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JOHN ELIOT, M.A., F.R.S., C.I.E.,
METEOROLOGICAL REPORTER TO THE GOVERNMENT OF INDIA AND DIRECTOR GENERAL OF INDIAN OBSERVATORIES.

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Corrigendum in India Weather Review, Annual Summary for the year 1896.

TEXT.

Page.	Part.	Correction.
639	India Weather Review, Annual Summary, 1896.	*For* " 6 " and " S 14° E " *read* 70 and S 85° E in columns 1 and 2, respectively, under June in Table XI against Darbhanga.

Corrigendum in India Monthly Weather Review for June 1897.

TABLE II.

Page.	Part.	Correction.
305	Monthly Weather Review, June 1897.	*For* "S 14° E " and " 6 " *read* S 85° E and 70 in columns 11 and 2 under " Wind direction " and " Wind steadiness, " respectively, against Darbhanga.

Corrigenda in India Monthly Weather Reviews for the year 1898.

TEXT.

Page.	Column.	Part.	Correction.
8	1	January 1898 . .	*For* "ten" *read* eleven in line 2 of para. 2nd.
8	2	Ditto ,, . .	*For* "0·59" *read* —0·59 in figure column 3 of tabular statement against Assam.
59	1	February ,, . .	*For* "disttrics" *read* districts in line 3 of para. 3rd below tabular statement.
66	2	Ditto ,, . .	*For* "Central Bengal" *read* the North Punjab in line 3 of para. 3rd.
,,	2	Ditto ,, . .	*For* "the ormal" *read* the normal in line 3 below tabular statement.
67	1	Ditto ,, . .	*For* "of Sufed Koh" *read* of the Sufed Koh in line 3 of para. 8th under heading g 1—Afghan Mountain Districts.
69	1	Ditto ,, . .	*For* "About 13 feet" *read* About 3 feet in line 9 of para (1) *Garhwal* below the tabular statement.
,,	2	Ditto ,, . .	*Insert* 5′ 6″ against Total in last line of snowfall statement under *Mallas Byans, Chandans and Darma.*
71	2	Ditto ,, . .	*For* "contributingl," and "norma" *read* contributing and normal in lines 11 and 13, respectively.
72	2	Ditto ,, . .	*Insert,* (coma) after "3°" in line 4 below 1st tabular statement.
74	1	Ditto ,, . .	*For* "argely" *read* largely in line 2 of para. 2nd below tabular statement.
,,	2	Ditto ,, . .	*For* "th" *read* the as last word in the last line of the column.
76	1	Ditto ,, . .	*For* "The lowest night temperatures were recorded, etc." *read* The lowest night temperatures of the month were recorded, etc., in line 1, para. 1st, below the second tabular statement.
78	1	Ditto ,, . .	*For* "Station" *read* Province in 1st column of heading of 1st tabular statement.
,,	1	Ditto ,, . .	*For* "Balgaum" *read* Belgaum in column 1 under Station in 2nd tabular statement.
80	1	Ditto ,, . .	*For* "The variations of" *read* The variations from the normal of, *for* "of the normal of aqueous" *read* of the aqueous and *for* "from that of the" *read* from those of the in lines 1, 2 and 3, respectively, of para. 6th below 1st tabular statement.
82	...	Ditto ,, . .	*For* "12·6" *read* 1·26 against Gujarat in column 1 under Rainfall of the tabular statement.
,,	...	Ditto ,, . .	*For* "haye" *read* have in foot-note below the page.
83	1	Ditto ,, . .	*For* "27" *read* 2·7 against Assam (Surma) in column 2 under Number of rainy days of the 1st tabular statement.
,,	1	Ditto ,, . .	*For* "showers," *read* showers in line 4 of para. 1st below 1st tabular statement.
168	2	April ,, . .	*For* "that" *read* than in line 2 of foot-note below tabular statement.
172	2	Ditto ,, . .	*For* "Thy varied" *read* They varied in line 4 of hailstorm report, dated 14th.
185	2	Ditto ,, . .	*For* "58" *read* 57 in line 2 of para. 3rd, under Rainfall.
297	1	June ,, . .	*For* "6," "+47," "S 14° E" and "55" *read* 70,—17, S 85° E and —16, respectively, in figure columns 2, 3, 5 and 6 in the 1st tabular statement against Darbhanga.
360	2	July ,, . .	*For* "+·002" *read* +·022 in figure column 3 of 2nd tabular statement against Punjab.
406	1	August ,, . .	*For* "ndicate" *read* indicate in line 2nd.
423	1	Ditto ,, . .	*For* "lay to the north of the first three of these stations" *read* lay generally to the north of these stations in lines 2 and 3 of para. 1st below 1st tabular statement.
437	1	Ditto ,, . .	*For* "Rainfa" *read* Rainfall in the heading of 2nd tabular statement.
529	2	October ,, . .	*For* "9·71" *read* 3·67 in figure column 2 of the 2nd tabular statement against 24-Parganas.
577	2	November,, . .	*For* "+c" *read* +·048 in column 5 of the 1st tabular statement against Leh and Lahore.
,,	2	Ditto ,, . .	*For* "+·010" *read* +·015 in column 5 of the 1st tabular statement against Simla and Ludhiana.
,,	2	Ditto ,, . .	*For* "+·03" *read* +·036 in column 5 of the 1st tabular statement against Chakrata and Roorkee.

Corrigenda in India Monthly Weather Reviews for the year 1898—*continued.*

TABLES I AND II.

Page.	Part.	Table.	Meteorological Province or Station.	Heading.	Column number.	Correction.
50	January 1898	II	Leh	Temperature of air.	8	*For* "33·7" *read* 33·2.
"	Ditto "	II	Darjeeling	Pressure	2	*For* "3·020" *read* 23·020.
89	February "	I	Faridpur	Wind direction	3	*For* "3" *read* ....
91	Ditto "	I	Buxar	Heaviest rainfall during month.	...	*For* "0·62" *read* 1·62.
94	Ditto "	I	Bombay	Pressure, 8 A.M., etc.	3	*For* "29·803" *read* 29·903.
98	Ditto "	I	Muktesar	Temperature of air.	2, 6 and 8.	*For* "49·1," "41·7," and "14·9" *read* 48·1, 41·2 and 13·9, respectively.
99	Ditto "	I	Teheran	Wind velocity	1	*For* "3·0" *read* 3·3.
"	Ditto "	I	Ispahan	Ditto	1	*For* "5·0," *read*, 4·6.
145	March "	I	Midnapore	Ditto	1	*For* "4·5" *read* 3·2.
147	Ditto "	I	Mainpuri	Ditto	1	*For* "0·4" *read* 4·5.
154	Ditto "	I	Minicoy	Temperature of air	4, 8, 11 and 13.	*For* "76·5*b*," "11·3," "72·0," and "17·7." *read* 76·7, 11·1, 72·2 and 17·5, respectively.
155	Ditto "	I	Teheran	Wind Velocity	1	*For* "3·0" *read* 2·9.
"	Ditto "	I	Ispahan	Ditto	1	*For* "6·0" *read* 6·1.
"	Ditto "	I	Baghdad	Ditto	1	*For* "6·0" *read* 5·5.
"	Ditto "		Zanzibar	Ditto	1	*Insert* 4·9.
156	Ditto "	II	False Point	Temp., Wet-bulb	1	*For* "7·6" *read* 67·6.
"	Ditto "	II	Dehra Dun	Pressure	1	*For* "27·874" *read* 27·674.
157	Ditto "	II	Peshawar	Humidity	5	*For* "+" *read* + 3.
"	Ditto "	II	Khandwa	Vapour tension	2	*Insert* ·228.
159	Ditto "	II	Simla (Ridge)	Cloud	1	*For* "3" *read* 3·9.
160	Ditto "	II	Minicoy	Temperature of air	2, 3, 5 and 6.	*For* "76·5*a*" "11·4," "72·0" and "18·5" *read* 76·7, 11·2, 72·2 and 18·3, respectively.
161	Ditto "	II	Aden	Vapour tension	1	*Insert* ·690.
"	Ditto "	II	Port Victoria (Seychelles)	Rainfall.	1 and 2	*Insert* 15·04 and 2·40, respectively.
196	April "	I	Delhi	Temperature of air.	6	*For* "9·2" *read* 89·2.
199	Ditto "	I	Pamban	Heaviest rainfall during month.	...	*For* "4·55" *read* 0·15.
201	Ditto "	I	Muktesar	Mean cloud amount	...	*Insert* 1·1.
202	Ditto "	I	Teheran	Pressure, 8 A.M., etc.	1	*For* "26·506" *read* 26·006.
202	Ditto "	I	Minicoy	Temperature of air.	4, 8, 11 and 13.	*For* "80·0*b*," "10·1," "74·2" and "18·4" *read* 80·2, 9·9, 74·4 and 18·2, respectively.
204	Ditto "	II	Jeypore	Temp., Wet-bulb	4	*For* "64·" *read* 64·5.
207	Ditto "	II	Darjeeling	Vapour tension	2	*For* "·426†" *read* ·426.
208	Ditto "	II	Minicoy	Temperature of air	2, 3, 5 and 6.	*For* "80·0†," "10·0," "74·2" and "18·5" *read* 80·2, 9·8, 74·4 and 18·3, respectively.
259	May "	I	Mount Abu	Rainfall	4, 6, 7 and 9.	*For* "1·01," "—0·17," "1·01," and "—0·35" *read* 1·03, —0·15, 1·03 and —0·33, respectively.
"	Ditto "	I	Mount Abu	Heaviest rainfalll during month.	...	*For* "0·85" *read* 0·87.

Corrigenda in India Monthly Weather Reviews for the year 1898—*concld.*

TABLES I AND II.

Page.	Part.	Table.	Meteorological Province or Station.	Heading.	Column number.	Correction.
262	May 1898	II	Chitaldroog	Temperature of air	10	*For* "—1·1" *read* +1·1.
263	Ditto ,,	II	Chitaldroog	Vapour tension	5	*For* "—·012" *read* +·012.
323	June ,,	I	Aden	Wind velocity	1 and 3	*For* "9·9*" and "+30" *read* ? and ?, respectively.
324	Ditto ,,	II	Akola	Temperature of air	5 and 6	*For* "75·8" and "36·0" *read* 73·1 and 38·7, respectively.
325	Ditto ,,	II	Darbhanga	Wind direction	11	*For* "S 14° E" *read* "S 85° E."
,,	Ditto ,,	II	Darbhanga	Wind steadiness	2	*For* "6" *read* 70.
,,	Ditto ,,	II	Lucknow	Vapour tension	1	*For* "·795" *read* ·759.
327	Ditto ,,	II	Chakrata	Ditto	3	*For* "·522" *read* ·531.
329	Ditto ,,	II	Aden	Wind velocity	1	*For* "271‡" *read* ?
381	July ,,	I	Jhansi	Hygrometry, 8 A.M.	1	*Insert* 83.
389	Ditto ,,	II	Saugor Island	Vapour tension	1	*For* "·832‡" *read* ·932‡.
390	Ditto ,,	II	Hoshangabad	Temperature of air	3, 9 and 10.	*For* "11·7," "80·3," and "+0·4," *read* 10·7, 80·1 and +0·2, respectively.
,,	Ditto ,,	II	Raipur	Pressure	1, 2, 4, 5 and 6.	*Apply*—·007 to each of the readings.
391	Ditto ,,	II	Chikalda	Humidity	4 and 5	*For* "83" and "—9" *read* 93 and +1, respectively.
450	August ,,	I	Perim	Pressure, 8 A.M., etc.	1	*For* "29·499" *read* 29·503.
454	Ditto ,,	II	Katmandu	Temp. Wet-bulb	1	*For* "76·4" *read* 67·4.
455	Ditto ,,	II	Chikalda	Rainfall	2	*For* "2·08" *read* 5·61.
456	Ditto ,,	II	Perim	Pressure	1, 2, 4 and 5.	*For* "·511‡," "·413‡," "·462‡" and "?" *read* ·516, ·419, ·465 and —·029, respectively.
,,	Ditto ,,	II	Perim	Temperature of air	1 and 3	*For* "96·3" and "11·3" *read* 96·0 and 11·0, respectively.
,,	Ditto ,,	II	Minicoy	Pressure	1, 2, 4 and 6.	*Deduct* ·050 from each of the readings.
502	September 1898	I	Jodhpore	Temperature of air	4	*For* 95·2 *read* 75·2.
508	Ditto ,,	I	Perim	Ditto	1	*For* 84·4 *read* 87·7.
509	Ditto ,,	I	Zanzibar	Wind direction	5	*Insert* 4.
510	Ditto ,,	II	Akola	Temp. Wet-bulb	4	*For* "73·6" *read* 73·9.
,,	Ditto ,,	II	Khandwa	Ditto	3	*For* "70·0" *read* 76·0.
511	Ditto ,,	II	Buldana	Vapour tension	1	*For* "·6" *read* ·639.
,,	Ditto ,,	II	Buldana	Humidity	1	*For* "0" *read* 90.
,,	Ditto ,,	II	Khandwa	Vapour tension	1	*Insert* ·724.
512	Ditto ,,	II	Raipur	Pressure	1, 2, 4, 5 and 6.	*Apply*—·007 to each of the readings.
513	Ditto ,,	II	Murree	Vapour tension	4 and 5	*For* "·403" and "—·015" *read* ·426 and +·008, respectively.
515	Ditto ,,	II	Aden	Ditto	2	*For* "·93" *read* ·935.
553	October ,,	I	Diamond Island	Rainfall	4, 6, 7 and 9.	*Apply* +0·05 to each of the values.
559	Ditto ,,	I	IX.—Deccan	Ditto	4	*For* "1·" *read* 1·19.
565	Ditto ,,	II	Buldana	Humidity	4 and 5	*For* "62" and "+3" *read* 42 and —17, respectively.
568	Ditto ,,	II	Port Victoria (Seychelles)	Temperature of air	10	*For* "—1·" *read* —1·1.

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MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

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CALCUTTA, JANUARY, 1898.

INTRODUCTION.

THE monthly review of the weather in India for the month of January 1898 is based on observations taken daily at 8 A.M. at 216 stations, and on additional observations recorded at 10 A.M. and 4 P.M. at 86 stations. In the case of the rainfall section of the review there are also utilized the weekly rainfall telegrams received from District Officers throughout India, and the rainfall statements of the month published in the Government Gazettes by the Provincial Governments that have been issued prior to the date of the publication of the review. A brief summary of the information relating to the weather in the Bay of Bengal and Arabian Sea, extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given. In the remaining monthly reviews of the present year, the brief statements of the methods of recording and tabulating the data for each of the elements of observation given in the present number at the commencement of each section, will not be repeated.

Summary of the chief features of the weather in India during the month of January, 1898.

The month of January is the first month of the north-east monsoon proper. North-east winds prevail over the whole of the Arabian Sea and the Bay of Bengal to the north of the equatorial belt of low pressure. The normal features of the weather in India are moderate temperature, and large daily range of temperature, and hence also of humidity (more especially in Northern and Central India and the Deccan), and clear skies and fine bright weather, with light to moderate winds, which are generally opposite in direction to those that prevail in the south-west monsoon.

Weather is usually fine throughout the whole month in the Peninsula. In Northern and Central India it is disturbed at intervals by shallow depressions or feeble cyclonic storms which either form in North-Western India or advance from Baluchistan. These depressions are generally shallow and ill-defined, but extensive. These storms, which usually advance eastwards across Northern India, frequently give rise to deep secondary stationary depressions in the Punjab. When a primary depression is not accompanied by a secondary depression, it either gives no rain or only light to moderate scattered rain over Northern and Central India. When a primary depression gives rise to a secondary depression in the Punjab, the double disturbance usually gives heavy rain in North-

Western India, heavy to excessive snowfall in the Himalayan mountain areas, and very stormy weather in the Punjab and Afghan hills. These storms hence form one of the most important abnormal features of the month. They usually produce large and marked temperature changes. A warm wave in which temperature is from 5° to 15° above the normal precedes each storm, and a dry cool wave follows in its rear.

January 1898 was unusually free from cold weather storms in Northern India. The leading features of the month over nearly the whole of India were abnormal dryness of the air, small amount of cloud and scanty rainfall. In Northern India temperature was higher than usual, but in the area of greatest deficiency of humidity including the Central Provinces, Berar and the North Deccan where skies were steadily free from cloud during the month, the night temperature was much lower than usual, and hence the mean temperature of the month was in moderate defect. The abnormal features in the meteorology were the immediate result of two conditions. The first was the early retreat of the south-west monsoon from the Deccan area in November, and the second was the comparative absence of cold weather storms during the month in the Persian area and Northern India.

The following gives a brief statement of the larger meteorological changes in India during the month.

At the end of the previous month, a cold weather depression and storm which formed in Persia on the 28th and 29th was approaching Baluchistan. Temperature was hence high in Upper India on the 1st in front of the depression. The storm passed through Baluchistan on the 1st, into Sind on the 2nd. The primary depression was of little importance in Baluchistan, as it gave no rain and only moderate cloud. A deepish secondary depression formed in the North and Central Punjab and Kashmir during the next 24 hours. Skies clouded over on the 2nd in the Punjab, and light to moderate showers were received during the 48 hours preceding 8 A.M. of the 4th in the North Punjab. The depression in the Punjab filled up very rapidly during the 24 hours preceding 8 A.M. of the 4th, and skies were again clear at that hour in the Punjab. Disturbed weather continued in the Kashmir region for 24 hours longer and much snow fell on the 3rd, 4th and 5th on the higher elevations in Chitral, Kashmir, Chamba and Lahoul.

The primary depression passed eastwards across Northern India at the rate of about 450 miles daily between the 2nd and 5th, but gave no rain and little or no cloud.

A wave of high pressure and of low temperature and humidity advanced slowly over Northern India behind the depression. This wave reduced temperature very largely over the whole of Northern India. The progress of the cool wave is clearly shown by the data of the following table :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					Change from 3rd to 6th January.
	3rd January.	4th January.	5th January.	6th January.	7th January.	
	°	°	°	°	°	°
Baluchistan (Quetta)	—3·1	—14·9	—12·0	—5·1	—3·9	— 2·0
Sind	+8·1	—3·8	—5·5	—4·6	—0·8	—12·7
Punjab	+2·4	—2·4	—3·8	—3·7	—2·1	— 6·1
Rajputana	+5·5	—2·7	—7·2	—7·9	—4·6	—13·4
North-Western Provinces and Oudh.	+0·3	+2·5	—0·1	—3·9	—3·9	— 4·2
Central India	+1·7	+2·0	—3·5	—7·7	—6·2	— 9·4
Bihar	—0·2	—0·2	+2·0	—2·1	—3·8	— 1·9
Chota Nagpur	—1·3	+1·0	+3·0	—1·9	—5·6	— 0·6
Bengal	—1·6	—1·7	—1·2	+0·1	—2·5	+ 1·7

The data show that the cool wave advanced across Upper India on the 3rd and 4th, Rajputana on the 5th, the North-Western Provinces, Bihar and Central India on the 6th, into Bengal on the 7th. Temperature was 13°·4 lower in Rajputana on the 6th than on the 3rd 9°·4 lower in Central India and 4°·2 lower in the Gangetic Plain.

The chief feature of this period was the very low night temperatures in Northern and Central India during the advance of the cool wave. The following gives the largest reduction of the night temperature below the normal during this period in the provinces of Northern and Central India :—

PROVINCE OR AREA.	Variation from normal of minimum temperature of 24 hours preceding 8 A.M. of date.	On night of
	°	
Baluchistan (Quetta)	—12·6	3rd and 4th.
Punjab	— 2·8	4th and 5th.
Sind and Rajputana	— 7·4	4th and 5th.
Central India and Gujarat	— 8·3	5th and 6th.
Central Provinces and Berar	— 8·4	6th and 7th.
Do. do do.	— 8.8	7th and 8th.
North-Western Provinces and Oudh	— 7·2	7th and 8th.
Bihar	— 4·0	7th and 8th.
Chota Nagpur	— 5·5	7th and 8th.
Bengal	— 5·4	8th and 9th.

The lowest night temperatures of the month were hence recorded during this period at the majority of stations in

Northern and Central India. The following gives the more noteworthy :—

STATION.	Lowest *minimum* temperature recorded in January 1898.	Date on which recorded.	Lowest minimum temperature recorded in January previous to 1898.	Year in which recorded.
	°		°	
Peshawar	32·4	8th	28·8	1878 and 1880.
Rawalpindi	31·9	7th and 8th	24·9	1879
Dera Ismail Khan	33·5	8th	26·0	1876
Jacobabad	33·5	5th	30·3	1885
Pachpadra	34·0	6th	30·0?	1895
Umballa	33·5	8th	34·0	1896
Roorkee	33·8	7th and 8th	30·7	1869
Ajmere	34·0	6th and 7th	31·0	1867
Jeypore	37·2	6th	35·0	1888
Cawnpore	36·5	8th	38·0	1897
Lucknow	37·6	9th	30·0	1874
Allahabad	38·9	9th	36·0	1878
Arrah	40·3	9th	40·5	1893

It may be noted that this wave of low temperature apparently originated in the Persian area. The following gives examples of the very low night temperatures in that area, which, it will be seen, were recorded about three days earlier than the lowest night temperatures in Upper India :—

STATION.	Lowest minimum temperature recorded in January 1898.	Date on which recorded.
	°	
Meshed	12·0	5th.
Teheran	10·0	2nd.
Ispahan	— 4·0	2nd and 3rd.
Baghdad	26·7	4th.

Very dry westerly winds prevailed in Northern and Central India during the advance of the wave, and hence very low humidities were recorded. The following gives the more remarkable :—

Date.	Hour.	Station.	Absolute humidity.	Relative humidity.
			*	%
4th	4 P.M.	Sholapur	·077	5
,,	10 A.M.	Mount Abu	·044	8
,,	4 P.M.	Deesa	·076	8
5th	,,	Belgaum	·099	8
,,	,,	Bellary	·164	11
,,	,,	Jacobabad	·105	14
8th	,,	Akola	·143	12
,,	,,	Allahabad	·099	13
9th	,,	Saugor	·058	7

Temperature increased during the next week (from the 8th to the 14th) in Baluchistan and Upper India but was throughout more or less considerably below the normal in Central India, Bengal, the Central Provinces and North Deccan. The following data illustrate these features :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF						
	8th January.	9th January.	10th January.	11th January.	12th January.	13th January.	14th January.
	°		°	°	°	°	°
Baluchistan (Quetta)	+0·1	+6·8	+13·	+9·6	+8·7	+3·6	+4·5
Punjab	—1·4	—0·8	+0·4	+0·2	+1·0	+0·8	+2·6
Sind and Rajputana	—0·2	+1·8	+2·4	+2·3	+2·2	+3·2	+3·3
Central India	—5·0	—3·0	—1·8	—1·5	—1·9	—1·2	+1·2
Berar	—6·3	—4·2	—5·4	—5·5	—5·4	—5·2	—3·0
Central Provinces	—7·6	—5·7	—6·5	—6·1	—5·9	—5·0	—3·5
Bengal	—4·7	—4·6	—3·5	—1·4	—0·9	—1·9	—2·8

Temperature was during nearly the whole of this period considerably above the normal in Southern India.

The advance of the cool wave across Northern India had been accompanied by a considerable increase of pressure in Northern India relative to Southern India, and steeper gradients than usual were hence established in the Bay for some time. The air movement in that area hence increased from an average of 2·6 on the 5th to 4·8 on the 10th, and diminished to 4·0 on the 13th. The mean normal strength of the winds in the Bay in January is, it may be noted, 3·0.

The strong north-east winds in the south of the Bay gave daily rain to Ceylon (chiefly the northern and eastern districts) from the 12th to the 15th. The rainfall extended to the Tinnevelly and Madura districts of South Madras on the 14th, 15th and 16th, but was light and partial in that area.

Fine bright clear weather prevailed over nearly the whole of India from the 6th (the date of the disappearance of the first cold weather storm of the month), until the 23rd, when the second cold weather storm of the month began to affect the weather in Upper India.

The chief feature of the meteorology of the period from the 15th to the 22nd was the persistent high temperature in Upper India, of which data for every second day are given below :—

Province or area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of			
	16th January.	18th January.	20th January.	22nd January.
	°	°	°	°
Baluchistan (Quetta)	+6·0	+8·7	+9·2	+10·3
Punjab	+3·1	+3·6	+5·5	+ 7·3
Sind	+3·4	+3·9	+4·8	+ 4·2
Rajputana	+2·0	+1·8	+4·1	+ 6·1

A second and noteworthy feature was the extension of the low temperature prevailing in the Deccan area southwards into Southern India. This was, as in the Deccan, almost entirely due to very low night temperatures accompanying great dryness of the air, and the prevalence of light airs and calms. The conditions are sufficiently indicated by the following variation data for the whole of the Madras Presidency :—

	Variation from normal of temperature of 24 hours preceding 8 A.M. of							
	15th January.	16th January.	17th January.	18th January.	19th January.	20th January.	21st January.	22nd January.
	°	°	°	°	°	°	°	°
Maximum temperature	—0·5	0	+0·9	+1·7	+0·8	—0·8	—3·1	—1·8
Minimum "	+1·1	—1·1	—2·2	—3·9	—3·9	—4·3	—5·2	—2·3
Mean "	+0·3	—0·6	—0·7	—1·1	—1·6	—2·6	—4·2	—2·1

The minimum temperature at Madras on the night of the 20th was 7°·5 below the normal and at Masulipatam 7°·8 below it.

The temperature conditions suggest that the period was one of great and abnormal dryness of the air in the Deccan and Madras. The following gives examples of the very low humidities recorded in that area from the 20th to the 25th :—

Date.	Hour.	Station.	Absolute humidity.	Relative humidity.
			"	%
18th	4 P.M.	Hassan	·122	11
19th	"	Belgaum	·073	
"	"	Akola	·133	11
20th	"	Poona	·086	7
"	"	Khandwa	·120	10
21st	"	Buldana	·087	8
25th	"	Bellary	·070	6
26th	"	Hassan	·126	11

The second cold weather disturbance originated in Rajputana on the 24th as a very shallow depression. There was a slight tendency to the formation of a secondary depression in the Punjab on the same day, but it failed to develop. The primary depression advanced through the North-Western Provinces on the 25th, Bihar and Chota Nagpur on the 26th, and Bengal on the 27th, into Upper Burma on the 28th. The disturbance gave light showers in the North and East Punjab and moderate snow in Kashmir on the 24th and 25th and a few light showers in the Gangetic Plain on the 25th and 26th. In Bengal and Assam the disturbance gave series of thunderstorms with heavy rain on the evening of the 26th and in Upper Burma light thundershowers on the 28th and 29th.

The disturbance had little effect in reducing temperature in Northern India. The following gives variation data from the 23rd to the 28th :—

Province or area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	23rd January.	24th January.	25th January.	26th January.	27th January.	28th January.
	°	°	°	°	°	°
Burma	+0·8	—0·3	+0·3	+1·3	+3·0	+1·6
Bengal and Assam	+1·4	+2·4	+2·6	+4·4	+2·9	—2·1
North-Western Provinces and Oudh.	+4·0	+7·4	+8·5	+6·1	+0·3	+1·9
Punjab	+6·8	+9·0	+2·2	+1·1	+2·9	+4·5
Sind and Rajputana	+6·5	+9·0	+5·2	—0·5	+2·3	+6·4
Central India and Gujarat.	+4·6	+6·7	+7·5	+1·7	—1·0	+1·9
Central Provinces and Berar.	—0·5	+2·4	+4·2	+4·0	—2·3	—3·1
Bombay	—0·9	+2·3	+2·4	+2·5	+1·8	+1·5
Madras	—1·4	—1·0	+0·1	—0·4	0	+0·1

An extraordinary rise of temperature occurred in the Persian and Baluchistan plateaux during the last week

of the month, the rise in Western Persia occurring three days earlier than in Baluchistan. The following gives data for the latter area :—

STATION.	MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF		Change from 25th to 30th January.
	25th January.	30th January.	
	°	°	°
Quetta	34·7	65·1	30·4
Kalat	32·2	53·7	21·5
Peshin	30·0	57·0	27·0
Kabul	32·2	43·3	11·1
Parachinar	40·5	49·8	9·3
Killa Drosh	44·1	51·7	7·6
Sharigh	46·3	54·8	8·5

This large increase of temperature in Baluchistan and Afghanistan accompanied the formation of a cold-weather disturbance in Persia. This storm, with the warm wave in front, was transferred eastwards and began to affect the weather in Baluchistan and the Upper India Himalayan area at the end of the month. A full account of the storm will be given in the February monthly review.

Pressure.—was, on the average of the whole Indian area, ·017″ higher than usual. Relatively to the general condition, pressure was in excess in Central India and the Deccan area. The anomalies were small except in the area defined by the following stations :—

STATION.	Variation from normal of mean 8 A. M. pressure of January 1898.	Pressure anomaly, January 1898.
	″	″
Akola	+·060	+·043
Amraoti	+·051	+·034
Indore	+·051	+·034
Khandwa	+·048	+·031
Hoshangabad	+·046	+·029
Raipur	+·039	+·022
Poona	+·037	+·020

Pressure was in slight relative defect over the remainder of India but the anomalies were small and unimportant. The most important feature of the pressure conditions of the month was the large excess at the hill-stations as compared with the neighbouring plains. This excess (or vertical pressure anomaly) was ·052″ in the case of Leh and Lahore, ·083″ in the case of Quetta and Jacobabad, ·036″ in the case of Simla and Ludhiana and ·022″ in the case of Ranikhet and Bareilly.

The following table gives the mean pressure variations and anomalies of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of January 1898.	Pressure anomaly, January 1898.
	″	″
Burma Coast and Bay Islands	+·007	—·010
Burma Inland	+·006	—·011
Assam	+·010	—·007
Bengal and Orissa	+·008	—·009
Gangetic Plain and Chota Nagpur	+·009	—·008
Upper Sub-Himalayas	+·006	—·011
Indus Valley and North-West Rajputana	+·012	—·005
East Rajputana, Central India and Gujarat	+·024	+·007
Deccan	+·037	+·020
West Coast	+·011	—·006
South India	+·020	+·003

Temperature.—The variations of the mean temperature conditions of the month were large and strongly marked. The mean day or maximum temperature was higher than usual over the whole Indian area excepting Lower Burma, South Bengal, Orissa and the Madras Coast districts. The deficiency was small and insignificant in these areas. The mean day temperature was in excess by amounts which increased westwards and northwards from the coast of the Bay and was most largely above the normal in North-Western India and Baluchistan. The excess was absolutely greatest at the stations for which data are given, *viz.* :—Quetta (+8°·7), Chakrata (+6°·5), Montgomery (+6°·8), Bickaneer (+6°·7) and Sambhar (+6°·3).

The mean minimum temperature was above the normal to a slight extent in Burma, Upper India and Baluchistan. The variations were generally small in these areas but exceeded 3° at the hill-stations in North-Western India, including Murree (+4°·9), Simla (+3°·7), Chakrata (+3°·7), Mount Abu (+5°·2) and Ranikhet (+3°·4). The mean night temperature of the month was below the normal over the remainder of India and the deficiency was largest in amount in the area of abnormal dryness and clearness of the air and freedom from cloud in the Deccan and Central Provinces. The mean night tempera-

ture of the month was more than 4° below the normal at stations for which data are given below :—

Station.	Mean minimum temperature. Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Chanda	46·3	54·6	—8·3?
Jubbulpore	41·7	48·3	—6·6
Akola	47·1	53·3	—6·2
Poona	48·9	55·0	—6·1
Malegaon	47·2	52·0	—4·8
Hoshangabad	48·3	52·4	—4·1
Hyderabad (Deccan)	53·8	57·9	—4·1

The mean temperature of the month was in considerable to large excess in Baluchistan and North-Western India where both the day and night temperatures were higher than usual. The variations were larger than 4° at stations for which data are given below :—

Station.	Mean daily temperature. Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Quetta	45·4	40·3	+5·1
Bickaneer	64·4	59·8	+4·6
Mooltan	60·4	56·2	+4·2?
Chakrata	48·4	43·3	+5·1
Simla	45·4	41·4	+4·0
Murree	45·7	41·7	+4·0

The mean temperature of the month was in slight to moderate defect in the north of the Peninsula, where the night temperature was largely below the normal and the day temperature in slight to moderate excess. The following gives data for stations at which it was more than 2° below the normal.

Station.	Mean daily temperature. Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Chanda	65·3	69·8	—4·5?
Sambalpur	65·3	68·6	—3·3?
Jubbulpore	59·7	62·8	—3·1
Cuttack	69·2	72·3	—3·1
False Point	66·3	68·9	—2·6
Akola	66·6	68·9	—2·3

Over the remainder of India the mean temperature differed little from the normal. It was in slight excess in the Gangetic Plain and the West Coast districts and in slight defect in the South Deccan and the Madras Coast districts.

The following gives variation data for the eleven meteorological provinces of the Empire :—

Meteorological Province.	Variation from normal of: Mean maximum temperature, January 1898.	Mean minimum temperature, January 1898.	Mean daily temperature, January 1898.
	°	°	°
Burma Coast and Bay Islands	—0·8	+0·7	0
Burma Inland	+0·4	+1·7	+1·1
Assam	+1·2	—1·3	0
Bengal and Orissa	—0·3	—1·9	—1·1
Gangetic Plain and Chota Nagpur.	+1·5	—1·3	+0·2
Upper Sub-Himalayas	+3·6	+0·7	+2·2
Indus Valley and North-West Rajputana.	+5·2	+1·5	+3·4
East Rajputana, Central India and Gujarat.	+4·0	—0·9	+1·6
Deccan	+1·0	—3·9	—1·4
West Coast	+2·3	—0·5	+0·9
South India	+0·4	—0·9	—0·2

Winds.—The mean air movement of the month in India was not marked by any large variations from the

normal. Winds were on the mean of the month slightly more easterly than usual in Lower Burma and more westerly in South Bengal but less westerly in the interior of Bengal. The mean air movement was generally feebler than usual in the Punjab and Western Himalayan area, chiefly due to the absence of cold-weather storms. Winds were much steadier than usual in Central India, the Central Provinces, Berar and the Deccan generally, although the mean velocity was slightly below the normal. Winds were normal in direction and strength in Madras and varied slightly but somewhat irregularly from their normal directions in the Central Provinces.

Humidity and Cloud.—The air was very slightly damper in the South Coromandel Coast districts and Arakan. Over the remainder of India it was drier than usual. The increased dryness of the air was very marked in the Konkan, Deccan, Central Provinces, Central India, East Rajputana, the southern and western districts of the North-Western Provinces and the South-East Punjab. The mean humidity of the month was 15 or upwards below the normal at the following stations :—Buldana (—21), Chikalda (—22), Saugor (—19), Sholapur, Simla and Chakrata (each—17), Ludhiana, Khandwa, Nagpur and Ratnagiri (each—16), Allahabad, Meerut, Quetta and Murree (each—15). The variations decreased in amount from this large central area of abnormal dryness eastwards to North-Eastern India and westwards to Sind where the deficiency was small in amount.

Humidity was also very largely below the normal in Baluchistan and the Western Himalayas. The mean for the month was 17 below the normal at Simla and Chakrata and 15 at Murree and Quetta.

A prominent feature of the meteorology of the month was the excessive dryness of the air in the Deccan area and in Baluchistan and the Western Himalayas. The mean aqueous vapour pressure of the month in the Deccan was ·107″ or 31 per cent. below the normal, and the relative humidity of the month 13 below it. The increased dryness in this area was solely due to the decreased amount of aqueous vapour present in the air, consequent on the early termination of the south-west monsoon rains. The relative humidity in the Upper Sub-Himalayas averaged 12 below the normal, and in the West Coast 10 below it. In these areas the increased dryness of the air was chiefly a result of the high temperature prevailing during the month.

There was more cloud than usual in the south-east of the Bay and the Andaman Sea. Cloud was in defect over the whole of India, and the deficiency was large and marked over the whole of the interior and in the Western Himalayas. The deficiency was absolutely greatest in the North-Western Provinces, the outer Himalayas and a part of Berar and the Central Prvinces, where it ranged between 2 and 3. Skies were free from cloud throughout the month generally in the Central Provinces, Berar, the Bombay Deccan and Konkan and also in parts of the North-Western Provinces. The mean cloud amount at stations in these areas ranged between *nil* and 0·2.

The following table gives variation data of the mean aqueous vapour pressure, mean humidity and mean cloud amount of ten meteorological provinces for the month of January 1898 :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean aqueous vapour pressure, January 1898.	Mean humidity, January 1898.	Mean cloud amount, January 1898.
	″		
Burma Coast and Bay Islands	—·003	—1	+0·4
Assam	—·009	—2	—0·7
Bengal and Orissa	—·035	—4	—1·2
Gangetic Plain and Chota Nagpur	—·023	—5	—1·9
Upper Sub-Himalayas	—·038	—12	—1·8
Indus Valley and North-West Rajputana.	+·015	—4	—1·4
East Rajputana, Central India and Gujarat.	—·038	—9	—1·9
Deccan	—·107	—13	—1 6
West Coast	—·072	—10	—0·6
South India	—·048	—5	—1·1

Rainfall.—As already pointed out, the month was unusually dry and free from cold-weather disturbances, and hence the rainfall was generally very scanty and more or less below the normal. A cold-weather disturbance gave light to moderate showers in the Punjab and Kashmir from the 3rd to the 5th, and light to heavy snow in the hills. A strong burst of north-east monsoon winds in the Bay was followed by rain in Ceylon, commencing on the 12th and extending to the southern districts of Madras on the 14th. These districts received light showers from the 14th to the 16th. The second cold-weather disturbance which originated in Rajputana on the 24th, gave moderate rain to parts of the Punjab and Kashmir on the 24th and 25th, light local showers in the Gangetic Plain on the 25th and 26th, and a moderately heavy burst of rain accompanying thunderstorms in Bengal and Assam on the 27th

and light showers in Upper Burma on the 28th. No rain fell over by far the greater part of India, including Rajputana, Central India, Berar, the Central Provinces, the greater part of the North-Western Provinces, Bombay, the Deccan, and North and Central Madras. The rainfall of the month was below the normal over the whole area except the Burma Coast and the Andamans and Bengal, which latter area received moderately heavy general rain on the 27th. The rainfall was most deficient in Upper India. Thus the Upper Sub-Himalayas received an average of only ·25 inch, barely one-seventh of its normal amount (1·67 inches) and the Gangetic Plain ·1 inch or one-seventh of the normal (·7 inch). The precipitation was as largely below the normal in the Upper India hill districts, as in the adjacent plains.

The following gives comparative rainfall data for the ten meteorological provinces of the empire :—

METEOROLOGICAL PROVINCE.	RAINFALL.		
	Mean actual for January 1898.	Mean normal for January.	Variation from normal, January 1898.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands . .	1·28	0·32	+0·55*
Burma Inland	0·21	0·23	—0·02
Assam	0·28	0·86	0·59*
Bengal and Orissa	0·56	0·43	+0·13
Gangetic Plain and Chota Nagpur .	0·10	0·71	—0·61
Upper Sub-Himalayas . . .	0·25	1·67	—1·40*
Indus Valley and North-West Rajputana.	0·07	0·56	—0·49
East Rajputana, Central India, and Gujarat.	0	0·32	—0·32
Deccan	0	0·29	—0·29
West Coast	0·13	0·24	—0·11
South India	0·31	0·44	—0·13

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with figures in column 1.

Atmospheric Pressure.

The barometers in use at the great majority of stations in India are mercurial barometers on Fortin's principle, and are generally Casella's small observatory standards with tubes 0·4 inch in diameter.

Casella's observatory barometers on the Kew principle (with a contracted scale to compensate for changes of level of the mercury in the cistern) are in use at the following stations :—

Aden.	Cuddapah.	Mymensingh.
Akyab.	Dinajpur.	Negapatam.
Arrah.	Faridpur.	Noakhali.
Barisal.	Gorakhpur.	Nowgong.
Bogra.	Hyderabad (Sind).	Perim.
Bushire.	Jacobabad.	Rampur Boalia.
Chapra.	Jalpaiguri.	Rangpur.
Cochin.	Mandalay.	Sambhar.
Cocos Island.	Mangalore.	Tavoy.
Comilla.	Midnapore.	Toungoo.

The instruments at the following stations are by various makers and of various kinds, but are being gradually replaced by Casella's small observatory standard barometers :—

Amini Divi.	Kurnool.	Sirsa.
Dehra.	Malegaon.	Wellington.
Kailang	Mercara.	
Katmandu.	Patiala.	

At Bombay and Calcutta large Newman's standards on Fortin's principle, with adjustable scales and tubes of more than 0·5″ in diameter, are in use.

All instruments are carefully compared at Calcutta before issue and their corrections determined to the Calcutta standard, which is believed to be ·011″ higher than the Kew standard.

The barometers are kept in all cases in masonry buildings to protect them as much as possible from changes of temperature.

The elevations of the barometers of all stations, with the exception of Minbu, Lashio, Bhamo, Shortt's Island, Daltonganj, Chaibassa, Muktesar, Patiala, Bickaneer, Pachpadra, Kotah, Veraval, Bhavnagar-Para, Aurangabad, Bidar, Sharigh, Astor, Minimarg, Skardu, Dras, Gilgit, Killa Drosh, Chitral, Para Chinar, Cherat, Gantok, Teheran, Ispahan, Jask, Baghdad, Perim and Kashgar, have been obtained as accurately as possible. In the great majority of cases they have been referred to datum levels determined by the Great Trigonometrical Survey of India.

The readings of the barometers are reduced to 32° F. and are corrected to constant gravity (Lat. 45°), and in the cases of all stations, the elevations of which are accurately known and are below 3,500 feet, to sea-level. Each

reading is separately corrected and the means of the month are the means of the daily corrected readings.

In Table I, columns 2 to 8, under the general heading "Pressure 8 A.M., in inches" are given for each station the 8 A.M. barometric data of the month, including the mean 8 A.M. pressure reduced to 32° F., and its variation from the normal mean pressure (reduced to 32° F.) of the month, the mean 8 A.M. pressure corrected to constant gravity and to sea level, the highest and the lowest pressures and their respective dates of occurrence and the total range of 8 A.M. pressure during the month.

In Table II, under the heading "Pressure" are given the monthly means of the two hours of observation, 10 A.M. and 4 P.M., reduced to 32° F., the mean daily range, the mean daily pressure reduced to 32° F. and its variation from the normal, and the mean daily pressure reduced to 32° F. and corrected to constant gravity and sea-level for all second class observing stations. The mean daily pressures have been obtained for all stations except Muktesar, Mysore, Wellington, Zanzibar, Seychelles and Muscat (for which crude means are used) by taking the means of the 10 and 16 hours' observations and applying corrections for each month, derived from the observations of the same or a neighbouring station, to give true daily means.

The distribution of the mean 8 A.M. pressure of the month is shown by means of two charts. The first chart (Plate I) shows the distribution of the mean pressure of the month reduced to sea-level and to constant gravity (that of Lat. 45°) by means of isobars drawn for differences of pressure of 0·05″ or $\frac{1}{20}$th of inch. The second chart (Plate II) gives the variations of the actual mean 8 A.M. pressure reduced to 32° F. from normal pressure.

The normal 8 A.M. daily and monthly means of pressure utilized in the pressure section of the review have been deduced from the barometric observations of the sixteen years' period 1878—93, the same period being selected for all stations (with ten or eleven exceptions), in order that the means may be fairly comparable.

A small chart, No. 4 of Plate III, gives the distribution of the monthly mean daily pressure corrected to standard gravity and to sea-level, and of the mean winds, in the same form and manner as in the monthly charts issued with the annual reports on the meteorology of India, previous to the year 1891. The data on which this chart is based will be found in Table II.

The monthly means employed in the determination of the variations of the mean actual from the mean normal pressures of the month given in Table II are derived from all the available trustworthy pressure data for each station, and hence are the means for very varying numbers of years, ranging from three years in the case of the Seychelles to fifty years in the case of Bombay.

The more important barometric changes and movements during the month are described in the statement of the barometric depressions of the month. The data that are chiefly used in that discussion are the 8 A.M. reduced observations and the variations derived from comparison of these observations with the normal daily or monthly 8 A.M. values.

The mean pressure of the whole Indian land area for January 1898 was ·017″ above the normal. Relatively to the general condition, pressure was in excess in Central India, Rajputana, Cutch, Kathiawar and the northern half of the Peninsula. This feature of increased or excessive pressure in the northern half of the Peninsula has been remarkably persistent during the previous three months. The excess in January 1898 was most pronounced in the area for which data are given below:—

STATION.	Variation from normal of mean 8 A.M. pressure of January 1898.	Pressure anomaly, January 1898.
	″	″
Akola	+·060	+·043
Amraoti	+·051	+·034
Indore	+·051	+·034
Khandwa	+·048	+·031
Hoshangabad	+·046	+·029
Raipur	+·039	+·022
Poona	+·037	+·020

The area of greatest excess of pressure hence included Berar, the western states of Central India and the western districts of the Central Provinces.

Pressure was, relatively to the general condition, in very slight defect in Northern India and Burma, and also in Southern India. The variations in these areas were in all cases small, nowhere exceeding ·02″ (excepting Calicut where it was —·023″).

The chief feature of the mean pressure distribution of the month was the large excess of pressure at the hill stations relatively to the adjacent plains. The following gives comparative data for nine pairs of stations:—

HILL STATION.	Variation from normal of pressure (a)	NEIGHBOURING PLAIN STATION.	Variation from normal of pressure. (b)	Vertical pressure anomaly or (a)—(b).
	″		″	″
Quetta	+·087	Jacobabad	+·004	+·083
Leh	+·054	Lahore	+·002	+·052
Kailang	+·027	Lahore	+·002	+·025
Murree	+·056	Peshawar	+·012	+·044
Simla	+·035	Ludhiana	—·001	+·036
Chakrata	+·042	Roorkee	0	+·042
Ranikhet	+·032	Bareilly	+·010	+·022
Darjeeling	+·046	Dhubri	+·004	+·042
Mount Abu	+·042	Deesa	+·019	+·023

Barometric depressions and cyclonic storms of the month.

Cold-weather storm of the 1st to the 4th January.—It was stated in the weather review of December that pressure gave way very rapidly at Baghdad and Western Persia on the 28th and 29th, and that the depression thus formed advanced eastwards and began to affect Baluchistan on the 31st. During the next 24 hours pressure gave way briskly to rapidly in Baluchistan and Upper India and a very shallow depression lay over Baluchistan and Sind on the morning of the 1st. The following data show the position and character of the depression at 8 A.M.:—

Station.	Pressure.			Wind.		Cloud.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Hyderabad . .	30·067	—·116	—·021	Calm	1	0	Clear.
Jacobabad . .	·061	—·099	—·037	WNW	2	10	Overcast.
Jodhpur . . .	·109	—·079	?	Calm	1	2	Fine.
Bickaneer . .	·074	—·092	?	WSW	4	5	Fine.
Mooltan . . .	·073	—·086	—·067	Calm	0	4	Fine.
Chaman . . .	?	+·080	?	ESE	4	5	Fine.
Quetta . . .	?	—·053	+·061	Calm	1	9	Frosty.

The data show that the depression was very shallow and in fact it had not yet developed into a closed area of low pressure.

A noteworthy feature of the pressure changes of the previous 24 hours was a large fall at the Himalayan hill stations and at Peshawar. This was, apparently, due to some action independent of the depression advancing through Baluchistan and Sind. The following gives data of the change at the hill stations:—

Station.	Pressure.			Wind.		Cloud.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Peshawar . .	30·057	—·124	—·067	S	4	0	Clear.
Srinagar . .	?	—·145	?	S	3	9	...
Astor . . .	?	—·134	?	SSW	3	0	Clear.
Minimarg . .	?	—·149	?	E	6	0	"
Skardu . .	?	—·170	?	Calm	2	6	Frosty.
Dras . . .	?	—·213	?	Calm	0	0	"
Leh . . .	?	—·186	—·115	W	2	5	Cloud.

Winds were as yet light at the hill stations and skies generally clear.

It may be noted that throughout the month there was a persistent tendency to low pressure over the hill and submontane districts of the Western Himalayas. No rain had fallen in Baluchistan during the previous 24 hours.

2nd January:—Pressure had again given way in Baluchistan and Sind, and a shallow closed area of depression was now shown in Sind. The following gives data for this area:—

Station.	Pressure.			Wind.		Cloud.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Kurrachee . .	30·036	—·042	—·048	WNW	4	5	Fine.
Hyderabad . .	·003	—·064	—·090	SW	3	5	"
Jodhpur . .	·097	—·012	?	Calm.	0	6	"
Bickaneer . .	·061	—·013	?	WSW	2	9	...
Mooltan . .	·052	—·021	—·090	Calm.	0	5	Fine.
Jacobabad . .	·004	—·057	—·108	NNE	2	8	"
Chaman . .	?	—·086	?	SSE	4	10	Overcast.
Quetta . .	?	—·093	—·038	Calm.	0	10	Dusthaze.

Pressure had increased considerably at the Western Himalayan hill stations but skies had clouded over and were now heavily clouded or overcast in the Punjab and Kashmir hill districts and the greater part of the Punjab, Sind and Baluchistan. As usual, temperature was excessive in the eastern quadrant of the depression and the cool wave in its rear was beginning to affect Baluchistan.

No rain was as yet reported in either Baluchistan or the Punjab.

3rd January.—Pressure had risen briskly in Baluchistan and had fallen rapidly in the Punjab and Rajputana. The primary depression had advanced into Central Rajputana, but was almost completely obscured by a secondary depression which had formed in the North Punjab,

The following table gives 8 A.M. data, showing the character of the secondary depression at that hour :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
D. I. Khan.	29·917	—·158	—·218	NW	3	0	...	Dusthaze.
Mooltan .	·918	—·134	—·230	Calm	0	8	...	Fine.
Montgomery	·860	—·186	—·236	WNW	6	0	...	Strong wind.
Lahore .	·833	—·230	—·283	SE	1	6	...	Fine.
Sialkot .	·897	—·178	—·197	ENE	1	8	...	,,
Rawalpindi.	·911	—·170	—·204	Calm	1	10	0·15	Showery.
Peshawar .	·974	—·097	—·172	,,	2	10	0·05	,,

The data indicate that a deepish depression overlay the North and Central Punjab. Winds were irregularly cyclonic, but were very feeble at the level of the plains, the greatest velocity at 8 A.M. in the storm area being only 6 miles per hour (at Montgomery).

Pressure had, however, given way much more rapidly at the hill stations in the Kashmir Himalayas, as is shown by the following data :—

STATION.	PRESSURE.		WIND.		Velocity at 8 A.M.	Cloud.	Rainfall.	WEATHER.
	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.				
	"	"					Inch.	
Cherat .	—·163	?	NNW	8	32	10	...	Snowing.
Murree .	—·191	—·200	SSE	19	32	10	0·30	,,
Srinagar .	—·279	?	NNW	4	2	9	...	...
Minimarg .	—·358	?	SW	8	4	10	0·75	Snowing.
Astor .	—·314	?	Calm	4	0	10	0·15	,,
Skardu .	—·378	?	ENE	1	2	10	0·03	,,
Gilgit .	—·297	?	Calm	1	...	10	...	,,
Dras . .	—·319	?	,,	1	0	10	0·30	,,
Leh . .	—·104	—·202	W	0	...	10	...	Dull.

The fall was hence nearly four-tenths of an inch at Skardu and Minimarg, and was hence considerably larger in actual amount than at the level of the plains in the Punjab. Winds had increased greatly at Cherat and Murree and weather was now disturbed with much snow in Kashmir and Chitral. Some light showers of rain had fallen in the North Punjab.

4th January.—Pressure had increased very rapidly in the Punjab, more rapidly in the plains than the hills. The secondary depression which lay over the Punjab plains on the previous day had completely filled up and ordinary anti-cyclonic conditions again obtained in Upper India. The following data show the weather in the Punjab at 8 A.M. :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
D. I. Khan.	30·171	+·254	+·030	NNE	5	0	...	Dusthaze.
Mooltan .	·156	+·238	+·001	Calm	1	0	...	Clear.
Montgomery	·135	+·275	+·017	NW	7	0	...	...
Lahore .	·106	+·273	—·025	W	2	0	...	Frosty.
Sialkot .	·111	+·214	—·007	Calm	2	0	0·04	Clear.
Rawalpindi.	·198	+·287	+·034	,,	1	0	0·40	Foggy.
Khushab .	·167	+·279	?	WSW	10	0	...	...
Peshawar .	·173	+·199	+·007	SW	2	0	...	Frosty.

The data show that skies had completely cleared in the Punjab, and fine bright weather with falling temperature (due to the eastward advance of the cool wave in the rear of the storm across North-West India) now obtained in that area.

Pressure had increased in Kashmir, but was still in considerable defect. Skies were heavily clouded and light to heavy snow had fallen at the higher stations. The following gives data :—

STATION.	PRESSURE.		WIND.		Cloud.	Rainfall.	WEATHER.
	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"					Inch.	
Cherat . .	+·160	?	NNW	23	0	...	Clear.
Murree . .	+·157	—·040	SE	12	0	0·55	Snow storm.
Srinagar .	+·185	?	NE	2	10	1·12	,
Minimarg .	+·185	?	Calm	14	10	0·70	...
Astor . .	+·194	?	SW	0	3	0·23	Snowstorm.
Skardu . .	+·188	?	Calm	1	9	0·23	,,
Gilgit . .	+·193	?	,,	1	10	0·05	Snowing.
Dras . .	+·147	?	,,	4	10	0·36	Snowstorm.
Leh . .	—·008	—·209	W	1	8	0·01	Cloudy.

The primary disturbance was now passing through Bihar and Chota Nagpur where pressure had given way locally to a slight extent. Skies were clear over the whole of North-Eastern India, and the feeble depression passing through that area was of no importance.

Pressure increased over the whole of India during the next 24 hours. The rise was greatest in the Kashmir hill districts and normal pressure conditions with clear skies were re-established in the Western Himalayan area.

The storm originated, as the majority of cold-weather storms appear to do, in the Persian area. It passed through Baluchistan on the 1st, into Sind on the 2nd when it was a very feeble disturbance. A deep secondary depression formed in the North and Central Punjab during the next 24 hours and filled up rapidly on the 4th. The primary depression passed through Central Rajputana on the 3rd, Bihar and Chota Nagpur on the 4th and Bengal and Assam on the 5th, but was so feeble that it gave little or no cloud in North-Eastern India.

The disturbance was remarkable for the very slight rain it gave. None fell in Baluchistan. Light local showers were received in the North and North-East Punjab. The storm, on the other hand, gave moderate to heavy snow in the Afghan, Kashmir and Punjab mountain districts.

The cool dry wave following the storm gave high pressures for some days in Northern India and hence steeper gradients than usual prevailed in the Bay of Bengal. Pressure was, for example, very high (upwards of a tenth of an inch above the normal) in Northern India on the 9th and 10th. It fell, chiefly in Northern India, during the next four days, but moderately steep gradients held steadily during that period in the Bay. Winds were hence considerably stronger than the normal from the 8th to the 13th in the Bay, as is shown by the following statement:—

Date.	Mean force.
7h January 1898	3·1
8th " "	3·6
9th " "	4·3
10th " "	4·8
11th " "	3·6
12th " "	3·3
13th " "	4·0

The normal strength of the winds in the Bay in January is 3·0 (Beaufort notation).

Apparently as an effect of these strong winds Ceylon (chiefly the eastern half of the island) received moderate rain from the 12th to the 15th and the rainfall extended to the Tinnevelly and Madura districts of South Madras on the 14th, 15th and 16th.

The pressure conditions prevailing on the 16th differed little from the normal. There was a slight excess of pressure in the Deccan, Berar, the western districts of Central India and Rajputana and a slight deficiency in North-Eastern India. The pressure changes were slight on the 17th. Pressure increased considerably to largely on the 18th and 19th (as usual most rapidly in Northern India) and decreased as briskly on the 20th and 21st.

This large oscillation was followed by slight and irregular changes on the 22nd on which day pressure was in slight defect in Northern India and in slight excess in the Central Provines, Berar and the western states of Central India. Conditions were hence similar to those obtaining on the 16th. Weather was disturbed during the next week in Northern India due to a cold weather storm, the history of which is given below.

Cold weather storm of the 23rd to the 28th January.—This storm did not originate in the Persian area, as pressure was largely above the normal at Baghdad and Bushire from the 18th to the 23rd. Pressure decreased simultaneously at these stations with the fall in Baluchistan and North-Western India, so that the general disturbance apparently affected the whole of Persia, Afghanistan, Baluchistan and North-Western India.

Pressure increased over the whole of the plains of India and also in Baluchistan and Eastern Persia during the 24 hours preceding 8 A.M. of the 23rd. The rise averaged nearly a tenth of an inch in East Persia and Baluchistan and between ·02″ and ·09″ in the plains of Northern India. Pressure had, however, fallen locally at the higher stations in Kashmir where skies had clouded over during the previous 48 hours and snow had begun to fall. The following gives data of this local fall of pressure and the accompanying disturbed weather:—

Station.	Pressure.		Wind.		Cloud.	Rainfall.	Weather.
	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	″	″				Inch.	
Cherat	+·066	?	NNW	9	4	0·01	
Murree	+·042	+·110	SE	14	1	...	Strong wind.
Srinagar	—·024	?	W	3	10	...	
Astor	—·122	?	SW	6	10	0·08	Snowstorm.
Gilgit	—·150	?	SSW	1	10	...	
Minimarg	—·083	?	Calm	2	10	0·16	Snowing.
Skardu	—·149	?	NE	3	10	...	
Dras	—·154	?	Calm	0	10	0·10	"
Leh	—·103	+·047	SW	1	9	...	
Simla	+·063	+·111	NE	4	4	...	

The decrease of pressure was hence very local and restricted to the Kashmir hill stations and did not even extend to Simla or Murree. Light snow had been received at most of the Kashmir hill stations.

24th January.—Pressure had given way very rapidly at Baghdad and in West Persia where skies had clouded over and southerly winds were setting in. The following gives data :—

STATION.	PRESSURE.			WIND.		Cloud.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Baghdad .	30·157	—·294	—·108	E	0	8	Gloomy.
Bushire .	·202	—·095	+·127	ESE	5	6	Sea smooth.
Ispahan .	?	—·100	?	Calm	1	4	
Teheran	?	—·100	?	NE	3	1	

No rain had fallen at the Persian stations.

In India pressure had given way over the whole area, but the fall was slight except in two areas which were related to each other as primary and secondary depressions.

Pressure had given way briskly to rapidly in Rajputana. Skies were partially clouded and very light showers had fallen at Bickaneer and Sambhar. This disturbance formed the primary depression.

Pressure had also fallen briskly in the North and Central Punjab and at the Kashmir stations, and weather was feebly disturbed over the whole of these areas. Light to moderate showers had fallen over the greater part of the Punjab and snow had continued to fall in Kashmir. There was hence a tendency to the establishment of a secondary depression in the North Punjab.

25th January.—Pressure had increased slightly to briskly in the Punjab, Sind and West Rajputana and skies had cleared over nearly the whole of that area. Light to moderate showers had fallen in the East Punjab and the adjacent hills.

The primary depression which was in Rajputana on the previous day had advanced eastwards to the central districts of the North-Western Provinces where pressure had fallen rapidly.

The following gives data of this area of low pressure :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch	
Bareilly .	29·915	—·120	—·097	NE	0	4	0·05	Showery.
Mainpuri .	·921	—·107	?	NNE	1	4	...	Fine.
Jhansi .	·940	—·105	—·090	W	1	0	...	Clear.
Nowgong .	·958	—·114	—·083	SW	1	0	...	,,
Sutna .	·967	—·112	—·070	N	2	0	...	,,
Lucknow .	·945	—·090	—·088	Calm	1	4	...	Fine.
Gorakhpur	·937	—·076	—·085	E	1	0	...	

Skies were partially clouded in some parts of the low pressure area and showers had fallen at a few stations. Thunderstorms with hail had visited the Mussooree and Naini Tal hill districts.

26th January.—Pressure had increased briskly in Rajputana, Baghelkhand, Bundlekhand and the western districts of the North-Western Provinces and had fallen briskly in Bihar, Chota Nagpur and West Bengal to which the primary depression was now transferred. The following data show its position at 8 A.M.:—

STATION.	PRESSURE.			WIND.		Cloud.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Darbhanga .	29·891	—·062	—·131	ESE	2	5	Fine.
Chaibassa .	·908	—·056	?	WSW	1	0	Clear.
Patna . .	·894	—·057	—·138	SSW	1	6	Fine.
Gaya . .	·912	—·045	—·116	SW	2	4	,,
Hazaribagh .	·907	—·054	—·100	NW	8	1	,,
Burdwan . .	·906	—·055	—·114	ENE	1	0	Clear.
Calcutta . .	·895	—·057	—·117	SSE	2	0	,,

Skies were very lightly clouded in the area of feeble depression in Bihar, but were clouding over in North Bengal and Assam. Practically no rain had fallen in the disturbed area during the previous 24 hours.

27th January.—Pressure had increased rapidly in Bihar and Chota Nagpur. The disturbance was passing from Bengal into Upper Burma, but was now very feebly marked. Weather was disturbed by numerous series of

thunderstorms in Bengal and Assam. They had given general but very irregularly distributed rain. The following gives falls exceeding 1½ inches registered at 8 A.M. of the 27th, :—

Province.	DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A. M. of 27th January 1898.
			Inches.
Bengal	Faridpur	Faridpur	3·24
	Jessore	Magura	2·30
	Muzaffarpur	Shinhar	2·16
	Nadia	Krishnagar	2·04
	Dacca	Narainganj	1·90
	Dinajpur	Dinajpur	1·67
	Nadia	Chuadanga	1·65
	Dacca	Munshiganj	1·52
Assam	Darrang	Orangajuli	2·22
	"	Charduar	2·11
	Nowgong	Sekoni	1·95
	Kamrup	Gauhati	1·55

A rapid recovery of pressure occurred over the whole of North-Eastern India and Upper Burma during the next 24 hours and the disturbance hence disappeared before the morning of the 28th. Some light showers fell in Upper Burma and Cachar during the previous afternoon.

The disturbance probably originated in Upper India. A depression formed simultaneously in Persia on the 24th and 25th and filled up on the 26th and 27th. It gave much cloud, but little or no rain.

The primary depression in India was generated in Rajputana on the 24th. There was a tendency to the formation of a secondary depression in the Punjab on the 25th but it failed to develop.

The primary depression passed through the North-Western Provinces on the 25th, Bihar and Chota Nagpur on the 26th, Bengal on the 27th, and then filled up or disappeared. The disturbance gave light but fairly general rain in the Punjab on the 24th and 25th. The Gangetic Plain received a few light local showers on the 26th. Assam and the greater part of Bengal obtained moderately heavy rain, chiefly during thunderstorms, on the 27th, and Upper Burma some light local showers on the 28th.

A depression appeared in Baluchistan and Sind on the 31st. The history of the disturbance will be given in the February review.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-west of India.

I.—AFGHAN MOUNTAIN DISTRICTS.

(1) *Wano* (*Waziristan*). No snow fell in this district during the month.

(2) *Dera Ismail Khan* (*Kulachi Border*).—Snow fell on the 23rd of the month on the Kat peak, Nawaz, Tiza, Marmaz, Nurzagar, Sorma and Ushbachaka to a depth of four feet.

(3) *Kurram.*—The following report has been received from the officer on special duty of the snowfall in that district in January 1898:—"Snow fell slightly on the higher ranges of Sufed Koh on the 19th, 22nd, 23rd, 24th and 30th, and there was a heavy fall of snow on the 31st which covered the higher and lower ranges of the Sufed Koh and all hills round the Parachinar station. No snow fell at the Parachinar station (elevation 6,000 feet) during the month under report. From the general information it appears that there was about 7 feet of snow on the Sikaram range of Sufed Koh at the end of the month when it was, however, melting fast. According to the opinion of the inhabitants of Kurram the snowfall of the month was less than during the corresponding period of the previous year."

(4) *Kabul.*—The meteorological observer has sent the following report:—

"Snow fell as under at the City of Kabul:—

January 2nd. Slight shower of snow.

" 3rd. Slight fall measuring 3 inches in depth.

" 19th. Light shower during the afternoon and evening. The total fall was only 1½ inches.

" 22nd. Snow fell during the night to a depth of 2 inches.

The total fall during the month was only 6½ inches. The neighbouring hills were covered with snow at the end of the month. None was lying in the Kabul Valley. The snowfall of the month was scanty compared with that of January 1897 when 3 feet were received during the month.

II.—KASHMIR AND PUNJAB HIMALAYAS.

Murree District.—The following gives data of the snowfall in that district:—

MURREE.

	Feet.	Inches.
3rd and 4th January 1898	0	9
14th ditto	0	7
Total	1	4

KAHUTA.

	Feet.	Inches.
3rd January 1898	1	0
24th ditto	0	2
Total	1	2

(2) *Kashmir.*—Dr. Mitra, Meteorological Reporter to the Kashmir Government, writing on the 25th January, says:—"We are having what I might call a mild winter; of course the higher passes have got their usual share of snow, but the lower hills are comparatively free. At Banihal (9,200 feet) there is snow on the top of the pass and all down on the Kashmir side, say about 2 feet, but no snow on the side facing the plains. In the valley there is no snow to speak of and very little disturbance of the atmosphere. After days of calm and overcast sky we had snow yesterday for three hours, but the temperature is warm. In short the general opinion is that it is a mild winter."

(3) *Leh.*—"There have been three or four very insignificant snowfalls in Leh proper during the month, the depth of the snow on each occasion not being more than three to four inches, and it hence melted very quickly. Above about 13,000 feet the snow seemed to remain. The weather has been unusually warm and dry with very many fine days. It has been in fact a very mild winter, not to be compared to that of the previous year."

(4) *Chamba.*—The first storm of the month was on the 3rd. There was general snowfall over the state, and the snow descended to about 5,500 feet generally, but to 4,500 feet in the neighbourhood of Dalhousie. A local snowstorm occurred in Barmaur on the 23rd, 24th and 25th. The snow line descended to about 6,500 feet and the total fall at a height of 8,000 feet on these days was 3 feet and 7 inches. The fall at Alansa, 7,000 feet high, during the same period amounted only to six inches. The following table gives the amounts of the snowfall as measured on the 3rd of January, the only day on which snowfall occurred over the whole state, at eight stations at different levels in the state:—

Name of Peak.	Height above sea-level in feet.	Snowfall measured on 3rd January 1898.	
		Ft.	In.
Kalatop	8,000	1	2
Surkhigulli	5,000	0	3
Chitrari	6,000	0	1
Olansa	7,000	0	4
Kundi	...	0	3½
Barmaur	7,000	0	6
Bhandal	6,000	0	3½
Thanela	7,000	1	1
Chanan	6,500	0	9
		Total 4	9

The depth of the snow accumulation on the 15th January was 11 inches at Kalatop, 9 inches at Barmaur, 10 inches at Choari (9,000 feet), 6 inches at Thanela and 3 inches at Chanan.

The snowfall up to date is considered to be abnormally light by the natives of the district. There has been an unusual amount of clear bright weather.

(5) *Dalhousie District.*—The first snowfall of the year occurred on the 4th January. It gave a fall of only about six inches. No further fall occurred during the month.

(6) *Simla Hill Districts.*—According to the snowfall report received the weather was unusually fine during the month. The only fall of snow during the month was on the 4th when a slight fall occurred above 9,200 feet as observed at Kilba.

The accumulation of snow on the higher passes is exceptionally small for the time of year and passes below 16,000 feet are still open.

The temperature has been much higher than usual and the weather dry. Crops are hence suffering for want of moisture.

The villages in the district are much concerned regarding the mildness of the winter, and unless snow soon falls their prospects are bad.

(7) *Kulu.*—The Assistant Commissioner of the Kulu Sub-Division reports as follows:—"There were falls of snow on the 24th and 25th January generally on all the passes in Kulu and on the 31st January only on high passes in the sub-division. The fall of the 24th and 25th descended to an elevation of 5,860 feet where the depth was about 2 inches, and was about 3 feet at an elevation of 11,000 feet.

"The following table shows the reported depth of snow on the higher passes of the sub-division at the end of the month under report:—

District.	Name of Pass.	Height above sea-level in feet.	Reported depth of snow at the end of January 1898.	Reported depth of snow at the end of January 1897.	Reported depth of snow at the end of January 1896.	Reported depth of snow at the end of January 1895.	Reported depth of snow at the end of January 1894.
		Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
Kulu	Rotang . . .	13,000	6½	14	12	19	16
	Hamta . . .	14,500	10	14	8	38?	14
	Chander Khani . .	14,500	4	5	5	7	13
	Baragarh . . .	?	3	...	...	...	...
	Barsai . . .	?	1	6	4	12	14
	Bujadhar . . .	?	..	7	5	11	11
	Lohri Achri . .	?	4	9	7	13	11
	Sari	?	8½	...	...	...	...
	Bhubhu . . .	10,000	2½	6	3½	9	7
	Pashtari . . .	?	4	4	2½	11	6
	Majhang . . .	?	1	2	1	2	2

District.	Name of Pass.	Height above sea level in feet.	Reported depth of snow at the end of January 1898.	Reported depth of snow at the end of January 1897.	Reported depth of snow at the end of January 1896.	Reported depth of snow at the end of January 1895.	Reported depth of snow at the end of January 1894.
		Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
	Sirikhand . . .	15,000	9	12	9	20	14
	Chul . . .	?	3	10	1	9	7
	Nunu . . .	?	1	...	...	...	...
	Maghian . . .	?	4	8	1	9	7
	Dundku . . .	?	4	10	1	10	7
	Tikar . . .	?	3	8	1	8	7
	Ramgarh . . .	?	1	...	...	...	...
PLACH .	Jalori . . .	10,500	3	9	1	10	7
	Raghopur . .	?	3	8	1	10	8
	Lambri . . .	?	4	9	1	12	7
	Sakiran . . .	?	...	9	1	12	8
	Supakun . . .	?	4	9	1	10	9
	Gargarasan . .	17,000	7	10	2	18	11
	Basleo . . .	11,000	4	9	1	11½	7
	Plach . . .	?	6	3	1	14	10
	Tirath . . .	?	7	9	1	17	12

The weather during the month was not so cold as in previous years. It was unusually dry and the amount of cloud was small. The snowfall was very light during the month under report as compared with that of previous years."

III.—NORTH-WESTERN PROVINCES HIMALAYAS.

(1) *Garhwal.*—"Moderate snow fell (about 1 foot in depth) on the higher ranges on the 20th and 24th January and light snow on the lower elevations down to about 8,000 feet, but melted immediately during the following days. Also some snow fell on the higher peaks which were well covered at the end of the month but the snow fall this year as a whole has been much lighter than usual. Passes up to 12,000 feet which are generally closed at this time of year are all open.''

Almora District.—The following report of the snowfall in this district from the 16th December 1897 to 15th January 1898 has been received from the Office of the Commissioner of Kumaon :—

Malla Danpur.—Snow fell to a depth of 2 inches on the 7th January ; on the well-known passes of Pindari, Kaphini and Kantela, Darma Pura, Johar, Byans, and Chandans Mallas no snow fell during the period.

The snowfall was less than in the corresponding period of the previous year.

Summary.—The snowfall of the month of January 1898 in the Western Himalayas was very light and the weather throughout the month was abnormally dry, warm and fine. The snowfall was equally scanty in Afghanistan and Baluchistan.

Summary of special storm reports.

An occasional feature of cold-weather disturbances of the month in the plains of Northern India is the occurrence of thunderstorms and hailstorms. The following gives a statement of the storms in January 1898, of which special reports were received from observers :—

3rd.—Violent duststorm at Jacobabad from 3 A.M. to 6 A.M. The storm came from north-west.

24th.—Severe thunderstorm with hail at Mussooree from 3-35 P.M. to 3-50 P.M. The storm came down from north-west.

25th.—Thunderstorm with small hail at Simla from 0-50 A.M. to 2-30 A.M.

Brief summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Ordinary north-east monsoon winds prevailed steadily throughout the month over nearly the whole of this area except in the extreme north off the Mekran and Sind coasts where north-west winds were experienced on two occasions, *viz.*, from the 1st to the 4th nd the 29th to the 31st. The mean intensity of the winds in January 1898 was 3·6 or 0·3 above the normal of the month. Winds were slightly weaker than usual at the commencement of the month, but increased rapidly in strength during the next twenty-four hours and were considerably stronger than usual during the next five days. Winds fell off rapidly during the following forty-eight hours and were blowing with a mean force of 2·6 at 8 A.M. of the 9th. This decrease of the air movement was however, only temporary as gradients for north-east winds increased considerably on the 10th and 11th and were steeper than usual until the 14th, during which period the wind force ranged between an average of 3·6 and 4·3.

The air movement differed but little from the normal during the next seven days, but increased largely in strength on the 23rd, at 8 A.M. of which day, its mean intensity was 4·6 or 1·3 above the normal. No important change took place during the next three days, the mean air movement ranging between 4·1 and 4·7. The baric gradients decreased during the next five days and the air movement hence fell to an average of 2·9 or 0·4 below the normal on the 30th. Gradients began to increase again during the day and the air movement rose to an average of 3·4 at 8 A.M. of the 31st. Weather was throughout the month fine with occasional cloud over the whole area except in the extreme south off the Travancore and West Ceylon Coasts, where occasional heavy squalls and a high sea were experienced from the 13th to the 15th. Winds were steadier than usual both in the Persian Gulf and the Gulf of Aden and moderate to strong in force. Unusually strong south to south-south-east winds, due probably to conditions in Abyssinia, prevailed in the southern half of the Red Sea from the23rd to the 26th, several vessels reporting gales varying in force from 8 to 11. Thus the S.S. *Melpomene* on her voyage from Suez to Bombay experienced southerly gales, force 10 to 11, between noon of the 23rd and 8 A.M. of the 25th.

Bay of Bengal.—Steady north-east monsoon winds obtained over the Bay during the whole of the month, but they were not so strong as in the Arabian Sea. They were somewhat below their normal strength during the first five days of the month, but intensified rapidly on the 6th and were above their normal intensity until the 14th. The variations of strength during this period from the 6th to the 14th were, however, somewhat larger than usual, the mean force over the whole area ranging between 3·1 on the 7th and 4·8 on the 10th. The strongest winds during the period were of force 9 and were experienced in the extreme south-west near the Ceylon Coast. Winds fell off rapidly in strength during the next twenty-four hours and had an average intensity of only 2·4 on the 16th and 17th as compared with 3·0, the normal of the month. During the remainder of the month the air movement varied somewhat irregularly from the normal, but was on the mean of the period of normal intensity.

Weather was more or less squally off the Ceylon Coast from the 8th to the 15th and the 23rd to the 25th and off the Madras Coast from the 10th to the 12th, due to intensified north-east monsoon winds, but was fine and settled over the remainder of the Bay throughout the month. The normal strength of the winds over the Bay in January is 3·0 and the mean force in January 1898 (3·1) was almost identical with the normal.

Equatorial Belt.—So far as can be judged from the scanty data available moderate northerly winds extended over the western half of this area as far south as Lat. 8°S. Further south winds were variable in direction and light in forces. In the eastern half of the belt north-east winds prevailed to the north of the equator, north-west winds between the equator and Lat. 6° or 7°S. and unsteady south-east winds further south. The data for the Seychelles show that winds were less steady and feebler than usual at that station. Weather was, however, more rainy than usual, the total fall of the month amounting to 23·01 inches, as compared with an average of 15·94 inches during the corresponding period of the previous three years.

Information has been received that "large numbers of icebergs were seen during the months of November and December last between the parallels of 46° 30′ S. and 51° S. latitude and the meridians of 175° E. and 165° W. longitude. Icebergs in that area are rare."

A report from the Government Astronomer, Adelaide, states that the severe drought and intense heat which had prevailed for some time broke up between the 3rd and 15th February and heavy rain had fallen over nearly the whole of Australia.

Temperature of the Air.

The mean temperature data are given in Table I and Table II under the headings "Temperature of the air." In Table I they are based upon observations of the dry bulb thermometers and the maximum and minimum thermometers recorded at 8 A.M. The variations of the mean maximum and mean minimum temperatures from the corresponding normal means for the month are given in Table I for all stations, for which sixteen years' trustworthy temperature observations are available. With a few exceptions (chiefly in Bengal), the normal mean maximum and minimum temperatures of the month have been obtained for all stations from the observations of the same period, *viz.*, 1878 to 1893, and are hence fairly comparable with each other. The mean daily temperature in this table is taken as the mean of the maximum and minimum. It differs from the true mean of the day by small amounts which vary from month to month. But the variations of the mean daily temperature from the normal, as determined by the use of the definition, agree in almost all cases closely with the variations of the true daily means derived from the readings at 16 hours and of the maximum and minimum thermometers, and the employment of cor-

rections deduced from the various series of hourly observations which have been taken at many stations in different parts of India.

It should be noted that the mean temperature of the day in Table I really denotes the mean temperature of the 24 hours preceding 8 A.M. of the day in question, and the month for which the means are given in this table hence terminates at 8 A.M. of the last day of the month.

In Table II are given means of the 10 and 16 hours temperatures of the month in addition to maximum and minimum temperature data. The mean temperature of the month (*i.e.*, the arithmetical mean of the mean temperature of each day of the month) is also shown. The mean temperature of the day is obtained by the use of the formula:—

$$\frac{\text{Maximum} + 16 \text{ hours} + 2 \text{ Minimum.}}{4}$$

and by applying a constant correction for each month obtained from the hourly observations at the same, or a neighbouring station, except in the case of Nagpur (Sanitary Commissioner's office), Hyderabad (Deccan), Mysore, Mercara, Hassan, Chitaldroog, Cocanada, Quetta, Muktesar, Srinagar, Katmandu, Darjeeling, Bangalore, Wellington, Muscat, Aden, Perim, Zanzibar and Port Victoria (Seychelles) (for all of which crude means are given), and Vizagapatam and Madras. For Vizagapatam and Madras the means are those given in the registers sent by the respective observatories.

The methods of exposing thermometers will be found fully described in the hand book of instructions to observers in India or briefly in the Annual Report on the Meteorology of India for the year 1886, page 37. All thermometers in use have been verified by comparison with Kew standard thermometers at Calcutta, and all thermometer readings are corrected to their true readings, and are hence strictly comparable.

The variations of the mean temperature of the month given in Table II have been obtained by a comparison of the actual means with normal means calculated in the same manner. They have been derived from all the available trustworthy temperature data for each station, and hence for very varying numbers of years, ranging from 50 years in the case of Bombay to 3 years in the case of Port Victoria.

It should be noted that the day or 24 hours period in Table II terminates at 4 P.M. (and not at 8 A.M.), and hence the monthly means are for monthly periods ending at 4 P.M. of the last day of the month in question.

The mean distribution of temperature in India in each month is exhibited by means of three charts, which show the variations of the mean maximum, mean minimum and mean daily temperature from their normal values for the month. These charts are Nos. 1, 2, and 3 of Plate III. In these charts equal variations of temperature are indicated by lines, the lines being drawn for differences of 2° of variation. A continuous line indicates that the temperature was in excess by the amount indicated by the number given near the line, and a broken line that it was in defect by the amount indicated by the number placed near the line. The line of no variation, separating areas of excess from areas of deficient temperature, consists of a continuous and of a broken line placed parallel and near to each other, the broken line being on the side of deficient temperature, and the continuous line on that of increased temperature. The variations of the temperature of the month from the normal at the hill stations (*i.e.*, stations the elevations of which exceed 5,000 feet) are given in figures with a positive or negative sign to indicate excess or defect.

Tables of normal mean maximum, minimum and mean daily temperature for each month and for the whole year were given in the annual summary for 1891. Similar tables were given in the annual review of 1894, based on the data for sixteen years, 1878 to 1893.

The mean day or maximum temperature of the month of January was above the normal over the whole of India with the exception of a narrow belt of the coast districts of the Bay of Bengal from Lower Burma to the Coromandel coast of Madras. The deficiency was small in amount in these coast districts and exceeded 1° in amount at four stations only, *viz.*, Tavoy (—1°·1), Narayanganj (—1°·4), Cuttack (—2°·3 (?)) and Vizagapatam (—1° 1). The day temperature was in excess over the remainder of India, the amount of the excess increasing westwards and northwards. It was more than 5° over the greater part of North-Western India. The following gives comparative data for stations in that area at which the mean day temperature of the month was more than 5° above the normal:—

Station.	Mean maximum temperature.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Quetta	60·1	51·4	+8·7
Montgomery	74·7	67·9	+6·8
Bickaneer	78·5	71·8	+6·7
Chakrata	57·1	50·6	+6·5
Sambhar	78·7	72·4	+6·3
Jeypore	79·4	73·7	+5·7
Deesa	88·2	82·7	+5·5
Mooltan	75·2	69·8	+5·4
Bhuj	85·5	80·1	+5·4
Hyderabad	81·9	76·5	+5·4
Jacobabad	78·6	73·3	+5·3

A noteworthy feature of the meteorology of the month was the unusually high day temperature of the month in Baluchistan, as represented by Quetta. This feature is especially remarkable when contrasted with the abnormally low temperature which obtained in Persia. The following gives comparative data for stations in that area:—

STATION.	MEAN MAXIMUM TEMPERATURE.		
	Actual, January 1898.	Normal January.	Variation of actual from normal, January 1898.
	°	°	°
Baghdad	49·6	63·3	−13·7
Bushire	59·7	65·2	− 5·5
Ispahan	38·4	?	?
Teheran	35·2	?	?
Aden	80·6	81·6	− 1·0

The diminished day temperature hence probably extended over the whole of Persia, Arabia and Mesopotamia, and was most marked at Baghdad.

The day temperature was above the normal at the hill stations in Northern and Central India. The following gives comparative data for six stations:—

STATION.	MEAN MAXIMUM TEMPERATURE.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Chakrata	57·1	50·6	+6·5
Simla	50·7	46·4	+4·3
Ranikhet	58·4	54·2	+4·2
Mount Abu	70·9	67·0	+3·9
Murree	51·0	47·9	+3·1
Leh	35·7	33·7	+2·0

It was almost as largely in excess at Wellington in Southern India (+3°·2) as at the northern hill stations.

The variations of the mean night temperature of the month from the normal were different in character from the variations of the day temperature over nearly the whole area. The night temperature was slightly higher than usual in Burma, Upper India (including the Punjab, Sind, North and West Rajputana, Kathiawar, Cutch) and Baluchistan. The variations were greater than 2° at six stations in these areas for which data are given below:—

STATION.	MEAN MINIMUM TEMPERATURE.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Lahore	44·5	41·3	+3·2(?)
Bassein	63·9	61·0	+2·9
Yamethin	55·6	53·0	+2·6
Minbu	57·6	55·0	+2·6
Bickaneer	50·3	47·9	+2·4
Diamond Island	72·4	70·3	+2·1

The variations at Lahore and Diamond Island are doubtful as changes have been made in the sheds and exposure of the instruments which have undoubtedly affected the readings of the minimum thermometer to some extent.

The night temperature was considerably above the normal at the hill stations in Northern India, as is exhibited by the following data:—

STATION.	MEAN MINIMUM TEMPERATURE.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Leh	14·3	9·5	+4·8
Murree	40·3	35·4	+4·9
Simla	40·1	36·4	+3·7
Ranikhet	43·2	39·8	+3·4
Darjeeling	37·1	34·6	+2·5
Mount Abu	56·3	51·1	+5·2

The night temperature was, on the other hand, much below the normal in Persia, and the conditions were hence in strong contrast with those obtaining in Baluchistan and the Himalayan area. The following gives data in illustration:—

STATION.	MEAN MINIMUM TEMPERATURE.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Baghdad	33·3	37·7	−4·4
Bushire	48·3	52·0	−3·7
Teheran	21·8	?	?
Ispahan	16·7	?	?
Jask	61·8	?	?
Meshed	19·9	?	?

The mean minimum temperature of the month was below the normal in the remainder of the Indian area. The deficiency was moderate to large in amount in the Deccan, Central India, Berar and the Central Provinces and was large in the area defined by the stations for which data are given below :—

STATION.	MEAN MINIMUM TEMPERATURE.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Chanda	46·3	54·6	—8·3?
Jubbulpore	41·7	48·3	—6·6
Akola	47·1	53·3	—6·2
Poona	48·9	55·0	—6·1
Malegaon	47·2	52·0	—4·8
Hoshangabad	48·3	52·4	—4·1
Hyderabad (Deccan)	53·8	57·9	—4·1

It was in large defect at Pachmarhi (—4°·7) and in slight defect at Wellington (—1°·8).

The mean temperature of the month was in moderate to large excess (ranging between 2° and 5°) in Baluchistan and North-Western India, in which areas both the day and night temperatures were above the normal. The excess was more than 4° at the stations for which data are given below :—

PROVINCE.	STATION.	MEAN DAILY TEMPERATURE.		
		Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
		°	°	°
BALUCHISTAN	Quetta	45·4	40·3	+5·1
RAJPUTANA	Bickaneer	64·4	59·8	+4·6
PUNJAB	Mooltan	60·4	56·2	+4·2(?)

Temperature was in defect in South Bengal and the greater part of the Peninsula (excluding the western districts). The deficiency was generally small in amount, but was more than 2° in the areas represented by stations for which comparative data are given below :—

STATION.	MEAN DAILY TEMPERATURE.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Chanda	65·3	69·8	—4·5(?)
Sambalpur	65·3	68·6	—3·3(?)
Jubbulpore	59·7	62·8	—3·1
Cuttack	69·2	72·3	—3·1
False Point	66·3	68·9	—2·6
Akola	66·6	68·9	—2·3

The mean temperature of the month was largely below the normal in Persia and Turkey in Asia. The following gives data for four stations :—

STATION.	MEAN DAILY TEMPERATURE.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	°	°	°
Baghdad	41·4	50·5	—9·1
Bushire	53·9	58·5	—4·6
Teheran	28·5	?	?
Ispahan	27·6	?	?

The following summarises the chief abnormal features of the temperature conditions of the month in the Indian area :—

(1) Temperature, both by day and night, was in large and marked defect in Persia and Turkey in Asia.

(2) Temperature, both by day and night, was in moderate to largish excess in Baluchistan, North-Western India and the Himalayan area.

(3) The day temperature was in slight excess in the Deccan, the Central Provinces, Berar and Khandesh, but the night temperature was in moderate to largish defect. The mean temperature of the month was hence in slight to moderate defect in these areas.

The following gives mean temperature data of the month for the 56 meteorological divisions of the Empire :—

PROVINCE.	DIVISION.	ACTUAL TEMPERATURE.					VARIATION FROM NORMAL OF MONTH OF		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
BURMA	Tenasserim	87·3	65·8	76·6	21·5	33·0	—1·1	—0·5	—0·6
	Lower Burma (Deltaic)	85·5	67·0	76·2	18·5	25·7	—0·5	+1·9	—2·4
	Central do.	85·4	56·5	71·0	28·9	38·1	0	+0·9	—0·9
	Upper do.	81·9	54·7	68·3	27·2	37·8	+0·1	+2·3	—2·2
	Arakan	80·6	58·9	69·8	21·7	30·5	—0·8	—0·6	—0·2

Province.	Division.	Actual temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of month of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Bengal and Assam	Eastern Bengal	74·7	5[illegible]·8	63·2	22·9	33·8	0	−1·1	+1·1
	Assam (Surma)	79·0	51·4	65·2	27·6	39·9	+1·8	−0·9	+2·7
	Do. (Brahmaputra)	72·6	50·3	61·5	22·4	34·8	+0·9	−1·5	+2·4
	Deltaic Bengal	77·3	52·4	64·9	25·0	38·1	−0·7	−2·6	+1·9
	Central do.	76·6	51·7	64·2	24·9	36·2	−0·1	−0·6	+0·5
	North do.	74·7	50·1	62·5	24·6	35·5	+0·2	−0·5	+0·7
	Bengal Hills	49·6	30·0	39·9	19·6	34·6	+1·4	+2·5	−1·1
	Orissa	79·6	57·5	68·6	22·1	33·7	−0·7	−3·8	+3·1
	Chota Nagpur	76·2	47·6	61·9	28·6	45·3	+0·4	−2·3	+2·7
	South Bihar	75·3	50·0	62·6	25·3	39·5	+0·8	−0·1	+0·9
	North do.	73·9	48·9	61·4	25·0	35·4	+1·5	−0·4	+1·9
North-Western Provinces and Oudh.	North-Western Provinces (East)	75·7	46·1	60·9	29·6	47·7	+1·5	−1·7	+3·2
	Oudh (South)	77·8	46·1	62·0	31·7	47·2	+3·9	−0·3	+4·2
	Do. (North)	75·2	46·9	61·1	28·3	44·8	?	?	?
	North-Western Provinces (Central)	77·8	48·4	63·1	29·5	49·4	+4·3	−1·6	+5·9
	Do. do. (West)	75·9	46·7	61·4	29·3	46·4	+4·4	−0·2	+4·6
	Do. do. (East Submontane)	73·7	48·0	60·9	25·7	35·9	?	?	?
	Do. do. (West do.)	72·2	45·7	59·0	26·6	40·1	+4·2	+0·3	+3·9
	Do. do. (Hills)	55·9	40·6	48·3	15·3	32·2	+5·4	+3·6	+1·8
Punjab	Punjab (South-East)	73·9	47·6	60·8	26·3	43·8	+3·0	−0·4	+34
	Do. (South)	73·9	43·9	58·9	30·0	47·2	+4·6	+0·9	+3·7
	Do. (Central)	70·5	44·5	57·5	26·0	40·4	?	?	?
	Do. (Submontane)	71·9	44·3	58·1	27·6	45·5	+3·7	+1·2	+2·5
	Do. (Hills)	45·0	26·9	36·0	18·1	38·9	+3·1	+4·5	−1·4
	Do. (North)	66·5	40·3	53·4	26·3	41·4	+2·9	+1·6	+1·3
	Do. (West)	74·1	43·3	58·7	30·8	45·0	+5·6	+0·5	+5·1
Bombay and Malabar Coast Districts (Madras).	Malabar	87·8	70·4	79·2	17·4	26·5	+1·3	+0·2	+1·1
	Madras (South Central)	87·5	63·5	75·5	24·0	34·3	+0·1	−0·2	+0·3
	Coorg	77·5	57·3	67·4	20·2	29·3	+1·1	+1·4	−0·3
	Mysore	83·2	57·1	70·2	26·1	34·9	+2·2	−0·1	+2·3
	Konkan	87·0	66·3	77·1	21·7	30·3	+3·2	−1·1	+4·3
	Bombay Deccan	86·7	53·1	69·9	33·6	42·9	+1·6	−3·0	+4·6
	Hyderabad (North)	83·4	53·7	68·6	29·8	39·3	?	?	?
	Khandesh	85·6	46·4	66·1	39·2	50·0	+1·2	−4·8	+6·0
Central Provinces and Berar.	Berar	86·0	47·1	66·6	38·9	48·8	+1·6	−6·2	+7·8
	Central Provinces (West)	83·3	48·9	66·1	34·4	47·5	+1·3	−4·7	+6·0
	Do. (Central)	80·3	45·1	62·7	35·3	49·0	+0·3	−5·4	+5·7
	Do. (East)	80·7	51·4	66·1	29·4	43·7	−0·1	−2·5	+2·4
Bombay (North)	Gujarat	89·5	57·5	73·6	32·0	43·6	?	?	?
	Kathiawar and Cutch	86·1	55·3	70·7	30·8	47·9	+4·2	+1·2	+3·0
	Sind	80·9	51·5	66·3	29·3	46·5	+4·9	+1·8	+3·1
	Baluchistan Hills	62·0	30·4	46·2	31·6	64·0	+8·7	+1·4	+7·3
Rajputana and Central India.	Central India (East)	78·7	46·2	62·5	32·5	49·4	+2·2	−2·1	+4·3
	Rajputana (East), Central India (West)	81·4	47·5	64·4	33·9	51·4	+5·4	−1·1	+6·5
	Do. (West)	81·8	48·5	65·2	33·3	52·1	+6·7	+2·4	+4·3
Madras	East Coast (North)	80·5	61·7	71·1	18·8	29·1	+1·8	−1·3	+3·1
	Hyderabad (South)	85·8	56·3	71·1	29·6	40·2	+1·1	−3·6	+4·7
	Madras (Central)	88·3	59·2	73·7	29·2	38·1	+0·4	−2·6	+3·0
	East Coast (Central)	85·0	64·1	74·6	20·9	29·0	+1·2	−2·1	+3·3
	Do. (South)	83·9	67·0	75·5	16·9	25·1	−0·5	−0·8	+0·3
	Madras (South)	85·0	71·1	78·1	14·0	21·2	−0·7	−0·2	−0·5

The following gives a sketch of the more important changes of the temperature conditions of January 1898 in the Indian region.

At the commencement of the month temperature varied irregularly from the normal. The chief features were considerably higher temperature than usual in Upper India and Burma and diminished temperature in the Deccan.

(2) Lower temperature than usual in North-Eastern and Central India from the 16th to the 18th, and in the north and centre of the Peninsula during the whole period from the 16th to the 24th. The deficiency in the temperature was most marked in Berar and the Central Provinces and extended southwards into Southern India on the 18th, as is shown by the following data :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	16th January.	18th January.	20th January.	22nd January	24th January.
	°	°	°	°	°
Bihar	—0·1	—0·3	+1·9	+3·0	+3·3
Chota Nagpur	—0·1	—2·7	—1·9	+1·3	+3·2
Bengal	—1·2	—1·8	+0·6	+0·9	+2·4
Central India	+1·0	+0·3	+0·6	+3·8	+6·5
Berar	—1·9	—2·0	—5·4	—0·8	+1·5
Central Provinces	—0·4	—4·1	—4·3	—1·8	+1·6
Orissa	—2·2	—4·8	—3·7	—1·3	+1·4
Deccan	0	+0·2	—2·8	—3·4	—1·2
Southern India	+0·4	—1·0	—1·8	—1·7	+0·7

(3) The day temperature was generally in excess throughout this period over the greater part of India and the night temperature more or less considerably in defect. The following gives variation data for the 18th in illustration of this feature :—

POLITICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 18th January.	Mean minimum temperature, 18th January.	Mean temperature, 18th January.
	°	°	°
Burma	—1·9	—0·5	—1·2
Bengal and Assam	—0·3	—3·5	—1·9
North-Western Provinces and Oudh	+4·2	—3·3	+0·5
Punjab	+7·4	—0·3	+3·6
Sind and Rajputana	+7·4	—2·1	+2·7
Central India and Gujarat	+4·9	—3·2	+0·9
Central Provinces and Berar	+0·8	—5·7	—2·5
Bombay	+3·5	—0·3	+1·6
Madras	+1·7	—3·9	—1·1

The most noteworthy feature of the period was the southward extension or displacement of the low temperature conditions into Southern India on the 18th and 19th as it is unusual for a cool wave after extending eastwards over Northern India to advance over the Peninsula to its extreme south.

Temperature increased generally from the 22nd to the 24th and was in large excess in North-Western India on the latter date as is shown by the following data :—

POLITICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 24th January.	Mean minimum temperature, 24th January.	Mean temperature, 24th January.
	°	°	°
Burma	—0·1	—0·5	—0·3
Bengal and Assam	+3·9	+0·8	+2·4
North-Western Provinces and Oudh	+9·8	+4·9	+7·4
Punjab	+9·2	+8·8	+9·0
Sind and Rajputana	+10·0	+7·9	+9·0
Central India and Gujarat	+8·[illegible]	+4·6	+6·7
Central Provinces and Berar	+4·3	+0·4	+2·4
Bombay	+3·8	+0·7	+2·3
Madras	—1·3	—0·7	—1·0

A slight disturbance affected Northern India during the next five days. It gave showery weather in the Punjab on the 24th and 25th, some light local showers in the Gangetic plain on the 26th, general and moderately heavy rain in Bengal and Assam on the 27th, and light to moderate showers in Upper Burma on the 28th. This disturbance apparently affected the Persian area and Northern India simultaneously. The advance of the disturbance was accompanied by a well developed warm wave, but the cool wave in its rear was feeble and faintly marked.

The following gives provincial variation data showing the advance of the waves across Northern India :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	24th January.	25th January.	26th January.	27th January.	28th January.
	°	°	°	°	°
Baluchistan (Quetta)	— 3·0	—4·6	+1·8	+10·7	+14·1
Sind	+ 6·8	+0·1	+1·5	+ 4·3	+ 7·1
Punjab	+ 9·0	+2·2	+1·1	+ 2·9	+ 4·5
Rajputana	+10·6	+9·2	—1·9	+ 0·7	+ 5·8
North-Western Provinces and Oudh.	+ 7·4	+8·5	+6·1	+ 0·3	+ 1·9
Central India	+ 6·8	+8·7	+2·8	— 1·6	+ 1·1
Bihar	+ 3·3	+4·5	+6·6	+ 1·0	+ 1·0
Chota Nagpur	+ 3·2	+4·1	+7·5	+ 0·7	— 0·9
Bengal	+ 2·4	+2·2	+3·4	+ 4·2	— 2·4

The following gives the largest variations of temperature from the normal in the areas covered by the warm and cool waves from the 24th to the 28th :—

Date.	Cool Wave. Station.	Cool Wave. Variation from normal of mean temperature of 24 hours preceding 8 A.M. of date.	Warm Wave. Station.	Warm Wave. Variation from normal of mean temperature of 24 hours preceding 8 A.M. of date.
		°		°
24th	Baghdad	—4·8	Ludhiana	+11·9
	Bushire	—8·5	Montgomery	+11·8
	Quetta	—3·0	Bickaneer	+11·6
25th	Bushire	—3·0	Jhansi	+12·9
	Quetta	—5·6	Sambhar	+11·2
26th	Jeypore	—3·4	Cawnpore	+10·9
	Sambhar	—3·3	Allahabad	+ 8·8
27th	Jubbulpore	—5·8	Barisal	+ 5·7
	Seoni	—5·6	Jessore	+ 5·4
28th	Saugor Island	—5·4	Minbu	+ 6·8
	Jessore	—5·1	Thayetmyo	+ 6·0

The eastward progress of the warm and cool waves was hence clearly exhibited.

The chief feature of the last four days of the month was a very large rise of temperature in Baluchistan and North-Western India, where temperature was hence in very large excess. The following data illustrate the changes of the temperature conditions in the Persian area and North-Western India during the last week of the month :—

Province or Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 25th January.	26th January.	27th January.	28th January.	29th January.	30th January.	31st January.
	°	°	°	°	°	°	°
Arabia (Baghdad)	+7·4	+8·9	+ 3·6	— 3·1	—10·4	—11·3	— 9·1
Persia (Bushire)	—3·0	+9·1	+12·0	+ 6·9	+ 3·7	—10·7	— 9·6
Baluchistan (Quetta)	—5·6	+1·8	+10·7	+14·1	+16·1	+26·7	+18·3
Sind	+0·1	+1·5	+ 4·3	+ 7·1	+ 6·3	+ 6·4	+ 9·2
Punjab	+2·2	+1·1	+ 2·9	+ 4·5	+ 6·5	+ 8·0	+ 7·8
Rajputana	+9·2	—1·9	+ 0·7	+ 5·8	+ 8·9	+ 9·3	+10·9

The maximum temperature at Quetta on the 30th was 29°·1 above the normal and the minimum 24°·3 above it. The preceding data indicate that there was a very large rise of temperature in Baluchistan between the 25th and 30th. The rise was greatest at stations on the plateau, and was comparatively small at stations on the hill ranges bordering the Indus Valley, as is shown by the following data :—

Station.	Mean daily temperature of 24 hours preceding 8 A.M. of 25th January.	30th January.	Change from 25th to 30th January.
	°	°	°
Quetta	34·7	6[illegible]·1	+30·4
Kalat	32·2	53·7	+21·5
Pishin	30·0	57·0	+27·0
Kabul	32·2	43·3	+11·1
Para Chinar	40·5	49·8	+ 9·3
Killa Drosh	44·1	51·7	+ 7·6
Sharigh	46·3	54·8	+ 8·5

It is very interesting to note that a similar large increase of temperature occurred at the Persian stations between the 22nd and 27th, *i. e.*, three days earlier than in Baluchistan. This is shown by the following data :—

Station.	Mean daily temperature of 24 hours preceding 8 A.M. of 22nd January.	27th January.	Change from 22nd to 27th January.
	°	°	°
Ispahan	20·0	45·0	+25·0
Teheran	24·5	35·5	+11·0
Baghdad	41·5	51·9	+10·4
Bushire	48·3	68·2	+19·9

It is hence evident that this very large increase of temperature commenced in Persia and extended eastwards at the rate of about 400 miles per diem.

The large rise of temperature occurred in front of a depression which formed in Persia and was the chief feature of the meteorology of India in the first week of February.

The following table gives the variations of the mean temperature, week by week, and also for the month. The data are taken from the weekly weather reviews published in the *Gazette of India* :—

Political Province.	Variation from normal of mean temperature of week ending 8th January.	15th January.	22nd January.	29th January.	For January 1898.
Burma	+0·5	+0·9	—0·2	+0·8	+0·3
Bengal and Assam	—1·3	—2·8	—0·5	+1·5	—0·7
North-Western Provinces and Oudh.	—1·3	—0·8	+2·4	+4·6	+1·4
Punjab	—1·2	+1·1	+4·7	+4·7	+2·5
Sind and Rajputana	—1·4	+2·6	+4·1	+5·2	+3·2
Central India and Gujarat	—2·4	—0·1	+1·9	+3·6	+1·1
Central Provinces and Berar	—2·9	—4·0	—1·9	+0·6	—2·0
Bombay	—1·5	+0·3	+0·5	+1·8	+0·2
Madras	—0·5	+0·7	—1·8	—0·6	—0·5

Winds.

The 8 A.M. wind data, consisting of observations of the direction of the wind and of the air movement as registered by Robinson anemometers, are given in Table I, under the headings, "Wind direction" and "Wind velocity." In these columns are shown the number of days the wind at 8 A.M. blew from each of eight points, and also the mean hourly air movement. It is calculated in all cases by the use of Lambert's formula in which equal values are given to each wind observation. The mean wind directions are shown in Plate I by means of arrows in the usual manner.

The wind data for 10 and 16 hours are given in a similar form in Table II. Under the headings "Wind direction," "Wind steadiness" and "Wind velocity" are shown the number of times that each of eight wind directions were observed at the hours of record, the trigonometrical resultant of these observations computed by Lambert's formula, the mean diurnal movement of the air at each station and the average monthly values of the last two elements computed from the previous wind observations at that station.

The mean wind directions of the month for the second class stations are indicated in the small chart No. 4 of Plate III by means of arrows flying with the wind. In this chart the lengths of the arrows are drawn so as to indicate the comparative wind prevalence in the mean direction on a scale such that five-eighths of an inch would represent a wind blowing continuously throughout the month from the mean direction.

The following gives a statement of the chief features of the air movement of the month based on a comparison of the mean wind direction and intensity (determined from the 10 and 16 hours' wind observations) and the corresponding normal values of these elements for the month.

Winds were on the mean of the month more easterly than usual on the Burma coast. They were slightly weaker than usual in Bengal, and the westerly element in the north-west winds of the month in the south of that area was more marked than usual. Winds were less westerly at Burdwan and Berhampore in the interior of Bengal. The following data show the amount of the westerly deflection at three stations in South Bengal:—

Station.	Wind direction.		
	Actual, January 1898.	Normal, January.	Westerly deflection.
Calcutta	N 49° W	N 36° W	13°
Saugor Island	N 24° W	N 6° W	18°
Chittagong	N 35° W	N 26° W	9°

Winds were slightly steadier in the Gangetic Plain than usual in January. The mean direction of the air movement varied somewhat irregularly from the normal at different stations, but the westerly element of the winds on the whole was slightly more pronounced than usual.

Winds were also slightly steadier in Rajputana and Central India, and were more westerly than usual in Rajputana. They were very light and unsteady in the Punjab.

The following gives comparative data of the strength and steadiness of the winds in different parts of Northern India:—

Province or Area.	Velocity in miles per diem.			Steadiness.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.	Average actual percentage, January 1898.	Average normal percentage, January.	Variation of actual from normal, January 1898.
Bengal	63	73	−10	47	40	+ 7
Bihar	40	59	−19	24	46	−22
Chota Nagpur	176	135	+41	64	49	+15
North-Western Provinces and Oudh.	68	60	+ 8	43	30	+13
Punjab	40	44	− 4	23	19	+ 4
Rajputana	91	114	−23	38	20	+18
Central India	53	68	−15	66	31	+35

The mean air movement of the month in Berar and the Central Provinces was much steadier than usual. Winds were, however, generally not so steady as usual, and the mean directions varied slightly irregularly from the normal, more specially in the Central Provinces.

Winds were practically of normal strength in the west coast districts. They were steadier than usual in Malabar, but less steady in the Konkan.

Winds were also practically of normal strength and direction in Mysore and at the Madras stations. The following gives comparative data for four representative stations:—

Station.	Velocity in miles per diem.			Wind direction.	
	Actual, January 1898.	Normal, January.	Variation of actual from normal.	Actual, January 1898.	Normal, January.
Madras	139	141	− 2	N 53° E	N 49° E
Bellary	40	81	−41	S 89° E	S 68° E
Bangalore	185	111	+74	N 69° E	N 88° E
Cocanada	181	187	− 6	S 88° E	N 81° E

The following gives comparative data of the air movement in the Central Provinces and the Peninsula :—

PROVINCE OR AREA.	VELOCITY IN MILES PER DIEM.			STEADINESS.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.	Average actual percentage, January 1898.	Average normal percentage, January.	Variation of actual from normal, January 1898.
Berar . . .	83	110	—27	36	21	+15
Central Provinces .	57	69	—12	31	24	+ 7
West Coast . .	155	159	— 4	44	38	+ 6
Deccan . . .	169	162	+ 7	56	43	+13
Madras Coast . .	108	123	—15	56	55	+ 1

Winds were below their normal strength at the hill stations in Upper India, and were, as usual in January, very unsteady. This was of course chiefly due to the steady prevalence of fine weather, light winds and the absence of the strong winds of cold weather disturbances. Winds were apparently stronger than usual and remarkably steady at Chakrata and Ranikhet, and also at Mount Abu and Pachmarhi. The following gives comparative data for these four stations :—

STATION.	STEADINESS.			VELOCITY IN MILES PER DIEM.		
	Actual percentage, January 1898.	Normal percentage, January.	Variation of actual from normal January 1898.	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
Chakrata . . .	60	5	+55	217	123	+94
Ranikhet . . .	37	15	+22	87	44	+43
Mount Abu . .	32	11	+21	123	119	+ 4
Pachmarhi . .	35	10	+25	93	78	+15

It may be noted that winds were normal in direction and remarkably steady at Zanzibar, but were somewhat feebler than usual.

Humidity and Cloud.

The hygrometric data of the month employed in the following paragraphs are given in Table II. In that Table are columns giving the means of the wet bulb readings at 10 and 16 hours and of the minimum wet bulb dings, rea the mean vapour tension and humidity at the same hours and also the daily means of these elements. The hygrometric data are taken from the Tables accompanying "*The Indian Meteorologist's Vade Mecum*," which were computed by means of Regnault's modification of August's formula. The normal values, by means of which the variations have been derived, are the means calculated in the same way for periods varying from 3 to 50 years.

The proportion of cloud is estimated in tenths of the sky expanse, an overcast sky being denoted by 10 and a cloudless sky by 0. The daily means are the arithmetical means of the cloud amount at 10 and 16 hours, and the normal means, with which the actual daily means of the month are compared, are the means for periods varying from 3 to 50 years of the available cloud data for the same hours.

The air contained the normal quantity of aqueous vapour at Port Blair and in Lower Burma, but was slightly drier than usual, due to temperature being above the normal on the mean of the month. The following gives comparative data :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	"	"	"	%	%	
Port Blair . . .	·753	·787	—·034	74	76	—2
Diamond Island . .	·640	·630	+·010	67	70	—3
Rangoon . . .	·540	·551	—·011	63	64	—1

The air was slightly damper locally at Madras, Akyab and perhaps Narayanganj. The following gives data for these three stations :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, January 1898.	Normal January.	Variation of actual from normal, January 1898.	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	"	"	"	%	%	
Madras . . .	·680	·654	+·026	81	75	+6
Akyab . . .	·534	·494	+·040	75	70	+5
Narayanganj . .	·427	·432	—·005	69	68	+1

The air was drier than usual on the mean of the month over the whole of India, with the exception of the small areas represented locally by the stations of Akyab, Narayanganj and Madras.

The mean relative humidity of the month was generally less than 5 below the normal in Bengal, Assam, Chota Nagpur, Bihar and Sind, and the variations of the mean conditions of the month from the normal were hence of little importance. Comparative data for these areas are given below :—

Province or Area.	Absolute Humidity.			Relative Humidity.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
	"	"	"	%	%	
Assam	·415	·424	—·009	77	79	—2
Bengal . . .	·407	·427	—·020	66	69	—3
Chota Nagpur . .	·255	·268	—·013	49	51	—2
Bihar	·378	380	—·002	68	70	—2
Sind	·317	·290	+·027	51	53	—2

Over the remainder of India the mean humidity of the month ranged between 5 and 22 in defect. The following gives comparative data for this large area of abnormal dryness of the air in January 1898 :—

Province or Area.	Absolute Humidity.			Relative Humidity.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.	Average actual, January 1898.	Average normal, January.	Variation of actual from nomal, January 1898.
	"	"	"	%	%	
Punjab . . .	·249	·262	—·013	55	63	— 8
North-Western Provinces and Oudh.	·258	·299	—·041	53	64	—11
Rajputana . . .	·224	·267	—·043	39	48	— 9
Central India . .	·248	·289	—·041	45	56	—11
Berar . . .	·184	·320	—·136	29	47	—18
Central Provinces . .	·236	·332	—·096	41	53	—12
Deccan . . .	·227	·360	—·133	33	46	—13
Bombay Coast . .	·527	·599	—·072	57	67	—10
Mysore . . .	·344	·398	—·054	50	57	— 7

The air was excessively dry over a portion of the Deccan, Berar and the Central Provinces and in parts of the Punjab, the North-Western Provinces and the Konkan. The deficiency was greatest at stations for which data are given in the table below :—

Station.	Absolute Humidity.			Relative Humidity.		
	Actual, January 1898.	Normal, January.	Variation of actual, from normal January 1898.	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	"	"	"	%	%	
Chikalda . . .	·184	·309	—·125	30	52	—22
Buldana . . .	·161	·310	—·149	23	44	—21
Sholapur . . .	·194	·350	—·156	27	44	—17
Nagpur . . .	·228	·359	—·131	36	52	—16
Khandwa . . .	·194	·325	—·131	33	49	—16
Saugor . . .	·180	·283	—·103	30	49	—19
Allahabad . . .	·259	·339	—·080	51	66	—15
Ratnagiri . . .	·419	·551	—·132	44	60	—16
Meerut . . .	·232	·290	—·058	50	65	—15
Ludhiana . . .	·240	·289	—·049	53	69	—16

The air was also abnormally dry in Baluchistan and at the outer Himalayan hill stations. Data are given below in illustration :—

Station.	Absolute Humidity.			Relative Humidity.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
	"	"	"	%	%	
Simla . .	·118	·147	—·029	41	58	—17
Chakrata . .	·134	·156	—·022	45	62	—17
Murree . .	·129	·141	—·012	45	60	—15
Quetta . .	·151	·158	—·007	52	67	—15
Ranikhet . .	·195	·193	+·002	56	63	— 7
Darjeeling .	·194	·203	—·009	74	81	— 7
Leh . .	·081	·072	+·009	61	67	— 6

The mean relative humidity of the month was hence as largely below the normal at Quetta, Simla, Chakrata and Murree as in the area of abnormal dryness in the North Deccan.

The abnormal dryness of the air was due almost solely to large deficiency in the amount of aqueous vapour present in the air. In fact the deficiency was absolutely

greatest in Berar and the Central Provinces where temperature on the mean of the month was below the normal to a moderate extent. The deficiency in the amount of aqueous vapour averaged about 40 per cent. in Berar and the Bombay Deccan, where it was largest in actual amount as well as relatively to the normal.

There were two very dry periods during the month. The first lasted from the 4th to the 9th, and was chiefly due to the advance of a very cool dry wave over Northern India after the first storm of the month. The following gives the most noteworthy examples of the dryness of the air during this period :—

DATE.	HOUR.	STATION.	Absolute humidity.	Relative humidity.
			"	%
4th January 1898 . .	4 P.M. .	Deesa . .	·076	8
" " " . .	10 A.M. .	Mount Abu. .	·044	8
" " " . .	4 P.M. .	Sholapur . .	·077	5
5th " " . .	" .	Jacobabad . .	·105	14
" " " . .	" .	Bellary . .	·164	11
" " " . .	" .	Belgaum . .	·099	8
8th " " . .	" .	Allahabad . .	·099	13
" " " . .	" .	Akola . .	·143	12
9th " " . .	" .	Saugor . .	·058	7

The second period was from the 19th to the 26th, when the air was excessively dry in the Deccan and Mysore. The following gives examples :—

DATE.	HOUR.	STATION.	Absolute humidity.	Relative humidity.
			"	%
18th January 1898	4 P. M.	Hassan . . .	·122	11
19th " " .	"	Belgaum . . .	·073	6
" " " .	"	Akola . . .	·133	11
20th " " .	"	Poona . . .	·086	7
" " " .	"	Khandwa . . .	·120	10
21st " " .	"	Buldana . . .	·087	8
25th " " .	"	Bellary . . .	·070	6
26th " " .	"	Hassan . . .	·126	11

The chief features of the humidity conditions of the month were hence as follows :—

1. The air was drier than usual over the whole of Burma and India, with the exception of small areas represented by Madras, Akyab and Narayanganj.

2. The air was excessively and abnormally dry in Rajputana, Central India, Berar, the Central Provinces, the Deccan, the Konkan, the East Punjab and the western and southern districts of the North-Western Provinces.

3. It was abnormally dry in Baluchistan and the Western Himalayas.

4. Over the remainder of India, the air was drier than usual, and the deficiency in the humidity was least marked in Sind, Burma, Bengal, Assam, Bihar and Chota Nagpur, where it was generally less than 5.

The amount of cloud was greater than usual in the south-east of the Bay and the Andaman Sea, as represented by the stations of Port Blair and the Cocos Island Light House, for which data are given below :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
Port Blair	5·0	3·4	+1·6
Cocos Island	2·8	2·0	+0·8

There was less cloud than usual in Burma, Bengal, Assam and the Madras Coast districts, and also in Baluchistan, but the mean amounts were generally less than the normal by not more than 1. The following gives comparative data for this area of moderate deficiency of cloud :—

PROVINCE OR AREA.	MEAN CLOUD AMOUNT.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
Burma	1·7	1·9	—0·2
Bengal	0·6	1·6	—1·0
Assam	2·6	3·3	—0·7
Madras Coast	1·5	2·4	—0·9
Baluchistan	3·7	4·1	—0·4

The amount of cloud for the month was very small over the whole of the interior of India, and was in defect

by amounts ranging between 1 and 3. The following gives comparative data :—

Province or Area.	Mean cloud amount.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
Punjab	2·4	4·0	—1·6
Sind	1·7	2·8	—1·1
Rajputana	0·9	2·6	—1·7
North-Western Provinces and Oudh	1·0	3·0	—2·0
Central India	0·1	2·4	—2·3
Bihar	0·5	2·0	—1·5
Chota Nagpur	0·5	2·3	—1·8
Central Provinces	0·1	1·8	—1·7
Berar	0	1·7	—1·7
Deccan	0·4	1·8	—1·4
Mysore	1·2	2·6	—1·4

The cloud amount was 2 or more below the normal in three areas, as is shown below :—

Area.	Station.	Mean cloud amount.		
		Actual, January 1898.	Normal, January.	Variation of actual from normal January. 1898.
Berar and Central Provinces.	Pachmarhi	0·2	2·3	—2·1
	Chikalda	0·1	2·2	—2·1
	Jubbulpore	0·1	2·1	—2·0
	Nagpur	0·1	2·1	—2·0
	Buldana	0	2·0	—2·0
Gangetic Plain	Lucknow	0·2	2·9	—2·7
	Nowgong	0·2	2·9	—2·7
	Meerut	0·7	3·2	—2·5
	Agra	0·5	2·5	—2·0
	Patna	0·5	2·6	—2·1
Hills	Simla	2·9	5·6	—2·7
	Ranikhet	1·4	4·1	—2·7
	Murree	3·6	6·1	—2·5
	Chakrata	2·5	4·6	—2·1

The mean cloud amount was absolutely or practically *nil* (*i.e.*, less than 0·2) at the following stations in the Central Provinces, Berar, the Bombay Deccan and the Konkan :—

Station.	Mean cloud amount.		
	Actual, January 1898.	Normal, January.	Variation of actual from normal, January 1898.
Sutna	0	1·9	—1·9
Poona	0	1·5	—1·5
Akola	0	1·4	—1·4
Buldana	0	2·0	—2·0
Khandwa	0	1·5	—1·5
Bombay	0	1·4	—1·4
Hoshangabad	0·1	1·8	—1·7
Nagpur	0·1	2·1	—2·0
Jubbulpore	0·1	2·1	—2·0
Saugor	0·1	1·7	—1·6
Raipur	0·1	1·5	—1·4
Karwar	0·1	0·7	—0·6
Chikalda	0·1	2·2	—2·1

The chief features of the cloud distribution of the month were as follows :—

(1) Cloud was in moderate excess in the south-east of the Bay and the Andaman Sea.

(2) There was less cloud than usual over the whole of India and Burma, and skies were free from cloud during the month in the large area including Berar, the Central Provinces, the Bombay Deccan and the Konkan, where the mean cloud amount of the month ranged between 0 and 0·1.

(3) Cloud was more or less largely below the normal over the whole of the interior of India by amounts ranging between 1 and 3. The deficiency was greatest in actual amount, and most marked in the Western Himalayan area and the North-Western Provinces.

Rainfall.

Rainfall observations are made at upwards of 2,000 stations in India. The hour of observation is 8 A.M. The rainfall data for each province are tabulated in the office of the Meteorological Reporter, Director of Land Records, or other office in the province, and published in the provincial gazettes. A weekly statement of the rainfall of every district is telegraphed to the Simla Meteorological Office by District Officers, and a summary of this information is published in the *Gazette of India* weekly.

The charts illustrating the distribution of rainfall in the month under discussion are based in part upon the rainfall data of the meteorological observatories throughout India, and in part upon the rainfall information relating to the month telegraphed to Simla by District Officers, and the rainfall statements of the month published by the Local Governments.

The first rainfall chart (Plate IV) shows the actual distribution of the rainfall of the month so far as it is indicated by the returns of upwards of 170 meteorological stations. The distribution of rainfall is shown on this chart by means of isohyetic lines, or lines of equal amounts of rainfall, the numbers attached to each line stating the rainfall in inches.

The second chart (Plate V) shows the normal average rainfall and the variation of the rainfall from the normal of the month of the 57 meteorological or rainfall divisions, over each of which the meteorological conditions (more especially the rainfall) are fairly uniform and the staple crops similar in character.

Northern India usually receives light to moderate rain in the month of January from cold weather cyclonic storms. The precipitation is generally heaviest in the hill districts, and decreases in amount southwards from the foot of these hills. Rain is also occasionally received in the South Madras coast districts, usually under the same conditions as in December. This rainfall is, however, exceptional in occurrence.

The month of January 1898 was much finer and less disturbed than usual in Northern India, and the rainfall of the month was hence in general defect.

There were three periods of disturbance and of rainfall during the month.

The first period was from the 3rd to the 5th. Light rain fell in the North and East Punjab and Kashmir, due to a feeble cold weather disturbance. Moderately heavy snow was received on the Afghan Hills and on the higher elevations in Kashmir and the Punjab Himalayas

The second period extended from the 14th to the 16th. Moderately heavy rain was received in Ceylon on the 12th and 13th, due to intensified north-east monsoon winds. The rainfall extended to the southern districts of Madras *viz.*, Tinnevelly and Madura on the 14th, and moderate to heavy showers were received in these districts from the 14th to the 16th.

The third period of rainfall, from the 24th to the 28th, was due to a cold weather disturbance which passed eastwards across Northern India during that period. It gave moderate precipitation to the Punjab and Kashmir on the 24th and 25th and light showers in the North-Western Provinces on the 25th and 26th. Bengal and Assam received moderately heavy and general rain on the 27th and Assam and Upper Burma light to moderate showers on the 28th.

The following table gives comparative rainfall data for the 55 meteorological districts into which India is divided:—

Province.	Division.	Number of rainy days. Average actual, January 1898.	Number of rainy days. Average normal, January.	Rainfall. Average actual, January, 1898.	Rainfall. Average normal, January.	Rainfall. Variation from normal, January 1898.
				Inch.	Inch.	Inch.
Burma	Tenasserim	0·3	?	0·15	?	?
	Lower Burma Deltaic	0·5	?	0·21	?	?
	Central ditto	0·3	?	0·15	?	?
	Upper ditto	0·5	?	0·22	0·14	+0·08
	Arakan	0	?	0·01	?	?
Bengal and Assam	Eastern Bengal	1·0	0·9	0·65	0·44	+0·21
	Assam (Surma)	0·8	1·5	0·30	0·62	−0·32
	Do. (Hill Tracts)	1·9	1·5	0·80	0·78	+0·02
	Do. (Brahmaputra)	2·0	2·9	0·90	1·07	−0·17
	Deltaic Bengal	0·8	0·8	0·66	0·40	+0·26
	Central do.	0·8	0·9	0·43	0·44	−0·01
	North do.	1·1	1·0	0·44	0·50	−0·06
	Bengal Hills	0·9	1·4	0·32	0·86	−0·54
	Orissa	0	0·6	0	0·35	−0·35
	Chota Nagpur	0·1	1·2	0·01	0·57	−0·56
	Bihar (South)	0·1	1·2	0·05	0·66	−0·61
	Do. (North)	0·6	1·2	0·28	0·72	−0·44

Province.	Division.	Number of rainy days. Average actual, January 1898.	Number of rainy days. Average normal, January.	Rainfall. Average actual, January 1898.	Rainfall. Average normal, January.	Rainfall. Variation of actual from normal, January 1898.
				Inches.	Inches.	Inches.
North-Western Provinces and Oudh.	North-Western Provinces (East)	0	1·4	0	0·65	−0·65
	Oudh (South)	0	1·4	0	0·72	−0·72
	Do. (North)	0·1	1·3	0·09	0·78	−0·69
	North-Western Provinces (Central)	0	1·3	0	0·56	−0·56
	Do. do. (West)	0	1·4	0	0·56	−0·56
	Do. do. (Submontane East)	0	1·2	0	0·57	−0·57
	Do. do. (do. West)	0·2	2·5	0·07	1·45	−1·38
	Do. do. (Hills)	0·6	4·1	0·16	2·56	−2·40
Punjab	Punjab (South-East)	0	1·5	0	0·72	−0·72
	Do. (South)	0·6	1·3	0·22	0·65	−0·43
	Do. (Central)	0·7	2·1	0·25	1·11	−0·86
	Do. (Submontane)	1·2	2·5	0·29	1·56	−1·27
	Do. (Hill Districts)	2·3	4·2	1·13	3·36	−2·23
	Do. (North)	1·3	2·8	0·50	1·81	−1·31
	Do. (West)	0·3	1·1	0·12	0·51	−0·39
Bombay and Malabar Coast Districts (Madras).	Malabar	0	0·3	0	0·19	−0·19
	Travancore	1·0	?	1·43	?	?
	Madras (South Central)	0·1	0·3	0·04	0·12	−0·08
	Mysore	0	0·1	0·03	0·09	−0·06
	Konkan	0	0·2	0	0·12	−0·12
	Bombay Deccan	0	0·2	0	0·07	−0·07
	Khandesh	0	0·2	0	0·10	−0·10
Central Provinces and Berar.	Berar	?	?	0	0·43	−0·43
	Central Provinces (West)	0	0·9	0	0·56	−0·56
	Do. (Central)	0	1·1	0	0·53	−0·53
	Do. (East)	0	1·1	0	0·49	−0·49
Bombay (North)	Gujarat	0	0·2	0	0·06	−0·06
	Kathiawar	0	0·3	0	0·05	−0·05
	Sind	0	?	0	0·40	−0·40
	Baluchistan Hills	0·3	?	0·08	1·70	−1·62
Rajputana and Central India.	Central India (East)	0	?	0	0·59	−0·59
	Rajputana (East) and Central India (West)	0	?	0	0·46	−0·46
	Rajputana (West)	0	?	0	0·32	−0·32
Madras	East Coast (North)	0	0·3	0	0·20	−0·20
	Do. (do.) (*a*)	0	0·3	0	0·07	−0·07
	Hyderabad (South)	0	0	0	0·14	−0·14
	Madras (Central)	0	0·1	0	0·05	−0·05
	East Coast (Central)	0	0·6	0	0·48	−0·48
	Do. (South)	0·8	0·8	0·37	0·47	−0·10
	Madras (South)	2·5	1·0	1·59	0·61	+0·98

No rain fell during the month over the greater part of India, including South Bihar, Orissa, the Bombay and the Madras Presidencies (except the most southern districts of Madras), Mysore, the Deccan, the Central Provinces, Berar, Central India, Rajputana and the greater part of the North-Western Provinces.

The rainfall of the month was in fact practically restricted to the Punjab, Kashmir, Bengal, Assam, Upper Burma and South Madras.

It was more or less in defect over the whole of India except East and South Bengal, South Madras and Lower and Central Burma.

Central and Lower Burma received light local showers on the 8th, 9th and 10th, and Upper Burma on the 27th and 28th. The following gives a summary of the rainfall the month deduced from the monthly return published the Burma Gazette :—

Division.	Number of rainy days. Average actual, January 1898.	Number of rainy days. Average normal, January.	Number of rainy days. Variation of actual from normal, January 1898.	Rainfall. Average actual, January 1898.	Rainfall. Average normal, January.	Rainfall. Variation of actual from normal, January 1898.
				Inch.	Inch.	Inch.
Tenasserim	0·3	?	?	0·15	?	?
Lower Burma (Deltaic)	0·5	?	?	0·21	?	?
Central Burma	0·3	?	?	0·15	?	?
Upper ,,	0·5	?	?	0·22	0·14	+·008
Arakan	0	?	?	0·01	?	?

The eastern districts of the Assam Valley, including Darrang, Nowgong, Sibsagar and Lakimpur, had light

showers on the 2nd, 4th, 5th and 6th. The heviest fall was 0·73 inch at Harmati in Lakhimpur.

The whole province received moderate rain between the 26th and 28th. The following gives the largest falls in 24 hours :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
KAMRUP . . .	Rani . . .	26th . .	1·55
NOWGONG . . .	Keliden . . .	,, . .	1·45
DARRANG . .	Orangajuli . .	27th . .	2·22
,, . . .	Charduar .	,, . .	2·11
,, . . .	Kopati . . .	,, . .	1·46
,, . . .	Balipara . .	,, . .	1·30
,, . . .	Boreli . . .	,, . .	1·15
NOWGONG . . .	Sekoni . .	,, . .	1·95
KAMRUP . . .	Gauhati . .	,, . .	1·55
,, . . .	Ramgaon . .	,, . .	1·24

The largest amounts were hence registered in the eastern districts of the Assam Valley, including Darrang, Kamrup, and Nowgong.

The following gives comparative data of the rainfall of the month in the eight plain districts :—

DISTRICT.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual January 1898.	Average normal, January.	Variation of actual, from normal, January 1898.	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
				Inches.	Inches.	Inches.
Cachar . . .	0·6	1·8	—1·2	0·14	0·85	—0·71
Sylhet . . .	1·0	1·3	—0·3	0·49	0·43	+0·06
Goalpara . . .	1·0	1·0	0	0·49	0·36	+0·13
Kamrup . . .	1·3	1·3	0	0·82	0·56	+0·26
Darrang . . .	2·7	2·0	+0·7	1·25	0·69	+0·56
Nowgong . . .	1·9	1·6	+0·3	1·26	0·66	+0·60
Sibsagar . . .	1·9	3·5	—1·6	0·62	1·22	—1·60
Lakhimpur . . .	2·7	4·9	—2·2	0·81	1·88	—1·07

The greater part of Bengal received a fairly general and moderately heavy burst of rain from the second cold weather disturbance of the month. It passed through Bengal on the 27th, and gave series of thunderstorms with heavy but very irregularly distributed rain to the whole of Bengal and the northern districts of Bihar. The following gives data of falls in 24 hours exceeding 2 inches :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
FARIDPUR . . .	Faridpur . .	27th January	3·24
JESSORE . . .	Magura . .	,, ,,	2·30
MUZAFFARPUR . .	Shinhar . .	,, ,,	2·16
NADIA . . .	Krishnagar . .	,, ,,	2·04

A large number of stations obtained falls on the 27th exceeding an inch. Some light local showers were also received on the 26th and 28th, chiefly in North and East Bengal.

The following gives a comparative statement of the rainfall of the month in the nine divisions of Bengal :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
				Inch.	Inch.	Inch.
Eastern Bengal . .	1·0	0·9	+0·1	0·65	0·44	+0·21
Deltaic ,, . .	0·8	0·8	0	0·66	0·40	+0·26
Central ,, . .	0·8	0·9	—0·1	0·43	0·44	—0·01
North ,, . .	1·1	1·0	+0·1	0·44	0·50	—0·06
Bengal Hills . .	0·9	1·4	—0·5	0·32	0·86	—0·54
Orissa . . .	0	0·6	—0·6	0	0·35	—0·35
Chota Nagpur . .	0·1	1·2	—1·1	0·01	0·57	—0·56
South Bihar . .	0·1	1·2	—1·1	0·05	0·66	—0·61
North ,, . .	0·6	1·2	—0·6	0·28	0·72	—0·44

Orissa, Chota Nagpur and South Bihar obtained practically no rain. The average fall in Central and North Bengal was practically normal. In East Bengal it was nearly double the small normal fall of the month.

Some light showers fell on the Baluchistan plateau on the 22nd and 23rd. The heaviest fall was 0·4 inch at

Khanai. The rainfall of the higher level stations averaged only 0·08 inch, barely one-twentieth of the normal fall of the month.

Kashmir had two periods of rain. The first was the 3rd and 4th, when moderate showers fell over the state. The second period was from the 23rd to the 25th. The rainfall during this period was partial, and very irregularly distributed. The largest total fall of the month was 3·46 inches at Kishtwar, and the smallest 0·7 inch at Gilgit.

The rainfall of the month in the Punjab was very small in amount in all districts. The first cold-weather disturbance of the month gave light showers to the Hazara, Peshawar, Rawal Pindi, Gurdaspur and Kangra districts. The second cold-weather disturbance gave much more general rain. The districts of Hissar, Rohtak, Delhi, Gurgaon and Karnal in the South-East Punjab and of Dera Ismail Khan, Jhang, Kohat and Shahpur in the West Punjab obtained no rain. The rainfall was heaviest, but only moderate in amount, in the submontane and hill districts. It occurred on the 24th and 25th. The following gives the only rainfalls exceeding one inch of which reports have been received :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inch.
Kangra	Kulu	25th	1·46
"	Nagar	"	1·40
"	Plach	"	1·15
Jhelum	Jhelum	"	1·46

The rainfall of the month was very scanty and was in defect over the whole province, and the deficiency was largest in actual amount for the hill and submontane districts.

The following gives comparative data for each of the 31 districts of the province :—

District.	Rainfall.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
	Inches.	Inches.	Inches.
Hissar	0·01	0·67	—0·66
Ferozepore	0·50	0·62	—0·12
Montgomery	0·29	0·35	—0·06
Gurgaon	0	0·50	—0·50
Rohtak	0	0·65	—0·65
Delhi	0	0·77	—0·77
Karnal	0	1·05	—1·05
Lahore	0·25	0·82	—0·57
Umballa	0·20	1·71	—1·51
Ludhiana	0·47	1·11	—0·64
Jullundur	0·50	1·27	—0·77
Hoshiarpur	0·36	1·79	—1·43
Gurdaspur	0·32	2·16	—1·84
Amritsar	0·21	1·08	—0·87
Simla	0·80	2·08	—1·28
Kangra	1·36	3·88	—2·52
Gujranwala	0·07	1·08	—1·01
Sialkot	0·16	1·41	—1·25
Gujrat	0·28	1·59	—1·31
Jhelum	0·31	1·41	—1·10
Rawalpindi	1·00	2·30	—1·30
Peshawar	0·29	1·64	—1·35
Hazara	1·80	2·53	—0·73
Kohat	0·03	1·27	—1·24
Bannu	0·05	0·88	—0·83
Shahpur	0·08	1·08	—1·00
Jhang	0·07	0·44	—0·37
D. I. Khan	0	0·43	—0·43
D. G. Khan	0·08	0·33	—0·25
Muzaffargarh	0·15	0·20	—0·05
Mooltan	0·32	0·30	+ 0·02

The hill districts of Dehra Dun, Almora and Garhwal and the submontane districts of Muzaffarnagar and Saharanpur in the North-Western Provinces received light to moderate showers on the 24th, 25th and 26th. The following gives the total fall in each of these districts :—

District.	Average actual rainfall during 24 hours preceding 8 A.M. of			Total rainfall of period, 24th to 26th January 1898.
	24th January.	25th January.	26th January.	
	Inch.	Inch.	Inch.	Inch.
Dehra Dun	0·09	0·26	0·02	0·37
Almora	0·04	0·05	0·09	0·18
Garhwal	0	0·23	0·07	0·30
Muzaffarnagar	0·02	0	0	0·02
Saharanpur	0	0·03	0	0·03

Practically no rain fell over the remainder of the province. The rainfall of the month was in defect over the whole province, the deficiency being greatest in actual amount

in the hill and submontane districts. The following is a comparative statement for the province :—

DIVISION.	RAINFALL.		
	Average actual, January 1898.	Average, normal, January.	Variation of actual from normal, January 1898.
	Inch.	Inches.	Inches.
N.-W. P. (East)	0	0·65	—0·65
Oudh (South)	0	0·72	—0·72
Oudh (North)	0·09	0·78	—0·69
N.-W. P. (Central)	0	0·56	—0·56
N.-W. P. (West)	0	0·56	—0·56
N.-W. P. (East Submontane)	0	0·57	—0·57
N.-W. P. (West Submontane)	0·07	1·45	—1·38
N.-W. P. (Hills)	0·16	2·56	—2·40

There were two periods of rainfall during the month in the southern districts of Madras. The first period extended from the 11th to the 15th. The Tanjore, Madura, Tinnevelly and Nilgiris districts and the Travancore state obtained light to moderately heavy rain during this period. Some heavy downpours, probably accompanying thunderstorms, occurred in the Travancore state on the 14th and the Tinnevelly district on the 15th. The following gives the largest amounts recorded on these dates:—

DATE.	District.	Station.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
14th	Travancore	Variyur	7·50
,,	,,	Arambaly	5·75
,,	,,	Rajakamangalam	5·40
,,	,,	Agastisvaram	4·95
,,	,,	Tamaracolum	4·70
15th	Tinnevelly	Nanguneri	5·90
,,	,,	Kulasegarapatnam	5·26
,,	,,	Ambasamudram	4·33

The second period included the 23rd and 24th, on which dates light to moderate showers fell in the Tanjore, Trichinopoly, Tinnevelly, Madura and Nilgiris districts.

The rainfall of the month in the Madras Presidency was hence solely restricted to the Tanjore, Trichinopoly, Madura, Tinnevelly and Nilgiris districts. The following gives comparative data of the rainfall of the month in these five districts :—

DISTRICT.	RAINFALL.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
	Inches.	Inches.	Inches.
Tanjore	1·23	0·88	+0·35
Trichinopoly	0·17	0·24	—0·07
Madura	0·80	0·44	+0·36
Tinnevelly	2·58	0·83	+1·75
Nilgiris	0·37	0·40	—0·03

The following gives a comparative statement of the rainfall of the month for the eight divisions of the Presidency :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, January 1898.	Average normal, January.	Variation of actual from normal January 1898.	Average actual, January 1898.	Average normal, January.	Variation of actual from normal, January 1898.
				Inches.	Inch.	Inch.
Malabar	0	0·3	—0·3	0	0·19	—0·19
Madras (South Central)	0·1	0·3	—0·2	0·04	0·12	—0·08
Madras (East Coast, North).	0	0·3	—0·3	0	0·20	—0·20
Madras (East Coast, North) (a)	0	0·3	—0·3	0	0·07	—0·07
Madras (Central)	0	0·1	—0·1	0	0·05	—0·05
Madras (East Coast Central).	0	0·6	—0·6	0	0·48	—0·48
Madras (East Coast, South.)	0·8	0·8	0	0·37	0·47	—0·10
Madras (South)	2·5	1·0	+1·5	1·59	0·61	+0·98

Table

Abstract of Observations taken at 8 A.M. at 216 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	+·007	...	...	...	...	...	...	...	85·2	−0·8	66·6	+0·7	75·9	0	18·5	...	...	...	...	27·4
	Tenasserim and Bay Islands.	Car Nicobars	25	29·946*	?	29·899*	30·041	18th	29·856	23rd	·185	78·7*	84·1*	?	76·3*	?	80·2*	?	7·8	86·5	26th	70·8	17th	15·7
		Port Blair	61	29·953	?	29·947	30·006	29th	29·893	21st	·113	76·8	84·2	?	74·6†	?	79·3†	?	9·6	88·6	23rd	70·3	3rd	18·3
		Mergui	96	29·914	?	29·944	29·976	9th	29·880	14th & 31st	·096	73·6	86·4	?	68·4	?	77·4	?	18·0	90·7	21st	60·3	31st	30·4
		Tavoy	26	29·995	+·003	29·952	30·070	29th	29·943	7th	·127	69·2	88·2	−1·1	63·2	−1·2	75·7	−1·2	25·0	92·7	7th	54·2	2 days	38·5
		Moulmein	94	29·952	0	29·984	30·068	28th	29·899	31st	·169	68·8	87·3	−1·0	65·8	+0·2	76·6	−0·4	21·5	91·0	26th	60·9	17th	30·1
2	Lower Burma	Rangoon	41	30·007	+·005	29·986	30·115	28th	29·954	25th	·161	68·3	87·8	−0·9	64·6	+0·7	76·2	−0·1	23·2	90·7	3 days	59·8	16th	30·9
		Bassein	27	30·025	+·010	29·988	30·127	28th	29·963	25th	·164	67·1	84·9	−0·5	63·9	+2·9	74·4	+1·2	21·0	88·7	22nd	59·3	17th	29·4
		Diamond Island	41	30·003	+·010	29·979	30·086	29th	29·954	25th	·132	76·6	83·8	−0·1	72·4	+2·1	78·1	+1·0	11·4	87·1	23rd	70·4	2 days	16·7
5	Arakan	Akyab	20	30·040	?	30·003	30·124	28th	29·969	25th	·155	62·8	80·6	−0·8	58·9	−0·6	69·8	−0·7	21·7	83·7	3 days	53·2	2 days	30·5
3	Central Burma	Toungoo	183	29·864	+·013	29·997	29·959	28th	29·802	31st	·157	63·2	84·2	−1·1	58·7	+1·1	71·5	0	25·5	87·8	3 days	54·1	12th	33·7
	II.—Burma Inland		...	...	+·006	...	...	...	...	...	...	...	82·7	+0·4	54·7	+1·7	68·7	+1·1	28·0	...	...	...	...	38·6
3	Central Burma	Thayetmyo	134	29·931	+·006	30·014	30·038	29th	29·862	31st	·176	62·1	86·5	+1·1	54·3	+0·7	70·4	+0·9	32·2	90·6	22nd	48·2	3 days	42·4
4	Upper Burma	Minbu	?	29·911	?	?	30·017	28th	29·837	31st	·180	64·0	85·0	?	57·6	+2·6	71·3	?	27·4	91·1	1st	51·5	13th	39·6
		Yamethin	657	29·386	?	30·021	29·499	28th	29·311	31st	·188	63·3	86·3	+0·1	55·6	+2·6	71·0	+1·4	30·7	92·0	9th	50·7	8th	41·3
		Mandalay	250	29·802	?	30·029	29·902	11th	29·698	15th	·204	63·4	83·8	0	57·4	+1·9	70·6	+1·0	26·4	87·5	22nd	52·2	11th	35·3
		Kindat	?	29·706	?	?	29·858	10th	29·569	16th	·289	56·4	77·9	?	53·5	+1·2	65·7	?	24·4	85·3	22nd	48·5	20th	36·3
		Bhamo	?	29·703	?	?	29·833	10th	29·609	1st	·224	53·7	76·4	?	49·5	+1·0	63·0	?	26·9	80·0	26th	43·9	3 days	36·1
4(a)	Burma Hill Stations.	Taunggyi	?			Not	recorde	d.				55·4	72·3	?	43·0	?	57·7	?	29·3	74·7	20th	36·5	6th	38·2
		Lashio	?	27·223	+·005	?	27·325	11th	27·076	25th	·249	52·1	73·8	−0·3	46·1	+2·1	59·9	+0·9	27·7	77·1	27th	41·1	11th	36·0
	III.—Assam		...	...	+·010	...	...	...	...	...	...	...	74·7	+1·2	50·6	−1·3	62·7	0	24·1	...	...	...	...	36·5
7	Surma	Silchar	104	30·001	+·018	30·064	30·146	10th	29·902	31st	·244	56·6	79·0	+1·8	51·4	−0·9	65·2	+0·5	27·6	84·4	21st	44·5	11th	39·9
9	Brahmaputra	Sibsagar	333	29·779	+·007	30·094	29·972	10th	29·684	25th	·288	51·3	71·0	+1·1	48·3	−1·5	59·7	−0·2	22·7	75·3	2 days	40·0	14th	35·3
		Dhubri	115	29·977	+·004	30·056	30·094	10th	29·882	2 days	·212	56·0	74·2	+0·7	52·2	−1·4	63·2	−0·4	22·0	79·1	21st	44·8	13th	34·3
	IV.—Bengal and Orissa		...	...	+·008	...	...	...	...	...	...	...	76·5	−0·3	52·5	−1·9	64·5	−1·1	24·0	...	...	...	...	35·5
6	East Bengal	Chittagong	87	29·984	+·001	30·024	30·078	10th	29·901	25th	·177					Not	recorde	d.						
		Lungleh	?			Not	recorde	d.				55·7	63·4	?	49·8	?	56·6	?	13·6	69·7	21st	42·8	2nd	26·9
		Noakhali	43	30·033	?	30·025	30·134	28th	29·942	26th	·192	59·5	77·4	?	50·6	?	64·0	?	26·8	83·5	26th	45·0	10th	38·5
		Comilla	36	30·038	?	30·024	30·136	10th	29·952	25th	·184	59·1	78·6	?	51·6	?	65·1	?	27·0	83·4	12th	46·1	9th	37·3
		Sirajganj	49	30·024	?	30·026	30·122	9th	29·921	26th	·201	55·2	74·2	?	51·3	?	62·8	?	22·9	78·5	20th	46·0	8th	32·5
		Narayanganj	26	30·045	?	30·021	30·150	10th	29·955	25th	·195	58·9	76·8	−1·4	54·7	−0·3	65·8	−0·9	22·1	81·1	12th	49·2	10th	31·9
		Barisal	13	30·049	?	30·008	30·150	10th	29·967	25th	·183	60·7	77·4	+0·9	52·3	−2·7	61·9	−0·9	25·1	82·3	27th	46·2	9th	36·1
		Mymensingh	59	30·016	?	30·030	30·126	10th	29·930	25th	·196	56·4	75·0	+0·5	52·0	−0·4	63·5	+0·1	23·0	79·6	20th	46·4	8th	33·2
10	Deltaic Bengal	Faridpur	46	30·030	?	30·026	30·142	10th	29·939	26th	·203	55·0	76·1	?	50·7	?	63·4	?	25·4	82·2	27th	45·5	8th	36·7
		Jessore	33	30·051	+·004	30·032	30·161	10th	29·930	26th	·231	57·5	76·6	−1·4	51·2	−2·0	63·9	−1·7	25·4	83·6	27th	45·1	2 days	38·5
		Calcutta	21	30·073	+·003	30·041	30·191	10th	29·928	26th	·263	57·8	76·5	−0·4	53·3	−2·1	64·9	−1·3	23·2	83·8	27th	43·2	2 days	35·6
		Saugor Island	25	30·060	+·002	30·030	30·184	10th	29·945	26th	·239	61·8	76·4	−0·2	55·7	−3·7	66·1	−2·0	20·7	82·0	24th	51·0	18th	31·0
		Krishnagar	47	30·051	?	30·051	30·165	9th	29·918	26th	·247	57·0	77·2	?	50·2	?	63·7	?	27·0	85·9	27th	43·2	8th	42·7
		Midnapore	149	29·940	?	30·046	30·068	10th	29·794	26th	·274	59·7	81·2	?	53·0	?	67·1	?	28·2	90·3	27th	46·1	9th	44·2

* Mean of 30 days.
† „ „ 26 „

I.

in India, Burma, etc., in January 1898.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st January 1898.	Normal rainfall for period, 1st to 31st January.	Variation from normal of period, 1st to 31st January.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·28	0·32	+0·55	...	...	...	...	I.—Burma Coast and Bay Islands.		
...	2	10	8	2	...	...	...	2	8·8**	?	?	77*	·757?	6·4?	4	?	?	5·02	?	?	5·02	?	?	2·41	Car. Nicobars (a)	TENASSERIM AND BAY ISLANDS.	1
...	9	8	6	...	...	...	2	6	6·3	7·0	− 10	82	·755	5·3	6	?	?	4·96	0·81	+ 4·15	4·96	0·81	+ 4·15	1·62	Port Blair .		
31	...	...	...	...	...	...	...	...	0·9	2·0	− 55	85	·711	2·0	1	?	?	0·56	0·61	− 0·05	0·56	0·61	− 0·05	0·56	Mergui.		
27	1	2	..	...	...	...	...	1	1·4	?	?	87	·627	0·4	1	?	?	0·33	0·19	+ 0·14	0·33	0·19	+ 0·14	0·32	Tavoy.		
...	7	10	8	3	1	1	...	1	2·6	2·4	+ 8	85	·600	2·0	0	0·09	− 0·09	0	0·51	− 0·51	0	0·51	− 0·51	0	Moulmein.		
...	4	7	5	6	3	3	2	1	3·9	4·3	− 9	83	·575	1·6	0	0·27	− 0·27	0·05	0·17	− 0·12	0·05	0·17	− 0·12	0·05	Rangoon .	LOWER BURMA.	2
12	2	7	2	...	...	...	...	8	3·9	2·9	+ 34	86	·574	2·0	1	0	+ 1·00	0·45	0·17	+ 0·28	0·45	0·17	+ 0·28	0·45	Bassein.		
1	11	13	6	...	...	...	...	...	11·2	6·6	+ 70	70	·657	2·2	1	0·44	+ 0·56	1·40	0·18	+ 1·22	1·40	0·18	+ 1·22	1·40	Diamond Island.		
...	5	22	3	...	1	...	...	...	2·9	2·6	+ 12	86	·494	0·6	0	0·18	− 0·18	0	0·08	− 0·08	0	0·08	− 0·08	0	Akyab .	ARAKAN.	5
3	12	3	1	...	...	1	1	10	2·3	1·9	+ 21	88	·520	1·3	0	0·27	− 0·27	0	0·12	− 0·12	0	0·12	− 0·12	0	Toungoo .	CENTRAL BURMA.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·21	0·23	−0·02	...	...	...	...	II.—Burma Inland.		3
...	16	3	1	1	4	2	1	3	3·4	2.4	+ 42	73	·411	1·4	1	0	+ 1·00	0·31	0·02	+ 0·29	0·31	0·02	+ 0·29	0·21	Thayetmyo.	CENTRAL BURMA.	4
10	2	...	...	1	...	1	6	11	6·3	?	?	70	·419	0·6	0	?	?	0	0·05	− 0·05	0	0·05	− 0·05	0	Minbu .	UPPER BURMA.	
15	5	...	...	2	2	...	...	7	3·3	?	?	76	·447	0·9	2	?	?	0·48	0·02	+ 0·46	0·48	0·02	+ 0·46	0·29	Yamethin.		
3	2	5	2	4	10	4	...	1	1·6	?	?	85	·498	0·9	0	?	?	0·04	0 08	− 0·04	0·04	0·08	− 0·04	0·04	Mandalay.		
16	3	2	2	2	2	1	1	2	1·2	?	?	96	·440	0·8	1	?	?	0·13	0·40	− 0·27	0·13	0·40	− 0·27	0·13	Kindat.		
11	3	6	...	1	2	3	3	2	3·1	?	?	96	·401	3·5	1	?	?	0·30	0·83	− 0·53	0·30	0·83	− 0·53	0·30	Bhamo.		
15	...	...	...	4	11	1	...	...	?	?	?	72	·320	2·0	1	?	?	0·14	0	+ 0·14	0·14	0	+ 0·14	0·14	Taunggyi.	BURMA HILL STATIONS.	4(a)
				Not recorded.					?	?	?	93	·307	7·3	3	?	?	2·11	0·07	+ 2·04	2·11	0·07	+ 2·04	0·78	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·28	0·86	−0·59	...	...	...	...	III.—Assam.		
23	...	1	4	2	1	...	...	...	1·9	2·0	− 5	91	·421	1·7	2	1·79	+ 0·21	0·28	0·72	− 0·44	0·28	0·72	− 0·44	0·17	Silchar .	SURMA.	7
28	...	1	...	1	1	...	...	...	1·2	1·8	− 33	99	·380	8·3	2	4·30	− 2·30	0·42	1·47	− 1·05	0·42	1·47	−1·05	0·15	Sibsagar .	BRAHMAPUTRA.	9
5	3	9	10	2	1	...	...	1	4·0	3·9	+ 3	91	·416	1·6	0	0·93	− 0·93	0·13	0·40	− 0·27	0·13	0·40	−0·27	0·08	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·56	0·43	+0·13	...	...	...	...	IV.—Bengal and Orissa		
3	10	14	4	...	...	...	...	...	?	3·7	?	?	?	0·4	1	0·73	+ 0·27	0·26	0·49	− 0·23	0·26	0·49	−0·23	0·26	Chittagong	EAST BENGAL.	6
				Not recorded.					?	?	?	74	·325	?	1	?	?	1·18	0·02	+ 1·16	1·18	0·02	+ 1·16	1·18	Lungleh.		
...	17	7	1	2	...	...	1	3	2·0	?	?	88	·452	0·2	1	0·96	+ 0·04	0·14	0·47	− 0·33	0·14	0·47	− 0·33	0·14	Noakhali.		
21	8	...	1	...	1	...	...	...	1·3	?	?	77	·385	0·8**	2	1·30	+ 0·70	1·24	0·53	+ 0·71	1·24	0·53	+ 0·71	0·82	Comilla.		
				Not recorded.					?	?	?	93*	·407*	0·8‡	1	1·04	− 0·04	0·42	0·45	−0·03	0·42	0·45	− 0·03	0·42	Sirajganj.		
16	4	1	1	2	...	...	...	7	2·2	2·1	+ 5	90	·452	?	1	0·91	+ 0·09	1·82	0·24	+ 1·58	1·82	0·24	+ 1·58	1·82	Narayanganj		
27	1	1	...	...	...	1	1	...	1·2	?	?	84	·451	0·5	1	1·04	− 0·04	0·58	0·61	− 0·03	0·58	0·61	− 0·03	0·58	Barisal.		
24	...	...	3	2	...	...	1	1	?	?	?	91	·414	?	1	0·85	+ 0·15	0·47	0·39	+ 0·08	0·47	0·39	+ 0·08	0·32	Mymensingh		
31	...	...	...	...	...	...	...	...	1·1	?	?	92	·401	0·1*	1	0·77	+ 0·23	3·24	0·36	+ 2·88	3·24	0·36	+ 2·88	3·24	Faridpur .	DELTAIC BENGAL.	10
17	5	...	2	1	...	2	1	3	2·1	1·6	+ 31	85	·408	1·0	1	0·88	+ 0·12	0·93	0·55	+ 0·38	0·93	0·55	+ 0·38	0·93	Jessore.		
22	7	...	...	...	1	...	...	1	1·7	3·0	− 43	84	·404	0·5	1	0·72	+ 0·28	0·36	0·60	−0·24	0·36	0·60	−0·24	0·36	Calcutta.		
...	13	9	1	...	1	1	2	4	7·6	6·3	+ 21	89	·500	0·9	0	0·77	− 0·77	0·04	0·32	− 0·28	0·04	0·32	− 0·28	0·04	Saugor Island.		
4	4	...	...	1	2	1	7	12	2·7	?	?	84	·392	0·6*	1	0·73	+ 0·27	2·04	0·30	+ 1·74	2·04	0·30	+ 1·74	2·04	Krishnagar.		
16	13	...	...	...	1	...	...	1	0·3	?	?	66	·347	0·1	0	0·85	− 0·85	0·08	0·52	− 0·44	0·08	0·52	−0·44	0·08	Midnapore.		

†† Variables 10. ** Mean of 29 days. ‡ Mean of 28 days. (a) Six variables, and one day's observation wanting.

Table

Abstract of Observations taken at 8 A.M. at 216 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura	298	29·771?	?	30·041?	29·908	10th	29·623	26th	·285	57·4	78·6	?	53·0	?	65·8	?	25·6	85·8	27th	46·3	9th	39·5
		Raniganj	334	29·754	?	30·061	29·880	10th	29·602	26th	·278	55·9	77·7	?	51·3	?	64·5	?	26·4	84·4	27th	45·4	9th	39·0
		Burdwan	99	29·997	+·006	30·050	30·114	10th	29·854	26th	·260	58·5	79·3	+0·8	53·8	−0·9	66·6	−0·1	25·5	86·9	27th	49·8	2 days	37·1
		Naya Dumka	489	29·583	?	30·067	29·711	10th	29·427	26th	·284	55·9	75·1	?	50·0	?	62·6	?	25·1	80·6	26th	44·1	9th	36·5
		Berhampore	67	30·023	0	30·042	30·146	10th	29·894	26th	·252	55·3	76·0	−0·8	52·3	−1·0	64·2	−0·9	23·7	82·2	27th	47·9	7th	34·3
		Rampur Boalia.	70	30·014	?	30·037	30·140	10th	29·900	26th	·240	57·7	74·9	?	51·7	?	63·3	?	23·2	80·1	26th	47·1	8th	23·0
		Malda	72	30·008	?	30·037	30·151	10th	29·868	26th	·283	54·7	75·3	?	49·7	?	62·5	?	25·6	80·3	20th	44·6	7th	35·7
		Bogra	61	30·019	?	30·035	30·145	10th	29·918	26th	·227	55·8	75·5	−0·2	51·8	+0·2	63·7	0	23·7	80·8	2 days	46·7	12th	34·1
12	North Bengal	Dinajpur	123	29·965	?	30·052	30·103	10th	29·865	26th	·238	53·2	75·5	+0·2	48·7	−0·5	62·1	−0·2	26·8	81·3	20th	41·5	8th	39·8
		Rangpur	123	29·964	?	30·051	30·087	10th	29·867	26th	·220	55·4	74·4	?	51·2	?	62·8	?	23·2	79·0	20th	45·2	13th	33·8
		Jalpaiguri	284	29·797	?	30·058	29·938	10th	29·705	26th	·233	53·7	74·7	?	50·0	−0·7	62·4	?	24·7	79·4	20th	45·1	13th	34·3
		Cooch Behar	156	29·939	?	30·044	30·037	10th & 19th	29·837	31st	·200	54·3	74·1	?	50·6	?	62·5	?	23·5	80·0	20th	45·9	13th	34·1
17	North Bihar	Purnea	125	29·975	?	30·064	30·143	10th	29·852	26th	·291	51·5	74·2	?	48·9	+1·0	61·6	?	25·3	79·0	21st	44·3	13th	34·7
14	Orissa	Balasore	46	30·058	+·019	30·054	30·178	10th	29·920	26th	·258	58·9	81·1	+1·0	52·5	−3·2	66·8	−1·1	28·6	88·4	27th	46·4	9th	42·0
		False Point	21	30·076	+·010	30·040	30·200	10th	29·965	26th	·235	60·9	78·0	−0·8	54·6	−4·3	66·3	−2·6	23·4	83·9	24th	48·0	10th	35·9
		Cuttack	80	30·024	+·018	30·048	30·150	10th	29·904	26th	·246	59·2	82·3	−2·3	56·0	−3·9	69·2	−3·1	26·3	91·4	27th	50·1	10th	41·3
		Shortt's Island	?	30·073	?	?	30·178	10th	29·951	26th	·227	63·7	76·8	?	64·8	?	70·8	?	12·0	80·8	27th	61·0	16th & 17th	19·8
		Puri	20	30·092*	?	*30·056	30·209	10th	30·033	21st	·176	64·2	79·9	?	59·8	?	69·8	?	20·1	84·7	25th	55·1	10th	29·6
	V.—Gangetic Plain and Chota Nagpur.		...	...	+·009	...	...	...	...	...	...	...	75·3	+1·5	48·1	−1·3	61·7	+0·2	27·2	...	...	...	...	41·9
15	Chota Nagpur	Hazaribagh	2,007	28·014	+·001	30·074	28·151	10th	27·887	26th	·264	55·2	72·9	+0·1	48·8	−1·7	60·9	−0·8	24·1	81·2	26th	40·4	7th	40·8
		Ranchi	2,128	27·898	+·012	30·073	28·025	10th	27·766	26th	·259	56·3	73·9	+0·2	49·2	−0·9	61·6	−0·4	24·7	81·9	26th	40·5	9th	41·4
		Daltonganj	730?	29·378?	?	30·122?	29·535	9th	29·229	26th	·306	52·2	76·9	?	43·0	?	60·0	?	33·9	87·1	26th	35·2	7th	51·9
		Chaibassa	760	29·309	?	30·073	29·436	10th	29·163	26th	·273	52·6	81·0	+0·8	49·3	−4·2	65·2	−1·7	31·7	89·8	27th	42·9	9th	46·9
16	South Bihar	Gaya	375	29·715	+·009	30·071	29·878	10th	29·564	26th	·314	55·5	76·7	+1·0	50·7	−0·8	63·7	+0·1	26·0	85·0	26th	44·0	9th	41·0
		Dehri	351	29·736	?	30·067	29·915	10th	29·599	26th	·316	56·3	76·3	?	51·9	?	64·1	?	24·4	85·3	26th	45·1	9th	40·2
		Patna	183	29·912	+·001	30·061	30·078	10th	29·750	26th	·328	54·5	73·3	+0·6	50·6	+0·7	61·9	+0·7	22·7	78·5	26th	45·2	8th	39·3
		Arrah	190	29·900	?	30 057	39·065	10th	29·747	26th	·318	52·9	74·8	?	47·7	?	61·2	?	27·1	82·1	26th	40·3	9th	41·8
		Buxar	239	29·857	?	30·063	30·029	10th	29·714	26th	·315	57·0	75·2	?	49·0	?	62·1	?	26·2	83·1	26th	41·9	8th	41·2
17	North Bihar	Bhagalpur	160	29·932	?	30·053	30·089	10th	29·791	26th	·298	56·2	75·2	?	49·0	?	62·1	?	26·2	80·3	7th	42·8	14th	37·5
		Darbhanga	166	29·915	+·001	30·048	30·082	10th	29·763	26th	·319	55·1	73·7	+1·5	51·7	−0·4	62·7	+0·6	22·0	78·0	26th	46·8	8th	31·2
		Muzaffarpur	178	29·908	?	30·054	30·063	10th	29·757	26th	·306	54·1	72·8	?	48·9	?	60·9	?	23·9	77·7	26th	43·8	8th	33·9
		Motihari	224	29·867	?	30·065	30·038	10th	29·720	26th	·318	52·6	73·4	?	46·2	?	59·8	?	27·2	78·0	3 days	40·0	8th	38·0
		Chapra	181	29·916	?	30·065	30·088	10th	29·754	26th	·334	52·8	74·2	?	48·8†	?	61·5†	?	25·4	80·3	26th	43·0	8th	37·3
18	N.-W. Provs., East.	Benares	267	29·834	+·023	30·079	30·009	10th	29·713	26th	·296	50·8	74·8	+0·4	46·1	−1·9	60·5	−0·8	28·7	84·7	26th	37·6	9th	47·1
		Allahabad	309	29·787	+·015	30·075	29·952	10th	29·660	25th	·292	52·4	76·5	+2·6	46·1	−1·5	61·3	+0·6	30·4	87·1	26th	38·9	9th	48·2
23	N.-W. Provinces (East Sub-montane).	Gorakhpur	256	29·811	−·001	30·045	29·982	10th	29·689	26th	·313	52·5	73·7	?	48·0	−1·0	60·9	?	25·7	79·5	26th	43·6	17th	35·9
19	South Oudh	Lucknow	368	29·713	+·005	30·070	29·892	10th	29·594	25th	·298	50·0	77·8	+3·9	46·1	−0·3	62·0	+1·8	31·7	84·8	25th	37·6	9th	47·2
20	North Oudh	Bahraich	403	29·658	?	30·053	29·837	10th	29·527	26th	·310	52·0	75·2	?	46·9		61·1	?	28·3	83·4	26th	38·6	8th	44·8
21	N.-W. Provs. (Central).	Cawnpore	416	29·666	+·024	30·070	29·639	10th	29·541	25th	·298	51·7	77·7	+4·3	46·0	−1·6	61·9	+1·4	31·7	86·8	25th	36·5	8th	50·3
		Mainpuri	516	29·554	?	30·070	29·739	10th	29·418	25th	·321	50·6	75·8	?	46·1	?	61·0	?	29·7	86·3	25th	36·0	9th	50·3

* Mean of 24 days.

I.—*continued.*

in India, Burma, etc., in January 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st January 1898.	Normal rainfall for period 1st to 31st January.	Variation from normal of period 1st to 31st January.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
19	...	...	...	...	...	...	11	1	1·5	?	?	71	·341	0·5	0	0·96	− 0·96	0	0·34	− 0·34	0	0·34	− 0·34	0	Bankura	CENTRAL BENGAL	11
5	1	2	...	...	...	...	8	15	2·1	?	?	72	·326	0·5	0	0·96	− 0·96	0·08	0·40	− 0·32	0·08	0·40	− 0·32	0·08	Raniganj.		
25	2	...	1	...	...	...	...	3	0·7	1·8	−61	76	·380	0	1	0·77	+ 0·23	0·69	0·36	+ 0·33	0·69	0·36	+ 0·33	0·69	Burdwan.		
13	3	1	1	...	...	2	...	11	0·9	?	?	66‡	·283‡	0·8†	0	1·17	− 1·17	0·01	0·60	− 0·59	0·01	0·60	− 0·59	0·01	Naya Dumka		
27	2	...	1	...	...	...	1	...	1·0	1·8	− 44	88	·389	0·6	1	1·04	− 0·04	0·45	0·52	− 0·07	0·45	0·52	− 0·07	0·45	Berhampore.		
11	8	1	1	1	...	1	1	7	1·9	?	?	81	·388	0·9†	1	0·81	+ 0·19	0·70	0·41	+ 0·29	0·70	0·41	+ 0·29	0·70	Rampur Boalia.		
...	5	1	...	...	1	3	12	9	1·7	?	?	89	·383	0·3†	1	0·81	+ 0·19	0·67	0·52	+ 0·15	0·67	0·52	+ 0·15	0·67	Malda.		
		Not	reco	rded.					?	?	?	86	·386	?	1	0·88	+ 0·12	1·00	0·47	+ 0·53	1·00	0·47	+ 0·53	1·00	Bogra.		
3	3	9	1	...	2	3	6	4	2·4	?	?	89	·363	1·3	1	0·88	+ 0·12	0·59	0·45	+ 0·14	0·59	0·45	+ 0·14	0·59	Dinajpur	NORTH BENGAL.	12
		Not	reco	rded.					?	?	?	92	·406	1·1	2	0·85	+ 1·15	0·45	0·61	− 0·16	0·45	0·61	− 0·16	0·33	Rangpur.		
...	11	6	1	1	1	1	5	5	1·6	?	?	92	·380	0·3	0	1·04	− 1·04	0	0·53	− 0·53	0	0·53	− 0·53	0	Jalpaiguri.		
11	2	10	2	6	...	...	...	...	1·4	?	?	93	·393	1·0††	1	?	?	0·22	0·38	− 0·16	0·22	0·38	− 0·16	0·20	Cooch Behar		
15	1	1	2	1	2	6	2	1	1·5	1·7	−12	92	·351	1·3	1	0·80	+ 0·20	0·16	0·49	− 0·33	0·16	0·49	− 0·33	0·13	Purnea	NORTH BIHAR.	17
17	5	...	...	...	...	3	3	3	1·4	?	?	81	·405	0·1	0	0·65	− 0·65	0	0·39	− 0·39	0	0·39	− 0·39	0	Balasore	ORISSA.	14
3	7	...	...	...	...	1	2	18	4·5	6·0	−25	86	·465	?	0	0·81	− 0·31	0	0·57	− 0·57	0	0·57	− 0·57	0	False Point.		
16	2	3	...	...	...	2	7	1	1·6	1·4	+14	75	·382	0	0	0·65	− 0·65	0	0·32	− 0·32	0	0·32	− 0·32	0	Cuttack.		
...	15	2	...	...	1	...	7	6	9·3	?	?	71	·497	0·1	0	?	?	0	0·11	− 0·11	0	0·11	− 0·11	0	Shortt's Island.		
6	18	5	...	...	...	...	...	2	7·9	?	?	76	·461	0	0	0·50	− 0·50	0	0·28	− 0·28	0	0·28	− 0·28	0	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	...	0·10	0·71	− 0·61	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
5	...	...	2	1	1	2	11	9	7·4	4·9	+51	60	·267	0·1	0	1·38	− 1·38	0	0·56	− 0·56	0	0·56	− 0·56	0	Hazaribagh.	CHOTA NAGPUR	15
9	...	1	...	...	2	2	8	9	5·6	?	?	59	·263	0	0	1·28	− 1·28	0	0·52	− 0·52	0	0·52	− 0·52	0	Ranchi.		
...	2	1	...	1	4	17	3	3	2·8	?	?	73	·290	0	0	1·52	− 1·52	0	0·72	− 0·72	0	0·72	− 0·72	0	Daltonganj.		
20	...	...	...	...	1	4	5	1	0·7	?	?	78	·314	0	0	1·35	− 1·35	0	0·58	− 0·58	0	0·58	− 0·58	0	Chaibassa.		
16	...	...	...	4	3	8	...	...	2·8	1·6	+75	66	·291	0·4	0	1·31	− 1·31	0	0·58	− 0·58	0	0·58	− 0·58	0	Gaya	SOUTH BIHAR.	16
4	...	...	...	...	6	18	3	...	4·0	?	?	73	·330	0·2†	0	0·12	− 0·12	0	0·62	− 0·62	0	0·62	− 0·62	0	Dehri.		
16	...	...	1	1	1	4	7	1	1·3	2·0	−35	81	·348	0·4	0	1·23	− 1·23	0	0·65	− 0·65	0	0·65	− 0·65	0	Patna.		
...	2	2	...	4	6	13	2	2	1·7	?	?	82	·332	0	0	1·50	− 1·50	0	0·73	− 0·73	0	0·73	− 0·73	0	Arrah.		
6	1	1	2	...	2	6	13	...	3·7	?	?	67	·316	0·2†	0	1·62	− 1·62	0	0·72	− 0·72	0	0·72	− 0·72	0	Buxar.		
23	...	...	1	...	1	4	2	...	1·0	?	?	79	·361	0·7†	1	1·12	− 0·12	0·18	0·48	− 0·30	0·18	0·48	− 0·30	0·12	Bhagalpur.	NORTH BIHAR.	17
8	2	2	3	2	3	2	6	3	2·1	2·3	− 9	88	·385	0·2	1	1·24	− 0·24	0·40	0·66	− 0·26	0·40	0·66	− 0·26	0·40	Darbhanga.		
21	...	...	1	2	1	2	3	1	1·5	?	?	90	·374	?	1	1·36	− 0·36	0·28	0·84	− 0·56	0·28	0·84	− 0·56	0·28	Muzaffarpur		
...	2	7	4	1	1	5	6	5	2·8	?	?	93	·365	0·2	1	1·35	− 0·35	0·38	0·71	− 0·33	0·38	0·71	− 0·33	0·38	Motihari.		
20	...	...	1	...	1	6	3	...	1·0	?	?	86	·347	0·1	0	1·46	− 1·46	0	0·68	− 0·68	0	0·68	− 0·68	0	Chapra.		
12	...	...	...	...	...	9	10	...	3·2	2·9	+10	77	·290	0·2	0	1·55	− 1·55	0	0·79	− 0·79	0	0·79	− 0·79	0	Benares	N.-W. PROVS. EAST.	18
2	...	1	2	3	2	4	11	6	4·7	3·4	+38	69	·274	0·3	0	2·09	− 2·09	0	0·85	− 0·85	0	0·85	− 0·85	0	Allahabad.		
15	1	3	1	...	...	2	8	1	1·1	1·7	−35	86	·342	0·5	0	1·18	− 1·18	0	0·84	− 0·84	0	0·84	− 0·84	0	Gorakhpur	N.-W. PROVINCES (EAST SUB-MONTANE).	23
20	...	...	1	...	...	1	9	...	1·5	2·4	−38	78	·282	0·3	0	1·64	− 1·64	0	1·10	− 1·10	0	1·10	− 1·10	0	Lucknow	SOUTH OUDH.	19
18	...	1	4	3	...	2	1	2	1·3	?	?	83	·330	0·3	2	?	?	0·96	0·86	+ 0·10	0·96	0·86	+ 0·10	0·73	Bahraich	NORTH OUDH.	20
17	...	...	...	...	...	5	7	2	2·8	?	?	67	·258	0·2	0	1·40	− 1·40	0	0·72	− 0·72	0	0·72	− 0·72	0	Cawnpore	N.-W. PROVS. (CENTRAL).	21
8	2	2	1	2	...	...	16	...	3·2	?	?	65	·243	1·0	0	?	?	0	0·61	− 0·61	0	0·61	− 0·61	0	Mainpuri.		

† Mean of 30 days. ‡ Mean of 21 days. †† Mean of 23 days.

Table

Abstract of Observations taken at 8 A.M. at 216 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas.		...	...	+·006	...	...	...	...	...	...	...	72·0	+3·6	44·4	+0·7	58·2	+2·1	27·9	...	...	...	...	44·5
24	N.-W. Provinces, West (Sub-montane).	Bareilly	568	29·491	+·010	30·071	29·673	10th	29·358	25th	·315	49·2	73·7	+3·4	45·7	−0·4	59·7	+1·5	28·0	80·3	25th	37·2	8th	43·1
		Dehra Dun	2,233	27·766	−·002	30·082	27·938	10th	27·666	26th	·272	48·8	70·7	+5·0	45·6	+0·9	58·2	+3·0	25·1	78·0	22nd	40·5	9th	37·5
		Roorkee	887	29·144	0	30·076	29·321	10th	29·052	25th & 26th	·269	45·9	74·2	+4·8?	41·9	−2·5	58·1	+1·2	32·3	82·8	22nd & 24th	33·8	7th & 8th	49·0
22	N.-W. P., West.	Meerut	738	29·314	+·007	30·080	29·487	10th	29·217	31st	·270	47·8	74·0	+3·9	45·1	?	59·6	?	28·9	82·7	24th	34·5	8th	48·2
26	South-East Punjab.	Delhi	718	29·333	?	30·072	29·482	10th	29·218	31st	·264	50·4	73·9	+3·0	47·6	−0·4	60·8	+1·3	26·3	81·7	24th	37·9	9th	43·8
28	Central Punjab.	Lahore	702	29·352	+·002	30·087	29·508	10th	29·109	3rd	·399	46·8	70·5	+3·1	44·5	?	57·5	?	26·0	75·6	23rd	35·2	8th	40·4
27	South Punjab	Sirsa	662	29·407	+·011	30·094	29·543	10th	29·195	31st	·348	46·8	75·5	+4·6	43·5	+0·9	59·5	+2·8	32·0	83·3	31st	35·7	8th	47·6
		Patiala	818	29·218	?	30·070	29·355	19th	29·079	3rd	·276	48·4	72·3	?	44·3	?	58·3	?	28·0	80·8	24th	34·0	8th	46·8
29	Punjab (Sub-montane).	Ludhiana	812	29·229	−·001	30·078	29·384	10th	29·057	3rd	·327	47·4	70·9	+3·3	45·3	+1·6	58·1	+2·5	25·6	79·1	24th	35·5	8th	43·6
		Sialkot	830	29·220	+·019	30·092	29·371	9th	29·038	31st	·333	47·7	70·7	+4·1	43·6	+0·8	57·2	+2·5	27·1	78·5	22nd	35·0	7th	43·5
		Umballa	892	29·152	?	30·081	29·323	10th	29·024	3rd	·299	47·7	74·2	?	44·0	?	59·1	?	30·2	83·0	24th	33·5	8th	49·5
31	North Punjab	Rawalpindi	1,643	28·370	?	30·126	28·518	9th	28·174	31st	·344	43·2	65·4	+2·1	39·6	+1·8	52·5	+2·0	25·8	73·0	24th	31·9	7th & 8th	41·1
	VII.—Indus Valley and North-West Rajputana.		...	...	+·012	...	...	...	...	...	...	...	77·5	+5·2	46·8	+1·5	62·2	+3·4	30·7	...	...	...	...	47·0
31	North Punjab	Peshawar	1,110	28·985	+·012	30·124	29·134	9th	28·794	31st	·340	44·8	67·6	+3·7	40·9	+1·4	54·2	+2·6	26·7	74·1	22nd	32·4	8th	41·7
32	West Punjab	Khushab	612	29·472	?	30·111	29·627	11th	29·250	31st	·377	46·9	72·6	?	42·6		57·6	?	30·0	79·7	22nd	34·0	8th	45·7
		Montgomery	558	29·513	+·016	30·088	29·647	10th	29·258	31st	·389	47·7	74·7	+6·8	43·1	+0·2	58·9	+3·5	31·6	81·0	20th	34·5	3 days	46·5
		D. I. Khan	594	29·524	+·012	30·120	29·686	11th	29·308	31st	·378	58·0	73·9	+4·3	42·0	+0·8	58·0	+2·6	31·9	79·3	22nd	33·5	8th	45·8
		Mooltan	420	29·672	?	30·098	29·817	11th	29·434	31st	·383	49·2	75·2	+5·4	46·0	?	60·6	?	29·2	79·8	19th & 20th	38·0	5th	41·8
47	Sind	Jacobabad	186	29·914	+·004	30·077	30·043	11th	29·641	31st	·402	49·1	78·6	+5·3	44·9	+1·8	61·8	+3·6	33·7	81·0	28th	33·5	5th	50·5
		Hyderabad	96	30·017	+·010	30·072	30·137	5th	29·783	31st	·354	57·8	81·9	+5·4	53·1	+1·9	67·5	+3·7	28·8	89·1	24th & 31st	42·0	6th	47·1
		Kurrachee	30	30·090	+·016	30·072	30·205	5th	29·888	31st	·317	61·8	82·3	+4·0	56·9	+1·7	69·6	+2·9	25·4	88·4	30th	46·5	4th	41·9
51	West Rajputana	Bickaneer	771	29·299	?	30·092	29·412	5th	29·067	31st	·345	54·7	78·5	+6·7	50·3	+2·4	64·4	+4·5	28·2	87·1	30th	42·5	6th	44·6
		Pachpadra*	380	29·719	?	30·090	29·822	5th	29·519	31st	·303	49·4	84·4	?	45·3	?	64·9	?	39·1	92·7	31st	34·0	6th	58·7
		Jodhpur	782	29·295	?	30·090	29·399	5th	29·104	31st	·295	56·5	82·5	?	49·8	?	66·2	?	32·7	90·1	3 days	37·1	6th	53·0
	VIII.—East Rajputana, Central India and Gujarat.		...	...	+·024	...	...	...	...	...	...	...	82·9	+4·0	50·9	−0·9	66·9	+1·6	32·1	...	...	...	...	48·6
50	East Rajputana	Jeypore	1,431	28·637	+·019	30·128	28·752	10th	28·488	31st	·264	51·6	79·5	+5·8	46·8	−1·6	63·1	+2·1	32·7	88·0	31st	37·2	6th	50·8
		Kotah	?	29·284	?	?	29·382	10th	29·068	31st	·314	55·2	81·7	?	51·4	?	66·6	?	30·3	92·5	25th	43·5	9th	49·0
		Sambhar	1,254	28·811	+·026	30·121	28·928	10th	28·636	31st	·292	48·8	78·7	?	44·5	−1·6	61·6	?	34·2	88·4	25th & 31st	35·0	6th	53·4
		Ajmere	1,611	28·461	+·020	30·157	28·568	10th	28·287	31st	·281	47·2	79·0	+5·0	44·1	−0·8	61·5	+2·1	34·9	87·4	31st	34·0	6th & 7th	53·4
		Deesa	466	29·617	+·019	30·069	29·698	10th	29·462	31st	·236	58·2	88·2	+5·5	50·6	−0·8	69·4	+2·4	37·6	93·8	4 days	43·6	5th	50·2
46	Kathiawar and Cutch.	Bhuj	395	29·708	+·029	30·077	29·796	5th	29·555	31st	·241	63·4	85·5	+5·4	56·0	+1·2	70·8	+3·3	29·5	94·3	31st	46·5	6th	47·8
		Rajkot	429	29·662	+·034	30·070	29·740	10th	29·535	31st	·205	61·4	87·2	+3·0	52·3	+1·1	69·8	+2·1	34·9	91·9	31st	42·0	5th	52·9
		Veraval	?	30·051	?	30·011	30·131	2nd	29·939	31st	·192	66·3	84·7	?	60·1	?	72·4	?	24·6	92·1	19th & 20th	51·3	27th	40·8
		Bhavnagar Para	35	30·053	?	30·035	30·135	10th	29·912	31st	·223	59·7	86·9	?	52·8	?	69·9	?	34·1	94·1	24th	44·2	7th	49·9
49	Central India	Nowgong	757	29·339	+·020	30·115	29·479	10th	29·208	25th	·271	50·2	76·2	+0·9	45·3	−1·6	60·8	−0·4	30·9	85·0	25th & 26th	37·5	8th	47·5
		Indore	1,823	28·251	+·051	30·124	28·377	10th	28·129	31st	·208	55·4	81·4	+2·5	46·8	−3·5	64·1	+0·5	34·6	88·2	31st	39·1	6th	49·1
		Neemuch	1,630	28·465	?	30·140	28·569	10th	28·314	31st	·255	57·3	81·1	+3·7	46·9	−2·0	64·0	+0·9	34·2	90·8	31st	38·0	5th	52·8
45	Gujarat	Surat	39	30·046	+·022	30·030	30·119	10th	29·940	31st	·179	62·6	91·1	?	56·5	+0·1	73·8	?	34·6	95·2	30th	51·6	5th	43·6
		Ahmedabad	164	29·936	?	30·056	30·034	10th	29·797	31st	·237	63·7	87·9	?	58·5	?	73·3	?	29·4	94·7	31st	51·2	5th	43·5
22	N.-W. P., West	Agra	555	29·521	+·006	30·083	29·685	10th	29·394	31st	·291	51·7	77·9	+4·5	48·2	−0·2	63·1	+2·1	29·7	86·5	30th	41·4	3 days	45·1
21	N.-W. P., Central.	Jhansi	858	29·234	+·021	30·100	29·378	10th	29·098	25th & 31st	·280	9·1	80·0	+4·0	53·0	?	66·5	?	27·0	92·1	25th	44·4	8th	47·7

* Mean of 30 days.

I—*continued.*

in India, Burma, etc., in January 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st January, 1898.	Normal rainfall for period, 1st to 31st January.	Variation from normal of period, 1st to 31st January.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·25	1·67	−1·40	...	...	...	...	VI.—Upper Sub-Himalayas.		
22	...	1	...	...	...	1	3	4	1·2	2·8	−57	79	·280	0·6	0	2·36	−2·36	0·05	1·10	−1·05	0·05	1·10	−1·05	0·05	Bareilly	N.-W. Provinces, West (Sub-montane).	24
26	...	...	2	...	...	2	1	...	1·3	1·8	−28	70	·247	2·5	1	3·73	−2·73	0·30	2·54	−2·24	0·30	2·54	−2·24	0·26	Dehra Dun		
25	1	1	...	...	1	...	...	3	2·1	2·2	− 5	79	·251	1·5	0	2·73	−2·73	0·07	1·76	−1·69	0·07	1·76	−1·69	0·04	Roorkee.		
15	...	...	1	...	...	1	13	1	1·8	2·1	−14	64	·217	0·4	0	2·45	−2·45	0	1·27	−1·27	0	1·27	−1·27	0	Meerut	N.-W. Provinces, West.	22
5	...	...	1	2	1	1	9	12	5·0	3·0	+67	55	·207	1·5	0	1·82	−1·82	0	1·24	−1·24	0	1·24	−1·24	0	Delhi	South-East Punjab.	26
18	1	...	2	2	...	...	7	1	1·4	1·9	−26	73	·239	2·8	0	2·00	−2·00	0·06	1·06	−1·00	0·06	1·06	−1·00	0·06	Lahore	Central Punjab	28
...	2	1	3	7	2	2	5	9	5·5	2·6	+112	60	·200	1·9	0	1·36	−1·36	0·05	0·90	−0·85	0·05	0·90	−0·85	0·05	Sirsa		
10	...	...	1	...	6	13	1	...	5·5	?	?	76	·263	2·1	1	?	?	0·11	?	?	0·11	?	?	0·11	Patiala.	South Punjab.	27
14	...	1	...	5	...	1	2	8	2·4	1·1	+118	72	·241	2·8	2	3·00	−1·00	0·52	1·97	−1·45	0·52	1·97	−1·45	0·34	Ludhiana	Punjab (Sub-montane).	29
24	...	2	4	1	...	...	...	...	1·1	1·4	−21	74	·247	2·5	1	2·36	−1·36	0·43	2·49	−2·06	0·43	2·49	−2·06	0·33	Sialkot.		
18	...	...	1	1	...	...	5	6	2·3	?	?	80	·269	1·8	0	?	?	0·04	1·15	−1·11	0·04	1·15	−1·11	0·04	Umballa.		
30	...	...	...	...	...	...	1	...	2·0	1·9	+ 5	82	·234	3·5	4	4·00	0	1·35	2·84	−1·49	1·35	2·84	−1·49	0·49	Rawalpindi	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·07	0·56	−0·49	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
14	...	...	...	...	6	7	2	2	2·3	2·5	− 8	67	·200	3·5	0	2·73	−2·73	0·05	1·77	−1·72	0·05	1·77	−1·72	0·05	Peshawar	North Punjab.	31
18	2	3	2	...	1	3	1	1	2·9	?	?	68	·221	2·5	0	1·30	−1·30	0·12	0·52	−0·40	0·12	0·52	−0·40	0·07	Khushab	West Punjab.	32
8	...	5	4	4	...	...	6	4	4·7	?	?	66	·221	2·3	1	0·90	+0·10	0·32	0·58	−0·26	0·32	0·58	−0·26	0·32	Montgomery		
16	2	5	...	1	...	1	2	4	1·9	1·4	+36	68	·213	2·0	0	1·45	−1·45	0	0·53	−0·53	0	0·53	−0·53	0	D. I. Khan		
23	2	3	...	1	...	...	...	2	0·4	1·	−76	70	·251	1·5	1	1·27	−0·27	0·16	0·48	−0·32	0·16	0·48	−0·32	0·16	Mooltan.		
22	3	1	3	...	...	...	...	2	2·1	2·1	0	59	·211	2·8	0	0·73	−0·73	0·04	0·25	−0·21	0·04	0·25	−0·21	0·04	Jacobabad	Sind.	47
7	9	1	...	1	1	3	...	9	6·8	7·2	− 6	58	·284	2·2	0	0·90	−0·90	0	0·31	−0·31	0	0·31	−0·31	0	Hyderabad.		
4	2	11	7	3	...	...	2	2	5·5	10·0	−45	64	·368	1·4	0	1·18	−1·18	0	0·72	−0·72	0	0·72	−0·72	0	Kurrachee.		
4	1	1	...	1	3	9	5	7	3·2	2·9	+10	51	·223	1·9	0	?	?	0·04	0·30	−0·26	0·04	0·30	−0·26	0·04	Bickaneer	West Rajputana.	51
...	7	11	5	1	...	1	1	5	4·2	2·8	+50	41	·150	1·3	0	?	?	0	0·37	−0·37	0	0·37	−0·37	0	Pachpadra.		
18	1	7	3	1	...	1	...	...	1·2	?	?	41	·193	1·6	0	?	?	0	0·28	−0·28	0	0·28	−0·28	0	Jodhpur.		
...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0·32	−0·32	...	...	...	...	VIII.—East Rajputana, Central India and Gujarat.		
8	8	4	3	...	...	3	...	5	2·4	3·9	−38	57	·222	1·3	0	1·60	−1·60	0	0·69	−0·69	0	0·69	−0·69	0	Jeypore	East Rajputana.	50
17	...	1	1	1	...	4	5	2	2·0	?	?	49	·216	0·4	0	?	?	0	0·15	−0·15	0	0·15	−0·15	0	Kotah.		
26	2	...	1	1	1	...	...	...	2·8	4·5	−38	53	·189	1·2	0	1·10	−1·10	0·02	0·47	−0·45	0·02	0·47	−0·45	0·02	Sambhar.		
24	3	1	...	...	1	...	1	1	1·8	1·9	− 5	67	·233	1·2	0	1·45	−1·45	0	0·52	−0·52	0	0·52	−0·52	0	Ajmere.		
...	...	6	21	3	...	1	...	...	7·0	8·6	−19	42	·210	0·1	0	0·36	−0·36	0	0·17	−0·17	0	0·17	−0·17	0	Deesa.		
11	...	2	2	...	4	3	5	4	6·0	6·0	0	46	·274	0·9	0	?	?	0	0·11	−0·11	0	0·11	−0·11	0	Bhuj	Kathiawar and Cutch.	46
3	2	8	14	3	...	...	1	...	4·0	5·2	−23	43	·245	0	0	0·20	−0·20	0	0·04	−0·04	0	0·04	−0·04	0	Rajkot		
6	8	15	...	1	...	...	...	1	4·0	?	?	41	·265	0·2	0	?	?	0	0	0	0	0	0	0	Veraval.		
...	...	1	1	...	...	6	12	11	4·6	?	?	38	·199	0·1	0	?	?	0	?	?	0	?	?	0	Bhavnagar Para.		
8	3	...	2	1	1	6	9	1	1·6	1·4	+16	66	·249	0·2	0	1·73	−1·73	0	0·65	−0·65	0	0·65	−0·65	0	Nowgong	Central India.	49
23	3	1	...	1	1	1	1	...	0·9	2·5	−64	53	·233	0·1	0	0·36	−0·36	0	0·18	−0·18	0	0·18	−0·18	0	Indore.		
10	5	11	2	1	...	...	...	2	5·1	8·1	−37	45	·214	0	0	0·45	−0·45	0	0·30	−0·30	0	0·30	−0·30	0	Neemuch.		
2	5	6	14	2	2	...	...	...	3·5	5·2	−33	56	·322	0·2	0	0·18	−0·18	0	0·05	−0·05	0	0·05	−0·05	0	Surat	Gujarat.	45
2	1	14	9	...	...	...	...	5	3·8	?	?	39	·228	0·3	0	?	?	0	0·03	−0·03	0	0·03	−0·03	0	Ahmedabad	N.-W. P., West	22
3	...	..	...	9	1	14	...	9	4·9	3·5	+40	63	·243	0·4	0	1·27	−1·27	0	0·53	−0·53	0	0·53	−0·53	0	Agra	N.-W. P., Central.	21
22	..	...	...	...	...	3	4	2	1·0	2·2	−55	45	·230	0·1	0	1·18	−1·18	0	0·59	−0·59	0	0·59	−0·59	0	Jhansi		

Table

Abstract of Observations taken at 8 A.M. at 216 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan		...	...	+·037	...	...	...	...	...	...	...	84·2	+1·0	50·7	−3·9	67·3	−1·4	32·7	...	...	...	...	44·3
38	Bombay, Deccan	Belgaum	2,524	27·511	+·027	30·016	27·570	10th	27·451	31st	·119	66·7	85·0	+1·9	57·0	−0·4	71·0	+0·8	28·0	89·7	27th	49·9	3rd	39·8
		Sholapur	1,590	28·481	+·035	30·072	28·556	10th	28·408	31st	·148	65·8	87·8	+0·5	55·2	−2·5	71·5	−1·0	32·6	91·2	5th & 27th	50·0	13th	41·2
		Poona	1,840	28·230	+·037	30·105	28·301	10th	28·143	31st	·158	57·3	87·5	+2·4	48·9	−6·1	68·2	−1·9	38·6	91·0	27th	45·9	8th	45·1
		Bijapur	1,946	28·116	0	30·064	28·180	10th	28·041	31st	·139	64·5	86·4	?	51·3	?	68·9	?	35·1	91·2	27th	45·6	11th & 21st	45·6
40	Khandesh	Malegaon	1,430	28·641	+·033	30·108	28·714	10th	28·531	31st	·183	54·6	86·3	+1·2	47·2	−4·8	66·8	−1·8	39·1	92·4	25th	40·3	7th	52·1
		Ahmednagar	2,152	27·922*	?	30·099†	27·997	10th	27·845	31st	·152	59·6	84·9	?	45·6	?	65·3	?	39·3	87·8	5th & 26th	39·9	28th	47·9
41	Berar	Akola	930	29·173	+·060	30·110	29·275	10th	29·055	31st	·220	57·0	86·1	+1·7	47·1	−6·2	66·7	−2·3	39·0	90·9	24th 25th & 26th	42·1	7th	48·8
		Amraoti	1,215	28·871?	+·051	30·090?	28·968	10th	28·767	31st	·201	63·3?	85·8	+1·6	56·8?	?	71·3?	?	29·0	90·7	25th	52·4	7th	38·3
42	Central Provinces, West.	Khandwa	1,044	29·046	+·048	30·114	29·151	10th	28·907	31st	·244	53·8	85·3	+1·9	46·6	−5·3	66·0	−1·7	38·7	92·2	25th	40·2	7th & 8th	52·0
		Hoshangabad	1,006	29·085	+·046	30·124	29·192	10th	28·950	31st	·242	52·2	80·8	+0·6	48·3	−4·1	64·6	−1·8	32·5	88·7	25th	41·8	8th	46·9
		Nagpur	1,025	29·054?	+·032?	30·091?	29·156?	10th	28·951	31st	·205	58·5	83·8	?	51·8	?	67·8	?	32·0	90·1	26th	46·6	7th	43·5
43	Central Provinces, Central.	Chanda	634	29·490	?	30·108	29·567	9th	29·380	31st	·187	57·6	84·2	−0·7	46·3	?	65·3	?	37·9	90·2	25th & 26th	42·1	8th	48·1
		Seoni	2,033	28·033	+·035	30·110	28·127	10th	27·916	31st	·181	56·3	79·2	+0·2	47·2	−4·1	63·2	−2·0	32·0	87·0	25th	41·0	8th	46·0
		Jubbulpore	1,327	28·753	+·033	30·128	28·871	10th	28·645	31st	·226	51·1	77·6	+0·4	41·7	−6·6	59·7	−3·1	35·9	87·4	25th	34·4	8th	53·0
		Saugor	1,807	28·256?	+·040?	30·096	28·369	10th	28·136	31st	·233	59·9?	78·1	+1·5	53·1?	?	65·6	?	25·0	87·3	25th	46·6	6th	40·7
49	Central India	Sutna	1,040	29·038	+·024	30·113	29·163	10th	28·919	25th	·244	50·9	76·2	+1·6	45·9	−1·4	61·1	+0·1	30·3	86·4	26th	38·1	8th & 9th	48·3
44	Central Provinces, East.	Raipur	970	29·118	+·039	30·098	29·215	10th	29·004	26th	·211	57·3?	80·9	−0·1	52·7	−2·5	66·9	−1·3	28·2	89·3	26th	46·4	10th	42·9
		Sambalpur	486	29·618	+·032	30·087	29·737	10th	29·511	31st	·226	55·7	80·5	−1·5	50·0	?	65·3	?	30·5	88·1	26th	43·7	9th	44·4
39	Hyderabad (North).	Aurangabad	1,865	28·227	?	30·099	28·288	10th	28·127	8th	·161	65·0	87·8	?	50·6	?	69·2	?	37·2	90·4	26th	46·2	12th	44·2
		Indur	?	...		Not	recorded					63·1	83·9	?	48·5	?	66·2	?	35·4	88·7	27th	44·1	8th	44·6
		Bidar	2,165?	27·903	?	30·039	27·988	10th	27·823	27th	·165	71·9	82·9	?	58·8	?	70·9	?	24·1	88·4	27th	54·4	10th	34·0
53	Hyderabad (South).	Gulbarga	1,502	28·577	?	30·080	28·648	10th	28·509	21st	·139	65·1	87·4	?	54·9	?	71·2	?	32·5	91·5	27th	49·0	11th	42·5
		Raichur	1,309	28·747	?	30·041	28·828	10th	28·666	31st	·162	69·5	85·6	?	61·5	?	73·6	?	24·1	90·1	1st	52·2	1st	37·9
		Hyderabad (Deccan).	1,690	28·380	+·027	30·091	28·459	10th	28·292	31st	·167	59·9	84·8	+0·7	53·8	−4·1	69·3	−1·7	31·0	89·9	27th	49·3	11th	40·6
		Secunderabad	1,787	28·276	+·021	30·085	28·351	10th	28·196	31st	·155	60·0	85·5	+1·4	54·9	−3·0	70·2	−0·8	30·6	91·1	27th	51·2	21st	39·9
		Khamamet	373	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	X.—West Coast		...	...	+·011	...	...	...	...	...	...	...	87·9	+2·3	68·1	−0·5	78·0	+0·9	19·8	...	...	...	...	28·6
37	Konkan	Bombay	37	30·029	+·029	30·007	30·106	10th	29·953	31st	·153	70·3	85·1	+2·8	67·8	−0·1	76·5	+1·4	17·3	91·0	17th	63·5	5th & 6th	27·5
		Ratnagiri	110	29·932	+·027	29·983	30·009	10th	29·862	31st	·147	73·2	91·0	+3·6	65·3	−0·8	78·2	+1·4	25·7	96·4	29th	60·9	3rd	35·5
		Mormugao	60	29·985	?	29·981	30·050	2nd	29·920	26th	·130	70·8	87·6	?	67·9	?	77·8	?	19·7	92·0	18th	65·3	4 days	26·7
		Goa	199	29·838	+·016	29·978	29·897	10th	29·772	26th	·125	71·5	86·4	?	67·0	?	76·7	?	19·4	90·5	16th	63·5	21st	27·0
		Karwar	44	29·983	+·006	29·960	30·043	2nd	29·921	26th	·122	66·7	89·6	+3·1	63·3	−2·5	76·5	+0·3	26·3	93·3	3 days	58·5	21st	34·8
33	Malabar	Cochin	10	29·999	+·003	29·937	30·056	2nd & 29th	29·928	15th	·128	74·4	89·5	+0·9	71·1	−0·2	80·5	+0·4	18·4	92·3	5 day	66·3	21st	26·0
		Calicut	27	29·988	−·006	29·945	30·056	2nd	29·919	15th	·137	74·3	88·1	+0·6	69·8	+0·6	79·0	+0·6	18·3	92·8	23rd	64·5	21st	28·3
		Mangalore	65	29·961	+·002	29·959	30·030	29th	29·902	25th	·128	74·4	90·3	+2·5	69·3	+0·1	79·8	+1·3	21·0	93·8	3 days	65·5	21st	28·3
		Trivandrum	198	29·780	?	29·912	29·851	2nd	29·703	14th	·148	74·2	83·3	?	71·5	?	77·4	?	11·8	86·5	13th	63·0	21st	23·5
	XI.—South India		...	...	+·020	...	...	...	...	...	...	...	84·0	+0·4	62·9	−0·9	73·5	−0·2	21·1	...	...	...	..	30·0
57	Madras (South).	Pamban	37	30·005	?	29·970	30·073	19th	29·926	15th	·147	76·5	81·3	?	74·0	?	77·7	?	7·3	83·3	29th	71·2	22nd & 31st	12·1
		Tinnevelly	168	29·889	?	29·989	29·964	18th	29·809	31st	·155	74·3	86·6	?	70·9	?	78·8	?	15·7	91·2	2nd	66·4	19th	24·8
		Madura	447	29·599	+·018	29·993	29·678	18th	29·532	31st	·146	74·6	87·2	−0·7	68·3	−0·2	77·8	−0·5	18·9	90·4	4th	63·7	21s	26·7

* Mean of 29 days. † Mean of 30 days.

I—*continued.*

in India, Burma, etc., in January 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st January 1898.	Normal rainfall for period, 1st to 31st January.	Variation from normal of period, 1st to 31st January.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0·29	−0·29	...	...	...	...	IX.—Deccan.		
8	...	4	13	6	...	...	...	...	10·6	10·9	− 3	41	·266	0·4	0	0·27	−0·27	0	0·06	− 0·06	0	0·06	− 0·06	0	Belgaum	Bombay Deccan.	38
9	...	6	6	9	...	...	...	1	10·0	7·1	+41	28	·182	0	0	0·36	−0·36	0	0·11	− 0·11	0	0·11	− 0·11	0	Sholapur.		
18	...	1	2	3	...	3	3	1	6·7	5·7	+18	44	·209	0·1	0	0·36	−0·36	0	0·06	− 0·06	0	0·06	− 0·06	0	Poona.		
3	...	1	12	7	...	2	4	2	4·4	?	?	61	·374	0	0	0·20	−0·20	0	0·04	− 0·04	0	0·04	− 0·04	0	Bijapur.		
7	...	1	...	...	...	2	13	8	5·7	3·9	+46	42	·183	0·1	0	0·27	−0·27	0	0·16	− 0·16	0	0·16	− 0·16	0	Malegaon	Khandesh.	40
8	6	1	2	1	1	2	3	7	7·6	?	?	46	·244	0	0	?	?	0	0·30	− 0·30	0	0·30	− 0·30	0	Ahmednagar.		
17	...	2	3	6	1	2	...	...	2·4	3·4	−29	42	·199	0	0	0·45	−0·45	0	0·43	− 0·43	0	0·43	− 0·43	0	Akola	Berar.	41
...	1	8	16	3	2	1	...	...	3·4	3·2	+ 6	41	·241	0	0	0·55	−0·55	0	0·39	− 0·39	0	0·39	− 0·39	0	Amraoti.		
24	1	3	2	...	...	...	...	1	2·5	2·8	−11	44	·182	0	0	0·45	−0·45	0	0·31	− 0·31	0	0·31	− 0·31	0	Khandwa	Central Provinces, West.	42
23	...	6	2	...	...	...	...	...	0·7	2·5	−72	64	·250	0	0	0·82	−0·82	0	0·25	− 0·25	0	0·25	− 0·25	0	Hoshangabad.		
16	8	...	1	1	...	1	...	4	3·8	3·9	− 3	46	·233	0·1	0	0·64	−0·64	0	0·55	− 0·55	0	0·55	− 0·55	0	Nagpur.		
13	7	1	2	1	...	...	3	4	1·4	2·1	−33	63	·303	0	0	?	?	0	0·37	− 0·37	0	0·37	− 0·37	0	Chanda	Central Provinces, Central.	43
...	5	12	3	2	1	2	2	4	1·1	2·7	−59	56	·256	0	0	1·18	−1·18	0	0·63	− 0·63	0	0·63	− 0·63	0	Seoni.		
5	1	...	1	17	5	1	...	1	1·5	2·2	−32	68	·259	0·1	0	1·73	−1·73	0	0·76	− 0·76	0	0·76	− 0·76	0	Jubbulpore.		
2	5	1	5	5	4	4	3	2	4·3	2·8	−54	40	·207	0	0	1·36	−1·36	0	0·70	− 0·70	0	0·70	− 0·70	0	Saugor.		
3	10	...	...	...	...	...	8	10	4·0	4·0	0	67	·509	0·2	0	1·73	−1·73	0	1·05	− 1·05	0	1·05	− 1·05	0	Sutna	Central India.	49
28	...	1	...	...	...	2	...	...	1·9	2·6	−27	57	·269	0·2	0	0·45	−0·45	0	0·20	− 0·20	0	0·20	− 0·20	0	Raipur	Central Provinces, East.	44
...	5	15	...	11	...	...	...	...	3·3	1·6	+106	74	·326	0	0	?	?	0	0·30	− 0·30	0	0·30	− 0·30	0	Sambalpur.		
22	...	6	1	1	...	1	...	...	3·3	?	?	36	·226	0	0	?	?	0	0·19	− 0·19	0	0·19	− 0·19	0	Aurangabad	Hyderabad (North).	39
24	3	...	2	1	1	...	...	...	2·5	?	?	62	·356	0	0	?	?	0	0·05	− 0·05	0	0·05	− 0·05	0	Indur.		
...	...	7	17	4	2	1	...	...	6·4	?	?	51	·398	0	0	?	?	0	0	0	0	0	0	0	Bidar.		
23	...	4	2	1	...	...	...	...	7·0	?	?	44	·275	0	0	?	?	0	0·08	− 0·08	0	0·08	− 0·08	0	Gulbarga (a)	Hyderabad (South).	53
...	5	5	20	1	...	...	...	...	6·7	?	?	51	·372	0·1	0	?	?	0	0·03	− 0·03	0	0·04	− 0·04	0	Raichur.		
28	...	...	1	2	...	...	...	...	3·4	?	?	64	·336	0·5	0	?	?	0	0·09	− 0·09	0	0·09	− 0·09	0	Hyderabad (Deccan).		
28	...	1	1	1	...	...	...	...	3·2	3·8	−16	61	·315	0·7	0	?	?	0	0·09	− 0·09	0	0·09	− 0·09	0	Secunderabad, Khamamet.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·13	0·24	−0·11	...	...	...	...	X.—West Coast.		
...	2	15	13	1	...	...	...	...	9·5	10·1	− 6	70	·523	0	0	0·27	−0·27	0	0·13	− 0·13	0	0·13	− 0·13	0	Bombay.	Konkan.	37
12	...	3	11	4	...	1	...	...	4·8	9·8	−51	44	·352	0·1	0	0·45	−0·45	0	0·22	− 0·22	0	0·22	− 0·22	0	Ratnagiri.		
...	...	...	8	23	...	...	...	...	7·7	?	?	70	·525	0·1	0	?	?	0	0	0	0	0	0	0	Mormugao.		
...	...	5	24	2	...	...	...	...	?	?	?	60	·465	0·3	0	?	?	0	0·25	− 0·25	0	0·25	− 0·25	0	Goa.		
...	2	12	17	...	...	...	...	...	3·5	?	?	71	·459	0·1	0	0·27	−0·27	0	0·12	− 0·12	0	0·12	− 0·12	0	Karwar.		
6	7	17	1	...	...	...	...	...	4·7	?	?	71	·617	1·8	0	0·82	−0·82	0·01	0·59	− 0·58	0·01	0·59	− 0·58	0·01	Cochin	Malabar.	38
...	...	4	15	12	...	...	...	...	11·7	?	?	75	·641	1·0	0	0·38	−0·38	0	0·08	− 0·08	0	0·08	− 0·08	0	Calicut.		
...	...	...	19	12	...	...	...	...	3·0	3·9	−23	62	·535	1·1	0	0·10	−0·10	0	0·09	− 0·09	0	0·09	− 0·09	0	Mangalore.		
12	9	4	4	1	...	...	...	1	3·2	?	?	74	·640	2·3	3	?	?	1·13	0·64	+ 0·49	1·13	0·64	+ 0·49	0·59	Trivandrum.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·31	0·44	−0·13	...	...	...	...	XI.—South India.		
...	10	13	3	...	...	...	...	5	11·6	?	?	88	·802	3·3	6	1·50	+4·50	2·88	1·80	+ 1·08	2·88	1·80	+ 1·08	1·04	Pamban	Madras (South)	57
...	10	4	...	...	...	...	2	15	5·3	?	?	75	·641	4·1	4	2·20	+1·80	1·35	1·01	+ 0·34	1·35	1·01	+ 0·34	1·06	Tinnevelly.		
...	15	9	...	...	...	...	...	7	4·7	5·4	−13	70	·613	1·8	0	1·00	−1·00	0·11	0·33	− 0·22	0·11	0·33	− 0·22	0·07	Madura.		

(a) Wind observations of 30 days.

Table

Abstract of Observations taken at 8 A.M. at 216 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras, South Central.	Salem	940	29·140	+·013	30·045	29·218	19th	29·081	22nd	·137	71·6	88·0	−0·2	63·6	+0·3	75·8	+0·1	24·4	92·4	27th & 28th.	56·5	18th	35·9
		Coimbatore	1,348	28·699	+·017	30·023	28·760	19th	28·629	31st	·131	69·7	86·9	+0·3	63·4	−0·6	75·2	−0·2	23·5	91·4	27th	58·7	30th	32·7
35	Coorg	Mercara	3,781	26·309	−·002	?	26·375	2nd	26·257	22nd	·118	62·2	77·5	+1·1	57·3	+1·4	67·4	+1·3	20·2	81·0	27th	51·7	21st	29·3
36	Mysore	Chitaldroog	2,405	27·644	?	30·010	27·706	29th	27·576	31st	·130	69·1	83·9	?	60·2	?	72·1	?	23·7	88·1	27th	54·9	11th & 21st.	33·2
		Bangalore	3,021	27·048	+·009	30·035	27·135	18th	26·984	31st	·151	65·0	81·5	+2·2	56·5	−0·1	69·0	+1·1	25·0	85·8	27th	51·9	21st	33·9
		Hassan	3,091	26·978	?	30·020	27·040	29th	26·920	21st	·120	66·9	82·9	?	53·2	?	68·1	?	29·7	86·4	27th	48·1	21st	38·3
		Mysore	2,518	27·544	?	30·026	27·604	29th	27·486	22nd	·118	67·6	84·4	?	58·5	?	71·5	?	25·9	88·4	28th	53·9	21st	34·5
56	Madras, East Coast, South.	Negapatam	31	30·018	+·013	29·979	30·083	18th & 19th	29·953	31st	·130	74·1	80·9	−0·9	70·2	−0·4	75·6	−0·7	10·7	83·2	1st & 18th.	66·0	27th	17·2
		Cuddalore	12	30·061	?	30·003	30·136	19th	29·981	31st	·155	71·9	83·4	?	65·5	?	74·4	?	17·9	85·8	30th	59·3	21st	26·5
		Trichinopoly	255	29·805	+·014	30 000	29·863	19th	29·752	14th	·111	72·9	87·3	+0·1	66·9	0	77·1	+0·1	20·4	90·5	26th	60·4	18th	30·1
		Madras	22	30·061	+·012	30·015	30·135	19th	29·988	31st	·147	72·6	84·0	−0·6	65·4	−2·1	74·7	−1·4	18·6	86·5	31st	60·0	18th	26·5
55	Madras, East Coast, Central.	Nellore	71	30·014	?	30·020	30·085	19th	29·932	31st	·153	69·9	85·5	?	64·6	?	75·1	?	20·9	88·7	26th & 27th.	60·1	18th	28·6
		Masulipatam	15	30·087	+·034	30·037	30·160	10th	30·000	31st	·160	69·7	84·5	+1·2	63·6	−2·1	74·0	−0·5	20·9	87·5	2nd	58·2	21st	29·3
54	Madras, Central	Cuddapah	433	29·639	+·025	30·027	29·708	10th	29·566	31st	·142	70·4	88·4	+0·8	63·4	?	75·8	?	25·0	94·1	28th	60·4	17th	33·7
		Kurnool	923	29·742	+ 027	30·049	29·217	10th	29·061	31st	·156	63·8	88·6	+0·3	55·4	−3·4	72·0	−1·6	33·2	92·7	27th & 28th.	51·2	3rd & 4th.	41·5
		Bellary	1,475	28·582	+·025	30·049	28·655	10th	28·514	31st	·141	67·4	88·0	+0·5	58·7	−1·8	73·4	−0·7	29·3	92·7	28th	53·6	4th	39·1
52	Madras, East Coast, North.	Rajahmundry	112	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Cocanada	26	30·076	+·037	30·037	30·156	10th	29·994	31st	·162	68·7	81·1	+1·8	64·0	−1·3	72·6	+0·3	17·1	87·6	27th	58·5	20th	29·1
		Vizagapatam	31	30·075	+·033	30·045	30·156	10th	29·994	31st	·162	67·9	81·6	?	60·4	−2·5	71·0	?	21·2	87·3	27th	55·4	16th & 19th.	31·9
		Waltair	...			Not recorded.						70·7	79·7	?	65·5	?	72·6	?	14·2	84·2	27th	61·9	15th & 16th.	22·3
		Gopalpur	21	30·076	?	30·038	30·169	10th	29·974	26th	·195	63·4	79·5	?	56·9	?	68·2	?	22·6	85·3	25th	52·1	11th	33·2
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·965	?	?	26·060	20th	25·760	31st	·300	44·5	67·7	?	36·6	?	52·2	?	31·1	81·0	23th	23·0	3rd	58·0
		Pishin	?			Not recorded.						?	60·1	?	21·5	?	40·8	?	38·6	77·0	31st	9·9	25th	67·1
		Quetta	5,502	24·767	+·087	?	24·909	6th	24·498	31st	·411	34·0	60·1	+8·7	30·7	+1·4	45·4	+5·1	29·4	77·7	30th	15·8	4th	61·9
		Kalat	?			Not recorded.						38·8	61·7	?	24·8	?	43·3	?	36·9	80·5	29th	7·4	5th	73·1
		Chaman	4,311	25·851	?	?	25·956	4th	25·573	31st	·383	43·7	60·2	?	38·3	?	49·3	?	21·9	80·3	29th	20·6	3rd	59·7
30	Punjab	Leh	11,503	19·715	+·054	?	19·956	9th	19·511	4th	·445	16·5	35·7	+2·0	14·3	+4·8	25·0	+3·4	21·4	44·6	30th	2·0	8th	42·6
		Srinagar	5,204	25·060	?	?	25·252	18th	24·735	3rd	·517	30·8	40·2	?	28·5	?	34·4	?	11·7	51·0	2nd	19·8	28th	31·2
		Astor (Kashmir)	?	22·310	?	?	22·501	9th	21·989	3rd	·512	25·6	39·3	?	21·6	?	30·5	?	17·7	48·9	30th	8·0	7th	40·9
		Minimarg	?	20·657	?	?	20·868	9th	20·370	3rd	·498	20·1	34·8	?	13·2	?	24·0	?	21·6	53·4	26th	0	1st	53·4
		Skardu	?	23·020	?	?	23·385	10th	22·644	3rd	·741	24·7	39·9	?	21·1	?	30·5	?	18·8	50·0	22nd	2·2	8th & 9th.	47·8
		Dras	?	20·845	?	?	21·081	9th	20·490	3rd	·591	1·5	24·5	?	−7·2	?	8·7	?	31·7	40·3	25th	−28·0	8th	68·3
		Gilgit	?	25·325	?	?	25·593	9th	24·948	31st	·645	37 0	48·4	?	34·0	?	41·2	?	14·4	55·0	22nd	23·5	8th	31·5
		Chitral	?	25·026 (a)	?	?	25·100	14 days	24·700	31st	·400	35·1	50·0	?	30·1	?	40·1	?	19·9	59·1	30th	26·0	4th	33·1
		Killa Drosh	?		?	Not recorded						42·2	54·8	?	35·0	?	45·0	?	19·8	62·3	26th	29·8	1st & 6th.	32·5
		Para Chinar	6,000	24·540	?	?	24·666	20th	24·327	3rd	·339	37·7	55·1	?	33·3	?	44·2	?	21·8	62·9	28th	21·3	4th	41·6
		Cherat	?	25·815	?	?	25·946	11th	25·625	3rd	·321	45·9	54·5	?	42·5	?	48·5	?	12·0	64·3	29th	31·0	4th	33·3
		Murree	6.333	23·909	+·056	?	24·030	10th	23·693	3rd	·337	43·8	51·0	+3·1	40·3	+4·9	45·7	+4·0	10·7	58·2	22nd	29·5	3rd & 4th.	28·7
		Poo	?			Not recorded.						?	51·6	?	29·8	?	40·7	?	21·8	58·5	12th	24·3	6th	34 2
25	N.-W. Provinces	Simla	7,224	23·157	+·035	?	23·276	10th	23·045	7th	·231	43·3	50·7	+4·3	40·1	+3·7	45·4	+4·0	10·6	56·4	19th	31·3	7th	25·1
		Chakrata	7,022	23·332	+·042	?	23·452	11th & 19th	23·207	7th	·245	43·8	57·1	+6·5	39·7	+3·7	48·4	+5·1	17·4	66·7	1st	30·6	8th	26·1
		Mussooree	6,705	23·587	?	?	23·703	11th	23·468	7th	·235	44·4	52·2	?	40·4	?	46·3	?	11·8	59·7	1st	33·0	8th & 26th.	26·7
		Ranikhet	6,069	24·167	+·032	?	24·303	10th	24·062	7th	·241	46·3	58·4	+4·2	43·2	+3·4	50·8	+3·8	15·2	65·1	22nd	32·5	7th	32·6
		Muktesar	?	22·884	?	?	23·013	10th	22.761	7th	·252	43·3	55·7	?	39·1	?	47·5	?	16·6	62·4	1st	29·0	8th	33·4

a Aneroid.

I—*continued.*

in India, Burma, etc., in January 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st January 1898.	Normal rainfall for period, 1st to 31st January.	Variation from normal of period, 1st to 31st January.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
5	1	15	7	1	...	...	1	1	6·2	5·0	+24	93	·569	1·7	0	0·36	−0·36	0	0·31	− 0·31	0	0·31	− 0·31	0	Salem	Madras, South Central.	34
...	...	...	31	...	...	...	...	...	2·0	3·1	−35	84	·615	3·5	0	0·64	−0·64	0·04	0·19	− 0·15	0·04	0·19	− 0·15	0·04	Coimbatore		
10	...	12	7	2	...	...	...	...	5·2	4·3	+21	68	·382	2·1	0	0·30	−0·30	0	0·04	− 0·04	0	0·04	− 0·04	0	Mercara	Coorg.	35
...	...	3	13	3	1	...	...	1	8·4	?	?	56	·394	0·6	0	?	?	0	0·24	− 0·24	0	0·24	− 0·24	0	Chitaldroog.	Mysore.	36
...	...	9	20	1	1	...	...	...	7·8	3·8	+105	74	·429	1·4	0	0·50	−0·50	0	0·19	− 0·19	0	0·19	− 0·19	0	Bangalore.		
1	...	6	15	9	...	...	...	...	3·4	?	?	61	·401	1·6	0	?	?	0	0·70	− 0·70	0	0·70	− 0·70	0	Hassan.		
...	1	13	13	3	...	...	1	...	10·7	?	?	62	·420	1·5	0	?	?	0	0·08	− 0·08	0	0·08	− 0·08	0	Mysore.		
3	2	11	...	...	...	...	...	15	12·9	5·4	+139	85	·717	5·8	2	2·82	−0·82	1·74	1·46	+ 0·28	1·74	1·46	+ 0·28	0·85	Negapatam	Madras, East Coast, South.	56
...	12	1	...	...	...	...	3	15	2·0	?	?	87	·272	3·1	0	1·40	−1·40	0·05	0·93	− 0·88	0·05	0·93	− 0·88	0·05	Cuddalore.		
14	9	7	...	...	...	...	...	1	5·1	4·7	+ 9	75	·603	2·6	2	0·91	+1·09	0·68	0·26	+ 0·42	0·68	0·26	+ 0·42	0·54	Trichinopoly		
2	16	4	1	...	1	1	...	6	5·6	6·1	− 8	83	·664	2·8	0	1·36	−1·36	0	0·89	− 0·89	0	0·89	− 0·89	0	Madras.		
16	...	...	...	...	...	...	7	8	3·2	?	?	88	·643	1·6	0	0·60	−0·60	0	0·42	− 0·42	0	0·42	− 0·42	0	Nellore	Madras, East Coast, Central.	55
1	22	7	...	...	...	...	...	1	4·7	5·2	−10	84	·609	0·7	0	0·27	−0·27	0	0·12	− 0·12	0	0·12	− 0·12	0	Masulipatam.		
...	...	11	1	9	...	10	...	...	?	?	?	76	·561	0·6	0	0·20	−0·20	0	0·02	− 0·02	0	0·02	− 0·02	0	Cuddapah.	Madras, Central.	54
31	...	...	...	...	...	...	...	...	?	?	?	60	·356	0·1	0	0·60	−0·60	0	0·08	− 0·08	0	0·08	− 0·08	0	Kurnool.		
25	...	...	1	3	...	...	1	1	1·7	3·3	−48	50	·334	0·8	0	0·18	−0·18	0	0·13	− 0·13	0	0·13	− 0·13	0	Bellary.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·30	...	...	0·08	...	...	0·08	...	...	Rajahmundry.	Madras, East Coast, North.	52
2	18	4	...	...	...	...	...	7	7·5	?	?	73	·512	0·7	0	0·50	−0·50	0	0·14	− 0·14	0	0·14	− 0·14	0	Cocanada.		
29	1	...	...	1	...	...	...	...	0	1·8	−100	77	·531	0·4	0	0·64	−0·64	0	0·19	− 0·19	0	0·19	− 0·19	0	Vizagapatam.		
...	4	6	4	3	3	6	3	2	?	?	?	69	·520	0·4	...			No	rainga	uge.					Waltair.		
...	16	...	...	...	...	...	...	15	9·8	6·5	+51	83	·476	0	0	0·38	−0·38	0	0·16	− 0·16	0	0·16	− 0·16	0	Gopalpur.		
																									XII.—Hill Stations.		
17	8	1	1	...	1	...	1	2	5·9	?	?	46*	·138*	2·1	0	?	?	0·01	2·51	− 2·50	0·01	2·51	− 2·50	0·01	Sharigh.	Baluchistan	48
					Not	record	ed.		?	?	?	?	?	?	0	?	?	0	2·84	− 2·84	0	2·84	− 2·84	0	Pishin.		
28	...	1	...	...	1	1	...	...	3·4	3·8	−11	80	·156	3·1	0	4·36	−4·36	0·12	2·11	− 1·99	0·12	2·11	− 1·99	0·09	Quetta.		
2	...	...	1	...	24	2	1	1	?	?	?	?	?	2·0	0	?	?	0·02	1·90	− 1·88	0·02	1·90	− 1·88	0·02	Kalat.		
...	1	1	11	11	3	2	1	1	8·4	?	?	56	·153	2·6	0	?	?	0·11	1·65	− 1·54	0·11	1·65	− 1·54	0·08	Chaman.		
...	...	...	...	...	...	13	18	...	1·6	?	?	51	·049	5·9	0	?	?	0·06	0·30	− 0·24	0·06	0·30	−0·24	0·03	Leh	Punjab.	30
8	1	3	3	6	5	1	1	3	4·9	?	?	88	·153	7·2	2	?	?	1·91	2·59	− 0·68	1·91	2·59	− 0·68	1·12	Srinagar.		
11	...	...	...	...	7	13	...	...	2·2	?	?	72	·105	5·5	5	?	?	1·21	?	?	1·21	?	?	0·41	Astor (Kashmir).		
7	2	5	7	6	...	1	2	1	6·0	?	?	89	·100	5·0	10	?	?	3·00	?	?	3·00	?	?	0·75	Minimarg.		
19	...	4	1	...	...	1	6	...	2·5	?	?	100	·140	6·5	1	?	?	0·26	2·28	− 2·02	0·26	2·28	−2·02	0·23	Skardu.		
30	...	...		...	...	...	...	...	0·7	?	?	73	·051	5·2	5	?	?	1·22	?	?	1·22	?	?	0·36	Dras.		
18	...	...	...	...	1	5	7	...	1·6	?	?	58	·130	6·4	0	?	?	0·07	0·14	− 0·07	0·07	0·14	− 0·07	0·05	Gilgit.		
16	4	2	2	...	1	1	3	2	3·5	?	?	79	·160	2·1	2	?	?	0·63	?	?	0·63	?	?	0·30	Chitral.		
2	...	1	11	6	2	4	3	...	?	?	?	57	·152	5·8	5	?	?	1·45	?	?	1·45	?	?	0·40	Killa Drosh†		
...	0	11	2	...	...	1	1	6	5·0	?	?	63	·140	3·5	2	?	?	0·45	?	?	0·45	?	?	0·27	Para Chinar.		
...	16	4	...	1	1	...	...	9	16·9	?	?	51	·155	3·2	1	?	?	0·44	2·94	− 2·50	0·44	2·94	− 2·50	0·43	Cherat.		
18	1	1	...	8	3	...	...	...	6·7	8·1	−17	43	·117	3·5	4	3·18	+0·82	1·64	3·52	− 1·88	1·64	3·52	− 1·88	0·60	Murree.		
18	2	2	3	1	1	...	2	2	?	?	?	?	?	3·9	1	?	?	0·46	3·20	− 2·74	0·46	3·20	− 2·74	0·44	Poo.		
7	9	10	2	1	1	1	...	...	5·1	2·0	+155	35	·095	2·7	2	4·27	−2·27	0·79	2·35	− 1·56	0·79	2·35	− 1·56	0·61	Simla.		
20	8	...	...	...	...	...	...	3	9·3	4·8	+94	41	·114	2·8	3	?	?	1·15	3·53	− 2·38	1·15	3·53	− 2·38	0·71	Chakrata	N.-W. Provinces.	25
...	6	1	6	2	1	...	2	13	?	?	?	50	·144	1·7	1	3·30	−2·30	0·50	2·83	− 2·33	0·50	2·83	−2·33	0·45	Mussooree.		
16	2	...	1	1	2	3	5	1	3·2	1·4	+129	56	·171	0·9	1	3·71	−2·71	0·25	2·94	− 2·69	0·25	2·94	− 2·69	0·25	Ranikhet.		
...	1	1	6	...	2	...	3	18	1·3	?	?	46	·127	1·7	2	?	?	0·28	?	?	0·28	?	?	0·18	Muktesar.		

* Mean of 30 days.

† Wind observations of 29 days.

Table

Abstract of Observations taken at 8 A.M. at 216 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
13	Bengal	Yatung	10,480?			Not recorded.						?	44·0	?	23·7	?	33·9	?	20·3	54·9	21st	19·9	5th & 17th.	35·0
		Darjeeling	7,408	23·085	+·046	?	23·186	8th	22·934	15th	·252	38·4	(a) 46·6	+1·6	37·1	+2·5	(d) 42·0	+2·1	9·5	59·3	20th	32·8	2 days	26·5
		Gantok	5,600	24·569	?	?	24·658	29th	24·461	6th	·197	45·4	58·4	?	29·3	?	43·9	?	29·1	67·8	21st	25·4	8th	42·4
	Central India	Mount Abu	3,945	26·180	+·042	?	26·270	11th	26·062	31st	·208	62·7	70·9	+3·9	56·1	+5·0	63·5	+4·5	14·8	76·1	31st	49·5	6th	26·6
		Pachmarhi	3,528	26·580	+·020	?	26·656	10th	26·492	31st	·164	52·9	72·3	+1·4	42·7	−4·7	57·5	−1·7	29·6	77·7	25th	35·3	8th	42·4
	South India	Wellington	6,200	24·304	−·005	?	24·357	2nd	24·231	21st	·126	54·3	69·7	+3·2	43·7	−1·3	56·7	+0·7	26·0	75·2	4th	33·2	21st	42·0
XIII.—Extra India.																								
	Ceylon	Trincomalee	12	29·992	?	29·930	30·058	18th	29·918	31st	·140	77·5	82·2	?	73·6	?	77·9	?	8·6	84·5	7th	70·5	17th & 21st.	14·0
		Colombo	40	29·959	+·007	29·925	30·058	18th	29·864	14th	·194	77·2	88·0	?	72·1	?	80·1	?	15·9	92·5	12th	68·0	18th & 19th.	24·5
	Persia	Meshed	3,104			Not recorded.						24·8	?	?	19·9	?	?	?	?	?	?	6·0	16th	?
		Resht	?	30·305	?	?	30·761	12th	29·772	26th	·989	35·7	45·4	?	29·1	?	37·3	?	16·3	70·8	28th	15·1	4th	55·7
		Teheran	?	(c) 26·214 25·509	? ?	? ?	26·520 25·810	3rd 3rd	25·860 25·212	17th 17th	·660 ·598	25·7	35·6	?	21·8	?	28·7	?	13·8	48·6	28th	10·1	2nd	38·5
		Ispahan	?	(c) 24·448 24·747	? ?	? ?	24·620 24·910	6th & 12th, 2nd & 3rd.	24·170 24·470	17th 17th	·450 ·440	28·6	38·3	?	17·1	?	27·7	?	21·2	55·0	27th	−4·2	4th	59·2
		Bushire	14	30·243	+·128	30·221	30·419	2nd	30·042	26th	·377	52·9	59·7	−5·5	48·3	−3·7	53·9	−4·6	11·4	78·6	27th	40·8	23rd	37·8
		Jask (a)	?	30·160	?	30·112	30·283	3rd	30·010	31st	·273	65·7	76·6	?	61·8	?	69·2	?	14·8	81·8	30th	53·8	23rd	28·0
	Arabia	Muscat	20	30·152	?	30·120	30·270	3rd	30·010	31st	·260	71·0	74·0	?	69·5	?	71·7	?	4·5	76·4	1st	66·1	24th & 25th.	10·3
		Baghdad	220	30·151	+·125	30·370	30·432	2nd	29·731	26th	·701	36·9	49·6	−13·7	33·3*	−4·4*	41·4*	−9·1	16·3	62·5	26th	26·7	4th.	35·8
		Aden	94	30·006	+·022	30·033	30·087	2nd	29·953	27th	·134	75·7	80·6	−1·0	73·6	+1·4	77·1	+0·2	7·0	82·3	4th	69·9	14th & 26th.	13·4
		Perim	?	29·868	?	?	29·944	2nd	29·799	27th	·145	76·7	83·8	?	74·3†	?	79·1†	?	9·5	84·9	15th	73·2	26th	11·7
	Afghanistan	Kabul	?			Not recorded.						24·5	44·5	?	19·7	?	32·1	?	24·8	59·2	29th	0·4	5th	58·8
	Central Asia	Kashgar	?	(b) 25·807	?	?	26·061	7th	25·446	31st	·615	18·5	34·9	?	15·3	?	25·1	?	19·6	48·8	14th	8·7	6th	40·1
	Arabian Sea Islands.	Amini Devi	15	30·018	?	29·961	30·105	29th	29·968	25th	·137	79·9	80·1	?	73·6	?	76·9	?	6·5	82·6	2nd	67·8	22nd	14·8
		Minicoy	10	29·975	?	29·910	30·037	2nd	29·916	14th	·121	79·6	85·4	?	75·1	?	80·3	?	10·3	86·7	27th	63·0	8th	23·7
	Africa	Zanzibar	73	29·927	?	29·927	30·006	2nd	29·863	10th	·143	82·7	87·1	?	80·7	?	83·9	?	6·4	88·5	31st	79·4	31st	9·1

(a) Mean of 28 days.
(b) Aneroid corrected.
(c) Aneroid uncorrected.
(d) Mean of 26 days.
† „ „ 29 „

NOTE.—When a query is inserted against any reading or in the variation returns for any stations the
* Mean of 30 days.

I—*concluded.*

in India, Burma, etc., in January 1898—concluded.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st January 1898.	Normal rainfall for period, 1st to 31st January 1898.	Variation from normal of period 1st January 1898.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
				Not recorded.					?	?	?	?	?	?	0	?	?	0	?	?	0	?	?	0	Yatung	Bengal.	13
1	1	2	18	5	1	3	...	...	2·8	2·6	+ 8	78	·180	3·7	2	1·65	+0·35	0·72	0·67	+0·05	0·72	0·67	+0·05	0·53	Darjeeling.		
25	...	1	...	...	1	...	...	...	?	?	?	84	·256	?	2	?	?	0·54	0·69	−0·15	0·54	0·69	−0·15	0·34	Gantok,(c)		
9	7	6	...	...	1	4	3	1	5·0	4·8	+ 4	28	·162	0·3	0	0·73	−0·73	0	0·42	−0·42	0	0·42	−0·42	0	Mount Abu	Central India.	
23	2	3	1	...	...	...	1	1	5·2	3·1	+66	66	·261	0·1	0	1·55	−1·55	0	0·51	−0·51	0	0·51	−0·51	0	Pachmarhi.		
23	...	5	1	2	...	...	...	...	2·4	2·4	0	64	·250	2·0	3	1·75	+1·25	0·64	1·04	−0·40	0·64	1·04	−0·40	0·28	Wellington.	South India	
																									XIII.—Extra India.		
5	7	13	...	...	...	...	...	6	1·8	?	?	81	·769	3·9	11	?	?	12·51	7·44	+5·07	12·51	7·44	+5·07	2·66	Trincomalee	Ceylon.	
...	10	18	3	...	...	...	...	...	9·2	8·4	+ 9	80	·754	2·9	5	?	?	2·22	2·92	−0·70	2·22	2·92	−0·70	0·82	Colombo.		
				Not recorded.					?	?	?	85	·117	6·1	2	?	?	0·31	0·20	+0·11	0·31	0·20	+0·11	0·11	Meshed.	Persia.	
				Not recorded.					?	?	?	82	·178	?	4	?	?	4·20	?	?	4·20	?	?	3·00	Resht.		
9	4	14	...	...	1	2	...	1	2·9	?	?	?	?	6·0	1	?	?	0·24	1·16	−0·92	0·24	1·16	−0·92	0·24	Teheran.		
10	3	3	1	2	...	9	1	2	3·1	?	?	(h) 72	(h) ·113	0·4	3	?	?	0·72	0·11	+0·61	0·72	0·11	+0·61	0·42	Ispahan.		
1	13	6	2	4	1	...	...	3	10·6	?	?	78	·314	3·4	5	?	?	1·33	3·39	−2·06	1·33	3·39	−2·06	0·59	Bushire.		
1	17	1	1	...	...	...	...	8	11·4	?	?	77	·495	1·8	0	?	?	0	0·71	−0·71	0	0·71	−0·71	0	Jask.		
...	...	3	2	3	2	3	12	6	3·9	?	?	68	·517	2·6	0	?	?	0·08	2·36	−2·28	0·08	2·36	−2·28	0·08	Muscat	Arabia.	
6	10	...	2	2	3	...	...	8	3·7	?	?	90	·195	5·3	2	?	?	1·25	1·59	−0·34	1·25	1·59	−0·34	0·69	Baghdad.		
2	1	8	11	9	...	...	...	...	11·1	12·0	−8	73	·697	6·5	0	?	?	0·09	0·28	−0·19	0·09	0·28	−0·19	0·09	Aden.		
...	...	...	28	3	...	...	...	...	18·6	?	?	75	·694	5·8	0	?	?	0	0·50	−0·50	0	0·50	−0·50	0	Perim.		
9	1	...	...	2	4	6	8	1	?	?	?	?	?	1·6	0	?	?	0	?	?	0	?	?	0	Kabul	Afghanistan.	
5	6	3	3	3	4	...	7	...	?	?	?	?	?	4·9	0	?	?	0	0·42	−0·42	0	0·42	−0·42	0	Kashgar	Central Asia.	
11	9	2	2	2	...	...	1	4	?	?	?	79	·809	3·2	0	?	?	0	?	?	0	?	?	0	Amini Devi	Arabian Sea Islands.	
6	7	7	5	2	2	...	...	2	58	?	?	77	·770	0·3	2	?	?	3·89?	?	?	3·89	?	?	3·51	Minicoy.		
...	14	12	3	1	1	...	...	...	6·9	?	?	81	·905	5·7	7	?	?	1·53	?	?	1·53	?	?	0·36	Zanzibar	Africa.	

data for that station are not utilized in calculating the provincial variations.

(h) Mean of 27 days. (c) Wind observations of 27 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Division.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. * Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·960	29·861	·099	29·906	+·017	29·898	84·2	74·8†	9·6	88·6	70·3	18·3	81·3	82·8	78·6†	−0·9	70·8	74·8	75·3	73·6
	Rangoon	...	30·022	·888	·134	·954	+·011	·932	87·9	64·6	23·3	90·9	59·8	21·1	77·9	85·1	73·8	−0·2	62·0	68·7	69·5	66·7
	Diamond Island	...	·023	·907	·116	·961	+·006	·937	83·9	72·4	11·5	87·3	70·5	16·8	80·3	81·2	77·1	+1·2	67·6	71·4	71·6	70·2
	Cocos Island	111	29·917	·823	·094	·866	+·009	·910	82·8	74·8	8·0	87·6	72·1	15·5	80·2	78·8	77·4	+2·5	68·1	71·8	70·8	70·2
	Akyab	...	30·058	·942	·116	·994	0	·957	80·7	58·9	21·8	84·0	53·2	30·8	71·4‡	77·5	69·4	−0·6	56·9	65·5‡	69·3	63·9
Assam.	Silchar	...	·017	·873	·144	·945	+·015	30·003	79·2	51·4	27·8	84·4	44·5	39·9	66·3	77·0	64·0	+0·6	50·5	61·1	63·6	58·4
	Sibsagar	...	29·804	·651	·153	·725	+·006	·029	71·0	48·5	22·5	75·7	40·0	35·7	59·5	69·0	58·5	+0·5	48·5	58·1	61·9	56·2
	Dhubri	...	30·002	·862	·140	·925	+·007	·000	74·3	52·1	22·2	79·0	44·6	34·4	63·7	73·4	61·8	−0·3	51·2	59·2	61·7	57·4
Bengal and Orissa.	Chittagong	...	·003	·885‡	·118	·940	−·002	29·976‡						Not recorded.								
	Narayanganj	...	·070	·954	·116	30·005	+·005	·980	77·0	54·7	22·3	81·4	49·3	32·1	68·2	75·9	66·2	0	53·4	62·1	63·0	59·5
	Calcutta (Alipore)	...	·094	·967	·127	·031	+·017	·986	76·5	53·5	23·0	83·9	48·4	35·5	67·7	75·8	64·1	−1·1	52·3	59·5	61·1	57·6
	Saugor Island	...	·078	·954	·124	·006	+·001	·976	76·4	55·8	20·6	81·8	51·2	30·6	70·0	74·1	65·1	−2·0	54·3	63·8	64·0	60·7
	Burdwan	...	·014	·883	·131	29·937	+·003	·986	79·4	53·8	25·6	87·0	49·8	37·2	69·5	77·7	65·8	−0·2	51·5	60·3	63·2	58·3
	Berhampore	...	·047	·923	·124	·973	+·012	·990	76·1	52·3	23·8	82·2	47·9	34·3	67·3	75·6	63·7	−1·0	50·6	59·8	61·9	57·4
	False Point	...	·094	·981	·113	30·033	+·008	·996	78·0	54·5	23·5	83·9	48·0	35·9	72·0	75·5	65·3	−2·5	53·9	64·3	66·1	61·4
	Cuttack	...	·042	·905	·137	29·970	+·016	·994	82·5	56·0	26·5	91·2	50·3	40·9	70·3	81·0	68·3	−2·5	54·5	60·0	62·5	59·0
Gangetic Plain and Chota-Nagpur.	Hazaribagh	...	28·040	27·940	·100	27·982	+·004	·987	73·1	48·8	24·3	81·2	40·4	40·8	64·9	71·2	60·0	−0·9	44·7	53·1	55·6	51·1
	Patna	...	29·938	29·823	·115	29·872	+·011	30·014	73·4	50·6	22·8	78·5	45·2	33·3	64·0	72·2	61·5	+0·8	48·1	57·3	60·8	55·4
	Darbhanga	...	·948	·829	·119	·880	+·007	·006	73·9	51·7	22·2	78·3	46·8	31·5	65·7	72·5	62·3	+0·2	50·8	59·3	61·5	57·2
	Allahabad	...	·816	·694	·122	·742	+·013	·017	76·5	46·1	30·4	87·2	38·7	48·5	65·5	75·7	60·4	−0·2	43·5	54·4	57·7	51·9
	Lucknow	...	·739	·630	·109	·676	+·009	·015	78·1	46·2	31·9	86·8	37·7	49·1	65·6	75·5	62·9	+2·0	44·2	55·6	58·7	52·8
Upper Sub-Himalayas.	Dehra Dun	...	27·805	27·718	·087	27·752	+·009	·014	70·6	45·6	25·0	78·2	40·7	37·5	59·7	66·5	56·6	+1·8	42·0	50·4	53·4	48·6
	Roorkee	...	29·179	29·078	·101	29·118	+·004	·007	74·4	41·9	32·5	83·0	33·8	49·2	60·8	72·0	57·1	+1·3	40·8	52·3	55·4	49·5
	Meerut	...	·340	·246	·094	·284	+·001	·019	74·2	45·1	29·1	82·5	34·4	48·1	61·2	72·1	58·6	+2·4	42·6	50·6	55·2	49·5
	Lahore	...	·386	·292	·094	·327	−·001	·033	70·7	44·5	26·2	75·7	35·2	40·5	57·6	70·2	56·4	+4·4	41·6	50·5	56·2	49·4
	Ludhiana	...	·267	·173	·094	·208	+·006	·028	71·2	45·4	25·8	79·1	35·6	43·5	58·4	69·5	57·0	+4·2	42·3	50·1	54·5	49·0
Indus Valley and N.-W. Rajputana.	Peshawar	...	·010	28·909	·101	28·948	+·004	·098	67·6	41·0	26·6	74·1	32·4	41·7	55·8	64·9	52·6	+3·1	38·0	47·9	51·8	45·9
	Mooltan	...	·698	29·592	·106	29·633	+·005	·042	75·4	46·1	29·3	79·8	38·0	41·8	60·4	72·9	59·0	+4·8	42·6	51·7	59·3	51·2
	Jacobabad	...	·957	·823	·134	·878	+·007	·030	78·8	44·9	33·9	84·4	33·4	51·0	64·1	77·3	60·3	+3·7	40·9	52·0	58·3	50·4
	Kurrachee	...	30·112	30·002	·110	30·048	+·017	·027	82·3	56·9	25·4	88·4	46·5	41·9	73·3	79·1	68·5	+3·5	52·0	61·9	65·9	59·9
E. Rajputana, C. India and Gujarat.	Jeypore	...	28·675	28·575	·100	28·614	+·034	·037	79·9	46·7	33·2	88·5	37·0	51·5	69·0	78·1	61·5	+2·7	41·6	53·9	58·0	51·L
	Ajmere	...	·485	·384	·101	·428	+·023	·043	79·4	44·1	35·3	87·4	34·0	53·4	64·4	78·4	61·0	+3·1	39·8	52·4	59·9	50·7
	Deesa	...	29·644	29·526	·118	29·573	+·037	29·999	88·4	50·5	37·9	94·0	43·6	50·4	76·9	86·7	69·5	+1·9	43·3	57·4	60·6	53·8
	Nowgong	...	·361	·247	·114	·294	+·028	30·034	76·4	45·2	31·2	85·2	37·3	47·9	64·0	75·3	60·2	−0·1	41·7	53·7	58·4	51·3
	Agra	...	·558	·443	·115	·489	+·008	·024	78·4	48·2	30·2	86·3	41·3	45·0	65·7	76·3	62·3	+3·3	43·5	54·9	60·4	52·9
Deccan.	Belgaum	...	27·520	27·406	·114	27·458	+·026	29·888	85·2	57·0	28·2	89·9	49·9	40·0	76·8	83·8	70·7	+0·8	50·9	57·4	58·1	55·5
	Sholapur	...	28·491	28·355	·136	28·420	+·037	·956	87·9	55·4	32·5	91·1	50·4	40·7	77·2	86·6	71·0	−1·0	45·6	57·3	59·4	54·1
	Poona	...	·237	·107	·130	·170	+·040	·954	87·7	48·9	38·8	90·8	46·0	44·8	75·1	86·1	68·1	−1·2	43·0	55·2	58·8	52·3
	Akola	...	29·185	29·048	·137	29·108	+·056	30·004	86·4	47·2	39·2	91·5	42·5	49·0	73·9	85·6	65·9	−2·3	41·4	56·4	60·8	52·9
	Buldana	2,132	27·955	27·838	·117	27·888	+·049	29·973	81·8	57·9	23·9	87·2	52·3	34·9	74·5	80·7	68·9	+0·4	46·2	54·1	55·9	52·1

* Corrected

† Mean of 26 days.

II.

at 86 Stations in India, Burma, etc., in January 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·702†	·778	·779	·753	−·034	82†	72	69	74	− 2	5·0	5·0	5·0	+1·6	...	22	21	11	2	...	...	...	6	N 30° E	N 41° E	74	76	149	162	...	...	Port Blair	Burma Coast and Bay Islands.
·524	·583	·514	·540	−·011	86	60	42	63	− 1	1·3	2·6	2·0	0	...	10	17	12	13	6	2	...	1	N 79° E	N 27° E	52	36	97‡	95	...	...	Rangoon	
·615	·655	·649	·640	+·010	77	63	61	67	− 3	1·7	2·9	2·3	0	12	8	17	9	2	1	...	3	10	N 27° E	N 1° W	45	71	292*	176	...	...	Diamond Island	
·601	·672	·652	·642	−·020	70	65	66	67	− 4	3·1	2·4	2·8	+0·8	...	27	24	6	1	...	...	...	...	N 29° E	N 18° E	85	86	?	391	1·17	0·89	Cocos Island.	
·439	·552‡	·611	·534	+·040	88	72‡	65	75	+ 5	0·6	0·8	0·7	−0·6	...	8	16	8	...	1	3	7	19	N 6° W	N 19° W	48	42	69	67	...	...	Akyab	
·359	·471	·411	·414	−·011	94	73	45	71	− 3	2·2	1·6	1·9	−1·2	30	...	2	5	5	5	10	4	1	S 8° W	S 30° E	23	25	79*	40	...	...	Silchar	Assam.
·347	·468	·458	·424	−·002	100	92	65	86	0	5·0	4·1	4·6	−0·5	32	2	24	1	1	...	2	...	...	N 46° E	N 64° E	39	50	35*	42	...	...	Sibsagar	
·368	·446	·398	·404	−·017	94	76	49	73	− 3	1·6	0·7	1·2	−0·4	9	1	14	26	1	4	2	4	1	N 30° E	N 75° E	50	22	94*	94	...	...	Dhubri	
?	?	?	?	?	?	?	?	?	?	0·4	0·1	0·3	−1·1	2	11	10	2	...	1	2	15	18	N 35° W	N 26° W	58	47	?	75	...	...	Chittagong	Bengal and Orissa.
·395	·480	·406	·427	−·005	91	69	46	69	+ 1	0·5	1·1	0·8	−0·8	...	6	9	4	4	2	6	16	15	N 51° W	N 60° W	35	34	52	53	...	...	Narayangan)	
·281	·405	·346	·377	−·025	92	59	39	63	− 6	0·5	0·5	0·5	−0·8	4	17	4	...	...	1	6	17	13	N 49° W	N 36° W	59	39	41	62	...	...	Calcutta (Alipore).	
·405	·515	·470	·463	−·056	90	70	56	72	− 3	0·7	0·5	0·6	−1·0	...	24	8	...	1	5	10	2	12	N 24° W	N 6° W	45	20	183	166	...	...	Saugor Island.	
·354	·406	·391	·384	0	84	56	41	60	− 2	0·5	0·5	0·5	−1·1	14	24	1	2	...	...	...	9	12	N 24° W	N 31° W	58	47	17	42	...	...	Burdwan	
·349	·418	·374	·380	−·014	88	62	42	64	− 5	0·5	0·6	0·6	−1·4	36	5	3	3	...	...	...	5	10	N 25° W	N 46° W	26	50	24*	42	...	...	Berhampore	
·414	·503	·519	·479	−·058	96	64	58	73	− 5	0·1	0·1	0·1	−1·9	...	13	10	9	9	8	3	2	8	N 54° E	N 57° E	26	22	110*	147	...	...	False Point	
·408	·385	·322	·372	−·092	90	52	31	58	− 6	0	0·3	0·2	−1·4	11	14	11	1	1	...	3	13	8	N 25° W	N 28° E	43	14	38	33	...	...	Cuttack	
·248	·263	·253	·255	−·013	71	42	33	49	− 2	0·2	0·8	0·5	−1·8	1	17	4	3	3	...	2	5	27	N 26° W	N 53° W	64	49	176	135	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·308	·386	·384	·359	−·004	82	64	48	65	− 2	0·3	0·6	0·5	−2·1	26	2	...	3	1	1	3	21	5	N 86° W	N 84° W	37	46	31*	55	...	...	Patna	
·363	·426	·404	·398	+·002	94	67	50	70	− 1	0·3	0·6	0·5	−0·9	8	3	2	11	7	5	6	13	7	S 45° W	S 80° W	11	46	49	63	...	...	Darbhanga	
·252	·283	·243	·259	−·080	80	44	27	51	−15	0·1	0·5	0·3	−1·8	5	4	5	3	3	...	3	22	17	N 61° W	N 40° W	51	25	111	81	...	...	Allahabad	
·269	·315	·277	·287	−·020	85	50	31	55	− 6	0·2	0·1	0·2	−2·7	24	...	...	...	1	...	4	30	3	S 88° W	N 51° W	55	38	33	55	...	...	Lucknow	
·226	·254	·250	·243	−·031	73	49	39	54	−13	2·1	2·2	2·7	−1·5	13	2	1	2	6	9	7	15	5	S 54° W	S 69° W	33	13	32‡	40	...	...	Dehra Dun	
·246	·284	·223	·251	−·038	91	53	29	58	− 8	1·5	1·8	1·7	−1·7	26	1	...	1	11	...	1	1	21	N 46° W	N 76° W	18	19	45	51	...	...	Roorkee	Upper Sub-Himalaya.
·244	·235	·216	·232	−·058	81	43	27	50	−15	0·5	0·9	0·7	−2·5	14	...	...	2	4	...	4	34	4	S 85° W	N 56° W	56	42	51*	49	...	...	Meerut	
·230	·278	·271	·260	−·012	77	57	37	57	− 6	1·8	2·2	2·0	−1·6	27	7	...	5	4	1	...	2	16	N 20° W	N 27° W	24	20	33	43	...	...	Lahore	
·235	·256	·229	·240	−·049	76	52	32	53	−16	2·6	3·1	2·9	−1·5	14	4	1	...	9	2	1	6	25	N 52° W	N 54° W	35	29	63	35	...	...	Ludhiana	
·196	·237	·225	·219	−·006	75	54	37	55	− 7	3·4	3·6	3·5	−1·3	28	6	3	5	7	5	3	1	4	S 79° E	S 2° W	10	5	52*	64	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·230	·272	·329	·277	+·014	73	52	41	55	− 4	1·0	1·3	1·2	−1·9	38	2	13	...	5	1	...	...	3	N 50° E	N 5° E	23	23	12*	34	...	...	Mooltan	
·209	·234	·240	·228	−·001	70	38	26	45	− 4	2·4	2·6	2·5	−0·5	30	9	4	7	2	3	...	2	5	N 27° E	N 4° W	20	24	46*	51	...	...	Jacobabad	
·333	·414	·468	·405	+·054	70	50	47	56	0	1·0	0·8	0·9	−1·7	1	3	6	8	4	9	18	10	3	S 33° W	N 23° E	29	23	164*	239	...	...	Kurrachee	
·205	·235	·239	·226	−·048	63	32	24	40	−13	1·1	1·5	1·3	−1·9	7	3	1	1	6	8	9	13	14	S 78° W	N 8° E	39	18	57	83	...	...	Jeypore	E. Rajputana, C. India and Gujarat.
·199	·250	·292	·247	−·028	67	41	30	46	− 7	0·9	1·3	1·1	−1·3	7	3	4	...	4	17	3	11	13	S 67° W	S 80° E	29	4	46	52	...	...	Ajmere	
·190	·219	·186	·198	−·054	50	24	15	30	− 7	0·4	0·4	0·4	−1·8	...	3	13	23	6	6	4	3	4	N 86° E	N 20° E	45	38	170	208	...	...	Deesa	
·222	·282	·272	·259	−·042	73	46	31	50	− 9	0·2	0·2	0·2	−2·7	...	6	3	5	1	1	8	32	6	N 82° W	N 40° W	56	28	27*	34†	...	...	Nowgong	
·225	·291	·317	·278	−·017	65	45	34	48	−10	0·4	0·6	0·5	−2·0	...	...	3	...	10	...	16	...	33	N 74° W	N 55° W	43	35	135*	83	...	...	Agra	
·200	·233	·167	·233	−·112	65	26	14	35	−12	0·3	0·2	0·3	−1·2	...	1	8	24	19	1	3	4	2	S 76° E	S 75° E	59	43	269	249	...	...	Belgaum	Deccan.
·187	·226	·170	·194	−·156	42	24	13	27	−17	0·1	0·2	0·2	−1·6	5	4	12	13	23	3	...	...	2	S 81° E	S 59° E	59	55	184*	184	...	...	Sholapur	
·207	·193	·159	·186	−·130	59	22	13	31	−11	0	0	0	−1·5	11	...	7	12	14	1	8	4	4	S 58° E	N 63° E	28	9	182*	134	...	...	Poona	
·187	·227	·206	·207	−·122	57	27	16	34	−14	0	0	0	−1·4	17	...	14	9	7	1	4	...	10	N 57° E	N 50° E	27	28	58*	88	...	...	Akola	
·170	·169	·143	·161	−·149	35	20	13	23	−21	0	0	0	−2·0	3	16	11	12	10	3	2	...	5	N 54° E	N 75° E	44	13	107	132	...	Nil	Buldana.	

‡ Mean of 20 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Deccan—*concluded.*	Khandwa	...	29·057	28·930	·127	28·986	+·053	29·999	85·8	46·6	39·2	92·7	40·1	52·6	73·7	85·2	65·4	−1·5	40·6	55·3	59·3	51·7
	Hoshangabad	...	·111	·978	·133	29·037	+·048	30·027	81·0	48·2	32·8	89·1	41·8	47·3	66·4	79·6	63·6	−2·0	43·3	55·8	61·5	53·5
	Nagpur	...	·079	·941	·138	·002	+·046	·000	84·0	51·8	32·2	90·1	46·6	43·5	70·9	82·3	66·8	−1·4	45·2	54·9	59·3	53·1
	Do. (Sanitary Commr.'s Office)	...	·103	·964	·139	·026	?	·012	85·6	51·1	34·5	91·9	45·4	46·5	72·2	84·6	68·1	?	45·3	55·9	60·7	54·0
	Jubbulpore	...	28·764	·645	·119	28·697	+·034	30·015	77·9	41·8	36·1	87·2	34·6	52·6	64·7	77·0	58·9	−2·8	40·6	53·6	59·7	51·3
	Saugor	...	·283	·172	·111	·220	+·032	·009	78·5	53·0	25·5	87·6	46·4	41·2	69·6	77·3	64·8	+1·1	44·2	52·7	54·9	50·6
	Sutna	...	29·055	·944	·111	·990	+·027	·020	76·4	45·8	30·6	86·4	38·1	48·3	66·9	75·9	60·2	−0·1	40·9	53·1	55·9	50·0
	Raipur	...	·141	29·012	·129	29·069	+·042	·000	81·0	52·7	28·3	89·2	46·6	42·6	69·1	79·8	65·9	−1·1	46·8	55·7	59·0	53·8
	Hyderabad (Deccan).	...	28·394	28·270	·124	28·326	+·037	29·973	85·1	53·8	31·3	90·3	49·3	41·0	74·7	82·3	68·7	−1·6	49·5	61·6	61·9	57·7
West Coast.	Bombay	...	30·043	29·923	·120	29·974	+·023	·951	85·1	67·7	17·4	90·8	63·3	27·5	74·8	80·9	75·0	+1·8	61·7	66·0	71·2	66·3
	Ratnagiri	...	29·941	·827	·114	·875	+·024	·923	91·2	65·2	26·0	96·3	60·9	35·4	84·2	85·0	76·2	+1·1	56·7	64·3	70·8	64·0
	Karwar	...	·997	·869	·128	·924	+·010	·900	89·6	63·4	26·2	93·5	58·6	34·9	76·6	87·4	75·6	+0·4	59·6	66·4	71·3	65·8
	Cochin	...	·999	·893	·106	·937	+·017	·874	89·9††	71·3	18·6	96·1	66·3	29·8	83·7	86·7	79·5††	+0·7	67·5	71·4	73·9	70·9
South India.	Salem	...	·139	28·995	·144	·070	+·019	·951	88·3	63·6	24·7	92·3	56·5	35·8	78·9	85·4	74·5	0	61·9	68·6	70·8	67·1
	Mercara	...	26·318	26·223	·095	26·273	+·018	?	77·4	57·3	20·1	81·0	51·7	29·3	68·8	75·4	66·9	+1·3	52·4	58·6	58·5	56·5
	Chitaldroog	...	27·654	27·538	·116	27·592	+·040	·919	83·9	60·2	23·7	87·9	54·7	33·2	75·9	82·1	71·6	−0·4	53·3	61·5	61·7	58·8
	Bangalore	...	·057	26·942	·115	26·999	+·011	·917	81·6	56·5	25·1	85·9	51·9	34·0	72·0	80·0	68·7	+1·1	54·5	60·5	60·9	58·6
	Hassan	...	26·986	·876	·110	·930	+·031	·900	82·8	53·2	29·6	86·4	48·1	38·3	74·8	81·5	67·7	−0·1	50·6	59·7	59·6	56·6
	Mysore	...	27·541	27·414	·127	27·478	+·023	·907	84·5	58·5	26·0	88·5	54·1	34·4	75·5	83·0	71·1	−0·2	54·7	61·8	61·9	59·5
	Trichinopoly	...	29·811	29·676	·135	29·747	+·028	·935	87·4	66·9	20·5	90·3	60·3	30·0	82·0	85·6	76·0	+0·2	64·7	68·6	70·4	67·9
	Madras	...	30·074	·966	·108	30·017	+·026	·970	84·1	65·3	18·8	86·3	59·9	26·4	79·9	80·6	74·1	−1·4	?	71·4	71·2	70·0
	Bellary	...	28·596	28·461	·135	28·525	+·024	·945	88·0	58·5	29·5	92·7	53·7	39·0	78·4	85·8	72·4	−0·8	52·9	59·4	62·4	58·2
	Cocanada	...	30·094	29·971	·123	30·023	+·028	·986	81·2	64·0	17·2	87·5	58·7	28·8	76·9	79·1	72·1	−0·6	61·3	67·8	68·1	65·7
	Vizagapatam	...	·088	·968	·120	·018	+·026	·987	81·8	60·4	21·4	87·3	55·3	32·0	77·8	79·1	72·4	−1·4	59·7	67·6	68·5	65·1
Hill Stations, Baluchistan.	Quetta	...	24·789	24·702	·087	24·736	+·081	?	60·5	30·7	29·8	77·7	15·9	61·8	48·3	56·7	44·7	+5·1	27·5	39·7	44·1	37·1
Hill Stations, Punjab.	Leh	...	19·730	19·666	·064	19·699	+·074	?	35·9	14·3	21·6	44·6	2·0	42·6	23·6	33·7	24·1	+5·6	12·2	18·9	28·0	19·7
	Srinagar	...	25·099	25·011	·088	25·045	+·088	?	40·2	28·5	11·7	51·8	19·8	32·0	33·6	38·7	34·0	+1·0	26·8	31·8	36·5	31·7
	Murree	...	23·942	23·891	·051	23·906	+·060	?	50·7	40·4	10·3	58·4	29·5	28·9	46·6	46·5	44·0	+4·9	32·0	37·2	39·0	36·1
	Kailang	10,087	20·831	20·742	·089	20·786	+·027	?	43·1	20·5	22·6	52·2	10·0	42·2	30·8	37·5	29·2	+7·8	19·3	24·6	29·0	24·3
	Simla (Ridge)	...	23·191	23·136	·055	23·157	+·054	?	50·7	40·0	10·7	56·4	31·3	25·1	46·6	48·0	44·2	+3·6	32·6‡	35·8	38·4	35·7
Hill Stations, N.-W.P.	Chakrata	...	·362	·305	·057	·324	+·033	?	56·8	39·9	16·9	64·5	30·6	33·9	49·3	50·0	46·1	+4·5	32·8	38·8	40·3	37·3
	Ranikhet	...	24·201	24·129	·072	24·150	+·039	?	58·3	43·2	15·1	65·1	32·6	32·5	52·3	54·5	49·3	+3·3	38·1	43·6	45·3	42·3
	Muktesar	...	22·920	22·859	·061	22·890	?	?	55·5	39·1	16·4	62·0	29·0	33·0	49·3	50·7	46·1	?	32·6	39·1	40·3	37·3
Hill Station, Nepal.	Katmandu	4,388	25·721	25·648	·073	25·679	−·008	?	65·8	36·5	29·3	71·1	29·0	42·1	51·1	60·9	49·9	−0·4	35·4	45·7	50·1	43·7
Hill Station, Bengal.	Darjeeling	...	23·059	3·020	·039	23·039	+·066	?	46·8††	37·1	9·7	59·5	32·8	26·7	43·8	44·4	41·3††	+2·0	33·5	39·6	41·1	38·1
Hill Stations, Central India.	Mount Abu	...	26·210	26·138	·072	26·162	+·041	?	71·2	56·2	15·0	75·9	49·7	26·2	67·8	68·5	63·0	+5·4	44·3	50·4	52·1	48·9
	Pachmarhi	...	·611	·528	·083	·561	+·038	?	72·6	42·7	29·9	78·5	35·5	43·0	66·2	71·2	55·6	−1·4	39·2	53·8	57·0	50·0
	Chikalda	3,642	·500	·405	·095	·444	+·033	?	75·4	56·2	19·2	79·8	48·5	31·3	67·5	74·2	63·8	+1·4	45·9	50·6	53·7	50·1

†† Mean of 22 days.

continued.

ndia, Burma, etc., in January 1898—continued.

Vapour Tension.				Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.			
Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
·215	·186	·194	−·131	57	26	15	33	−16	0	0	0	−1·5	10	5	20	9	9	2	2	2	3	N 64° E	N 21° E	% 43	% 21	60	74	...	...	Khandwa.	Deccan—*concluded.*
·318	·329	·290	−·051	67	49	33	50	− 4	0·1	0·1	0·1	−1·7	33	...	19	9	...	...	...	...	1	N 57° E	N 62° E	42	37	17	66	...	...	Hoshangabad.	
·237	·224	·228	−·131	58	31	20	36	−16	0·1	0	0·1	−2·0	21	11	16	7	1	...	2	...	3	N 35° E	N 71° E	44	30	88	93	...	...	Nagpur .	
·250	·238	·240	?	61	31	20	37	?	0·1	0	0·1	?	8	24	17	5	1	3	2	1	1	N 25° E	?	56	?	29*	?	...	...	Do. (Sanitary Commr.'s Office)	
·280	·303	·275	−·059	91	45	32	56	− 4	0	0·1	0·1	−2·0	4	9	10	2	7	6	7	3	14	N 21° W	N 3° E	18	14	35	48	...	...	Jubbulpore .	
·195	·160	·180	−·103	46	27	16	30	−19	0·1	0·1	0·1	−1·6	9	13	11	6	5	2	2	8	6	N 12° E	N 32° E	29	17	104	69	...	...	Saugor .	
·245	·235	·236	−·040	64	35	22	40	−12	0	0	0	−1·9	3	15	1	...	...	...	...	23	20	N 51° W	N 20° W	76	33	79*	101	...	...	Sutna .	
·271	·229	·249	−·099	61	38	22	40	−12	0·1	0·1	0·1	−1·4	39	4	5	4	2	...	2	4	2	N 19° E	N 8° W	10	22	40*	66	...	...	Raipur .	
·389	·301	·332	−·105	73	45	27	48	−12	0·3	0·2	0·3	−1·3	15	2	...	23	17	4	...	...	1	S 69° E	S 51° E	60	60	81*	90	...	...	Hyderabad (Deccan).	
·523	·637	·544	−·033	69	61	60	63	− 6	0	0	0	−1·4	...	3	17	14	...	...	1	11	16	N 7° E	N 6° E	42	58	224	239	...	...	Bombay .	West Coast.
·338	·568	·419	−·132	57	29	47	44	−16	0·2	0·3	0·3	−0·3	1	5	2	14	8	1	5	8	18	N 17° W	N 32° W	15	32	194	205	...	...	Ratnagiri .	
·514	·559	·511	−·079	79	56	43	59	−10	0·1	0·1	0·1	−0·6	3	3	7	4	...	...	1	15	29	N 45° W	N 19° W	63	53	88	73	...	...	Karwar .	
·608	·670	·635	−·045	81	53	52	62	− 6	1·0	2·1	1·6	−0·2	4	16	9	1	...	1	...	22	9	N 37° W	S 82° W	56	9	115	119	...	...	Cochin .	
·564	·559	·553	−·011	91	57	46	65	0	2·1	2·7	2·4	−0·4	3	3	24	24	7	...	...	...	1	N 71° E	N 82° E	77	62	149	117	...	...	Salem .	
·380	·299	·340	−·073	72	54	34	53	− 9	1·9	1·8	1·9	−1·3	20	1	20	16	4	...	...	...	1	N 68° E	N 71° E	56	64	138	117	...	...	Mercara .	South India.
·369	·299	·331	−·023	63	42	27	44	−2	0·8	0·7	0·8	−1·0	...	2	16	30	14	...	...	...	...	N 86° E	S 88° E	82	77	174*	175	...	...	Chitaldroog .	
·397	·319	·372	−·033	87	51	31	56	− 5	1·0	1·0	1·0	−1·5	...	3	28	26	4	1	...	...	...	N 69° E	N 88° E	84	79	185*	111	...	...	Bangalore .	
·341	·260	·315	−·070	83	40	24	49	− 8	1·6	1·5	1·6	−1·5	...	1	28	27	6	...	...	...	...	N 72° E	N 87° E	87	74	81*	75	...	...	Hassan .	
·387	·296	·356	−·091	78	44	26	49	−11	1·6	0·9	1·3	−1·5	...	...	20	31	11	...	...	...	...	N 83° E	N 82° E	85	83	257*	218	...	...	Mysore .	
·525	·543	·551	−·047	88	48	45	60	− 7	2·5	3·6	3·1	−1·0	11	11	37	1	1	...	...	...	1	N 36° E	N 46° E	74	79	123	111	...	...	Trichinopoly .	
·660	·639	·680	+·026	?	65	61	81	+ 6	3·5	2·7	3·1	−0·9	...	8	37	14	3	...	...	...	...	N 53° E	N 49° E	85	78	139	111	...	...	Madras .	
·273	·274	·294	−·132	68	28	23	40	−12	1·3	0·7	1·0	−1·2	10	1	4	40	7	...	...	...	...	S 89° E	S 68° E	77	64	40?	81	...	...	Bellary .	
·562	·546	·540	−·058	85	61	54	67	− 5	0·8	0·2	0·5	−0·8	1	1	20	13	21	...	2	4	...	S 88° E	N 81° E	58	59	181*	187	...	...	Cocanada .	
·542	·560	·536	−·016	96	57	56	69	+ 2	1·1	0·4	0·8	−0·9	19	8	10	7	6	8	3	1	...	N 13° E	S 59° E	25	29	4†	40	...	...	Vizagapatam .	
·163	·165	·150	−·008	71	48	38	52	−15	3·4	3·9	3·7	−0·4	29	7	...	...	1	4	4	8	9	N 72° W	N 85° W	27	25	60*	74	...	...	Quetta .	Hill Station, Baluchistan.
·068	·113	·081	+·009	71	53	59	61	− 6	5·4	5·8	5·6	−1·0	...	...	...	...	...	...	30	32	...	S 68° W	S 10° W	92	29	38	22	...	...	Leh .	Hill Stations, Punjab.
·162	·197	·163	+·009	82	83	82	82	0	7·1	7·5	7·3	−0·6	10	5	6	3	9	6	9	7	7	S 46° W	S 37° E	10	10	95*	71	...	...	Srinagar.	
·127	·164	·130	−·011	42	42	53	46	−14	3·0	4·2	3·6	−2·5	43	1	...	...	12	5	...	...	1	S 34° E	S 51° E	23	46	172*	220	...	...	Murree .	
·085	·093	·092	+ 004	88	50	44	61	−10	4·8	5·0	4·9	−1·8	...	...	...	...	3	7	29	17	6	S 57° W	S 58° W	76	52	46	20	0·74	0·72	Kailang .	
·101	·136	·118	−·029	47‡	33	41	41	−17	2·7	3·1	2·9	−2·7	19	21	8	...	3	7	4	...	...	N 18° E	S 6° W	26	49	122	128	...	...	Simla (Ridge).	
·131	·152	·134	−·022	51	41	44	45	−17	2·2	2·7	2·5	−2·1	17	3	...	...	1	40	...	...	1	S	S 84° W	60	5	217	123	...	...	Chakrata .	Hill Stations, N.-W. P.
·195	·211	·195	+·002	66	52	51	56	− 7	0·9	1·8	1·4	−2·7	20	3	3	2	1	2	11	19	1	S 78° W	S 51° W	37	15	87*	44	...	...	Ranikhet .	
·143‡	·145	·137	?	52	43‡	41	45	?	2·0	3·1	2·6	?	...	1	...	12	4	1	9	20	15	N 86° W	?	35	?	35*	?	...	...	Muktesar .	
·250	·240	·229	−·020	89	66	45	67	− 6	1·8	3·0	2·4	−0·9	5	4	1	1	9	2	...	20	10	N 83° W	N 76° W	47	49	22	21	*Nil*	*Nil*	Katmandu .	Hill Station, Nepal.
·201	·226	·194	−·009	70§	73	78	74	− 7	4·2‡	5·6‡	4·9	−0·8	...	10	12	12	1	...	2	15	10	N 6° W	S 89° W	37	22	?	88	...	...	Darjeeling .	Hill Station, Bengal.
·168	·203	·177	−·030	25	25	29	30	−13	0·3	0·3	0·3	−2·1	1	7	16	1	1	2	15	4	15	N 38° W	N 69° W	32	11	123*	119	...	...	Mount Abu .	Hill Stations, Central India.
·276	·308	·263	−·021	73	43	40	52	− 3	0·1	0·3	0·2	−2·1	20	10	8	2	2	...	2	6	12	N 18° W	N 79° W	55	10	93*	78	...	...	Pachmarhi .	
·177	·181	·184	−·125	43	26	21	30	−22	0·1	0·1	0·1	−2·1	33	14	3	...	1	1	4	...	6	N 15° W	S 40° W	26	24	138*	123	*Nil*	*Nil*	Chikalda .	

* Corrected. † Mean of 22 days. ‡ Mean of 30 days. § Mean of 29 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, South India.	Wellington	...	24·314	24·248	·066	24·281	+·011	?	69·8	43·5	26·3	75·3	33·2	42·1	65·0	65·5	55·6	+0·4	40·2	53·3	56·0	49·8
Extra India.	Muscat	...	30·169	30·079	·090	30·124	+·058	30·092	74·0	69·5	4·5	76·2	66·1	10·1	73·0	73·9	71·7	+2·0	62·5	66·3	67·0	65·3
	Aden	...	·016	29·909	·107	29·555	+·028	29·982	80·6	73·6	7·0	83·1	69·7	13·4	77·5	79·1	76·9	+0·9	67·7	?	?	?
	Perim	...	29·876	·763	·113	·811	+·045	?	83·8	74·3	9·5	84·9	72·2	11·7	79·8	80·7	78·2†	+0·8	69·0	72·1	71·6	70·9
	Minicoy	...	·990	·896	·094	·939	?	·874	85·3	?	?	86·7	?	?	83·1	82·2	?	?	?	75·4	75·3	?
	Zanzibar	...	·924†	·791	·133	·858	+·020	·857†	87·3	80·7	6·6	88·9	79·4	9·5	83·5†	87·0	84·0	+1·6	76·7	78·4†	78·8	78·0
	Port Victoria (Seychelles)	15	·976	·894	·082	·935	+·010	·874	83·0	76·0	7·0	86·3	73·9	12·4	80·4	81·3	79·1	−0·6	72·7	76·0	76·4	75·0
	Mauritius	181	?	?	?	·829	+·060	·956	?	?	?	90·4	68·0	22·4	?	?	79·0	+0·4	?	?	?	?

† Mean of 29 days

II—*concluded.*

in India, Burma, etc., in January 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·226	·277	·354	·286	−·016	79	49	57	62	−6	2·0	3·0	2·5	−0·7	3	4	3	6	34	10	1	...	...	S 48° E	S 27° E	69	65	57	52	...	...	Wellington	Hill Station, South India.
·478	·561	·573	·537	+·029	66	69	68	68	0	1·3	1·1	1·2	−1·3	...	2	5	14	3	2	...	7	29	N 19° W	N 3° E	37	35	95	100	...	...	Muscat	Extra India.
·601	?	?	?	?	73	?	?	?	?	6·1	1·6	3·9	+0·1	...	2	2	30	21	3	3	...	1	S 70° E	N 89° E	74	70	335‡	319	...	...	Aden	
·640†	·687	·686	·671	+·009	75†	68	62	68	−2	5·3	1·9	3·6	+1·2	...	...	...	29	33	...	...	...	...	S 66° E	S 63° E	92	78	444	472	...	...	Perim	
?	·779	·773	?	?	?	69	68	?	?	0·3	0·3	0·3	?	1	22	18	10	3	3	...	1	4	N 33° E	?	63	?	139*	?	...	...	Minicoy	
·866	·905†	·874	·882	+·032	83	79†	68	77	0	5·9	3·1	4·5	+0·1	...	20	25	8	2	2	1	...	2	N 35° E	N 35° E	72	69	182*	196	...	...	Zanzibar	
·761	·842	·843	·815	−·005	85	81	79	82	+2	6·6	7·8	7·2	+0·2	16	6	2	...	3	3	1	10	21	N 54° W	N 43° W	45	66	120	144	23·01	5·30	Port Victoria (Seychelles).	
?	?	?	·773	?	?	?	?	80	+4	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	223	266	6·48	1·10	Mauritius	

G. I. C. P. O.—No. 42 Meteo.—4-5-98.—385.

* Corrected.

‡ Mean of 30 days.

LITHO. BY J.N. MUNDLE.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2	miles per hour	...	one feather added to the wind arrow
„ „	2 to 5	„ „ „	...	two feathers „ „ „ „
„ „	5 to 10	„ „ „	...	three „ „ „ „ „
„ „	10 to 20	„ „ „	...	four „ „ „ „ „
	over 20	„ „ „	...	five „ „ „ „ „

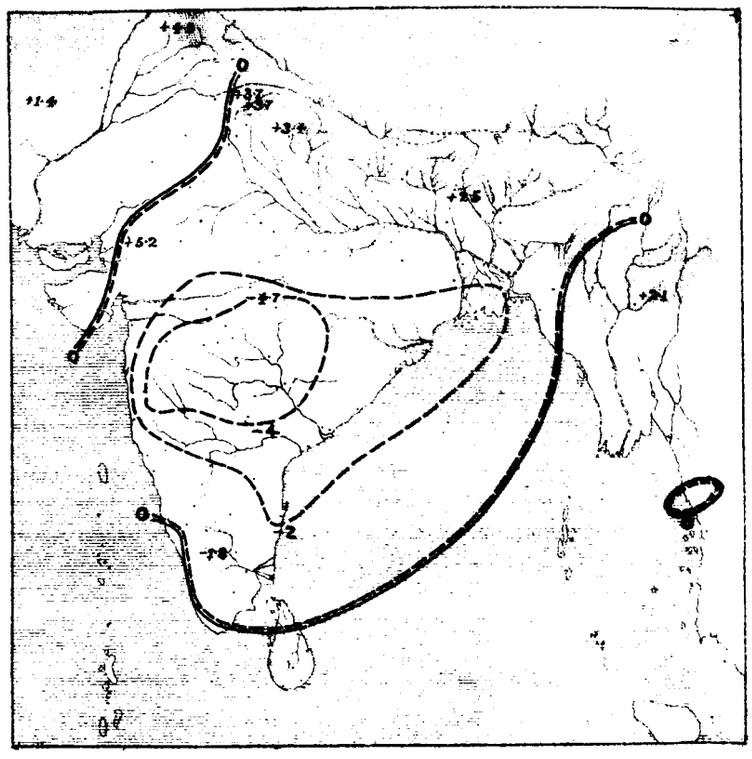
LITHO BY J. N. MUNDLE.

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



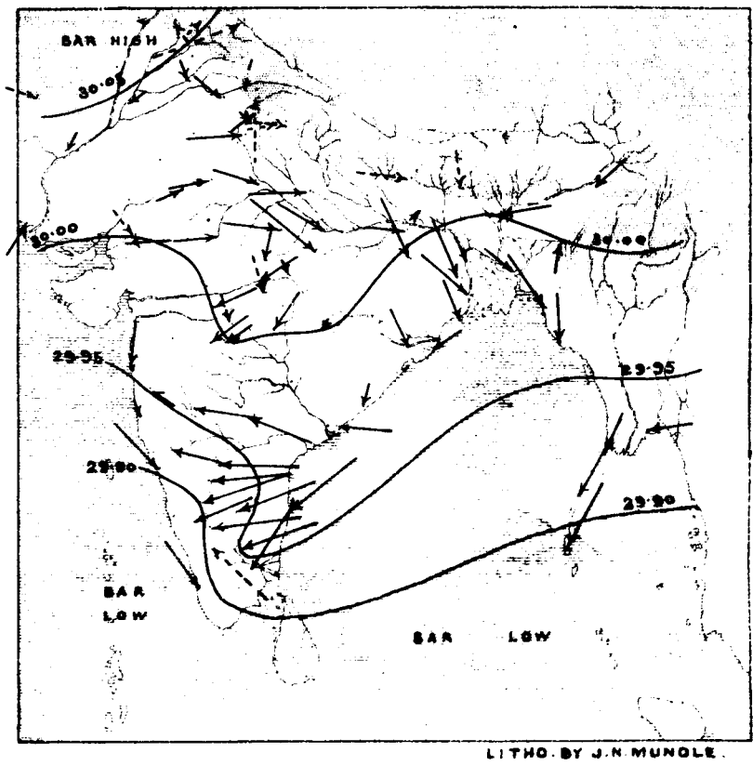
Explanation.

ontinuous lines indicate that the mean maximum of month was in xcess by amounts indicated by the attached numbers. Broken or dotted nes that it was in defect by the amounts indicated by the attached umbers. Double lines are the lines of no variation, the broken line facing he area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF JANUARY 1898.



LITHO. BY J.N. MUNDLE.

Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North, Punjab
32. West do.
33. Malabar
33a. Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a. Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52a. Do. do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

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GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

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CALCUTTA, FEBRUARY, 1898.

INTRODUCTION.

THIS Review of the weather in India during the month of February 1898 is based on observations taken daily at 8 A.M. at 215 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 86 stations. In the rainfall summary, the rainfall data of the meteorological observatories and the weekly rainfall telegrams received during the month from District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the preparation of the review are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is given.

Summary of the chief features of the weather in India during the month of February, 1898.

February is usually the last month of the cold weather in Northern India. Temperature increases rapidly, more especially in the latter half of the month, and pressure decreases slowly in Upper India. The north-east winds in the Bay of Bengal and Arabian Sea usually diminish slightly in strength during the month. The general character of the air movement in India in February is similar to that of January. An important change, however, commences at the head of the Bay in the latter half of the month, shown by the establishment of local southerly winds on the Bengal Coast. These extend at first to a short distance from the coast landwards and seawards and are very unsteady, but gradually increase in intensity and volume, and become an important feature of the air movement in India during the hot weather months. The establishment of these winds usually accompanies the appearance of a shallow depression in West Bengal and Chota Nagpur. It is at first very shallow, but gradually developes, and becomes an important feature of the pressure distribution of the hot weather months.

The chief disturbances of February are cold weather storms, similar in all respects to the corresponding storms of the preceding month. In North-Eastern India there are periods of slight local disturbance, shown chiefly by the occurrence of series of thunderstorms at irregular intervals, after the setting in of the hot weather southerly winds on the Bengal Coast.

The following is a summary of the more important features of the meteorology of the month of February 1898:—

At the commencement of the month a feeble depression was affecting the weather in Northern India. It had advanced from Persia through Baluchistan on the 30th of January into Sind on the 31st. It continued to advance eastwards and was in East Rajputana and the adjacent districts of the North-Western Provinces on the 1st of February, Bihar and Chota Nagpur on the 2nd, and East Bengal on the 3rd. It gave much cloud in Upper India, but little or no rain.

Temperature was very high in Northern India during this period and was highest in front of the advancing

depression. The following gives variation data for Northern India for this period:—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	1st February.	2nd February.	3rd February.	4th February.
	°	°	°	°
Baluchistan (Quetta)	+0·9	+7·3	+5·0	+6·3
Punjab	+9·1	+9·0	+7·7	+6·8
Sind and Rajputana	+10·4	+8·4	+6·5	+6·4
North-Western Provinces and Oudh.	+7·3	+8·4	+7·4	+6·2
Central India and Gujarat	+7·7	+6·7	+4·9	+4·9
Bihar	+3·6	+5·7	+5·7	+5·6
Chota Nagpur	+1·7	+5·6	+7·0	+6·6
Bengal	+3·5	+5·0	+6·8	+6·6

Pressure gave way rapidly on the 4th over Upper India and a shallow depression appeared in the South-West Punjab on that day. It advanced eastwards on the 5th and 6th and gave general and moderately heavy rain to the North-Western Provinces, North Bihar and North Bengal on the 6th. As the disturbance did not give much snow in the hill districts of North-Western India, it was not followed by a cool wave. The rainfall in the North-Western Provinces and North Bengal reduced temperature to a moderate extent. The following data show that temperature was from the 5th to the 8th largely above the normal in North-Western India:—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	5th February.	6th February.	7th February.	8th February.
	°	°	°	°
Baluchistan (Quetta)	+2·0	+1·4	+7·8	+11·3
Punjab	+6·4	+6·2	+3·9	+3·7
Sind and Rajputana	+6·6	+2·8	+4·3	+5·1
North-Western Provinces and Oudh.	+5·7	+3·1	—0·9	+0·8
Central India and Gujarat	+3·4	+2·2	+2·4	+2·8
Bihar	+5·8	—0·1	—1·5	+0·6
Chota Nagpur	+6·0	+4·6	+1·2	+0·5
Bengal	+6·4	+4·0	+2·6	+2·0

Weather was very disturbed during the next ten or twelve days, due to a succession of three storms. Pressure was during the whole of the period from the 9th to the 17th or 18th largely below the normal in the Persian area as well as in India. The depression and storms of this period, however, appear to have formed in India and not to have passed into India from Persia. They are described in the following paragraphs:—

Pressure gave way rapidly in South-West Rajputana and North Bombay on the 8th and 9th and a deepish depression was shown over that area on the latter day. The pressure changes of the next two days were large and apparently irregular. There was a tendency to the formation of a secondary depression in the North Punjab. The closed area of depression, instead of advancing eastwards, was displaced north-eastwards into Central Rajputana on the 10th and North Rajputana on the 11th. It filled up in the South Punjab during the next 24 hours. The most remarkable feature of the storm was the heavy and general rain it gave to nearly the whole of India. Rain, in fact, fell in all divisions except East Bengal, Assam and Burma. The following gives a summary of the rainfall due to this storm:—

PROVINCE OR AREA.	AVERAGE ACTUAL RAINFALL OF 24 HOURS PRECEDING 8 A.M. OF				Total of period 9th to 12th Feb. 1898.
	9th Feb.	10th Feb.	11th Feb.	12th Feb.	
	Inch.	Inches.	Inches.	Inch.	Inches.
Punjab	0·05	0·46	0·79	0·11	1·41
N.-W. Provinces and Oudh	0·20	1·16	1·11	0·30	2·77
Bihar	0	0·05	0·50	0·06	0·61
Chota Nagpur	0·03	0	0·68	0·03	0·74
Bengal	0	0	0·03	0·01	0·04
Central India	0·72	0·50	0·34	0	1·56
Central Provinces	0·20	0·69	1·00	0	1·89
Berar	0·03	0·20	0·21	0·01	0·45
Hyderabad	0·27	0·36	0·30	0	0·93
Cutch	0·04	0·04	0	0	0·08
Kathiawar	0·07	0·46	0	0	0·53

Falls exceeding four inches were registered at several stations in the Punjab and the North-Western Provinces. The heaviest recorded fall was 5·83 inches at Umballa on the 11th. The rainfall accompanied thunderstorms in the majority of cases. Numerous hailstorms occurred in Rajputana and Central India and caused damage to the opium and other crops.

The rainfall reduced temperature very largely over nearly the whole of India. The following gives variation data for the period from the 10th to the 14th :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	10th Feb.	11th Feb.	12th Feb.	13th Feb.	14th Feb.
	°	°	°	°	°
Baluchistan (Quetta)	+3·6	+0·3	+0·9	+6·5	+8·9
Punjab	+3·7	+0·2	−0·5	−0·9	+2·0
Sind and Rajputana	−4·1	−2·6	−3·0	−1·1	+1·7
North-Western Provinces and Oudh	−2·1	−1·6	−2·4	−1·7	−1·9
Central India and Gujarat	−0·8	−5·6	−3·4	−2·1	−1·4
Central Provinces and Berar	+3·0	−7·0	−7·6	−6·5	−4·5
Bihar	+3·1	+5·2	−0·4	−0·5	0
Chota Nagpur	+3·6	+3·6	−1·0	−2·4	−2·6
Bengal	+1·5	+4·0	−0·1	+2·6	−0·6
Deccan	+1·2	−4·6	−7·2	−4·7	−1·3

Temperature was during this period in excess in Burma and Madras, as is shown below :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	10th Feb.	11th Feb.	12th Feb.	13th Feb.	14th Feb.
	°	°	°	°	°
Burma	+3·4	+3·6	+3·5	+4·6	+2·4
Madras	+3·1	+2·3	−0·2	+0·2	+1·0

The second disturbance and depression of the series appeared in Upper Sind (having probably formed there) on the 14th. It advanced rapidly across Northern India. The storm gave light to moderate showers in Baluchistan and the Punjab on the 14th and 15th.

Another depression, the third of the series, formed in the South-West Punjab and Sind on the 16th and was stationary on the 15th, 16th and 17th and filled up during the next 24 hours. The Punjab (chiefly the eastern districts) and Baluchistan obtained moderate rain during this period. Weather was showery in the Punjab and Kashmir hills from the 16th to the 18th, and much snow fell. This was in some parts of the hill districts the heaviest fall of the season. A well marked cool wave advanced from Upper India eastwards and southwards and reduced temperature very largely during the next five days. The following gives variation data from the 19th to the 24th :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	19th Feb.	20th Feb.	21st Feb.	22nd Feb.	23rd Feb.	24th Feb.
	°	°	°	°	°	°
Baluchistan (Quetta)	−5·5	−3·5	−4·3	−5·6	−6·7	−3·3
Punjab	−5·2	−7·5	−5·4	−6·1	−6·3	−5·8
Sind and Rajputana	−4·5	−5·0	−1·3	−3·4	−5·7	−7·2
North-Western Provinces and Oudh.	+0·6	−8·4	−7·6	−5·8	−5·4	−7·0
Central India and Gujarat.	−3·9	−6·7	−4·2	−2·7	−4·2	−6·6
Central Provinces and Berar.	−2·1	−10·0	−8·3	−5·5	−3·9	−5·7
Bihar	+5·0	−5·4	−8·0	−6·0	−4·2	−4·8
Chota Nagpur	+3·5	−8·1	−9·8	−7·0	−5·9	−6·2
Bengal	+5·7	−2·7	−8·4	−7·8	−6·0	−4·1
Deccan	−1·5	−6·9	−6·0	−2·8	−2·1	−2·7

The reduction of temperature was even more marked in the day than in the night temperature. The lowest night temperatures of the month were recorded in Northern India during this period. Unusually low night temperatures were recorded in Baluchistan and the hill stations in Upper India. The following gives examples :—

STATION.	Lowest minimum temperature recorded in February 1898.	Date on which recorded.
	°	
Kabul	19·6	19th
Kalat	15·0	5th, 23rd and 24th
Peshin	10·9	5th
Leh	1·0	20th
Minimarg	−1·5	23rd
Dras	−28·0?	20th
Murree	24·5	19th
Simla	23·0	19th
Darjeeling	27·6	21st
Rawalpindi	34·4	22nd and 23rd
Peshawar	33·9	23rd
Lahore	40·2	20th and 22nd
Dehra Dun	39·0	20th
Roorkee	40·5	7th
Lucknow	43·2	21st and 22nd
Allahabad	44·4	21st

The changes of pressure on the 18th and 19th were very unusual. Pressure gave way very rapidly in Northern India on the 18th and very rapidly in North-Eastern India on the 19th. On the latter day pressure was nearly half an inch below the normal in Assam and North Bengal

6th and 7th from a depression which originated on the 3rd in Upper India. A low pressure area which formed in Kathiawar and Gujarat on the 8th and 9th gave rise to an unusually extensive disturbance (shown by heavy thundershowers from the 10th to the 13th). Rain fell over by far the greater part of India, including the Punjab, Rajputana, Central India, the North-Western Provinces, Bihar, Chota Nagpur, the Central Provinces, Berar, the Deccan and Southern India. A depression, the fourth of the month, formed in Upper Sind on the 14th and 15th. It gave general and heavy rain to the Punjab and Kashmir from the 15th to the 18th.

The rainfall of the month was in large excess over the Punjab, Rajputana, Central India, the North-Western Provinces and the Central Provinces, and in moderate excess in the Deccan, Madras, Bihar and Chota Nagpur. It was in slight defect in Bengal. The month was practically rainless in Burma. The rainfall of the 9th to the 18th was exceptionally valuable as it occurred at the end of an unusually dry cold weather. Many districts received during this period from five to ten times the normal fall of the month.

The following table gives comparative data of the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	RAINFALL.		
	Mean actual for February 1898.	Mean normal for February.	Variation from normal, February 1898.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	0·29	0·49	—0·20
Burma Inland	0·07	0·17	—0·10
Assam	1·46	1·59	—0·13
Bengal and Orissa	0·42	0·92	—0·50
Gangetic Plain and Chota Nagpur	1·61	0·53	+1·08
Upper Sub-Himalayas	4·34	1·18	+3·27*
Indus Valley and North-West Rajputana.	1·34	0·42	+0·92
East Rajputana, Central India and Gujarat.	0·83	0·17	+0·70*
Deccan	1·23	0·19	+1·06*
West Coast	0·35	0·15	+0·20
South India	0·56	0·26	+0·30

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian land area was largely below the normal by amounts averaging ·077″ for the whole area. The mean pressure of the month was normal at Bushire and in moderate excess at Baghdad. The deficiency of pressure, which was the most prominent feature of the pressure conditions of the month in the Indian land area, hence did not extend westwards into Persia. It was as marked in Tenasserim and Ceylon as in India and was also nearly as large at Aden as in India. The deficiency of pressure which characterized India hence extended over the whole of the Arabian Sea and the Bay of Bengal and probably the north of the Indian Ocean.

Relatively to this general condition, pressure was in defect, or the pressure anomalies of the month were negative, over the greater part of Northern and Central India and in Burma. The anomalies were small except in two areas, *viz.*, Tenasserim and Upper India, for which data are given below :—

PROVINCE.	STATION.	Variation of mean 8 A.M. pressure of February 1898 from normal.	Pressure anomaly, February 1898.
		″	″
UPPER INDIA	Mooltan	—·123	—·046
	Peshawar	—·118	—·041
	Jacobabad	—·116	—·039
UPPER INDIA	Dera Ismail Khan	—·110	—·033
	Hyderabad	—·110	—·033
	Montgomery	—·106	—·029
	Lahore	—·099	—·022
	Ajmere	—·099	—·022
	Deesa	—·098	—·021
	Kurrachee	—·097	—·020
TENASSERIM	Tavoy	—·101	—·024
	Moulmein	—·098	—·021

The local deficiency of pressure in Tenasserim was probably the continuation of a feature of the meteorology of the previous four months. A reference to the weather reviews of these months will show that there was throughout a marked tendency to persistent low pressure in the south-east of the Bay and the Andaman Sea. This condition was in the months of October, November and December accompanied by a very abnormal distribution of the cyclonic storms of the period. The general low pressure conditions in Upper India were, in part, a cause and

in part an effect of the presence of the depressions of the month in that area. Pressure was, relatively to the general condition, in excess over the whole of the Peninsula. The excess was moderate in amount over a large part of the centre of the Peninsula defined by the stations for which comparative data are given below :—

STATION.	Variation of mean 8 A.M. pressure of February 1898 from normal.	Pressure anomaly, February 1898.
	"	"
Goa	—·044	+·033
Ratnagiri	—·045	+·032
Akola	—·045	+·032
Bellary	—·047	+·030
Amraoti	—·049	+·028
Vizagapatam	—·049	+·028
Cocanada	—·049	+·028
Masulipatam	—·049	+·028
Sholapur	—·054	+·023
Kurnool	—·056	+·021

Pressure was also more or less below the normal at the hill stations, but the deficiency was, in the great majority of cases, smaller in amount than at the neighbouring plain stations. The vertical anomalies were hence generally positive. The following gives data for eight pairs of stations :—

HILL STATION.	Variation from normal pressure.	PLAIN STATION.	Variation from normal pressure.	Vertical pressure anomaly, (Hill—Plain).
	"		"	"
Leh	—·090	Lahore	—·099	+·009
Kailang	—·099	Do.	—·099	0
Quetta	—·064	Jacobabad	—·116	+·052
Murree	—·064	Peshawar	—·118	+·054
Simla	—·070	Ludhiana	—·092	+·022
Chakrata	—·061	Roorkee	—·083	+·022
Ranikhet	—·054	Bareilly	—·071	+·017
Darjeeling	—·012	Dhubri	—·069	+·057

Barometric depressions and cold weather storms of the month.

The following gives a brief sketch of the disturbances of the month so far as can be drawn up from the available data.

The chief feature in the pressure conditions at the commencement of the month was a shallow cold weather depression which was crossing Northern India. This depression had apparently formed in the Persian area on the 27th of January and passed eastwards through Persia on the 28th and 29th into Baluchistan on the 30th. It was of slight importance, as it gave little or no rain to either Persia or Baluchistan. The following data for stations in Baluchistan and the Punjab and Kashmir hills give the weather at 8 A.M. of the 30th January :—

STATION.	PRESSURE.		WIND.		Cloud.	WEATHER.
	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"				
Chaman	—·082	?	SSW	20	10	Gale.
Quetta	—·132	—·016	S	4	6	Dustbaze.
Cherat	—·140	?	SSE	4	9	
Murree	—·152	+·061	SE	7	10	
Simla	—·079	+·105	Calm	4	10	
Dras	—·245	?	Calm	0	10	
Skardu	—·277	?	Calm	1	10	
Astor	—·280	?	Calm	1	10	
Minimarg	—·280	?	Calm	6	10	
Leh	—·088	+·123	SW	1	10	Dull.
Gilgit	—·373	?	WSW	1	10	
Kashgar	—·307	?	SSE	...	8	

Pressure had given way briskly to rapidly over the whole Indian area during the previous 24 hours. The fall was as great at the higher hill stations in Kashmir and the Punjab as in the plains of Upper India.

31st January.—Pressure had fallen rapidly in Sin during the previous 24 hours, and the depression whic

was in Baluchistan on the 30th now lay over Sind. The following gives data showing its position at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Kurrachee	29·870	—·107	—·164	W	9	1	Fine.
Hyderabad	·836	—·119	—·210	SSW	6	0	Clear.
Jacobabad	·800	—·157	—·244	E	3	8	Fine.
Pachpadra	·884	—·145	?	NNW	6	0	
Bickaneer	·840	—·143	?	SSW	5	2	Fine.
Montgomery	·822	—·155	—·211	NE	6	5	Fine.
Mooltan	·853	—·130	—·219	NNW	0	4	Fine.

The central depression hence lay over Sind between Jacobabad and Hyderabad. Pressure was about a quarter of an inch below the normal in that area. Skies were clear or lightly clouded in Sind and Rajputana. They were overcast and weather was disturbed in the Punjab and Kashmir hills. The following gives 8 A.M. data for hill stations in Upper India :—

Station.	Pressure.		Wind.		Cloud.	Rainfall.	Weather.
	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"				Inch.	
Cherat	—·108	?	SSE	7	9	...	
Murree	—·098	—·036	S	15	8	...	
Simla	—·045	+·058	Calm	2	10	...	
Dras	—·141	?	Calm	1	10	0·12	Snowing.
Skardu	—·214	?	SW	4	9	...	
Astor	—·094	?	SW	8	10	0·11	Snowing.
Minimarg	+·020	?	W	7	10	0·20	Snow-storm.
Leh	—·140	—·014	SW	1	9	...	
Gilgit	—·165	?	W	2	10	...	
Kashgar	—·016	?	N	...	10	...	

1st February.—Pressure had risen briskly in Sind and the South-West Punjab and had fallen in East Rajputana and the adjacent districts of the North-Western Provinces to which the depression was now transferred. The following data indicate the position of the central depression at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Nowgong	29·918	—·061	—·130	WSW	1	2	Fine.
Cawnpore	·910	—·047	—·106	SE	1	0	Clear.
Mainpuri	·905	—·052	?	ESE	2	4	Fine.
Agra	·914	—·030	—·126	SW	7	0	Clear.
Jhansi	·910	—·044	—·136	SW	1	0	Clear.

Skies were clearing in the Punjab and were lightly clouded in the depression area. Light to moderate snow had fallen in the Kashmir and Punjab hills down to about 6,000 feet. Light showers had been received in the districts of Peshawar, Rawalpindi and Hazara in the North Punjab.

2nd February.—Pressure had given way briskly to rapidly in the eastern districts of the North-Western Provinces, Bihar, Chota Nagpur and South Bengal. The depression was now passing through Bihar and Chota Nagpur, but was of little importance, as skies were clear in North-Eastern India, except in Assam and Sikkim where light local showers had fallen.

3rd February.—The depression had continued to advance eastwards and was now passing through Bengal, where pressure had given way slightly. It had fallen briskly in Assam. The depression was probably central at 8 A.M. in Central Bengal. Light local showers had fallen in Assam.

4th February.—A brisk to rapid rise of pressure had occurred in Bengal and Assam and the depression had completely filled up. Showers had again fallen in Assam and Sikkim, but skies were now clearing in these areas.

Pressure had given way briskly to rapidly in Upper India and a depression was shown in the South-West Punjab at 8 A.M. The following gives an account of the storm :—

Depression and storm of the 4th to the 6th February.—The depression did not form in the Persian area, as pressure was in considerable to large excess from the 1st to the 3rd at Baghdad and Bushire. It appears to have originated in Upper India on the 3rd as the pres-

sure changes were small and irregular at the Baluchistan stations.

Pressure gave way rapidly in Upper India and at the hill stations in Kashmir and the Punjab during the 24 hours preceding 8 A.M. of the 4th, and a low pressure area, central near Mooltan, lay over the South-West Punjab at that hour.

The following data show its position at that hour :—

Station.	Pressure.			Wind.		Cloud.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				
Jacobabad	29·796	—·106	—·262	SW	3	0	Clear.
Bickaneer	·803	—·124	?	SSW	4	0	Dusthaze.
Montgomery	·769	—·131	—·256	SE	4	0	Clear.
Mooltan	·737	—·184	—·339	Calm	0	0	
Lahore	·776	—·111	—·273	E	1	2	Fine.
Khushab	·778	—·118	?	NNE	1	0	Clear.
Dera Ismail Khan.	·777	—·157	—·305	Calm	2	0	Clear.

Winds were exceedingly light in the area of depression and skies were beginning to cloud over. The conditions in the neighbouring hill districts are shown by the following 8 A.M. observations :—

Station.	Pressure.		Wind.		Cloud.	Weather.
	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"				
Cherat	—·117	?	NNE	15	0	Clear.
Murree	—·125	—·141	Calm	5	5	Frosty.
Simla	—·074	—·119	S	4	2	Dusthaze.
Dras	—·139	?	Calm	0	2	Frosty.
Skardu	—·188	?	Calm	3	9	
Minimarg	—·176	?	NE	9	0	Clear.
Leh	—·112	—·099	W	2	2	Fine.
Gilgit	—·184	?	SW	4	10	

The weather was as yet fine in the hills but skies were clouding over rapidly.

5th February.—The pressure changes were very irregular. Pressure had increased briskly in the Punjab, Assam and Upper Burma, and had fallen in North Bombay and in Bihar and Chota Nagpur. An area of depression, in which pressure ranged between ·19" and ·24" in defect, stretched from Sind and the West Punjab to Bihar and Chota Nagpur. Pressure was, on the other hand, in excess in Assam and steep gradients for easterly winds obtained in Bengal Weather was feebly disturbed in the Gangetic Plain and thundershowers had fallen over the greater part of the North-Western Provinces, North Bihar and North Bengal.

6th February.—Pressure had risen very rapidly in the Punjab, Rajputana and the North-Western Provinces, and normal pressure conditions were re-established in the submontane districts of Northern India. Series of thunderstorms had given moderate to heavy rain in North Bengal and Sikkim. The following large falls were reported :—

District.	Station.	Rainfall in 24 hours preceding 8 A.M. of 6th February.
		Inches.
SONTHAL PARGANAS	Bhagya	1·86
DARJEELING	Pedong	1·67
"	Darjeeling	1·54
"	Kurseong	1·28
RANGPUR	Gobindganj	1·51
"	Peerganj	1·30

The disturbance passed away completely during the day.

Pressure was in general slight defect on the 7th in Northern India. It was in considerable defect in the Peninsula and in large defect in Lower Sind and Cutch.

Pressure gave way locally in Sind and North Bombay on the 8th, thus emphasizing the local deficiency of pressure in that area. Pressure decreased briskly to rapidly in that area and Rajputana during the next 24 hours, and a deepish depression was shown on the morning of the 9th. The following gives a history of this storm, the most important feature of the month :—

Storm of the 9th to the 11th February.—This depression formed over Sind, South-West Rajputana, Cutch and Kathiawar during the 48 hours preceding 8 A.M. of the 9th. This is confirmed by the fact that north-east winds prevailed steadily at this time in the Arabian Sea off the Sind and Kathiawar coasts, increasing in strength with the development of the depression.

The following data show the position of the depression at 8 A.M. of the 9th :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
Mount Abu .	...	—·104	—·256	S	8	9		
Jodhpur .	29·784	—·110	?	NE	4	9	0·17	Showery.
Pachpadra .	·766	—·105	?	ENE	10	8	0·13	
Jacobabad .	·882	—·053	—·179	NNW	9	10	0·08	
Hyderabad (Sind.)	·759	—·101	—·296	NNW	15	10		
Kurrachee .	·813	—·019	—·233	NNW	9	10	0·34	
Bhuj . .	·735	—·086	—·288	NW	10	10		
Deesa . .	·733	—·108	—·290	ENE	10	7		Squally.

The centre of the depression was probably about midway between Deesa and Hyderabad where pressure was three-tenths of an inch below the normal. The S. S. *Incharran* off the Kathiawar coast had northerly winds, force 4, during the day, and very vivid lightning at night. The S. S. *Patna*, proceeding along the Sind coast towards Bombay, had north-north-east winds with hard squalls in the morning.

Numerous thunderstorms and hailstorms had occurred in the eastern quadrant of the depression, more especially in Rajputana, Central India and the western districts of the Central Provinces.

Pressure had risen briskly to rapidly in North Bengal, Assam and Upper Burma and was now in considerable excess. The abnormal pressure conditions were now giving easterly winds over the whole of Bengal and the Gangetic Plain.

10th February.—Pressure had given way rapidly in the Punjab. The fall was greatest in the north of the Punjab. There was a marked tendency to the formation of a secondary depression in the North Punjab. The combination of the changes in North Bombay and Rajputana due to the movement of the primary depression with the changes in Upper India had resulted in the apparent transfer of the closed area of low pressure and of depression north-eastwards into Rajputana. The following data show its position at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
Mount Abu .	...	—·064	—·320	S	12	9	0·51	Thunderstorm.
Sambhar .	29·736	—·081	—·293	SSE	18	8	0·21	
Bickaneer .	·701	—·182	?	S	9	7	0·59	Fine.
Sirsa . .	·755	—·178	—·276	ESE	11	10	0·63	Raining.
Montgomery	·782	—·171	—·299	NE	13	10	0·66	Continuous rain.
Mooltan .	·820	—·144	—·251	NNE	6	10	0·72	Drizzling.
Hyderabad (Sind).	·797	+·038	—·251	NNW	19	0	0·34	Nor-wester with rain.

Pressure was now nearly three-tenths of an inch below the normal over the whole of Rajputana and Upper Sind and was most largely in defect at Ajmere (—·31″). The depression hence now consisted of a large area of uniform pressure of about 400 miles in diameter with steep gradients in the eastern quadrant and very slight gradients in the northern quadrant.

General rain had fallen over an unusually large area during the previous 24 hours, including the Punjab, the North-Western Provinces, Rajputana, Central India, the Central Provinces, Berar, Hyderabad and North Bombay.

In many cases the rain had accompanied thunderstorms and hailstorms of considerable intensity. Hailstorms were chiefly restricted to Central India and Rajputana. Falls exceeding 3 inches in amount were recorded at the following stations at 8 A.M. :—

District.	Station.	Rainfall in 24 hours preceding 8 A.M. of 10th February.
		Inches.
Muzaffarnagar . .	Budhana	4·03
Chanda	Chanda	3·71
Jhansi	Mau	3·44
Moradabad	Sambhal	3·40
Balaghat	Lanji	3·06

11th February.—Pressure had increased rapidly in North Bombay and Rajputana, and slightly in the Punjab. A large shallow depression covered the greater part of the Punjab, Sind and Rajputana. Pressure was lowest

and most largely below the normal at Montgomery (—·26″), but winds were light to moderate in force and cyclonic in direction in the depression. Pressure had given way in Bihar and also in East Bengal, and had risen in the intermediate area, and a V-shaped area of local high pressure stretched southwards from Sikkim to Lower Bengal. The pressure conditions were very abnormal and weather was more or less disturbed over the greater part of India. No rain had been received during the previous 24 hours in Burma, Assam and East Bengal. Fairly general, and in some districts heavy, rain had fallen over the remainder of India. The showers were heavy in the South-East Punjab and some parts of the Central Provinces. The following gives the largest amounts recorded at 8 A.M. :—

DISTRICT.	STATION.	Rainfall in 24 hours preceding 8 A.M. of 11th February.
		Inches.
UMBALLA	Umballa	5·83
"	Kharar	4·07
HOSHIARPUR	Garhshankar	4·11
AMRITSAR	Buggeh	4·00
CHANDA	Brahmapuri	3·95
BHANDARA	Sakoli	3·05
"	Tirora	3·00

12th February.—Pressure had increased very rapidly in Upper India, and the depression in that area had completely disappeared. Pressure had fallen rapidly at the foot of the Sikkim hills and the abnormal pressure conditions in Bengal had passed away. Light to moderate showers had fallen in the Punjab, chiefly in the south-eastern districts, and in some parts of the Gangetic plain and Bengal. Pressure was practically normal at 8 A.M. of this day over nearly the whole of India, except Bengal and Burma where it was in moderate to considerable defect.

The disturbance was very abnormal in character. It formed in South-West Rajputana and North Bombay on the 8th and 9th, and was displaced north-eastwards into North Rajputana and the South Punjab on the 11th and filled up during the next 24 hours. It was remarkable for the general and heavy fall of rain it gave to nearly the whole country. This rain was especially valuable for the crops, as the cold weather rainfall had hitherto been exceptionally light. The following gives a summary of the rainfall :—

PROVINCE OR AREA.	AVERAGE ACTUAL RAINFALL OF 24 HOURS PRECEDING 8 A. M. OF				Total rainfall of period 9th to 12th Feb. 1898.
	9th February.	10th February.	11th February.	12th February.	
	Inch.	Inches.	Inches.	Inch.	Inches.
Punjab	0·05	0·46	0·79	0·11	1·41
North-Western Provinces and Oudh.	0·20	1·16	1·11	0·30	2·77
Bihar	0	0·05	0·50	0·06	0·61
Chota Nagpur	0·03	0	0·68	0·03	0·74
Bengal	0	0	0·03	0·01	0·04
Central Provinces	0·20	0·69	1·00	0	1·89
Berar	0·03	0·20	0·21	0·01	0·45
Hyderabad	0·27	0·36	0 30	0	0·93

The storm also gave a moderate fall of snow in the Western Himalayas.

Pressure gave way irregularly over the Indian area on the 13th. The fall was rapid in Upper Sind and parts of the Punjab. Pressure fell again rapidly during the next 24 hours in Sind and West Rajputana, and a depression lay over Sind on the morning of the 14th of which the following is an account :—

Cold weather storm of the 14th to the 17th February.—The origin of this storm is doubtful. A deepish depression lay over Greece, South Turkey, the Black Sea and South Russia on the 8th and 9th. It apparently passed eastwards and anticyclonic conditions prevailed in South-Eastern Europe during the remainder of the month. Pressure fell below the normal at Baghdad and in West Persia on the 10th and was largely below the normal from the 10th to the 16th. Weather was cloudy and showery with strong winds.

Pressure was, during this period, from the 10th to the 16th, considerably to largely below the normal in Baluchistan and Upper India.

The observations, however, appear to indicate that the depression under discussion originated in Sind and did not pass from Persia through Baluchistan.

The following data show the character of the weather in Sind and Baluchistan on the 14th :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Kurrachee	29·830	—·082	—·182	W	10	0	...	Clear.
Hyderabad (Sind).	·813	—·110	—·198	SSW	6	0	...	Clear.
Pachpadra	·845	—·097	?	N	3	7	...	
Mooltan	·869	—·069	—·176	Calm	0	10	0·13	Drizzling.
Jacobabad	·772	—·144	—·248	NNE	5	2	...	Fine.
Chaman	...	—·043	?	ESE	9	9	0·27	
Quetta	...	—·089	—·205	SSE	5	10	1·19	Showery.

Skies were more or less clouded in Upper India and Baluchistan and light showers had fallen in Baluchistan and some districts of the Punjab.

15th February.—The pressure changes suggest that the depression in Sind on the 14th had advanced rapidly eastwards, and was at 8 A.M. in Baghelkhand, Bundelkhand and the adjacent districts of the North-Western Provinces. Pressure had increased briskly in Upper India and Baluchistan, but was still in large defect, and a very shallow low pressure area lay over the whole of Sind and the neighbouring districts of Baluchistan. Light to moderate showers had been received in the Punjab, North Rajputana and Baluchistan.

16th February.—Pressure had given way briskly in Bengal and the depression was now passing eastwards, through that area. Skies were, however, generally clear, and the storm was hence of little importance.

Pressure had given way briskly to rapidly in the West and Central Punjab and the low pressure area in Sind on the previous day had developed considerably and now lay over Sind and the South-West Punjab. The following data show its position at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"					Inch.	
Bickaneer .	29·817	—·051	?	SW	6	8	0·02	
Montgomery	·751	—·136	—·257	SSE	6	9	0·04	Showery.
Khushab .	·822	—·069	?	E	9	10	0·55	Showery.
Mooltan .	·788	—·105	—·250	Calm	1	10	0·02	Overcast.
Jacobabad .	·783	—·051	—·225	E	7	0	...	Clear.

Moderate rain had fallen over the North Punjab.

17th February.—The pressure changes were very small in Upper India and the depression in that area was practically unchanged in position or character. The following data fix its position at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
Bickan .	29·824	+·007	?	SSW	9	0	...	Dusthaze.
Montgomery	·801	+·050	—·200	E	6	3	...	Fine.
Khushab .	·838	+·016	?	ENE	12	10	0·09	Showery.
Mooltan .	·795	+·007	—·243	Calm	0	2	...	Fine.
Jacobabad .	·756	—·027	—·251	ESE	6	0	...	Clear.

Rain had fallen in the sub-montane districts of the Punjab and moderate to heavy snow on the higher ranges of the Panjab and Kashmir Himalayas.

18th February.—The depression had filled up during the previous 24 hours. Rain had again fallen in the East Punjab and general snow in the hills.

Pressure had given way very rapidly over the whole of Northern India and was unusually low over the whole length of Northern India from Bihar to Central Bengal, the deficiency ranging between ·30" at Purnea and ·37" at Peshawar.

These pressure conditions were giving rise to westerly winds in the Gangetic Plain, but they were as yet feeble.

Pressure increased rapidly in Upper India and decreased very rapidly in North-Eastern India during the next 24 hours. A depression in which pressure was nearly half an inch below the normal lay over Assam and North Bengal on the morning of the 19th. Pressure was in slight defect on the North Bombay Coast. Abnormally strong gradients for westerly winds now obtained in Northern India. Skies had cleared in North-Western India and a rapid fall of temperature and humidity had commenced in Upper India.

Pressure increased steadily in the Indian area on the 21st and the two following days and was again in excess over by far the greater part of India on the 23rd. The following gives the mean changes of pressure day by day during this period :—

Province.	Pressure change in 24 hours preceding 8 A.M. of					
	18th Feb.	19th Feb.	20th Feb.	21st Feb.	22nd Feb.	23rd Feb.
	"	"	"	"	"	"
Punjab	—·153	+·106	—·022	+·138	+·118	+·151
North-Western Provinces and Oudh.	—·176	+·018	+·022	+·131	+·133	+·080
Bihar	—·148	—·105	+·110	+·155	+·098	+·043
Chota Nagpur . .	—·128	—·099	+·094	+·132	+·107	+·051
Bengal	—·105	—·166	+·137	+·132	+·079	+·022
Central Provinces . .	—·105	+·008	+·002	+·048	+·095	+·073
Central India . .	—·107	+·041	—·029	+·053	+·102	+·131
Deccan . . .	—·045	—·040	—·003	+·014	+·052	+·043

The pressure changes during the remainder of the month were larger and more rapid than usual. On the whole pressure increased and was above the ormal generally at the end of the month by amounts increasing from zero in the west coast to a tenth of an inch in West Bengal. Weather was throughout this period unusually fine with clear skies, low temperature and great dryness of the air in Northern and Central India and the Deccan.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-west of India.

The following is a statement of the information relating to the snowfall of the month of February 1898 in the Himalayan and Afghan mountain areas received up to date :—

I.—AFGHAN MOUNTAIN DISTRICTS.

(1) *Dera Ismail Khan District* (*Kulachi Border*).—"Snow fell on the 8th and 9th February to the depth of 3 feet, and on the 14th and 15th to the depth of 2 feet on the following peaks of the Suleiman range, *viz.*:—Ushbachaka, Mormarz, Ghar, Soryala and Kot.

(2) *Wano.*—Snow fell during the month as under —

9th.—Heavy fall of snow, about 1 foot, on the Marwattai hills from 10,000 to 6,500 feet.

14th.—Fall of snow from 4 to 6 inches in depth on the Marwattai hills from 10,000 to 8,000 feet.

15th.—Ditto ditto.

16th.—Heavy fall of snow, about 1 foot in depth, on the Marwattai hills from 10,000 to 8,000 feet. Slight sprinkling on Kotkan, 7,900 feet.

18th.—Ditto ditto.

"On each occasion the snow on the hills was accompanied by rain in the Wano plain and the storms extended over the whole neighbourhood.

"On the 28th February about 6 inches snow was remaining on the northern slopes of hills from 8,000 feet upwards. The snowfall during the month was slightly above the normal."

(3) *Kurram.*—Snow fell on the 5th, 6th, 7th, 8th, 11th, 13th, 14th, 15th, 16th, 17th, 18th, 27th and 28th February in the Kurram Valley.

"It snowed slightly throughout the month under report, except on the 7th and 15th February. There were heavy falls on these dates when snow fell down to about 4,000 feet. The total falls at Parachinar station measured about 2 and 2½ inches respectively.

"The general character of the weather during each snow-storm was unusually cold and strong northerly gales continued blowing during the period from the 18th to the 22nd February.

"From the reports received it appears that there was about 4 feet of snow on the Badina and Sikoram summits of Sufed Koh at the end of the month. The fall of snow during the month was lighter and the wind stronger than during the same period of last year."

(4) *Kabul.*—"Snow fell on the 14th, 15th, 16th and 27th, but the amounts were very small. The total fall of the month was barely two inches. There was no snow lying near Kabul at the end of the month. The adjoining hills were partly covered. The fall of the month was very light and much less than in February 1897 when a total of nearly 3 feet was received."

II.—KASHMIR AND PUNJAB HIMALAYAS.

(1) *Leh.*—"Snow fell on the 11th and 12th to the depth of a few inches. Light snow fell on the nights of the 16th and 17th and the depth of snow lying on the 18th was about 3 inches. The snow melted during the next week, and on the 26th had disappeared entirely from the valley. The snow line on the surrounding hills was at an elevation of about 12,000 feet at the end of the month."

(2) *Chitral.*—The following information of the snowfall in Chitral was received by telegram from the Officer Commanding in Chitral :—

20th February.—"Very heavy snow has fallen during the past four or five days on the Lowarai range. The pass across the range has hence been closed for some days. The weather has now cleared. Strong, cold northerly gales have also prevailed for some days, but have begun to abate to-day.

"It may also be noted that earthquake shocks were experienced at Drosh on the 6th at 1·10 P.M. and on the 20th at 6·30 P.M., and midnight."

(3) *Chamba.*—The first storm of the month occurred on the 4th and 5th, and severe storms followed on the 10th, 11th, 13th and 15th and also from the 16th to 18th, the snow line descending to 3,500 feet.

The following gives a statement of the snowfall of the month at different levels :—

NAME OF PEAK.	Height above sea level.	REPORTED DEPTH OF SNOW ON			
		4th and 5th February 1898.	10th to 15th February 1898.	16th to 18th February 1898.	TOTAL.
	feet.	′ ″	′ ″	′ ″	′ ″
Chitrari . . .	6,000	0 2	2 2	2 5	4 9
Alansa . . .	7,000	0 3½	3 4	4 9	8 4½
Kundi . . .	?	0 1½	2 3	2 4	4 8½
Devi Kothi . .	7,800	0 7	2 4	?	2 11
Kalatop . . .	8,000	*Nil*	3 2	4 9	7 11
Bhandal . . .	6,000	*Nil*	0 8	2 5	3 1
Thanela . . .	7,000	*Nil*	2 8	5 5	8 1
Chanan . . .	6,500	*Nil*	1 9	4 5	6 2
Surkhi Galli . .	5,000	*Nil*	*Nil*	0 9	0 9
Barmaur . . .	?	0 4	5 11	5 1	11 4

The storms of February 10th to 15th and 16th to 18th were general over the whole of Chamba, while the others

were more or less local. The weather was generally calm and the intervals between the storms were bright and clear.

After the storm ending 18th February the weather cleared until the 28th, when a gale commenced to blow and the sky clouded over again.

The following gives the depth of snow on the 15th of the month at certain forest stations:—

STATION.	Height above sea level.	Reported depth of snow.	
	Feet.	′	″
Kalatop . . .	8,000	2	9
Kundi . . .	?	1	6
Chitrari . . .	6,000	1	7
Alansa . . .	7,000	2	4
Bhandal . . .	6,000	0	4
Chaori Pass . .	9,000	3	3
Padri „ . .	?	4	0 (uncertain.)

The snowfall up to date is considered abnormally light and the continuance of clear weather unusual.

(4) *Dalhousie District.*—The following interesting report on the snowfall in this district for the period, 1st January to 28th February, has been received from Captain F. H. Playfair, Treasury Officer:—

"The *first* snowfall of the year occurred on the 4th January 1898, giving a fall of some 6 inches of snow. There was no further fall during the month of January.

"In February snow fell as follows:—

	Inches.
On 10th	. 2
„ 11th	. 6
„ 16th	. 1
„ 17th	. 21
„ 18th	. 6
TOTAL	. 36

"After the falls on the 17th and 18th the line of snowfall on the neighbouring ranges of hills appeared to be exceedingly low. The exact height cannot be given, but judging from the datum level of Dalhousie Mall as 6,500 feet, the snowfall on the adjoining ranges of hills must have come down to and below a similar height. In some of the valleys it descended far below this, even covering the cantonment of Bolun (which is about 5,800 feet) to a depth of 18 inches and going even 1,000 feet lower than this to a depth of 12 inches in the vicinity of Ranikhet. At this station it is nearly always possible to prognosticate the advent of snow previous to the snowfall itself, as the sky becomes heavily clouded over 24 hours before, entirely obscuring the sun in the day time. This was the case on the 3rd January and the snow fell on 4th. From the 10th to the 18th February, the weather was wildly unsettled, excepting a partial break on the forenoon of 14th for six hours. The heaviest fall was on the 17th between midnight and 6 A.M. The whole period from the 10th to the 18th February was continuously unsettled and accompanied by snow, hail and rain. Up to the slight fall on 4th January and after it again till the unsettled period in February the weather was exceptionally mild for the time of year, so much so that in many places rhododendrons were budding and blooming some two months before the usual time. Again, as soon as the unsettled period passed away, excepting a week immediately following it, the weather was mild, so much so that in many places traces of recent snowfall have disappeared already.

"On the southern aspects of the station there is no snow left. On the northern there is standing in Dalhousie about an average of 1 foot, on Bakrota (7,800 feet) 3 feet on the north and 1 foot on the south side. On Denkund and Kalatop hills (height approximately 9,000 feet) the snowfall is over 3 feet in depth, and to this extent abundantly covers these hills, greatly to the benefit of the station water-supply which emanates from them. The snowy range in the Chamba district is a beautiful view at present densely covered with snow in every direction, which has descended to an average approximate height of 9,000 or 10,000 feet and there remains at present. The snowfall has so far not only been less than usual in amount but also very late in commencing. The lowest elevation to which the snow line descended in February on the adjoining hills was not lower than what is usually reached by the end of November in ordinary years, and snow may come in the station at any time *after* Christmas. It is exceptional to fall *before*. The slight fall on the 4th January was average but for six weeks after it the weather was quite abnormal. The period of snowfall generally is from the last week of December to the end of February and the average or normal accumulated fall at least 6 feet."

(5) *Kulu.*—The following report for the month of February has been received from the Assistant Commissioner:—

"There were falls on 4th, 9th, 10th, 11th, 13th 14th, 15th, 16th, 17th and 18th in the Kulu tahsil and on the 5th to 19th and 23rd in the Plach sub-tahsil. The fall of snow were general on these days on all the passes in the sub-division. The falls of the 17th and 18th descended to an elevation of 5,000 feet where the depth was about an inch.

"The weather was generally cold during the month. All the passes in the sub-division were closed during the month. The Jalori pass (10,000 feet) was open to foot passengers except for a few days after the heavy snow of the 17th and 18th."

The following table shows the reported depth of snow on the higher passes of the sub-division at the end of the month under report :—

TAHSIL.	Name of pass.	Height above sea level in feet.	REPORTED DEPTH OF SNOW ON 25TH				
			Feb. 1898.	Feb. 1897.	Feb. 1896.	Feb. 1895.	Feb. 1894.
		Feet.	′ ″	′ ″	′ ″	′ ″	′ ″
KULU	Rotang	13,000	11 0	12 0	16 0	21 0	19 0
	Hamta	14,500	12 0	12 6	12 0	12 0	16 0
	Barsai	...	3 0	5 0	5 0	8 0	12 0
	Chandarkhani	...	6 0	6 0	7 0	6 0	12 0
	Bujadhar	...	6 0	6 0	5 0	7 0	11 0
	Lohri Achri	...	9 0	12 0	11 0	8 0	11 0
	Bhubu	10,000	8 0	6 0	6 0	8 0	8 0
	Pastari	...	6 0	5 0	5 0	9 0	5 0
PLACH	Srikhand	15,000	14 0	12 0	14 0	24 0	18 0
	Chul	...	5 0	8 0	5 0	9 0	6 0
	Maghin	...	6 0	7 0	5 0	7 0	6 0
	Tikar	...	7 0	9 0	5 0	7 0	6 0
	Dundku	...	7 0	11 0	6 0	8 0	8 0
	Nuhun	...	1 0	3 0	?	7 0	4 0
	Jalori	10,500	7 0	8 0	6 0	9 0	6 0
	Raghopur	...	...	8 0	5 0	10 0	6 0
	Lambri	...	7 0	8 0	5 0	9 0	6 0
	Sakiran	...	...	10 0	5 0	10 0	6 6
	Supakun	...	7 0	10 0	5 0	10 0	9 0
	Gargarasan	17,000	11 0	12 0	7 0	19 0	11 0
	Basleo	11,000	8 0	9 0	6 0	9 6	6 0
	Plach	...	11 0	6 0	6 0	14 0	9 0
	Tirath	...	12 0	10 0	6 0	17 0	11 0

III.—NORTH-WESTERN PROVINCES HIMALAYAS.

(1) *Garhwal.*—" There was a fall on the 4th and 5th of February, when about a foot of snow fell on the higher ranges and the snow line descended to about 6,000 feet. The snow on the lower hills melted almost immediately. Snow began to fall again heavily on the 9th February and continued intermittently till the 18th, descending down to about 6,000 feet. The fall on the higher ranges was heavy, about 6 feet in depth. Passes down to about 7,000 feet were closed. About 3 feet fell on the Dhanpur pass, 9,000 feet, which remained closed. All higher passes are likely to remain closed for some time.

"The weather preceding the snow storms was rather warm. During the intervals of snowfall it was cloudy. Since the weather cleared on the 18th great cold has set in with severe frost at night.

"The accumulation of snow (at the middle of the month) varied from about 3 feet on the Dhanpur pass (elevation 9,000 feet) to about 6 feet on the Kinori pass at 12,000 feet. At higher altitudes the accumulation cannot be judged with any certainty, but is probably not much in excess of 6 feet.

"Snowfall was, generally speaking, lighter this year than in previous years, though, owing to the recent heavy falls, the total accumulation at the present time is probably not much inferior to that of ordinary years."

(2) *Almora Distict.*—The following report of the snowfall in this district from the 16th January to 15th February 1898 has been received from the Office of the Commissioner of Kumaon :—

Mala Danpur.—Snow fell as under during the period :—

	′ ″
24th January 1898	2 0
3rd February ,,	1 0
10th to 12th February 1898	4 0
TOTAL	7 0

This was the depth on the well-known passes of Pindari, Kaphini and Kantela.

Mala Johar.—Snow fell as under during the period —

	′ ″
25th January 1898	3 0
26th ,, ,,	3 0
31st ,, ,,	3 0
5th February ,,	5 0
7th ,, ,,	3 0
9th ,, ,,	6 0
10th ,, ,,	3 0
11th ,, ,,	6 0
TOTAL	32 0

This was the depth on the well-known peaks of Utamdhura and Ralamdhura. In Millam 7 feet of snow fell.

Mallas Byans, Chandans and Darma.—Snow fell as under during the period —

	′ ″
24th January 1898	0 6
4th February ,,	0 6
8th ,, ,,	0 6
9th ,, ,,	0 6
10th ,, ,,	0 6
11th ,, ,,	1 0
12th ,, ,,	1 0
13th ,, ,,	0 6
15th ,, ,,	0 6
TOTAL	

The weather was cold and the snowfall less than in previous years.

Summary.—There were two periods of stormy weather in the hill districts of Northern India. The first period was from the 3rd to the 5th when light to moderate snow was received, chiefly in the North Punjab and Kashmir. The second was from the 8th to the 18th when moderate to heavy snow fell over the whole of the Western Himalayas. The snowfall of the month was below the normal generally and the deficiency was most marked in the Baluch and Afghan Mountains and Kashmir. The winter up to the end of February was unusually mild and the snowfall exceptionally light.

Summary of special Storm Reports.

Local thunderstorms and hailstorms occasionally occur in the month of February during the periods of general disturbance known as cold-weather storms. They also occur during hot-weather disturbances, when temperature increases more rapidly than usual and is considerably above the normal. Severe local storms appear to be more frequent under the latter conditions than during the cold-weather disturbances.

The following gives brief notices of thunderstorms and hailstorms which occurred during the month and of which reports have been received :—

3rd.—Hailstorms at Bijni in the Goalpara district, Hailakandi and Gauhati. The storms were of short duration and inflicted little or no damage on the crops.

8th.—Hailstorm at Garote in Indore.

Thunderstorm at Jubbulpore at 9 A.M.

9th.—Hailstorm at Chikalda at 8-10 P.M. Heavy rain fell after the storm.

Severe thunderstorm at Veraval from 9-5 P.M. to 9-20 P.M.

Thunderstorm at Bhuj at 9-30 P.M.

Hailstorm at Bhopal which injured the opium crop to a great extent.

Hailstorm at Saugor at 7-10 P.M. Hailstorm in 42 villages of the Pergannah Mandha in the Hamirpur district. The hailstorms caused much damage to the crops — over 4 annas in 4 villages and under 4 annas in 16 villages.

9th and 10th.—Hailstorms visited some villages in the Bareli pergannah of the Bhopal State. The crops were damaged to the extent of 8 annas in some of the villages. The hailstones were of the size of gooseberries.

10th.—Severe duststorm at Jubbulpore. The storm came from south-west. The strongest winds were of velocity 50 miles per hour.

Hailstorm at Garote at 3 P.M., extending over an area of about 6 square miles in which the poppy crop was damaged.

Hailstorm at Sewan Madhopore in the Jeypore State at 9-10 P.M.

Hailstorms visited a large number of villages in the Partabgarh State. The hailstones were from 2 to 6 drams in weight. Little damage was done to the standing crops.

13th.—Hailstorm at Kohima and the neighbouring villages. Hailstorm in the Dibrugarh tahsil and at Nakari in the North Lakhimpur district. Some slight damage was caused to the mustard, tobacco and silkworm crops.

Severe thunderstorm and hailstorm at Mussooree from 3 P.M. to 3-30 P.M. The storm came down from north-east.

14th.—Hailstorm in about 12 square miles of the Jorhat sub-division of the Sibsagar district. The crops were not injured.

16th.—Thunderstorm at Lahore from 3 A.M. to 7 A.M.

17th.—Thunderstorm at Lahore from 4-30 P.M. to 5 P.M.

18th.—Duststorm at Jubbulpore from north-west.

Brief Summary of the Weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Except along the Indian coast where the air movement was largely influenced by the varying pressure conditions over the neighbouring land area, ordinary north-east monsoon winds held steadily throughout the

month over the Arabian Sea. Winds were more or less above their normal intensity on at least fifteen days. The variations of strength were even larger than usual, the mean force over the whole area ranging between 1·9 and 4·7. Winds were, however, on the mean of the month of practically normal strength.

Weather was fine throughout the month over the whole area, except near the North Bombay coast, where it was slightly disturbed with occasional rain and squalls on the 9th and 10th. Conditions were, as in the corresponding period of the previous year, much less disturbed than usual in the Persian Gulf and hence moderate to strong north-west winds obtained in that area on most days. Weather was settled and quiet in the Gulf of Aden, but was showery in the southern half of the Red Sea on the 1st and 2nd. Very strong south to south-east winds, force 5 to 9, were experienced in the latter area from the 22nd to the 25th, due probably to actions in Abyssinia. The south-east wind at Perim blew with an average hourly velocity of 25 miles on the 22nd and of 29 miles on the 23rd.

Bay of Bengal.—Abnormal westerly winds due to conditions over the land obtained off the Bengal and Orissa coasts during the first six days of the month, and ordinary north-east monsoon winds over the remainder of the Bay. The air movement over the Bay averaged 2·3 for this period from the 1st to the 6th or 0·2 below the normal. Winds increased rapidly in force on the 7th and 8th and averaged 3·4 on the 9th and 3·6 on the 10th. They fell off again during the next 48 hours and averaged only 2·0 in force on the morning of the 12th. Pressure was more or less largely below the normal over the land area of Burma and North-Eastern India during the next ten or eleven days, and the whole of that period was hence characterised by the prevalence of abnormal winds from between north and west over nearly the whole of the Bay. The abnormal conditions were most marked on the 20th, at 8 A.M. of which day all the vessels contributing wind data for the Bay experienced westerly winds, force 2 to 5. Winds were more or less above their normal strength during the whole of the period from the 14th to the 23rd. They were strongest at the end of the period (*i.e.*, on the 23rd) when they averaged 3·7 in force or 1·2 above their normal intensity. Fairly normal winds obtained over the Bay during the remainder of the month except in the extreme north where northerly winds continued to prevail instead of the local southerly winds which usually set in over that area in the second week of the month. The mean force for the month under review was 2·8 or 0·3 above the normal of the month. Weather was feebly unsettled in the vicinity of Ceylon on one or two occasions, but was fine with clear or lightly clouded skies over the remainder of the Bay throughout the month.

Temperature of the Air.

The mean maximum or day temperature of the month was above the normal in two areas. The first area included Burma and South Bengal. The variations were, however, small and the day temperature was hence practically normal. The second area included Baluchistan and the Indus valley districts. The excess was large at Quetta (+5°·3) and considerable at Jacobabad (+3°·8), but was small at the remaining stations in the Indus valley.

The day temperature was below the normal over the remainder of India. The deficiency was more than 2° in the North-Western Provinces and in the greater part of the Deccan, Berar, Khandesh and the Central Provinces. The following gives temperature data for stations in those areas at which the day temperature was 3° or upwards below the normal:—

Province.	Station.	Mean maximum temperature.		
		Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
		°	°	°
South Punjab	Delhi	71·8	75·1	—3·3
North-Western Provinces and Oudh.	Meerut	71·1	74·4	—3·3
	Benares	77·2	80·4	—3·2
Central Provinces.	Chanda	87·3	91·6	—4·3
	Sambalpur	84·8	87·9	—3·1
	Seoni	80·9	83·9	—3·0
Deccan	Sholapur	89·6	93·8	—4·2
	Hyderabad (Deccan)	87·2	91·0	—3·8
	Secunderabad	88·0	91·0	—3·0
Gujarat	Surat	86·2	89·5	—3·3

The day temperature was also below the normal to a slight or moderate extent at the hill stations in Kashmir, the Punjab and the North-Western Provinces and in Central India. The deficiency was greatest at Mount Abu (—2°·9) and Ranikhet (—2°·5).

The mean minimum or night temperature of the month was above the normal over the whole of India with the exception of the Deccan, North Madras, Orissa and the South Konkan. The following are the variations exceeding 2° in the areas of lower night temperature than usual at the stations for which data are given below :—

Station.	Mean minimum temperature.		
	Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
	°	°	°
Vizagapatam	64·5	67·9 ?	—3·4 ?
Belgaum	56·7	59·5	—2·8
False Point	61·6	64·3	—2·7
Cuttack	62·4	65·1	—2·7
Cocanada	67·4	69·6	—2·2

The night temperature was generally in slight excess over the remainder of India, but the excess was more than 2° in amount in five small areas. The following gives data for stations at which it was more than 3° :—

Province.	Station.	Mean minimum temperature.		
		Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
		°	°	°
Burma	Bassein	67·2	63·9	+3·3
Bengal	Jalpaiguri	54·4	50·8	+3·6
	Dinajpur	54·2	51·2	+3·0
Punjab	Lahore	48·0	43·9	+4·1
	Mooltan	49·5	46·0	+3·5
	Ludhiana	49·6	46·5	+3·1
Central India	Nowgong	53·2	50·0	+3·2
	Sutna	54·0	51·0	+3·0

The night temperature was, on the other hand, slightly below the normal at the hill stations with the exception of Leh (+2°·5) and Murree (+1°·5). The deficiency was most marked at Darjeeling (—2°·8).

The variations of the mean temperature were generally small in amount, as the day and night temperatures at the majority of stations departed in opposite directions from the normal.

The mean temperature of the month was above the normal over the whole of India to the north of Lat. 22° N. (except the North-Western Provinces) and also in Burma and Southern India. The variations were small and less than 2° in amount except in Baluchistan, Upper Sind and the South-West Punjab. The following gives data :—

Province.	Station.	Mean daily temperature.		
		Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
		°	°	°
Baluchistan	Quetta	44·1	41·7	+2·4
Sind	Jacobabad	65·1	62·4	+2·7
Punjab	Mooltan	61·6	59·5	+2·1

The mean temperature of the month was below the normal in the Peninsula between Lat. 12° N. and Lat. 22° N. The deficiency was most marked in the driest districts of the Deccan, where it ranged between 2° and 3° as is shown below :—

Province.	Station.	Mean daily temperature.		
		Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
		°	°	
Madras	Vizagapatam	74·1	77·3	—3·2
Deccan	Sholapur	74·8	77·8	—3·0
	Belgaum	71·4	74·1	—2·7
	Hyderabad (Deccan)	74·5	76·9	—2·4
Central Provinces	Chanda	72·7	75·3	—2·6
	Seoni	67·2	69·5	—2·3
Orissa	Cuttack	75·4	77·6	—2·2

The mean temperature of the month was above the normal at Leh, but was in slight defect at the stations

on the outer ranges of the Himalayas and at Mount Abu. The following gives data :—

STATION.	MEAN DAILY TEMPERATURE.		
	Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
	°	°	°
Ranikhet	46·0	47·9	—1·9
Simla	39·8	41·6	—1·8
Chakrata	41·7	43·3	—1·6
Mount Abu	59·6	61·1	—1·5

The mean temperature of the month was also practically normal in Persia and at Aden.

The following are the leading abnormal features of the mean temperature conditions of the month :—

(1) Both the day and night temperatures were above the normal in the Indus valley districts, and hence the mean temperature of the month was in moderate excess at Jacobabad and Mooltan.

(2) The day temperature was in slight to moderate defect in the Gangetic Plain, Rajputana and Central India and also Southern India, and the night temperature in slight to moderate excess. Hence the mean temperature of the month in these areas was practically normal.

(3) Both the day and night temperatures were below the normal in the Peninsula between Lat. 22° N. and Lat. 12° N., and hence the mean temperature of the month was in moderate to considerable defect over the greater part of that area, more especially in the Deccan.

(4) The day and night temperatures and hence also the mean temperature of the month were below the normal to a slight extent at the hill stations in Northern and Central India.

The following table gives mean temperature data of the month for 56 of the meteorological divisions into which India is divided :—

PROVINCE.	DIVISION.	ACTUAL TEMPERATURE.					VARIATION FROM NORMAL OF		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
BURMA	Tenasserim	90·3	69·3	79·8	21·1	36·9	+0·3	+1·4	—1·1
	Lower Burma (Deltaic)	89·2	69·5	79·3	19·7	30·8	+0·5	+2·5	—2·0
	Central do.	91·9	60·2	76·1	31·7	44·0	+0·3	+2·1	—1·8
	Upper do.	87·6	58·1	72·8	29·5	43·4	+0·6	+1·5	—0·9
	Arakan	84·7	61·0	72·9	23·7	37·1	+0·1	+0·1	0
BENGAL AND ASSAM	Eastern Bengal	78·9	57·0	68·0	21·9	37·0	+0·2	+1·2	—1·0
	Assam (Surma)	81·0	55·7	68·4	25·3	38·0	+1·1	+0·7	+0·4
	Do. (Brahmaputra)	73·6	54·4	64·0	19·2	32·6	—1·5	+1·5	—3·0
	Deltaic Bengal	81·7	59·3	70·5	22·5	40·2	—0·6	+0·4	—1·0
	Central do.	80·3	56·6	68·5	23·7	40·6	—1·0	+1·5	—2·5
	North do.	76·1	54·5	65·4	21·6	32·6	—1·1	+3·0	—4·1
	Bengal Hills	49·8	27·5	38·7	22·3	40·7	?	?	?
	Orissa	84·2	64·3	74·2	19·9	34·5	—1·1	—2·7	+1·6
	Chota Nagpur	79·4	54·9	67·2	24·5	40·4	—0·7	+0·7	—1·4
	Bihar (South)	77·9	55·5	66·6	22·4	36·7	—1·6	+1·6	—3·2
	Do. (North)	76·1	53·8	65·0	22·4	36·8	—1·4	+2·2	—3·6
NORTH-WESTERN PROVINCES AND OUDH.	North-Western Provinces (East)	77·7	52·8	65·3	25·0	42·4	—2·4	+1·6	—4·0
	Oudh (South)	76·8	51·6	64·2	25·2	43·6	—1·7	+1·3	—3·0
	Do. (North)	75·0	51·8	63·4	23·2	37·9	?	?	?
	North-Western Provinces (Central)	77·4	53·3	65·4	24·1	41·9	—0·6	+1·8	—2·4
	Do. do. (West)	73·6	51·7	62·6	21·9	41·1	—2·7	+2·1	—4·8
	Do. do. (Submontane, East)	75·3	53·5	64·4	21·8	37·0	—2·8	+1·7	—4·5
	Do. do. (do. West)	70·0	48·5	59·2	21·5	38·8	—2·3	+0·9	—3·2
	Do. do. (Hills)	49·6	36·4	43·1	13·2	32·5	—2·2	—1·4	—0·8
PUNJAB	Punjab (South-East)	71·8	51·7	61·8	20·1	40·3	—3·3	+0·1	—3·4
	Do. (South)	71·4	48·3	59·9	23·2	42·0	—2·0	+1·6	—3·6
	Do. (Central)	69·2	48·0	58·6	21·2	37·4	—1·3	+4·1	—5·4
	Do. (Submontane)	69·6	48·4	59·0	21·2	40·3	—1·4	+2·6	—4·0
	Do. (Hills)	45·2	26·3	35·8	18·9	38·3	—1·1	+0·8	—1·9
	Do. (North)	66·1	43·3	54·7	22·8	40·1	+1·1	+2·3	—1·2
	Do. (West)	72·2	47·8	60·0	24·4	41·9	+0·8	+2·1	—1·3
BOMBAY AND MALABAR COAST DISTRICTS (MADRAS).	Malabar	87·2	73·1	80·2	14·1	20·7	—0·5	+0·6	—1·1
	Madras (South Central)	92·5	67·6	80·0	24·9	37·3	—0·3	+2·7	—3·0
	Coorg	79·7	58·6	69·2	21·1	30·8	—1·5	+1·3	—2·8
	Mysore	86·9	60·9	73·9	25·9	37·0	+0·3	+1·8	—1·5
	Konkan	83·7	68·1	76·0	15·6	26·0	—1·0	+0·1	—1·1
	Bombay Deccan	88·3	58·1	73·2	30·3	45·7	—2·9	—2·1	—0·8
	Hyderabad (North)	87·1	59·4	73·2	27·7	43·4	?	?	?
	Khandesh	87·1	54·1	70·6	33·0	52·2	—2·2	+0·7	—2·9

Province.	Division.	Actual Temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Central Provinces and Berar.	Berar	88·0	58·7	73·4	29·4	46·3	−2·0	−0·1	−1·9
	Central Provinces (West)	85·9	57·2	71·6	28·6	47·8	−0·9	+1·2	−2·1
	Do. (Central)	82·1	55·0	68·5	27·1	44·7	−2·5	+0·1	−2·6
	Do. (East)	84·6	60·7	72·7	24·0	40·2	−2·8	+0·9	−3·7
Bombay (North)	Gujarat	86·1	60·9	73·5	25·2	48·1	?	?	?
	Kathiawar & Cutch	83·9	59·3	71·6	24·7	45·0	+0·7	+1·1	−0·4
	Sind	81·3	54·5	67·9	26·8	44·7	+2·1	+1·1	+1·0
	Baluchistan Hills	59·7	30·3	45·0	29·5	47·1	+5·3	−0·6	+5·9
Rajputana and Central India.	Central India (East)	79·7	53·2	66·5	26·5	46·4	−0·9	+2·2	−3·1
	Rajputana (East), Central India (West)	79·3	52·5	65·9	26·8	49·0	−0·7	+1·8	−2·5
	Do. (West)	79·2	51·6	65·4	27·6	48·1	−0·2	+1·2	−1·4
Madras	East Coast (North)	83·4	65·6	74·5	17·8	29·7	−1·4	−2·2	+0·8
	Hyderabad (South)	88·2	63·0	75·6	25·3	39·2	−3·4	−0·7	−2·7
	Madras (Central)	92·5	65·4	79·0	27·1	40·6	−1·8	−0·2	−1·6
	East Coast (Central)	87·8	67·5	77·7	20·3	37·6	−0·8	−0·2	−0·6
	Do. (South)	87·4	69·3	78·4	18·1	35·1	−0·4	+0·1	−0·5
	Madras (South)	89·2	72·8	81·0	16·4	26·6	−0·3	+1·9	−2·2

The following gives a summary of the more important changes of the temperature conditions in India during the month.

At the commencement of the month temperature was argely above the normal over the whole of Northern and Central India and was slightly below it in Madras. A feeble cold weather disturbance affected Northern India, from the 1st to the 3rd. The area of greatest excess of temperature which was in Central Rajputana on the 1st was hence displaced eastwards to East Rajputana and Bundelkhand on the 2nd, the North-Western Provinces on the 3rd, and Bihar and Bengal on the 4th.

The excess was as pronounced in the night as in the day temperature. The following gives variation data for this period illustrating the conditions in Northern India :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 1st February.	2nd February.	3rd February.	4th February.
	°	°	°	°
Baluchistan (Quetta)	+ 9·0	+7·3	+5·0	+6·3
Punjab	+ 9·1	+9·0	+7·7	+6·8
Sind and Rajputana	+10·4	+8·4	+6·5	+6·4
North-Western Provinces and Oudh.	+ 7·3	+8·4	+7·4	+6·2
Central India and Gujarat	+ 7·7	+6·7	+4·9	+4·9
Bihar	+ 3·6	+5·7	+5·7	+5·6
Chota Nagpur	+ 1·7	+5·6	+7·0	+6·6
Bengal	+ 3·5	+5·0	+6·8	+6·6

Temperature fell rather rapidly in Bengal, Assam and the North-Western Provinces and also in Rajputana on the 6th and 7th, whilst it increased slightly in Burma, Southern India and Baluchistan. Temperature was in considerable excess in Burma, the greater part of North-Western India and Baluchistan and in slight excess elsewhere. The following gives variation data for the 8th and illustrates the conditions obtaining at the end of the period :—

Political area or Province.	Variation from normal of Mean maximum temperature.	Mean minimum temperature.	Mean temperature.
	°	°	°
Burma	+3·0	+6·9	+5·0
Bengal and Assam	−1·0	+3·8	+1·4
N.-W. Provinces and Oudh	+0·5	+1·1	+0·8
Punjab	+4·4	+2·9	+3·7
Sind and Rajputana	+4·7	+5·4	+5·1
Central India and Gujarat	+1·4	+4·1	+2·8
Central Provinces and Berar	+0·9	+5·1	+3·0
Bombay	−1·9	+2·2	+0·2
Madras	−0·1	+2·7	+1·3

A cold weather disturbance of very unusual character affected North-Western India during the period from the 9th to the 12th. It formed in South-West Rajputana and the adjacent districts of Bombay on the 8th and 9th, and shifted slightly to the north-east on the 10th and 11th into Central Rajputana and filled up in Upper India on the

12th and 13th. The disturbance was remarkable for the widely-spread and heavy rainfall it gave. Areas which, as a rule, receive no rain from cold weather depressions, obtained a moderate to heavy downpour. In Rajputana and Central India series of thunderstorms with hail occurred which cooled the air very considerably. The whole of India, with the exception of parts of Madras, East Bengal, Assam and Burma, received more or less general rain. This rainfall was followed by a large reduction of temperature over practically the whole of India. The following gives mean temperature variation data from the 9th to the 13th :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATUR OF 24 HOURS PRECEDING 8 A.M. OF				
	9th Feb.	10th Feb.	11th Feb.	12th Feb.	13th Feb.
	°	°	°	°	°
Baluchistan (Quetta)	+4·5	+3·6	+0·3	+0·9	+6·5
Punjab	+4·3	+3·7	+0·2	—0·5	—0·9
Sind and Rajputana	+5·4	—4·1	—2·6	—3·0	—1·1
North-Western Provinces and Oudh.	+4·8	—2·1	—1·6	—2·4	—1·7
Central India and Gujarat	+5·0	—0·8	—5·6	—3·4	—2·1
Central Provinces and Berar	+4·9	+3·0	—7·0	—7·6	—6·5
Bombay Coast	—0·5	+1·5	—1·2	—2·0	—2·4
Deccan	—0·1	+1·2	—4·6	—7·2	—4·7
Bihar	+2·0	+3·1	+5·2	—0·4	—0·5
Chota Nagpur	+3·5	+3·6	+3·6	—1·0	—2·4
Bengal	+1·3	+1·5	+4·0	—0·1	+2·6

The effect of the cloudy disturbed weather was to depress the day temperature very largely below the normal and to raise the night temperature above it, in some cases decreasing the diurnal range to 15° or 20° less than the normal. These conditions were on the whole most strongly exhibited on the 11th, for which comparative variation data are given below :—

POLITICAL AREA OR PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature.	Mean minimum temperature.	Mean temperature.
	°	°	°
Burma	+ 3·0	+4·1	+3·6
Bengal and Assam	+ 2·4	+5·0	+3·7
N.-W. Provinces and Oudh	—10·2	+7·1	—1·6
Punjab	— 8·8	+9·2	+0·2
Sind and Rajputana	— 6·9	+1·8	—2·6
Central India and Gujarat	—12·5	+1·4	—5·6
Central Provinces and Berar	—14·1	+0·2	—7·0
Bombay	— 8·3	—2·1	—5·2
Madras	— 0·2	+4·7	+2·3

Temperature increased over the whole of Northern and Central India from the 14th to the 17th, when it was again in general excess, as is shown by the data in the following table :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	14th February.	15th February.	16th February.	17th February.
	°	°	°	°
Baluchistan (Quetta)	+8·9	+3·4	+7·7	+2·2
Punjab	+2·0	+0·9	+0·7	+0·2
Sind and Rajputana	+1·7	+4·2	+4·2	+5·2
North-Western Provinces and Oudh.	—1·9	+1·5	—0·7	+2·4
Central India and Gujarat	—1·4	+1·4	+2·4	+4·4
Central Provinces and Berar	—4·5	—0·7	+1·7	+1·7
Bihar	0	—0·8	+1·6	+2·8
Chota Nagpur	—2·6	—1·8	+3·1	+4·0
Bengal	—0·6	—1·1	+0·5	+3·7
Deccan	—1·3	—0·6	+0·2	+0·6

Temperature was, during this period from the 10th to the 14th, steadily in excess in Burma and Southern India, but fell below the normal when temperature increased rapidly in Northern India. The following gives data in illustration :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF							
	10th Feb.	11th Feb.	12th Feb.	13th Feb.	14th Feb.	15th Feb.	16th Feb.	17th Feb.
	°	°	°	°	°	°	°	°
Burma	+3·4	+3·6	+3·5	+4·6	+2·4	+0·3	—1·4	—0·9
Madras	+3·1	+2·3	—0·2	+0·2	+1·0	+1·3	+0·1	—1·1

Weather was disturbed in Upper India from the 14th to the 17th. A cold weather storm gave moderate rain in the Punjab and heavy snow fell over the Punjab and Kashmir Himalayas and in Chitral. Weather cleared on the 18th and a cool wave of considerable intensity advanced rapidly eastwards and southwards, reducing temperature very largely below the normal. The following data illustrate its progress :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	18th Feb.	19th Feb.	20th Feb.	21st Feb.	22nd Feb.
	°	°	°	°	°
Baluchistan (Quetta)	—1·2	—5·5	—3·5	—4·3	—5·6
Punjab	+0·5	—5·2	—7·5	—5·4	—6·1
Sind and Rajputana	+4·5	—4·5	—5·0	—1·3	—3·4
North-Western Provinces and Oudh.	+5·3	+0·6	—8·4	—7·6	—5·8
Central India and Gujarat	+4·9	—3·9	—6·7	—4·2	—2·7
Bihar	+4·3	+5·0	—5·4	—8·0	—6·0
Chota Nagpur	+3·3	+3·5	—8·1	—9·8	—7·0
Bengal	+3·0	+5·7	—2·7	—8·4	—7·8
Central Provinces and Berar	+2·8	—2·1	—10·0	—8·3	—5·5
Deccan	+1·1	—1·5	—6·9	—6·0	—2·8

The reduction of temperature was greatest on the 19th in the Punjab and Baluchistan, on the 20th in the Central Provinces and North-Western Provinces, on the 21st in the Central Provinces and Bengal, and on the 22nd in Bengal. The reduction of temperature was almost as large in the night as in the day temperature. The following data for the 20th, a day typical of the period, illustrate this feature :—

POLITICAL AREA OR PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature.	Mean minimum temperature.	Mean temperature.
	°	°	°
Burma	— 1·9	+3·6	+0·9
Bengal and Assam	— 2·6	—4·9	—3·8
North-Western Provinces and Oudh	—10·5	—6·3	—8·4
Punjab	— 8·9	—6·1	—7·5
Sind and Rajputana	— 4·0	—6·0	—5·0
Central India and Gujarat	— 7·9	—5·5	—6·7
Central Provinces and Berar	—12·2	—7·8	—10·0
Bombay	— 4·0	—4·2	—4·1
Madras	+ 1·9	—3·5	—0·8

The lowest night temperatures were recorded at the great majority of stations in India during this period. The following gives the more noteworthy examples :—

STATION.	Lowest minimum temperature recorded in February 1898.	Date on which recorded.
	°	
Kabul	19·6	19th
Kalat	15·9	5th, 23rd and 24th.
Peshin	10·1	5th
Leh	1·0	20th
Minimarg	— 1·5	23rd
Dras	—28·0?	20th
Murree	24·5	19th
Simla	23·0	19th
Darjeeling	27·6	21st
Rawalpindi	34·4	22nd and 23rd
Peshawar	33·9	23rd
Lahore	40·2	20th and 22nd
Dehra Dun	39·0	20th
Roorkee	40·5	7th
Lucknow	43·2	21st and 22nd
Allahabad	44·4	21st

Temperature increased slowly on the 23rd and 24th and somewhat more rapidly from the 25th to the end of the month, but was considerably below the normal in the Gangetic Plain and Bengal on the 28th. The following gives variation data from the 23rd to the 28th :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A. M. OF					
	23rd Feb.	24th Feb.	25th Feb.	26th Feb.	27th Feb.	28th Feb.
	°	°	°	°	°	
Baluchistan (Quetta)	—6·7	—3·3	—3·3	+2·5	+7·0	+28
Punjab	—6·3	—5·8	—4·1	—2·3	+0·1	+0·6
Sind and Rajputana	—5·7	—7·2	—6·1	—3·8	—1·4	+1·4
North-Western Provinces and Oudh.	—5·4	—7·0	—4·8	—4·9	—3·8	—2·8
Central India and Gujarat	—4·2	—6·6	—2·6	—0·5	+0·5	+3·2
Central Provinces and Berar	—3·9	—5·7	—2·6	—0·9	+1·4	+2·6
Bihar	—4·2	—4·8	—3·1	—3·1	—4·3	—2·6
Chota Nagpur	—5·9	—6·2	—3·3	—2·6	—1·2	—0·8
Bengal	—6·0	—4·1	—5·1	—4·4	—2·8	—3·9
Deccan	—2·1	—2·7	—3·4	—2·9	—2·5	—2·2

The following table gives the variations of the mean temperature, week by week, and also for the month.

The data are taken from the weekly weather reviews published in the *Gazette of India*:—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING				
	5th Feb.	12th Feb.	19th Feb.	26th Feb.	For whole month, Feb. 1898.
	°	°	°	°	°
Burma	—0·7	+3·9	+0·6	—0·8	+1·1
Bengal and Assam	+3·8	+1·7	+1·5	—5·1	+0·1
North-Western Provinces and Oudh.	+6·4	+0·2	+0·8	—6·2	—0·3
Punjab	+7·8	+3·1	—0·3	—5·4	+0·8

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING				
	5th Feb.	12th Feb.	19th Feb.	26th Feb.	For whole month, Feb. 1898.
	°	°	°	°	°
Sind and Rajputana	+8·2	+1·1	+2·0	—4·6	+1·0
Central India and Gujarat	+5·5	+0·4	+0·8	—3·9	+0·7
Central Provinces and Berar	+3·0	—0·1	—1·1	—5·3	—0·9
Bombay	+1·0	—2·0	—1·3	—1·5	—1·0
Madras	—1·2	+1·5	+0·4	—2·1	—0·3

Winds.

Winds were stronger but slightly less steady than usual at Port Blair and in Lower Burma. Winds were also stronger in Bengal and were more northerly than usual in Orissa and South Bengal, as is shown by the following data:—

STATION.	WIND DIRECTION.		STEADINESS.		
	Mean actual, February 1898.	Mean normal, February.	Mean actual, February 1898.	Mean normal, February.	Variation from normal, February 1898.
Dacca	N 49° W	S 75° W	32	36	— 4
Calcutta	N 61° W	S 89° W	36	25	+11
Burdwan	N 39° W	N 54° W	35	41	— 6
Cuttack	N 46° W	S 7° W	28	7	+21

The westerly element was also very strongly marked at Saugor Island and False Point, as is shown below:—

STATION.	WIND DIRECTION.		STEADINESS.		
	Mean actual, February 1898.	Mean normal, February.	Mean actual percentage, February 1898.	Mean normal percentage, February	Variation from normal, February 1898.
	°	°			
Saugor Island	S 72 W	S 52 W	21	18	+3
False Point	S 15 W	S 12 E	23	17	+6

Winds differed little from the normal in direction in the Gangetic Plain, but were remarkably unsteady, as is shown by the following examples:—

STATION.	WIND DIRECTION.		STEADINESS.		
	Mean actual, February 1898.	Mean normal, February.	Mean actual percentage, February 1898.	Mean normal percentage, February.	Variation from normal, February 1898.
	°	°			
Patna	S 83 W	N 80 W	28	51	—23
Allahabad	N 52 W	N 63 W	33	34	— 1
Roorkee	N 74 W	N 61 W	5	31	—26
Ludhiana	S 45 W	N 50 W	14	40	—26
Lahore	N 26 E	N 31 W	14	31	—17

They were stronger than the normal in Rajputana and Central India, but were very unsteady. The following gives examples:—

STATION.	VELOCITY IN MILES PER DIEM.			STEADINESS.		
	Mean actual, February 1898.	Mean normal, February.	Variation from normal, February 1898.	Mean actual percentage, February 1898.	Mean normal percentage, February.	Variation from normal, February 1898.
Jeypore	104	93	+11	12	34	—22
Deesa	221	211	+10	24	30	—6
Agra	155	99	+56	30	41	—11
Suma	137	117	+20	43	40	+ 3
Nowgong	61	44	+17	27	37	—10

The following gives comparative data of the mean air movement in Northern and Central India during the month :—

Station.	Velocity in miles per diem.			
	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.	Percentage variation from normal.
Bengal	102	92	+10	+11
Bihar	99	84	+15	+18
Chota Nagpur	218	172	+46	+27
North-Western Provinces	89	74	+15	+20
Punjab	55	56	— 1	— 2
Sind	188	160	+28	+18
Rajputana	142	124	+18	+15
Central India	99	81	+18	+22

Winds were generally stronger in the Central Provinces, Berar and the Deccan. They, however, varied very irregularly from their normal directions. They were generally steadier than usual, but were very variable at stations for which data are given below :—

Station.	Wind Direction.		Steadiness.		
	Mean actual, February 1898.	Mean normal, February.	Mean actual percentage, February 1898.	Mean normal percentage, February.	Variation from normal, February 1898.
Balgaum	S 46° W	S 62° E	3	14	—11
Nagpur	S 35 W	N 42 E	5	22	—17

Winds were of practically normal steadiness but stronger than usual at the Bombay Coast stations. They were also slightly more westerly than usual at Bombay and Ratnagiri.

Winds were approximately normal in character, but were very unsteady in Mysore and Coorg. The following gives examples :—

Station.	Wind Direction.		Steadiness.		
	Mean actual, February 1898.	Mean normal, February.	Mean actual percentage, February 1898.	Mean normal percentage, February.	Variation from normal, February 1898.
Bangalore	S 80° E	S 69° E	45	65	—20
Mercara	N 66 W	N 58 E	12	38	—26
Mysore	N 78 E	N 87 E	30	67	—37

The following gives comparative data of the velocity of the air movement in the Peninsula during the month :—

Division.	Velocity in miles per diem.		
	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.
Central Provinces	102	85	+17
Berar	170	124	+46
Bombay Coast	180	172	+ 8
Deccan	195	164	+31
Mysore and Coorg	120	130	—10
Madras Coast	108	110	— 2

The abnormal features of the air movement were not hence very strongly marked.

The chief features were :—

(1) Winds were stronger than usual in Bengal and the Gangetic Plain. The northerly element was also more prominent than usual, especially in Bengal.

(2) Winds were generally more westerly than usual in Rajputana, Central India and North Bombay.

(3) Winds were remarkably unsteady in the West Deccan, Mysore and Coorg.

Humidity and Cloud.

The mean humidity of the month was normal at Port Blair and the Cocos Island. It was less than usual in Lower Burma. The variations were small in Lower Burma, but were moderately large in South-West and Central Bengal and Orissa. The following gives data for the latter area :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.
	"	"	"	%	%	
False Point . .	·558	·628	—·070	69	78	—9
Saugor Island .	·557	·613	—·056	69	75	—6
Calcutta . .	·435	·468	—·033	59	65	—6
Berhampore . .	·390	·397	—·007	58	63	—5
Cuttack . .	·442	·516	—.074	56	61	—5

The air was also slightly drier than usual at the west-coast stations and in Southern India. The mean humidity percentage of the month was most largely in defect in those areas at Trichinopoly (—5).

The air was also drier than usual in a portion of the Deccan, Berar and the Central Provinces defined by the stations of Hyderabad, Buldana, Sholapur, Saugor and Khandwa. The variations were generally small and were largest at Khandwa (—5) and Buldana (—4).

The air was unusually dry in Baluchistan and Lower Sind and also at Leh in Ladakh. The following gives comparative data :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.
	"	"	"	%	%	
Quetta . . .	·129	·166	—·037	48	66	—18
Kurrachee . . .	·361	·409	—·048	49	58	— 9
Jacobabad . . .	·233	·231	+·002	40	42	— 2
Leh	·081	·076	+·005	62	68	— 6

The air was damper than usual over the remainder of India. The excess was marked in two areas. The first area included Bihar, Chota Nagpur, the North-Western Provinces, Rajputana and the South and Central Punjab.

The following gives comparative data for these areas :—

AREA.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Average actual, Feb. 1898.	Average normal, Feb.	Variation of actual from normal, Feb. 1898.	Average actual, Feb. 1898.	Average normal, Feb.	Variation of actual from normal, Feb. 1898.
	"	"	"	%	%	
Bihar	·408	·368	+·040	66	60	+6
Chota Nagpur . .	·284	·253	+·031	48	42	+6
North-Western Provinces.	·336	·298	+·038	64	56	+8
Rajputana . . .	·281	·251	+.030	47	40	+7
South and Central Punjab.	·320	·284	+·036	65	56	+9

The excess was absolutely greatest at Deesa (+10) and Lahore (+9) and perhaps Lucknow (+18).

The mean humidity of the month was almost as largely in excess at the hill stations on the outer ranges of the Himalayas as in the plains of Northern India, as is shown below :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.
	"	"	"	%	%	
Srinagar . . .	·218	·156	+·062	87	80	+7
Simla	·154	·152	+·002	67	58	+9
Chakrata . . .	·166	·163	+·003	71	63	+8
Ranikhet . . .	·185	·196	—·011	65	62	+3

The second area of increased humidity included the stations of Poona and Belgaum for which data are given below :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, Feb. 1898.	Normal Feb.	Variation of actual from normal, Feb. 1898.	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.
	"	"	"	%	%	
Poona	·290	·234	+·006	43	34	+9
Belgaum . . .	·305	·328	—·023	46	39	+7

It is noteworthy that the air was abnormally dry at Aden, Perim and Muscat, and it is hence probable that the unusual dryness of the air which characterized these stations and Quetta extended over the whole Persian area. The following gives data for the stations named above :—

Station.	Absolute Humidity.			Relative Humidity.		
	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.	Actual, Feb. 1898.	Normal, Feb.	Variation of actual from normal, Feb. 1898.
	"	"	"	%	%	
Aden	·637	·652	—·015	69	71	— 2
Perim	·652	·694	—·042	68	72	— 4
Muscat	·465	·538	—·073	61	72	—11
Quetta	·129	·166	—·037	48	66	—18

The following are the chief abnormal features of the humidity conditions of India in February 1898.

(1) The air was abnormally dry in Baluchistan, Arabia and Sind and probably also in Persia.

(2) It was slightly drier than usual in the west coast districts, Southern India and Lower Burma, and also in the East Deccan, the western districts of the Central Provinces and Berar, but the variations were small and unimportant.

(3) It was considerably drier than usual in South Bengal and Orissa.

(4) It was much damper than usual in Chota Nagpur, Bihar, the North-Western Provinces, Rajputana and the South and Central Punjab.

The variations of the amount of cloud differed largely in general character from those of the normal of aqueous vapour pressure in the air and also from that of the rainfall of the month.

Cloud was generally below the normal to the west of a line running from Lucknow through Jubbulpore and Sholapur to Ratnagiri and in excess to the east and south of that line.

The deficiency was large and marked in Baluchistan and the Kashmir Himalayas, as is shown below :—

Station.	Mean cloud amount.		
	Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
Murree	3·0	5·7	—2·7
Srinagar	5·7	6·8	—1·1
Quetta	3·1	4·2	—1·1

The deficiency was also large in Sind and South-West Rajputana. The following gives comparative data :—

Station.	Mean cloud amount.		
	Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
Jacobabad	1·9	3·4	—1·5
Deesa	1·0	2·4	—1·4
Kurrachee	1·7	2·8	—1·1
Mount Abu	1·7	2·6	—0·9

The following gives comparative data for the areas of decreased amount of cloud in February 1898 :—

Area.	Mean cloud amount.		
	Average actual, February 1898.	Average normal, February.	Variation of actual from normal, February 1898.
North Western Provinces	3·0	3·1	—0·1
Punjab	3·4	3·8	—0·4
Rajputana	1·8	2·5	—0·7
Central India	1·9	2·5	—0·6
North Bombay	1·8	3·1	—1·3

Cloud was in large excess over a considerable portion of Central Madras and in Mysore and Coorg. The following gives data in illustration :—

Station.	Mean cloud amount.		
	Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
Mysore	4·0	1·4	+2·6
Bellary	3·9	1·4	+2·5
Chitaldrug	2·9	1·5	+1·4
Madras	3·9	2·8	+1·1
Mercara	3·9	2·9	+1·0
Hassan	3·8	2·8	+1·0

Cloud was also in considerable excess at Port Blair and Diamond Island, as is shown below :—

Station.	Mean cloud amount.		
	Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
Port Blair	4·6	2·8	+1·8
Diamond Island	3·2	2·2	+1·0

The following gives comparative data for the areas of increased cloud :—

Station.	Mean cloud amount.		
	Average actual, February 1898.	Average normal, February.	Variation of actual from normal, February 1898.
Burma	2·5	1·8	+0·7
Assam	4·3	3·5	+0·8
Bengal	2·3	2·0	+0·3
Bihar	2·3	2·1	+0·2
Chota Nagpur	3·7	2·3	+1·4
Madras	2·8	2·0	+0·8
Mysore	3·3	1·9	+1·4
Hyderabad	1·6	1·3	+0·3

Cloud was very largely below the normal at Muscat (—1·6) and Aden (—0·9).

The mean amount of cloud for the month was less than 1·0 at stations for which data are given below :—

Station.	Mean cloud amount.		
	Actual, February 1898.	Normal, February.	Variation of actual from normal, February 1898.
Buldana	0·8	1·8	—1·0
Bombay	0·9	1·2	—0·3
Khandwa	0·9	1·4	—0·5
Ratnagiri	0·8	0·5	+0·3

The chief abnormal features of the cloud distribution of the month were as follows :—

(1) There was less cloud than usual over the whole area to the west of a line running from Lucknow through Jubbulpore and Sholapur to Ratnagiri and in excess to the east and south of that line.

(2) The deficiency was large and marked in Kashmir, Sind, Baluchistan and the Arabian and Persian areas.

(3) Cloud was in large excess in Central Madras, Mysore, Coorg and the Andamans.

Rainfall.

Rainfall in February is usually due to the occurrence of storms of the type known as cold-weather storms. The rainfall is chiefly received in Northern India, and is generally heaviest in the Punjab, more especially in the hill and submontane districts. Bengal, Lower Burma and Malabar occasionally obtain thunder-showers, but as a rule, the conditions for these storms do not occur before March.

The rainfall of the month of February 1898 was largely above the normal over the greater part of India and was, on the other hand, absolutely or practically *nil* in Burma, excepting Tenasserim.

The chief periods of rainfall were as follows :—

1st.—The 1st, when light rain fell in Kashmir and the North Punjab.

2nd.—From the 5th to the 7th. Moderate rain fell in the Gangetic Plain and North Bengal on the 5th, and in North Bengal and Assam on the 6th and 7th.

3rd.—From the 9th to the 18th, when general rain due to a succession of three depressions was received over nearly the whole of India. The rainfall was most general on the 10th, 11th and 12th, and was restricted to the Punjab and Kashmir from the 14th to the 18th.

The rainfall of the month was in very large excess over nearly the whole of India. It was in slight to moderate excess in Madras and the Deccan. The excess was large in the Central Provinces, Central India, Rajputana, the North-Western Provinces and the Punjab, averaging about four times the normal fall of the period in that large area. It was in moderate excess in Bihar and Chota Nagpur, but generally below the normal in Bengal and Burma. It was in large defect in Baluchistan, and probably over the whole Persian area. This was due to the fact that the storms of the month did not pass from Persia through Baluchistan into India.

The rainfall of the month occurred during the passage of depressions across Northern India. These depressions originated almost without exception in India and not in the Persian area. One, the most important of the month, was generated much further south than usual, in Kathiawar, Gujarat and South-West Rajputana. This storm was almost unique in its origin. The disturbance and rainfall due to this depression extended over nearly the whole of India and the burst of rain was the most general and widely spread that has occurred in February during the past 20 years.

The following table gives mean actual, mean normal and variation rainfall data for the 57 meteorological divisions or districts into which India is divided, in the same form as in previous months, and has been prepared in the same manner as hitherto:—

Province.	Division.	Rainy days. Average actual, February 1898.	Rainy days. Average normal, February.	Rainfall. Average actual, February 1898.	Rainfall. Average normal, February.	Rainfall. Variation from normal.
				Inches.	Inches.	Inches.
Burma	Tenasserim	0·8	?	0·79	?	?
	Lower Burma (Deltaic)	0	?	0·04	?	?
	Central do.	0	?	0	?	?
	Upper do.	0·1	?	0·03	0·10	— 0·07
	Arakan	0	?	0·01	?	?
Bengal and Assam	Eastern Bengal	0·7	1·6	0·31	0·97	— 0·66
	Assam (Surma)*	?	?	1·15	1·72	— 0·57
	Do. (Hills)*	?	?	1·24	1·27	— 0·03
	Do. (Brahmaputra)*	?	?	1·33	1·15	+ 0·18
	Deltaic Bengal	0·4	1·8	0·20	1·24	— 1·04
	Central do.	1·3	1·5	0·66	0·86	— 0·20
	North do.	2·3	1·1	1·37	0·52	+ 0·85
	Bengal Hills	4·3	2·2	2·03	0·84	+ 1·19
	Orissa	0·4	1·4	0·16	0·84	— 0·68
	Chota Nagpur	1·6	1·6	1·06	0·84	+ 0·22
	Bihar (South)	2·2	1·4	1·31	0·64	+ 0·67
	Do. (North)	2·2	1·2	0·76	0·49	+ 0·27
North-Western Provinces and Oudh.	North-Western Provinces (East)	2·7	0·8	1·82	0·34	+ 1·48
	Oudh (South)	3·0	0·6	2·13	0·23	+ 1·90
	Do. (North)	3·5	0·8	2·46	0·31	+ 2·15
	North-Western Provinces (Central)	2·8	0·6	2·29	0·22	+ 2·07
	Do. do. (West)	4·0	0·8	4·11	0·32	+ 3·79
	Do. do. (Submontane, East)	2·8	1·0	1·68	0·44	+ 1·24
	Do. do. (do. West)	5·6	2·0	4·80	1·05	+ 3·75
	Do. do. (Hills)	6·2	4·0	5·19	2·07	+ 3·12
Punjab	Punjab (South-East)	4·5	1·0	2·53	0·41	+ 2·12
	Do. (South)	4·3	1·1	2·03	0·43	+ 1·60
	Do. (Central)	5·7	2·0	3·53	0·89	+ 2·64
	Do. (Submontane)	6·4	2·5	5·44	1·34	+ 4·10
	Do. (Hills)	8·3	4·5	5·27	3·04	+ 2·23
	Do. (North)	5·5	2·6	3·14	1·42	+ 1·72
	Do. (West)	3·4	1·1	1·89	0·43	+ 1·46
Bombay and Malabar Coast Districts, Madras.	Malabar	0·3	0·2	0·16	0·16	0
	Travancore	2·4	?	2·42	?	?
	Madras (South Central)	1·1	0·2	0·81	0·13	+ 0·68
	Coorg*	?	?	0	0·11	— 0·11
	Mysore*	?	?	0·04	0·04	0
	Konkan	1·2	0	0·73	0	+ 0·73
	Bombay Deccan	0·9	0·1	0·34	0·03	+ 0·31
	Hyderabad North	1·4	?	1·12	0·07	+ 1·05
	Khandesh	0·7	0	0·35	0·03	+ 0·32
Central Provinces and Berar.	Berar	1·3	?	0·45	0·22	+ 0·23
	Central Provinces (West)	1·6	0·5	1·03	0·21	+ 0·82
	Do. do. (Central)	2·2	0·6	2·69	0·24	+ 2·45
	Do. do. (East)	1·4	0·6	1·75	0·33	+ 1·42
Bombay (North)	Gujarat	1·3	0	12·6	0·02	+ 1·24
	Kathiawar	0·9	0	0·48	0·09	+ 0·39
	Sind	1·1	?	0·52	0·31	+ 0·21
	Baluchistan Hills	1·6	?	0·86	1·96	— 1·10
Rajputana and Central India.	Central India (East)	2·5	?	1·69	0·39	+ 1·30
	Rajputana (East) and Central India (West)	2·6	?	1·34	0·23	+ 1·11
	Rajputana (West)	1·5	?	0·69	0·11	+ 0·58
Madras	East Coast (North)	1·1	0·4	1·25	0·22	+ 1·03
	Do. (do.) (a)	1·0	0·4	0·60	0·19	+ 0·41
	Hyderabad (South)	1·5	?	0·74	0·12	+ 0·62
	Madras (Central)	0·3	0·1	0·11	0·03	+ 0·08
	East Coast (Central)	0·7	0·2	0·29	0·19	+ 0·10
	Do. (South)	0·6	0·2	0·40	0·30	+ 0·10
	Madras (South)	1·6	0·8	1·29	0·57	+ 0·72

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports

Assam received light showers on the 6th and 7th and from the 12th to the 19th. The rainfall of the month was practically normal in Cachar and in moderate excess in the Brahmaputra Valley. The following gives data for the three divisions of the province :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.
				Inches.	Inches.	Inches.
Assam (Surma) . .	2·7	2·7	0	1·49	1·35	+0·14
„ (Brahmaputra) .	4·8	3·7	+1·1	1·98	1·32	+0·66
„ (Hill tracts) .	3·6	3·1	+0·5	1·23	1·28	—0·05

There were two periods of rainfall during the month in Bengal. The first period was from the 5th to the 7th. South-West and East Bengal, Orissa and Chota-Nagpur received light sporadic showers, Bihar and North Bengal, on the other hand, obtained general and in some parts moderately heavy rain. The large amount of 4·98 inches was recorded at Chanchal in the Malda district on the 5th. The second period extended from the 10th to the 12th. Bihar and Chota Nagpur obtained moderate and fairly general rain and Bengal light local showers. The Shahabad District, where the rainfall was heaviest, obtained an average of 1·32 inches, and Gaya of 1·01 inches. The rainfall of the month was in marked excess in North Bengal and South Bihar and in slight to moderate excess in North Bihar and Chota Nagpur. It was, on the other hand, in general defect in South-West and East Bengal and Orissa. The following gives a summary of the rainfall data of the month in the nine divisions of the province :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, February 1898.	Average normal, February.	Variation of actual from normal, February 1898.	Average actual, February 1898.	Average normal, February.	Variation of actual from normal, February 1898.
				Inches.	Inches.	Inches.
Eastern Bengal . .	0·7	1·6	—0·9	0·31	0·97	—0·66
Deltaic „ . .	0·4	1·8	—1·4	0·20	1·24	—1·04
Central „ . .	1·3	1·5	—0·2	0·66	0·86	—0·20
North „ . .	2·3	1·1	+1·2	1·37	0·52	+0·85
Bengal Hills . .	4·3	2·2	+2·1	2·03	0·84	+1·19
Orissa	0·4	1·4	—1·0	0·16	0·84	—0·68
Chota Nagpur . .	1·6	1·6	0	1·06	0·84	+0·22
Bihar (South) . .	2·2	1·4	+0·8	1·31	0·64	+0·67
„ (North) . .	2·2	1·2	+1·0	0·76	0·49	+0·27

The rainfall of the month was unusually general and heavy in the North-Western Provinces. Showers were received in Oudh, the eastern, western and hill districts of the North-Western Provinces on the 5th and 6th. General and heavy rain fell from the 9th to the 12th over the whole Province, heaviest in the western and central districts. Falls in 24 hours exceeding 2 inches were registered at a large number of stations. The following gives falls exceeding 3 inches :—

DISTRICT.	Station.	Date.	Rainfall in 24 hours preceding 8 A.M. of date.
			Inches.
ALMORA	Champawat . .	11th Feb.	4·95
NAINI TAL . . .	Naini Tal . . .	11th „	4·05
MUZAFFARNAGAR . .	Budhana . . .	10th „	4·03
„	Bhainswal . .	11th „	4·00
BULANDSHAHR . . .	Bulandshahr . .	11th „	3·91
JHANSI	Mau	10th „	3·44
MORADABAD . . .	Sambhal . .	10th „	3·40
MEERUT	Meerut . . .	11th „	3·32
MUTTRA	Chhata . . .	11th „	3·18
SAHARANPUR . . .	Kalsia . . .	11th „	3·10
NAINI TAL . . .	Naini Tal . . .	12th „	3·08
ALMORA	Champawat . .	12th „	3·03
SAHARANPUR . . .	Nakur . . .	11th „	3·02

The following table gives the average daily rainfall from the 9th to the 12th in the eight divisions of the Province :—

DIVISION.	AVERAGE ACTUAL RAINFALL DURING 24 HOURS PRECEDING 8 A.M. OF				Total rainfall of period, 9th to 12th Feb. 1898.
	9th Feb.	10th Feb.	11th Feb.	12th Feb.	
	Inch.	Inches.	Inches.	Inch.	Inches.
North-Western Provinces, East .	0·14	0·19	1·33	0·11	1·77
South Oudh	0·20	0·66	0·81	0·27	1·94
North „	0·04	0·92	0·58	0·23	1·77
North-Western Provinces, Central	0·32	1·21	0·73	0·01	2·27
„ „ West .	0·17	1·73	1·15	0·15	3·20
„ „ Submontane East.	0·07	0·24	0·71	0·08	1·10
„ „ West .	0·18	1·61	1·57	0·59	3·95
„ „ Hills .	0·31	1·34	1·56	0·84	4·05

The burst of rain was one of the heaviest in recent years that has occurred during the cold weather in the Gangetic Plain.

Light to moderate showers fell daily from the 15th to the 19th in the western, submontane and hill divisions of the Province.

The rainfall of the month was in very large excess in all the eight divisions, ranging from two to thirteen times its normal amount, as is shown by the following statement:—

Division.	Number of rainy days.			Rainfall.		
	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.
				Inches.	Inches.	Inches.
North-Western Provinces, East.	2·7	0·8	+1·9	1·82	0·34	+1·48
South Oudh . .	3·0	0·6	+2·4	2·13	0·23	+1·90
North ,, ...	3·5	0·8	+2·7	2·46	0·31	+2·15
North-Western Provinces, Central.	2·8	0·6	+2·2	2·29	0·22	+2·07
North Western Provinces, West.	4·0	0·8	+3·2	4·11	0·32	+3·79
North-Western Provinces, Submontane East.	2·8	1·0	+1·8	1·68	0·44	+1·24
North-Western Provinces, Submontane West.	5·6	2·0	+3·6	4·80	1·05	+3·75
North Western Provinces, Hills.	6·2	4·0	+2·2	5·19	2·07	+3·12

The following gives data for each of the 48 collectorates of the Province:—

District.	Number of rainy days.			Rainfall.		
	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.
				Inches.	Inch.	Inches.
Fyzabad . . .	3·2	0·7	+2·5	1·45	0·22	+1·23
Gonda . . .	3·3	0·8	+2·5	3·03	0·35	+2·68
Bara Banki . .	3·0	0·6	+2·4	1·95	0·20	+1·75
Bahraich . . .	3·0	1·0	+2·0	2·56	0·47	+2·09
Sitapur . . .	3·8	0·7	+3·1	3·05	0·21	+2·84
Kheri	4·7	1·2	+3·5	3·36	0·52	+2·84
Sultanpur . . .	3·5	0·7	+2·8	1·61	0·23	+1·38
Partabgarh . .	2·3	0·7	+1·6	1·58	0·22	+1·36
Rae Bareli . . .	3·3	0·8	+2·5	1·85	0·24	+1·61
Unao	2·8	0·5	+2·3	1·94	0·25	+1·69
Lucknow . . .	2·7	0·7	+2·0	2·97	0·27	+2·70
Hardoi . .	3·0	0·5	+2·5	2·90	0·20	+2·70
Ghazipur . . .	3·3	0·6	+2·5	1·87	0·42	+1·45
Benares . . .	3·0	0·9	+2·1	2·02	0·41	+1·61
Jaunpur . . .	2·2	0·7	+1·5	1·89	0·33	+1·56
Mirzapur . . .	3·2	0·9	+2·3	1·89	0·37	+1·52
Allahabad . . .	2·3	0·7	+1·6	1·63	0·27	+1·36
Banda . . .	2·8	0·6	+2·2	1·26	0·23	+1·03
Fatehpur . . .	3·0	0·6	+2·4	1·89	0·22	+1·67
Hamirpur . . .	3·0	0·6	+2·4	1·79	0·21	+1·58
Cawnpore . . .	2·6	0·7	+1·9	1·86	0·28	+1·58
Jalaun . . .	2·8	0·5	+2·3	2·43	0·16	+2·27
Etawah . . .	2·5	0·5	+2·0	2·70	0·20	+2·50
Farukhabad . .	3·0	0·6	+2·4	3·52	0·20	+3·32
Mainpuri . . .	3·7	0·4	+3·3	3·14	0·14	+3·00
Etah	2·8	0·6	+2·2	4·29	0·18	+4·11
Jhansi . . .	2·1	0·6	+1·5	2·00	0·26	+1·74
Agra	3·0	0·4	+2·6	2·61	0·12	+2·49
Muttra . . .	3·6	0·7	+2·9	3·99	0·21	+3·78
Aligarh . . .	4·0	0·8	+3·2	3·29	0·32	+2·97
Bulandshahr . .	3·8	1·0	+2·8	5·85	0·47	+5·38
Meerut . . .	5·4	1·2	+4·2	5·22	0·56	+4·66
Pilibhit . . .	4·2	1·6	+2·6	4·60	0·78	+3·82
Shahjahanpur . .	4·0	1·2	+2·8	4·45	0·51	+3·94
Budaun . . .	5·2	1·1	+4·1	3·90	0·48	+3·41
Bareilly . . .	4·9	1·8	+3·1	3·91	0·70	+3·21
Moradabad . . .	4·7	2·1	+2·6	4·84	0·98	+3·86
Bijnor . . .	4·8	2·1	+2·7	5·09	1·36	+3·73
Muzaffarnagar . .	5·0	1·6	+3·4	4·60	0·70	+3·90
Saharanpur . .	6·8	2·2	+4·6	5·01	1·09	+3·92
Dehra Dun . . .	8·2	3·8	+4·4	6·27	2·42	+3·85
Almora	6·3	4·6	+1·7	5·81	2·09	+3·72
Garhwal . . .	8·3	5·3	+3·0	5·31	2·72	+2·59
Naini Tal . . .	4·6	2·5	+2·1	4·48	1·63	+2·85
Gorakhpur . . .	3·5	1·1	+2·4	1·64	0·50	+1·14
Basti	2·8	1·0	+1·8	2·12	0·34	+1·78
Azamgarh . . .	3·4	1·0	+2·4	1·50	0·37	+1·13
Ballia . . .	1·0	0·8	+0·2	1·41	0·37	+1·04

The rainfall of the month was unusually favourable in th Punjab and occurred chiefly during two periods, *viz.*, th 9th to the 12th and the 15th to the 18th. Rain fell ove the whole province during the first period. It was heavies

in the south-east and submontane districts. The following gives falls in 24 hours exceeding 3 inches in amount :—

DISTRICT.	Station.	Date.	Rainfall in 24 hours preceding 8 A.M. of date.
			Inches.
UMBALLA . . .	Umballa . . .	11th Feb.	5·83
HOSHIARPUR . . .	Garhshankar . .	do.	4·11
UMBALLA . . .	Kharar . . .	do.	4·07
AMRITSAR . . .	Buggeh . . .	do.	4·00
HOSHIARPUR . . .	Hoshiarpur (Sadr) .	do.	3·45
,, ...	Una . . .	do.	3·39
,, ...	Hoshiarpur . .	do.	3·36
GURDASPUR . . .	Gurdaspur . .	do.	3·25
UMBALLA	Rupar . . .	do.	3·24
GURDASPUR . . .	Pathankot . .	do.	3·23
KARNAL	Thanesar . . .	do.	3·14

The rainfall of the second period was as general as that of the first period. It was lightest in the Mooltan and Muzaffargarh districts and heaviest in the central and northern districts. The daily falls were not so heavy as in the previous period. The following gives amounts in 24 hours exceeding 2 inches :—

DISTRICT.	STATION.	Date.	Rainfall in 24 hours preceding 8 A.M. of date.
			Inches.
Shahpur . . .	Sakesar . . .	16th February	3·31
Gujranwala . . .	Khangah Dogran . .	15th ,,	3·17
Ferozepore . . .	Ferozepore . . .	17th ,,	2·85
Dera Ismail Khan . .	Shekh Budin . . .	15th ,,	2·50
Gurdaspur . . .	Dalhousie . . .	17th ,,	2·42
Gujranwala . . .	Hafizabad . . .	16th ,,	2·16

The rainfall of the month was in large excess over the whole province, as is shown by the following comparative data :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.
				Inches.	Inches.	Inches.
South-East Punjab .	4·5	1·0	+3·5	2·53	0·41	+2·12
South Punjab . .	4·3	1·1	+3·2	2·03	0·43	+1·60
Central ,, . .	5·7	2·0	+3·7	3·53	0·89	+2·64
Punjab (Submontane) .	6·4	2·5	+3·9	5·44	1·34	+4·10
,, Hills . .	8·3	4·5	+3·8	5·27	3·04	+2·23
North Punjab .	5·5	2·6	+2·9	3·14	1·42	+1·72
West ,, . .	3·4	1·1	+2·3	1·89	0·43	+1·46

In Baluchistan moderate showers fell on the 13th, 14th, 15th and 16th. The total amounts were not large. No rain fell during the remainder of the month, and the rainfall was hence generally below the normal. It obtained an average of ·86 inch, 1·1 inches less than the normal fall of the period.

Kashmir received frequent rain during the first three weeks of the month. The periods of most general rain were the 1st, the 5th, the 10th and 11th and the 14th to the 18th. The falls were, on the whole, heaviest on the 10th and 11th and the 17th. The snowfall on the higher elevations, more especially in Chitral, was heavy and the total for the month was unusually large.

There were two periods of rainfall in Rajputana. The first was from the 8th to the 11th. The rainfall was general over the whole area and was heaviest in the Bhurtpore, Dholpur and Kerowlee state. The Bhurtpur state received an average of 1·3 inches on the 9th and the Dholpur state of 1·2 inches on the 10th. The rainfall accompanied hailstorms and thunderstorms, in some cases of considerable severity. The second period was from the 14th to the 16th. The rainfall of this period was very partially and irregularly distributed and was heaviest and most general in the Ulwar and Bhurtpore states.

The following gives comparative data for the larger states :—

State or Division.	Number of rainy days.			Rainfall.		
	Average actual, February 1898.	Average normal, February.	Variation of actual from normal, February 1898.	Average actual, February 1898.	Average normal, February.	Variation of actual from normal, February 1898.
				Inches.	Inch.	Inches.
Jeysulmere . . .	3·3	?	?	1·83	0·13	+1·70
Jodhpore . . .	1·3	?	?	0·55	0·09	+0·46
Jeypore . . .	2·4	?	?	0·99	0·25	+0·74
Ulwur	4·2	?	?	1·52	0·40	+1·12
Bhurtpore . . .	3·5	?	?	2·67	0·20	+2·47
Dholpur . . .	2·5	?	?	2·12	?	?
Kerowlee . . .	3·3	?	?	2·09	0·14	+1·95
Kotah	2·2	?	?	1·21	0·21	+1·00
Ajmere Merwara . .	1·4	?	?	0·47	0·25	+0·22
Odeypore . . .	1·0	?	?	0·46	0·18	+0·28
Sirohee . . .	1·7	?	?	0·48	0·24	+0·24

The rainfall was hence in unusually large excess, and the whole area obtained an average of six times the normal fall of the month.

Central India received general moderate rain from the 8th to the 11th. No rain fell during the remainder of the month.

The following gives comparative data of the month for the larger states :—

State or Division.	Number of rainy days.		Rainfall.		
	Average actual, February 1898.	Average normal, February.	Average actual, February 1898.	Average normal, February.	Variation from normal, Feburary 1898.
			Inches.	Inch.	Inches.
Bhopal Agency . .	2·0	?	0·83	0·28	+0·55
Gwalior . . .	2·6	?	1·72	0·25	+1·47
Rewah . . .	2·4	?	2·33	0·56	+1·77
Bundelkhand . .	2·8	?	1·93	0·39	+1·54

The precipitation of the month hence ranged between three and seven times its normal amount in these four states.

The Central Provinces received a heavy and general burst of rain, chiefly accompanying thunderstorms, between the 9th and 11th. The falls were light only in the Nimar and Betul districts. Falls in 24 hours exceeding three inches were recorded at several stations, as is shown below :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M of date.
			Inches.
Chanda . . .	Brahmapuri . .	11th February.	3·95
,, . . .	Chanda . . .	10th ,, .	3·71
Balaghat . . .	Lanji . . .	10th ,, .	3·06
Bhandara . . .	Sakoli . . .	11th ,, .	3·05
,, . . .	Tirora . . .	11th ,, .	3·00

The showers were unusually heavy and the rainfall o the month was hence in large excess in all districts excep Nimar.

The following gives comparative data for the three rain fall divisions of the province and of Berar :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, February 1898.	Average normal, February.	Variation from normal, February 1898.	Average actual, February 1898.	Average normal, February.	Variation from normal February 1898.
				Inches.	Inch.	Inches.
Central Provinces, East	1·4	0·6	+0·8	1·75	0·33	+1·42
,, ,, Central	2·2	0·6	+1·6	2·69	0·24	+2·45
,, ,, West .	1·6	0·5	+1·1	1·03	0·21	+0·82
Berar	1·3	?	?	0·45	?	?

The Hyderabad State received light to moderate show ers from the 9th to the 11th. The total rainfall of th period and also of the month averaged 0·93 inch o 0·8 inch above the normal of the month.

The Madras Presidency received an unusually genera fall of rain during the disturbed period from the 10th t the 15th. The rainfall was very light and sporadic in th Deccan districts and in the districts of Tanjore, Trichi nopoly, Chingleput and North Arcot and was on the whol heaviest in the Circars. The following table gives dat showing the heaviest district rainfalls of this period :—

District.	Date.	Rainfall.	
		Average actual of district.	Heaviest in the district.
		Inch.	Inches.
South Arcot	12th February.	0·67	4·72
Tinnevelly	13th ,, .	0·41	3·71
Do.	16th ,,	0·50	3·55

District.	Date.	Rainfall. Average actual of district.	Rainfall. Heaviest in the district.
		Inches.	Inches.
Godavari	11th February	1·41	3·45
Tinnevelly	15th ,,	0·52	3·05
Vizagapatam	11th ,,	1·25	3·00
Kistna	11th ,,	0·93	2·70
Salem	12th ,,	0·69	2·37
Ganjam	11th ,,	0·58	1·75

The rainfall was heavy in the Circars districts on the 11th. The precipitation of the month was above the normal in all divisions of the Presidency, more especially in the southern and northern divisions. The following gives comparative data derived from the rainfall statement of the month published in the *Fort St. George Gazette*:—

Division.	Number of rainy days. Average actual, February 1898.	Number of rainy days. Average normal, February.	Number of rainy days. Variation from normal, February 1898.	Rainfall. Average actual, February 1898.	Rainfall. Average normal, February.	Rainfall. Variation from normal, February 1898.
				Inches.	Inch.	Inches.
Malabar Coast	0·3	0·2	+0·1	0·16	0·16	0
Madras (South-Central)	1·1	0·2	+0·9	0·81	0·13	+0·68
,, East Coast (North).	1·1	0·4	+0·7	1·25	0·22	+1·03
,, East Coast (North) (*a*).	1·0	0·4	+0·6	0·60	0·19	+0·41
,, Central	0·3	0·1	+0·2	0·11	0·03	+0·08
,, East Coast (Central).	0·7	0·2	+0·5	0·29	0·19	+0·10
,, East Coast (*South*).	0·6	0·2	+0·4	0·40	0·30	+0·10
,, (South)	1·6	0·8	+0·8	1·29	0·57	+0·72
Travancore State	2·4	?	?	2·42	?	?

The distribution of the rainfall is shown more fully by the following data for each of the 22 Collectorates of the Presidency:—

District.	Number of rainy days. Average actual, February 1898.	Number of rainy days. Average normal, February.	Rainfall. Average actual, February 1898.	Rainfall. Average normal, February.	Rainfall. Variation from normal, February 1898.
			Inches.	Inch.	Inches.
Ganjam	1·3	0·8	0·79	0·44	+0·35
Vizagapatam	1·0	0·4	1·43	0·19	+1·24
Godavari	1·1	0·2	1·48	0·11	+1·37
Kistna	1·2	0·2	1·12	0·07	+1·05
Nellore	0·7	0·2	0·29	0·19	+0·10
Chingleput	0·3	0·2	0·05	0·42	—0·37
Madras	1·0	0·2	0·49	0·28	+0·21
North Arcot	0·3	0·2	0·24	0·21	+0·03
South Arcot	0·9	0·2	0·72	0·20	+0·52
Tanjore	0·8	0·5	0·43	0·54	—0·11
Trichinopoly	0·6	0·1	0·51	0·11	+0·40
Madura	1·0	0·5	0·58	0·39	+0·19
Tinnevelly	2·4	1·2	2·18	0·81	+1·37
Malabar	0·4	0·4	0·23	0·26	—0·03
South Canara	0	0	0·03	0·02	+0·01
Salem	1·1	0·2	0·84	0·10	+0·74
Coimbatore	1·2	0·2	0·76	0·17	+0·59
Nilgiris	2·5	0·5	1·64	0·23	+1·41
Cuddapah	0·1	0·1	0·01	0·06	—0·05
Anantapur	0·3	0·1	0·10	0·03	+0·07
Bellary	0·1	0	0·01	0·02	—0·01
Kurnool	0·6	0·1	0·32	0·01	+0·31

Table

Abstract of Observations taken at 8 A.M. at 215

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level, in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·088	...	...	...	...	...	...	...	88·8	+0·4	69·2	+1·9	79·0	+1·2	19·6	...	...	...	...	32·1
1	Tenasserim and Bay Islands.	Car Nicobars	25	29·879	?	?	29·951	28th	29·714	19th	·237	79·5	86·5	?	77·0	?	81·8	?	9·5	88·3	27th	71·1	21st	17·2
		Port Blair	61	29·860	?	29·853	29·966	28th	29·712	19th	·254	77·2	86·9	?	74·8*	?	80·8*	?	12·1	90·7	27th	69·3	4th	21·4
		Mergui	96	29·826	?	29·855	29·928	27th	29·632	19th	·296	76·0	88·6	?	71·3	?	80·0	?	17·3	91·9	25th	62·3	1st	29·6
		Tavoy	26	29·887	−·101	29·844	29·988	2 days	29·707	19th	·281	71·9	90·8	?	67·6	+0·3	79·2	?	23·2	95·2	11th	57·2	1st	38·0
		Moulmein	94	29·824	−·098	29·855	29·924	27th	29·640	20th	·284	72·9	91·6	+0·3	68·9	+1·4	80·4	+0·9	22·7	97·4	11th	54·4	27th	43·0
2	Lower Burma	Rangoon	41	29·879	−·089	29·857	29·996	28th	29·672	19th	·324	71·4	93·6	+1·2	67·4	+2·2	80·5	+1·7	26·2	97·7	13th	60·8	3rd	36·9
		Bassein	27	29·903	−·072	29·866	30·005	28th	29·699	19th	·306	71·9	89·6	+0·1	67·2	+3·3	78·4	+1·7	22·4	95·2	13th	60·8	2 days	34·4
		Diamond Island	41	29·889	−·081	29·865	29·996	28th	29·698	19th	·298	77·7	84·3	+0·2	73·9	+2·1	79·1	+1·2	10·4	90·6	11th	69·4	3rd	21·2
5	Arakan	Akyab	20	29·919	−·085	29·882	30·023	28th	29·639	19th	·384	66·6	84·7	+0·1	61·0	+0·1	72·9	+0·1	23·7	92·3	12th	55·2	2 days	37·1
3	Central Burma	Toungoo	183	29·723	−·089	29·855	29·824	28th	29·512	2 days	·312	66·6	91·0	+0·3	62·7	+2·5	76·9	+1·4	28·3	97·2	26th	55·1	17th	42·1
	II.—Burma Inland		...	...	−·078	...	...	...	...	...	...	...	88·4	+0·5	58·0	+1·5	73·2	+1·0	30·4	...	...	...	...	43·9
2	Central Burma	Thayetmyo	134	29·788	−·072	29·868	29·893	10th	29·544	19th	·354	68·8	92·7	+0·3	57·7	+1·7	75·2	+1·0	35·0	99·1	2 days	53·2	4 days	45·9
4	Upper Burma	Minbu	?	29·762?	−·082	?	29·882	10th	29·500	20th	·382	68·2	91·4	+0·2	61·6	+2·1	76·5	+1·2	29·8	100·6	27th	53·5	22nd	47·1
		Yamethin	657	29·245	−·074	29·870	29·370	10th	29·005	20th	·365	68·2	93·3	+0·9	60·2	+1·2	76·8	+1·1	33·1	99·5	25th	52·7	22nd	46·5
		Mandalay	250	29·659	−·079	29·887	29·795	10th	29·395	19th	·400	68·1	89·8	−0·2	61·2	+1·6	75·5	+0·7	28·6	95·0	2 days	55·2	16th	39·8
		Kindat	?	29·558?	−·085	?	29·709	9th	29·237	19th	·472	58·4	82·3	+1·3	54·3	+1·0	68·3	+1·2	28·0	90·3	27th	47·0	21st	43·3
		Bhamo	?	29·554?	?	?	29·706	10th	29·210	19th	·496	58·3	81·1	?	53·0	+0·1	67·1	?	28·1	89·1	27th	48·9	11th	40·2
(a)4	Burma Hill Stations.	Taunggyi	?			Not recorded.						62·9	76·8	?	47·1	?	62·0	?	29·7	84·2	28th	40·1	18th	44·1
		Lashio	?	27·133	−·070	?	27·242	11th	26·868	19th	·374	54·7	79·0	+1·0	48·9	+0·8	64·0	+0·9	30·1	90·5	27th	44·0	2 days	46·5
	III.—Assam		...	...	−·074	...	...	...	...	...	...	...	76·1	−0·2	54·8	+1·1	65·5	+0·5	21·2	...	...	...	...	34·4
7	Surma	Silchar	104	29·864	−·073	29·925	29·992	27th	29·486	19th	·506	61·7	81·0	+1·1	55·7	+0·7	68·4	+0·9	25·3	86·5	28th	48·5	21st	38·0
9	Brahmaputra	Sibsagar	333	29·631	−·079	29·940	29·805	9th	29·243	19th	·562	56·9	71·6	−1·1	52·6	?	62·1	?	19·0	79·8	26th	45·9	10th	33·9
		Dhubri	115	29·833	−·069	29·910	29·981	9th	29·438	19th	·543	60·1	75·6	−1·5	56·2	+1·5	65·9	0	19·4	82·1	27th	50·8	22nd	31·3
	IV.—Bengal and Orissa		...	...	−·075	...	...	...	...	...	...	...	80·2	−0·7	58·0	+0·8	69·1	+0·1	22·1	...	...	...	...	37·6
6	East Bengal	Chittagong	87	29·859	−·080	29·898	29·980	27th	29·552	19th	·428	64·5	83·1	+1·6	58·4	−0·1	70·8	+0·8	24·7	88·7	12th	49·9	21st	38·8
		Langleh	?			Not recorded.						59·5	67·9	?	54·8	?	61·3	?	13·1	76·5	12th	46·6	22nd	29·9
		Noakhali	43	29·910	?	29·901	30·025	28th	29·585	19th	·440	65·5	81·2	?	55·6	?	68·5	?	25·6	85·9	28th	45·0	22nd	40·9
		Comilla	36	29·913	?	29·898	30·028	28th	29·564	19th	·464	64·1	81·9	?	57·4	?	69·7	?	24·5	86·4	19th	47·9	22nd	38·5
		Sirajganj	49	29·883	?	29·884	30·011	28th	29·532	19th	·479	60·3	77·6	?	55·4	?	66·5	?	22·2	85·3	19th	45·6	21st	39·7
		Narayanganj	26	29·917	−·085	29·892	30·045	28th	29·569	19th	·476	64·0	80·0	−2·2	59·4	+1·6	69·8	−0·3	20·6	85·6	19th	50·7	22nd	34·9
		Barisal	13	29·928	−·084	29·887	30·060	28th	29·603	19th	·457	67·1	81·4	+1·4	58·7	+0·6	70·1	+1·0	22·7	87·8	19th	50·2	22nd	37·6
		Mymensingh	59	29·881	−·089	29·894	30·008	9th	29·523	19th	·485	61·3	77·8	0	56·1	+2·5	67·0	+1·3	21·7	84·2	19th	48·6	22nd	35·6
11	Deltaic Bengal	Faridpur	46	29·903	?	29·899	30·026	28th	29·575	19th	·454	61·1	79·4	?	56·3	?	67·8	?	23·1	86·6	19th	47·0	21st	39·6
		Jessore	33	29·915	−·078	29·896	30·041	28th	29·585	19th	·456	64·1	81·1	−2·0	57·7	+1·1	69·4	−0·5	23·4	88·5	19th	46·1	21st	42·4
		Calcutta	21	29·938	−·073	29·905	30·068	28th	29·624	19th	·444	65·4	81·2	−0·4	60·2	+0·4	70·7	0	21·0	88·9	19th	50·2	22nd	38·7
		Saugor Island	25	29·920	−·080	29·890	30·053	28th	29·625	19th	·428	69·5	81·4	+0·5	64·9	−0·2	73·2	+0·2	16·5	86·9	18th	53·5	25th	33·4
		Krishnagar	47	29·917	?	29·914	30·040	28th	29·591	19th	·449	64·4	81·3	?	56·0	?	68·7	?	25·3	89·0	19th	44·8	21st	44·2
		Midnapore	149	29·804	?	29·907	29·934	28th	29·508	19th	·426	66·5	85·9	?	60·4	?	73·2	?	25·5	94·3	19th	51·2	22nd	43·1

* Mean of 23 days.

I.

Stations in India, Burma, etc., in February 1898.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st January to 28th February 1898.	Normal rainfall for period, from 1st January to 28th February.	Variation from normal of period, 1st January to 28th February.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·29	0·49	−0·20	...	...	...	...	**I.—Burma Coast and Bay Islands.**		
2	6	8	6	...	...	...	2	1	6·0	?	?	79	·793	5·2	1	?	?	0·23	?	?	5·25	?	?	0·20	Car Nicobars.	Andamans and Bay Islands.	1
...	9	7	..	...	...	...	6	6	5·3	5·1	+ 4	85	·800	5·4	0	?	?	0	1·17	−1·17	4·96	1·98	+ 2·98	0	Port Blair.		
27	1	...	...	...	...	...	...	...	1·3	2·0	−35	85	·769	2·5	2	?	?	2·21	1·43	+ 0·78	2·77	2·04	+ 0·73	1·33	Mergui.		
25	...	...	...	...	...	...	...	3	1·3	?	?	91	·721	0·1	2	?	?	0·35	0·58	− 0·23	0·68	1·10	− 0·42	0·15	Tavoy.		
...	5	3	8	3	3	3	1	1	2·4	2·4	0	84	·686	1·6	0	0·45	− 0·45	0	0·20	− 0·20	0	0·71	− 0·71	0	Moulmein.		
...	2	1	2	2	6	8	5	2	4·3	3·9	+10	81	·624	2·0	0	0·45	− 0·45	0	0·34	− 0·34	0·05	0·51	− 0·46	0	Rangoon.	Lower Burma.	2
8	3	...	1	...	1	2	...	13	5·2	3·8	+37	85	·667	2·0	0	0·45	− 0·45	0	0·30	− 0·30	0·45	0·47	− 0·02	0	Bassein.		
2	12	5	2	...	...	...	1	6	13·4	7·2	+86	72	·695	3·5	0	0·40	− 0·40	0·01	0·10	− 0·09	1·41	0·28	+1·13	0·01	Diamond Island.		
...	10	13	3	2	...	...	...	...	3·8	3·4	+12	81	·527	1·0	0	0·36	− 0·36	0·05	0·11	− 0·06	0·05	0·19	− 0·14	0·05	Akyab.	Arakan.	5
5	9	3	...	2	3	...	1	5	2·3	1·9	+21	85	·570	1·0	0	0·36	− 0·36	0	0·18	− 0·18	0	0·30	− 0·30	0	Toungoo.	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·07	0·17	−0·10	...	...	...	...	**II.—Burma Inland.**		
...	7	1	2	3	3	...	6	6	2·1	4·2	−50	64	·453	0	0	0	0	0	0·01	− 0·01	0·31	0·03	+ 0·28	0	Thayetmyo.	Central Burma.	3
10	...	1	...	4	2	2	3	6	7·7	?	?	62	·432	0·8	0	?	?	0	0·02	− 0·02	0	0·06	− 0·06	0	Minbu.	Upper Burma.	1
12	2	...	...	7	3	...	...	4	3·9	?	?	65	·454	0·9	0	?	?	0	0·13	− 0·13	0·48	0·23	+ 0·25	0	Yamethin.		
...	3	...	1	4	13	6	...	1	1·6	?	?	69	·468	0·8	0	?	?	0	0·07	− 0·07	0·04	0·13	− 0·09	0	Mandalay.		
18	1	...	1	2	1	1	3	1	2·2	?	?	96	·575	1·0	0	?	?	0	0·34	− 0·34	0·13	0·74	− 0·61	0	Kindat.		
9	3	8	1	2	...	1	2	2	3·5	?	?	91	·446	3·1	1	?	?	0·42	0·43	− 0·01	0·72	1·30	− 0·58	0·37	Bhamo.		
7	...	..	...	3	9	8	1	...	?	?	?	53	·301	2·4	0	?	?	0	0·65	− 0·65	0·14	0·66	− 0·52	0	Taunggyi.	Burma Hill Stations.	4(a)
			Not	rec	orde	d.			?	?	?	86	·366	4·4	0	?	?	0	0·49	− 0·49	2·11	0·56	+ 1·55	0	Lashio		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·46	1·59	−0·13	...	...	...	...	**III.—Assam.**		
17	...	1	7	3	...	...	...	...	2·5	2·8	−11	84	·477	4·2	3	4·04	− 1·04	1·24	2·29	− 1·05	1·52	3·01	− 1·49	0·60	Silchar.	Surma.	7
14	5	4	1	...	1	2	...	...	3·3	2·2	+50	97	·451	7·0	7	5·30	+ 1·70	2·33	1·96	+ 0·37	2·75	3·43	− 0·68	0·63	Sibsagar.	Brahmaputra.	9
4	2	5	11	...	4	2	...	...	5·6	4·0	+40	84	·437	2·8	3	1·14	+ 1·86	0·82	0·53	+ 0·29	0·95	0·93	+ 0·02	0·41	Dhubri.		
...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		0·42	0·92	−0·50	...	...	...	...	**IV.—Bengal and Orissa.**		
...	11	12	2	1	1	...	...	1	4·9	4·4	+11	84	·517	1·6	0	1·35	− 1·35	0·09	0·81	− 0·72	0·35	1·30	− 0·95	0·09	Chittagong.	East Bengal.	6
			Not	rec	orde	d.			?	?	?	62	·315	?	0	?	?	0	0·50	− 0·50	1·18	0·52	+ 0·66	0	Lungleh.		
...	13	2	2	...	1	4	4	2	3·1	?	?	81	·517	1·5	0	1·73	− 1·73	0·02	1·02	− 1·00	0·16	1·49	− 1·33	0·02	Noakhali.		
6	3	3	1	2	3	2	2	6	2·5	?	?	80	·479	2·6†	2	2·10	− 0·10	0·43	0·99	− 0·56	1·67	1·52	+ 0·15	0·24	Comilla.		
14	1	...	2	...	...	5	1	5	1·7	?	?	89	·469	2·5‡	1	1·64	− 0·64	0·15	1·02	− 0·87	0·57	1·47	− 0·90	0·11	Sirajganj.		
5	6	1	2	2	1	4	2	5	3·8	2·6	+46	83	·503	4·6	0	2·00	− 2·00	0	1·26	− 1·26	1·82	1·50	+ 0·32	0	Narayanganj.		
23	1	2	...	...	...	...	1	1	1·8	?	?	79	·530	2·0	1	1·81	− 0·81	0·18	1·13	− 0·95	0·76	1·74	− 0·98	0·18	Barisal.		
18	...	...	3	1	...	...	6	...	?	?	?	83	·452	?	1	1·50	− 0·50	0·19	1·13	− 0·94	0·66	1·52	− 0·86	0·17	Mymensingh.		
24	2	3	1	...	...	...	1	...	1·1	?	?	86	·473	2·1‡	0	2·04	− 2·04	0·01	1·49	− 1·48	3·25	1·85	+ 1·40	0·01	Faridpur.	Deltaic Bengal.	10
14	3	2	1	1	1	2	1	3	2·7	2·0	+35	77	·472	3·0	0	1·77	− 1·77	0·09	1·21	− 1·12	1·02	1·76	− 0·74	0·09	Jessore.		
14	2	...	2	...	3	4	...	3	2·7	3·8	−29	78	·498	3·1	0	1·92	− 1·92	0	1·38	− 1·38	0·36	1·98	− 1·62	0	Calcutta.		
...	8	4	1	...	5	5	1	4	10·6	7·9	+34	81	·595	3·5	0	1·77	− 1·77	0·04	1·10	− 1·06	0·08	1·42	− 1·34	0·04	Saugor Island.		
2	2	1	3	4	2	2	7	5	4·0	?	?	75	·461	3·1§	1	1·62	− 0·62	0·48	1·23	− 0·75	2·52	1·53	+ 0·99	0·42	Krishnagar.		
11	6	3	...	...	4	...	...	4	1·3	?	?	67	·434	1·8†	2	1·46	+ 0·54	0·35	1·07	− 0·72	0·43	1·59	− 1·16	0·17	Midnapore.		

† Mean of 26 days. ‡ Mean of 25 days. § Mean of 27 days.

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal.	Bankura	298	29·632	?	29·895	29·753	27th & 28th	29·334	19th	·419	64·4	83·3	?	59·1	?	71·3	?	24·2	90·1	19th	50·9	21st	39·2
		Raniganj	334	29·615	?	29·916	29·755	28th	29·300	19th	·455	62·6	82·4	?	56·9	?	69·7	?	25·5	90·5	19th	47·7	21st	42·8
		Burdwan	99	29·858	−·070	29·909	29·983	28th	29·548	19th	·435	65·6	83·7	+0·5	59·9	+1·8	71·9	+1·2	23·8	92·4	19th	50·0	21st	42·4
		Naya Dumka	489	29·447	?	29·917	29·583	28th	29·121	19th	·462	63·5	79·2	?	56·0	?	67·6	?	23·2	88·0	19th	47·3	21st	40·7
		Berhampore	67	29·884	−·076	29·903	30·024	28th	29·546	19th	·478	60·5	80·2	−1·7	56·3	+0·4	68·3	−0·7	23·9	88·5	19th	47·6	21st	40·9
		Rampur Boalia	70	29·874	?	29·897	30·004	28th	29·534	19th	·470	62·3	78·6	?	56·0	?	67·4	?	22·6	86·9	19th	48·0	21st	38·9
		Malda	72	29·868	?	29·896	29·999	28th	29·514	19th	·485	60·4	77·5	?	53·4	?	65·5	?	24·1	84·9	19th	44·2	21st	40·7
		Bogra	61	29·879	?	29·896	30·006	11th	29·518	19th	·488	60·1	77·4	−1·7	55·5	+2·2	66·5	+0·3	21·9	86·2	19th	47·2	21st	39·0
12	North Bengal	Dinajpur	123	29·823	?	29·908	29·962	9th	29·442	19th	·520	58·9	77·3	−1·1	54·2	+3·0	65·8	+1·0	23·1	83·8	19th	47·0	21st	36·8
		Rangpur	123	29·819	?	29·903	29·961	9th	29·431	19th	·530	59·8	76·2	?	54·5	?	65·4	?	21·7	81·3	19th	48·5	21st	32·8
		Jalpaiguri	284	29·652	−·064	29·909	29·810	9th	29·257	19th	·553	58·3	75·7	?	54·4	+3·6	65·1	?	21·3	80·4	28th	50·6	8th	29·8
		Cooch Behar	156	29·775	?	29·885	29·926	9th	29·417	19th	·509	59·6	75·3	?	55·0	?	65·1	?	20·3	86·3	28th	49·2	20th	31·1
17	North Bihar	Purnea	125	29·825	−·062	29·911	29·973	9th	29·451	19th	·522	57·3	76·9	−1·9	53·4	+2·7	65·2	+0·4	23·5	83·0	19th	43·5	21st	39·5
14	Orissa	Balasore	46	29·914	?	29·909	30·050	28th	29·617	19th	·433	66·7	85·7	?	60·0	−0·2	72·8	?	25·7	93·4	19th	50·5	2 days	42·9
		False Point	21	29·910	−·064	29·903	30·060	28th	29·657	19th	·403	68·8	82·2	−0·4	61·6	−2·7	71·9	−1·6	20·6	86·9	20th	50·5	21st	36·4
		Cuttack	80	29·882	−·064	29·908	30·007	28th	29·609	19th	·398	65·6	88·3	−1·7	62·4	−2·7	75·4	−2·2	25·9	95·4	27th	54·1	21st	41·3
		Shortt's Island	?	29·937	?	?	30·043	10th & 27th	29·628	19th	·415	73·7	81·6	?	70·3†	?	75·8	?	11·3	86·6	20th	66·8	14th	19·8
		Puri	20	29·940*	?	29·903*	30·063	28th	29·680	19th	·383	71·0	83·0	?	67·0	?	75·1	?	16·0	90·7	18th	58·6	21st	32·1
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·079	...	...	...	...	...	...	...	77·2	−1·5	53·9	+1·3	65·6	−0·1	23·3	...	...	...	...	38·8
15	Chota Nagpur	Hazaribagh	2,007	27·839	−·079	29·919	28·031	27th	27·627	19th	·404	60·1	75·8	−1·9	54·6	+0·7	65·2	−0·6	21·2	82·2	28th	45·6	20th	36·6
		Ranchi	2,128	27·780	?	29·926	29·928	28th	27·521	19th	·407	61·0	76·8	0	55·5	?	66·2		21·3	82·9	26th	47·7	20th	35·2
		Daltonganj	730	29·224	?	29·949	29·360	28th	28·992	19th	·368	59·8	80·6	?	52·1	?	66·3	?	28·5	87·1	3rd	42·0	21st	45·1
		Chaibassa	760	29·170	?	29·915	29·300	27th	28·895	19th	·405	61·6	84·3	+0·6	57·5	+0·6	70·9	+0·6	26·8	92·9	27th	48·2	21st	44·7
16	South Bihar	Gaya	375	29·571	−·076	29·920	29·697	28th	29·295	19th	·402	61·6	80·3	−1·0	56·2	+0·4	68·2	−0·3	24·1	86·0	19th	49·5	2 days	36·5
		Dehri	351	29·5925	?	29·9175	29·718	27th	29·331	19th	·387	62·3	78·8	?	58·1	?	68·5	?	20·7	86·3	3rd	50·6	21st	35·7
		Patna	183	29·760	−·091	29·906	29·897	28th	29·458	19th	·439	60·0	75·8	−2·2	55·4	+2·8	65·6	+0·3	20·4	82·7	19th	47·9	24th	34·8
		Arrah	190	29·741	?	29·894	29·883	28th	29·454	19th	·429	58·8	77·2	?	53·0	?	65·1	?	24·2	83·9	19th	44·8	21st	39·1
		Buxar	239	29·703	?	29·911	29·827	28th	29·435	19th	·392	60·3	77·3	?	54·7‡	?	65·7‡	?	22·6	81·6	3rd	47·3	7th	37·3
17	North Bihar	Bhagalpur	160	29·784	?	29·903	29·911	27th	29·440	19th	·471	62·4	77·1	?	55·0	?	66·1	?	22·1	85·2	19th	48·2	22nd	37·0
		Darbhanga	166	29·768	−·080	29·897	29·907	9th	29·417	19th	·490	59·1	75·4	−0·8	55·4	+1·7	65·5	+0·5	20·0	81·8	19th	49·1	21st	32·7
		Muzafferpur	178	29·761	?	29·903	29·904	9th	29·428	19th	·476	59·1	75·7	?	53·2	?	64·4	?	22·5	82·7	19th	45·5	22nd	37·2
		Motihari	224	29·710	?	29·905	29·860	9th	29·369	19th	·491	57·5	74·6	?	52·1	?	63·4	?	22·5	81·0	19th	43·9	21st	37·1
		Chapra	181	29·762	?	29·908	29·908	28th	29·454	19th	·454	58·8	77·0	?	53·5	?	65·2	?	23·5	84·1	19th	46·6	21st	37·5
18	N.-W. P., East	Benares	267	29·684	−·069	29·922	29·816	23rd	29·453	19th	·363	58·3	77·2	−3·2	52·6	+1·2	64·9	−1·0	24·6	85·2	2nd	43·6	21st	41·6
		Allahabad	309	29·638	−·075	29·920	29·783	23rd	29·421	18th	·362	59·4	78·2	−1·6	52·9	+2·0	65·6	+0·2	25·3	87·6	2nd	44·4	21st	43·2
23	N.-W. P. (East Submontane).	Gorakhpur	256	29·662	−·082	29·891	29·803	28th	29·376	19th	·427	58·6	75·3	−2·8	53·5	+1·7	64·4	−0·6	21·8	82·6	19th	45·6	24th	37·0
19	South Oudh	Lucknow	368	29·569	−·078	29·919	29·706	23rd	29·343	18th	·363	56·9	76·8	−1·7	51·6	+1·3	64·2	−0·2	25·2	86·8	5th	43·2	21st & 22nd.	43·6
20	North Oudh	Bahraich	403	29·512	?	29·901	29·657	28th	29·263	19th	·394	57·3	75·0	?	51·8	?	63·4	?	23·2	81·4	28th	43·5	21st & 24th.	37·9
21	N.-W. Provinces (Central).	Cawnpore	416	29·516	−·085	29·911	29·668	23rd	29·296	18th	·372	58·0	77·7	−0·4	51·9	+1·0	64·8	+0·3	25·8	88·3	2nd	43·5	21st	44·4
		Mainpuri	516	29·402	?	29·909	29·570	23rd	29·173	18th	·397	55·7	74·8	?	51·3	?	63·1	?	23·5	84·3	2nd	43·6	23rd & 24th.	40·7

* Mean of 19 days. † Mean of 21 days. ‡ Mean of 16 days.

I—*continued.*

in India, Burma, etc., in February 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st January to 28th February 1898.	Normal rainfall for period from 1st January to 28th February.	Variation from normal of period, 1st January to 28th February.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
20	...	1	2	...	...	...	4	1	2·3	P	P	64	·388	2·7§	1	1·81	− 0·81	0·12	0·94	− 0·82	0·12	1·28	− 1·16	0·12	Bankura	Central Bengal.	11
7	1	1	2	1	...	1	7	8	2·7	P	P	63	·361	2·1	1	1·62	− 0·62	0·17	1·18	− 1·01	0·25	1·58	− 1·33	0·15	Raniganj.		
17	1	3	...	...	...	3	2	2	1·3	2·3	−43	70	·449	2·7	1	1·58	− 0·58	0·11	0·93	− 0·82	0·80	1·29	− 0·49	0·11	Burdwan.		
10	3	2	2	...	...	...	2	9	1·5	P	P	57†	·341†	3·1	1	1·67	− 0·67	0·24	0·79	− 0·55	0·25	1·39	− 1·14	0·15	Naya Dumka.		
10	2	...	...	...	3	2	7	4	2·4	2·4	0	81	·431	2·7	0	1·73	− 1·73	0·06	1·04	− 0·98	0·51	1·56	− 1·05	0·06	Berhampore.		
12	3	1	2	1	...	3	3	3	2·8	P	P	76	·433	2·4	0	1·46	− 1·46	0·08	0·84	− 0·76	0·78	1·25	− 0·47	0·04	Rampur Boalia.		
...	3	...	2	...	1	6	11	5	2·3	P	P	81	·428	2·2‖	3	1·27	+ 1·73	2·56	0·61	+ 1·95	3·23	1·13	+ 2·10	1·50	Malda.		
Not				rec	orde	d.			P	P	P	82	·431	P	3	1·46	+ 1·54	1·05	0·97	+ 0·08	2·05	1·44	+0·61	0·58	Bogra.		
1	4	4	2	...	1	3	7	6	4·3	P	P	81	·409	2·5	3	1·19	+ 1·81	1·92	0·51	+ 1·41	2·51	0·96	+1·55	1·04	Dinajpur	North Bengal.	12
7	1	6	4	...	...	2	5	3	3·6	P	P	91	·471	2·8	2	1·08	+ 0·92	1·66	0·43	+ 1·23	2·11	1·04	+ 1·07	1·03	Rangpur.		
...	4	4	5	2	3	5	2	3	2·2	P	P	87	·427	1·7	3	1·12	+ 1·88	1·49	0·38	+ 1·11	1·49	0·91	+ 0·58	1·13	Jalpaiguri.		
7	3	5	3	6	4	...	...	...	2·9	P	P	87	·445	4·3	3	P	P	0·99	0·31	+ 0·68	1·21	0·69	+ 0·52	0·56	Cooch Behar		
6	1	2	3	...	1	7	4	4	5·1	2·5	+104	85	·401	2·7	3	1·20	+ 1·80	0·58	0·59	− 0·01	0·74	1·08	− 0·34	0·33	Purnea	North Bihar.	17
14	3	1	...	...	2	5	1	2	2·8	P	P	80	·528	1·8	0	2·23	− 2·23	0	1·31	− 1·31	0	1·70	− 1·70	0	Balasore	Orissa.	14
1	2	...	...	1	1	5	6	12	6·6	7·5	−12	81	·588	2·2	0	1·42	− 1·42	0	0·86	− 0·86	0	1·43	− 1·43	0	False Point.		
13	3	2	1	...	1	2	5	1	2·1	2·2		79	·500	1·6	1	1·23	− 0·23	0·12	0·63	− 0·51	0·12	0·95	− 0·83	0·12	Cuttack.		
...	6	2	2	...	1	7	7	3	14·2	P	P	71	·596	1·3§	1	?	P	0·25	0·97	− 0·72	0·25	1·08	− 0·83	0·25	Shortt's Island		
4	10	2	...	...	...	4	2	6	10·1§	P	P	76	·588	1·5	0	1·15	− 1·15	0	0·78	− 0·78	0	1·06	− 1·06	0	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·61	0·53	+ 1·08	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
1	1	...	2	2	3	3	9	7	9·0	6·5	+38	62	·318	3·8§	2	1·81	+ 0·19	1·00	0·82	+ 0·18	1·00	1·38	− 0·38	0·84	Hazaribagh.	Chota Nagpur.	15
1	...	1	3	2	2	3	6	10	8·0	P	P	58	·310	3·1§	1	2·12	−1·12	0·63	1·21	− 0·58	0·63	1·73	− 1·10	0·62	Ranchi		
...	2	...	1	1	7	10	5	2	4·0	P	P	73	·381	2·0§	3	1·32	+ 1·68	1·71	0·49	+ 1·22	1·71	1·21	+ 0·50	1·32	Daltonganj.		
14	1	...	...	1	...	5	7	...	1·2	P	P	73	·404	1·6§	3	1·65	+ 1·35	1·27	0·97	+ 0·30	1·27	1·55	− 0·28	0·69	Chaibassa.		
4	...	3	1	3	1	11	3	2	5·3	2·6	+104	69	·384	2·5	3	1·35	+ 1·65	1·35	0·67	+ 0·68	1·35	1·25	+ 0·10	0·96	Gaya	South Bihar.	16
2	1	...	...	3	5	12	4	1	6·7	P	P	73	·401	3·1	1	1·25	− 0·25	1·08	0·44	+ 0·64	1·08	1·06	+ 0·02	1·08	Dehri		
5	...	1	4	...	2	4	12	...	3·5	2·9	+21	75	·392	2·7	2	1·12	+ 0·58	1·31	0·53	+ 0·78	1·31	1·18	+ 0·13	0·87	Patna.		
...	...	1	3	2	2	7	8	5	3·8	P	P	81	·409	1·9	2	1·04	+ 0·96	1·95	0·59	+ 1·36	1·95	1·32	+ 0·63	1·60	Arrah.		
...	...	...	6	2	1	4	14	1	4·8	P	P	71	·376	2·9‖	2	1·46	+ 0·54	1·87	0·50	+ 1·37	1·87	1·22	+ 0·65	0·62	Buxar.		
9	...	2	3	1	2	9	1	1	3·0	P	P	70	·397	2·8	3	1·46	+ 1·54	1·00	0·62	+ 0·38	1·18	1·10	+ 0·08	0·66	Bhagalpur	North Bihar.	17
2	...	1	4	3	1	3	9	5	4·7	3·3	+42	81	·411	1·8	1	1·32	− 0·32	0·57	0·49	+ 0·08	0·97	1·14	− 0·17	0·49	Darbhanga.		
14	...	3	4	1	...	...	3	3	5·5	P	P	81	·412	1·7§	2	1·32	+ 0·68	0·48	0·48	0	0·76	1·32	− 0·56	0·26	Muzaffarpur.		
...	1	3	6	...	3	4	8	3	6·3	P	P	87	·415	0·9	2	1·17	+ 0·83	1·49	0·48	+ 1·01	1·87	1·19	+ 0·68	0·71	Motihari.		
7	...	...	4	2	1	7	6	1	3·5	P	P	79	·396	2·8§	2	1·08	+ 0·92	0·78	0·46	+ 0·32	0·78	1·14	− 0·36	0·61	Chapra.		
12	1	...	2	1	1	4	7	...	3·2	4·1	−22	78	·388	2·8	4	0·82	+ 3·18	2·09	0·37	+ 1·72	2·09	1·16	+ 0·93	1·14	Benares	N.-W. P. East.	18
2	3	1	2	4	4	3	7	2	6·2	4·2	+48	77	·396	2·6	3	0·64	+ 2·36	2·39	0·28	+ 2·11	2·39	1·13	+ 1·26	2·02	Allahabad.		
1	4	2	2	1	2	3	7	6	2·5	2·3	− 9	81	·403	2·2	5	0·73	+ 4·27	1·72	0·41	+ 1·31	1·72	1·25	+ 0·47	0·85	Gorakhpur	N.-W. P. (East Submontane).	22
14	1	1	3	1	...	...	7	1	2·1	3·3	−36	81	·376	1·8	3	0·55	+ 2·45	4·06	0·25	+ 3·81	4·06	1·35	+ 2·71	2·12	Lucknow	South Oudh.	19
7	1	1	2	2	1	1	2	10	2·9	P	P	79	·378	1·5	3	P	P	2·47	0·63	+ 1·84	3·43	1·49	+ 1·94	1·07	Bahraich	North Oudh.	20
9	...	2	3	3	...	4	6	1	3·9	P	P	72	·351	1·9	2	0·60	+ 1·40	1·42	0·28	+ 1·14	1·42	1·16	+ 0·26	0·82	Cawnpore	N.-W. Provinces (Central).	21
5	1	1	6	2	1	1	8	3	3·9	P	P	75	·340	3·9	3	P	P	3·12	0·16	+ 2·96	3·12	0·77	+ 2·35	2·37	Mainpuri.		

§ Mean of 27 days. ‖ Mean of 26 days.

Tabl

Abstract of Observations taken at 8 A.M. at 215 Station

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range
	VI.—Upper Sub-Himalayas		...	...	−·086	...	...	...	...	...	...	...	69·9	−1·8	48·3	+1·8	59·1		21·7	...	...	...	...	39
24	N.-W. Provinces, West (Submontane).	Bareilly	568	29·346	−·071	29·915	29·490	28th	29·124	19th	·366	54·9	72·0	−2·8	51·2	+2·4	61·6	−0·2	20·8	82·4	3rd	44·2	20th	38
		Dehra Dun	2,233	27·635	−·090	29·931	27·793	28th	27·398	20th	·395	50·9	67·2	−1·7	46·7	−0·1	56·9	−0·9	20·5	77·0	2nd	39·0	20th	38
		Roorkee	887	29·006	−·083	29·921	29·161	23rd	28·782	18th	·379	51·8	70·8	−2·3	47·5	+0·3	59·2	−1·0	23·3	80·8	2nd & 3rd.	40·5	7th	40
22	N.-W. P., West	Meerut	738	29·168	−·083	29·922	29·333	23rd	28·946	18th	·387	52·9	71·1	−3·3	49·9	+2·4	60·6	−0·5	21·2	82·2	2nd	43·1	20th	39
26	South-East Punjab.	Delhi	718	29·189	−·094	29·916	29·371	23rd	28·971	18th	·400	55·1	71·8	−3·3	51·7	+0·1	61·8	−1·6	20·1	83·7	27th	43·4	20th	40
28	Central Punjab.	Lahore	702	29·203	−·099	29·927	29·439	22rd	28·969	18th	·470	51·1	69·2	−1·3	48·0	+4·1	58·6	+1·4	21·2	77·6	2nd & 28th	40·2	20th & 22nd,	37
27	South Punjab	Sirsa	662	29·251	−·094	29·926	29·478	23rd	29·036	18th	·442	51·7	73·2	−2·0	47·6	+1·6	60·4	−0·2	25·6	85·3	2nd	41·2	24th	44
		Patiala	818	29·083	?	29·922	29·272	23rd	28·855	18th	·417	53·5	69·6	?	48·9	?	59·3	?	20·7	80·8	2nd	41·0	20th & 22nd.	39
29	Punjab (Submontane).	Ludhiana	812	29·081	−·092	29·918	29·283	23rd	29·823	18th	·460	51·8	68·9	−2·6	49·6	+3·1	59·3	+0·3	19·3	80·6	2nd	41·6	20th & 22nd,	39
		Sialkot	830	29·074	−·077	29·935	29·293	23rd	28·818	18th	·475	51·4	69·1	−0·2	47·4	+2·1	58·3	+1·0	21·7	78·5	3rd	39·6	20th	38
		Umballa	892	29·004	?	29·921	29·179	23rd	28·745	18th	·434	51·7	70·7	?	48·1	?	59·4	?	22·6	84·0	2nd	41·0	8th	43
31	North Punjab	Rawalpindi	1,643	28·215	−·073	29·947	28·454	23rd	27·972	18th	·482	47·2	65·5	+1·1	42·5	+1·3	54·0	+1·5	23·0	75·4	28th	34·4	22nd & 23rd,	40
	VII.—Indus Valley and N.-W. Rajputana.		...	...	−·111	...	...	...	...	...	...	...	76·5	+1·2	50·6	+1·6	63·6	+1·4	25·9	...	...	...	...	44
31	North Punjab	Peshawar	1,110	28·820	−·118	29·941	29·084	23rd	28·557	18th	·527	48·8	66·7	+1·0	44·1	+2·6	55·4	+1·8	22·6	74·1	4 days	33·9	23rd	40
32	West Punjab	Khushab	612	29·308	?	29·938	29·569	23rd	29·089	18th	·480	50·7	70·1	?	47·3	?	58·7	?	22·8	80·2	4th	46·5	19th & 20th.	39
		Montgomery	558	29·355	−·106	29·971	29·626	23rd	29·154	18th	·472	52·0	73·0	+0·9	46·6	+0·6	59·8	+0·8	26·4	82·5	23th	39·0	3 days	43
		D. I. Khan	594	29·363	−·110	29·947	29·628	23rd	29·121	18th	·507	50·9	71·0?	−1·2?	47·7?	+2·8?	59·4?	+0·8?	23·3?	80·3?	4th & 28th.	42·5?	25th	37
		Mooltan	420	29·510	−·123	29·930	29·778	23rd	29·320	18th	·458	53·5	73·6	+0·7	49·5	+3·5	61·6	+2·1	24·1	83·3	28th	40·9	19th	42
47	Sind	Jacobabad	186	29·749	−·116	29·910	30·028	23rd	29·595	17th	·433	54·5	80·9	+3·8	49·3	+1·5	65·1	+2·7	31·6	89·5	28th	40·0	22nd	49
		Hyderabad	96	29·857	−·110	29·912	30·101	23rd	29·704	9th	·397	61·1	81·4	+1·4	54·8	+0·7	68·1	+1·1	26·6	91·1	28th	44·5	25th	46
		Kurrachee	30	29·939	−·097	29·921	30·162	23rd	29·808	19th	·354	64·4	81·6	+1·1	59·4	+1·1	70·5	+1·1	22·2	88·4	27th	50·4	23rd	38
51	West Rajputana	Bickaneer	771	29·139	?	29·923	29·404	23rd	28·920	10th	·484	56·8	75·0	−0·2	52·2	+1·2	63·6	+0·5	22·8	88·7	1st	47·6	4 days	41
		Pachpadra	380	29·553	?	29·917	29·780	23rd	29·399	10th	·381	55·0	82·7	?	49·0	?	65·9	?	33·7	94·9	28th	40·1	24th	54
		Jodhpur	782	29·122	?	29·909	29·361	23rd	28·928	10th	·433	59·0	80·0	?	53·6	?	66·8	?	26·4	92·6	28th	44·2	19th	48
	VIII.—East Rajputana, Central India and Gujarat.		...	...	·033	...	...	...	...	...	...	...	81·3	−0·7	55·7	+1·7	68·5	+0·5	25·7	...	...	...	...	46
50	East Rajputana	Jeypore	1,431	28·485	−·092	29·950	28·686	23rd	28·319	10th	·367	57·0	75·8	−2·1	52·0	+2·0	68·9	−0·1	23·8	88·5	1st	40·2	24th	48
		Kotah	?	29·090	?	?	29·289	23rd	28·946	10th	·343	61·1	82·1	?	56·5	?	69·3	?	25·6	93·0	1st	49·5	20th & 24th.	43
		Sambhar	1,254	28·651	−·090	29·939	28·864	23rd	28·465	10	·399	54·3	76·8	+0·4	49·8	+1·7	63·3	+1·1	27·0	89·4	1st	38·0	20th	51
		Ajmere	1,611	28·300	−·099	29·962	28·501	23rd	28·108	10th	·393	54·0	76·8	−0·5	50·1	+1·7	63·5	+0·6	26·7	87·4	28th	38·4	20th	49
		Deesa	466	29·464	−·098	29·910	29·631	23rd	29·285	10th	·346	61·7	85·0	−0·7	54·2	?	69·6	?	30·8	97·8	28th	45·1	20th	52
46	Kathiawar and Cutch.	Bhuj	395	29·554	−·082	29·919	29·712	23rd	29·371	9th	·341	58·0	84·5	+0·7	59·0	+1·1	71·8	+0·9	25·5	94·8	28th	53·5	19th	41
		Rajkot	429	29·536	?	29·937?	29·675	16th	29·332	10th	·343	63·8	85·1	−2·4	56·4	?	70·8	?	28·7	98·9	28th	46·5	19th	52
		Veraval	?	29·933	?	29·893	30·007	28th	29·790	9th	·217	66·6	79·5	?	62·3	?	70·9	?	17·2	91·6	23th	55·3	19th	36
		Bhavnagar Para	35	29·911	?	29·893	30·016	12th	29·765	9th	·251	66·0	86·6	?	59·3	?	73·0	?	27·3	99·6	28th	49·7	19th	49
49	Central India	Nowgong	757	29·176	−·090	29·934	29·348	23rd	28·996	18th	·352	57·5	78·1	?	53·2	+3·2	65·7	?	24·9	88·0	2nd	43·5	24th	44
		Indore	1,823	28·098	−·070	29·938	28·234	23rd	27·960	10th	·274	61·6	81·8	−0·7	52·9	+1·3	67·4	+0·3	28·9	92·7	28th	43·6	20th	49
		Neemuch	1,630	28·303	?	29·958	28·490	23rd	28·144	10th	·346	60·8	80·9	?	52·8	+1·3	66·9	?	28·1	92·3	28th	42·9	20th	49
45	Gujarat	Surat	39	29·923	−·073	29·906	30·017	12th	29·792	9th	·225	66·9	86·2	−3·3	61·3	?	73·8	?	24·9	102·2	28th	51·6	20th	50
		Ahmedabad	164	29·788	?	29·907	29·923	23rd	29·641	9th & 10th	·282	66·0	85·9	?	60·4	?	73·2	?	25·5	98·7	28th.	53·2	11th & 20th.	45
22	N.-W. P., West	Agra	555	29·374	−·090	29·923	29·564	23rd	29·154	18th	·410	57·3	76·1	−2·1	53·5	+1·8	64·7	−0·2	22·6	87·0	2nd	42·9	24th	44
21	N.-W.P., Central	Jhansi	858	29·077	−·091	29·932	29·258	23rd	28·898	18th	·360	62·4	79·7	−0·8	56·7	+2·5	68·2	+0·9	23·0	89·6	1st & 2nd	49·4	20th	40

I—*continued.*

in India, Burma, etc., in February 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st January to 28th February 1898.	Normal rainfall for period 1st January to 28th February.	Variation from normal of period, 1st January to 28th February.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4·34	1·18	+ 3·27	...	...	...	...	VI.—Upper Sub-Himalayas.		
4	...	2	2	2	...	1	3	4	2·3	4·0	− 43	81	·355	2·5	5	1·18	+3·82	4·13	0·61	+ 3·52	4·18	1·71	+ 2·47	1·88	Bareilly	N.-W. Provinces, West (Submontane).	
21	2	1	2	...	...	...	...	2	1·6	2·0	− 20	74	·279	4·1	7	3·00	+4·00	5·17	1·93	+ 3·24	5·47	4·47	+ 1·00	1·64	Dehra Dun.		
22	2	...	...	...	...	...	...	4	2·5	2·8	− 11	81	·317	3·2	6	2·09	+3·91	5·20	1·22	+ 3·98	5·27	2·98	+ 2·29	2·69	Roorkee.		
13	1	...	3	2	...	1	8	...	2·9	2·6	+ 12	76	·310	3·3	5	1·27	+3·73	5·64	0·79	+ 4·85	5·64	2·06	+ 3·58	3·32	Meerut	N.-W. P., West.	22
6	...	...	4	4	...	...	7	7	5·9	3·6	+ 64	69	·307	3·7	4	1·00	+3·00	2·91	0·61	+ 2·30	2·91	1·85	+ 1·06	1·05	Delhi	South-East Punjab.	26
13	1	2	3	2	...	1	5	1	2·4	2·4	0	81	·309	3·6	7	2·00	+5·00	3·25	1·10	+ 2·15	3·31	2·16	+ 1·15	0·83	Lahore	Central Punjab.	28
1	2	1	5	7	2	4	5	1	5·5	3·4	+ 62	74	·289	2·4	3	0·55	+2·45	1·22	0·27	+ 0·95	1·27	1·17	+ 0·10	0·63	Sirsa	South Punjab.	27
11	1	2	2	...	3	7	2	...	5·8	P	P	81	·337	3·1	6	P	P	3·36	P	P	3·47	P	P	1·33	Patiala.		
14	2	...	...	6	1	...	...	5	2·8	1·6	+ 75	80	·312	3·9	5	1·82	+3·18	4·14	1·23	+ 2·91	4·66	3·20	+ 1·46	1·10	Ludhiana	Punjab (Submontane).	29
19	2	3	3	1	...	...	...	...	1·4	1·7	− 18	78	·297	2·6	6	2·45	+3·55	4·91	1·70	+ 3·21	5·34	4·19	+ 1·15	1·68	Sialkot.		
16	...	...	4	...	...	...	3	5	2·0	P	P	86	·331	3·1	7	P	P	9·21	1·07	+ 8·14	9·25	2·20	+ 7·05	5 78	Umballa.		
17	3	2	1	...	...	...	4	1	2·8	2·4	+ 17	84	·276	4·6	5	3·18	+1·82	2·98	2·41	+ 0·57	4·33	5·25	− 0 92	0·80	Rawalpindi.	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·34	0·42	+0 92	...	...	...	...	VII.—Indus Valley and N.-W. Rajputana.		
12	2	2	...	2	6	3	1	...	3·8	3·3	− 15	73	·258	3·8	6	2·00	+4·00	2·60	0·98	+ 1·62	2·65	2·75	− 0·10	0·98	Peshawar	North Punjab.	31
7	3	6	4	2	2	3	1	...	4·2	P	P	75	·283	3·3	4	1·70	+2·30	2·08	0·76	+ 1·32	2·20	1·28	+ 0·92	0·73	Khushab	West Punjab.	32
9	1	4	5	4	2	2	...	1	4·2	P	P	74	·291	2·4	2	1·10	+0·90	0·99	0·61	+ 0·38	1·31	1·19	+ 0·12	0·66	Montgomery.		
15	5	2	2	...	1	...	1	2	2·1	2·0	+ 5	76	·295	3·4	4	0·91	+3·09	4·72	0·52	+ 4·20	4·72	1·05	+ 3·67	1·43	D. I. Khan.		
21	2	1	...	1	...	2	...	1	0·7	2·4	− 71	70	·295	2·4	4	1·00	+3·00	1·26	0·38	+ 0·88	1·42	0·86	+ 0·56	0·72	Mooltan.		
3	6	4	6	1	...	2	2	4	5·6	3·0	+ 87	51	·223	1·7	0	1·00	+1·00	0·03	0·40	− 0·37	0·07	0·65	− 0·58	0·03	Jacobabad	Sind.	47
5	8	...	...	...	1	6	1	7	10·8	7·0	+ 54	55	·296	1·3	1	0·30	+0·70	0·34	0·23	+ 0·11	0·34	0·54	− 0 20	0·34	Hyderabad.		
4	3	6	6	1	...	...	5	3	8·1	10·5	− 23	57	·367	1·2	1	0·36	+0·64	0·43	0·31	+ 0·12	0·43	1·03	− 0·60	0·34	Kurrachee.		
...	1	3	3	2	4	6	4	5	6·0	3·7	+ 62	61	·295	3·0	3	P	P	1·50	0·22	+ 1·28	1·54	0·52	+ 1·02	0·73	Bickaneer	West Rajputana	51
...	5	7	3	2	2	5	3	1	8·7	3·3	+164	53	·245	1·7	2	P	P	0·26	0·09	+ 0·17	0·26	0·46	− 0·20	0·13	Pachpadra.		
7	4	9	2	1	...	3	1	1	3·3	P	P	52	·281	2·6	3	P	P	0·58	0·16	+ 0·42	0·58	0·44	+ 0·14	0·23	Jodhpur.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·83	0·17	+0·70	...	...	...	...	VIII.—East Rajputana, Cen. India and Gujarat.		
4	6	8	2	1	...	...	2	5	4·3	4·4	− 2	63	·299	2·1	1	0·60	+0·40	0·56	0·19	+ 0·37	0·56	0·88	− 0·32	0·37	Jeypore	East Rajputana.	50
8	...	5	2	2	1	3	5	2	4·2	P	P	52	·279	1·5	1	P	P	0·60	0·25	+ 0 35	0·60	0·40	+ 0·20	0·53	Kotah.		
15	4	1	1	1	1	...	5	...	5·1	5·3	− 4	62	·265	2·3	2	0·55	+1·45	0·53	0·21	+ 0·32	0·55	0·68	− 0·13	0·21	Sambhar.		
12	3	1	2	1	...	3	4	2	4·3	2·5	+ 72	66	·289	2·2	1	0·64	+0·36	0·22	0·30	− 0·08	0·22	0·82	- 0·60	0·10	Ajmere.		
...	1	6	5	3	3	2	6	2	9·1	9·0	+ 1	56	·291	1·0	1	0·27	+0·73	0·16	0·10	+ 0·06	0·16	0·27	− 0·11	0·16	Deesa.		
2	1	2	3	...	...	3	12	5	10·9	6·7	+ 63	58	·373	1·2	1	P	P	0·1 3	0·11	+ 0·02	0·13	0·22	− 0·09	0·12	Bhuj	Kathiawar and Cutch.	46
6	4	2	2	...	4	2	7	1	6·5	6·2	+ 5	72	·430	1·6	1	0·10	+0·90	0·30	0·08	+ 0·22	0·30	0·12	+ 0·18	0·22	Rajkot.		
2	10	10	2	1	1	...	...	2	6·1	P	P	67	·433	2·2	1	P	P	0·14	0·01	+ 0·13	0·14	0	+ 0·14	0·13	Veraval.		
...	...	2	...	...	2	10	9	5	7·0	P	P	56	·365	1·2	1	P	P	0·29	P	P	0 29	P	P	0·29	Bhavnagar Para.		
5	3	...	7	...	4	3	4	2	2·9	1·7	+ 71	72	·352	2·3	3	0·73	+2·27	2·26	0·27	+ 1·99	2·26	0·92	+ 1·34	0·98	Nowgong	Central India.	48
16	1	1	1	2	2	1	2	2	2·5	3·0	− 17	55	·299	0·8	2	0·55	+1·45	0·55	0·18	+ 0·37	0·55	0·36	+ 0·19	0·27	Indore.		
3	1	10	2	1	1	3	5	2	5·6	9·1	− 38	55	·289	0·9	1	0·55	+0·45	0·54	0·19	+ 0·35	0 54	0·49	+ 0·05	0·41	Neemuch.		
9	3	5	4	2	2	1	1	1	2·7	5·4	− 50	72	·482	0·8	2	0	+2·00	1·68	0·01	+ 1·67	1·68	0·06	+ 1·62	1·50	Surat	Gujarat.	45
4	2	5	3	2	1	...	2	7	4·1	P	P	58	·365	1·4	1	P	P	0·78	0·08	+ 0·70	0·78	0·11	+ 0·67	0·78	Ahmedabad*		
2	...	3	...	3	...	11	...	9	5·4	4·0	+ 35	70	·332	2·3	4	0·36	+3·64	2·69	0·21	+ 2·48	2·69	0·74	+ 1·95	1·80	Agra	N.-W. P., West.	22
17	..	2	1	1	...	3	2	2	1·1	2·7	− 59	57	·321	1·8	2	1·09	+0 91	1·92	0·33	+ 1·59	1·92	0·92	+ 1·00	1·45	Jhansi	N.W.P. Central	21

* Wind observations of 26 days.

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan	...	...	...	−·064	...	...	...	...	...	...	...	86·1	−2·3	58·4	0	72·3	−1·2	27·7	...	...	...	...	44·3
38	Bombay (Deccan)	Belgaum	2,524	27·404	−·062	29·899	27·526	28th	27·319	21st	·207	66·4	86·0	−2·6	56·7	−2·8	71·4	−2·7	29·3	92·7	28th	50·9	12th	41·8
		Sholapur	1,590	28·357	−·054	29·933	28·477	28th	28·265	20th	·212	68·4	89·6	−4·2	60·0	−1·7	74·8	−3·0	29·6	96·7	28th	49·0	12th	47·7
		Poona	1,840	28·101	−·063	29·942	28·222	28th	27·999	10th	·223	63·6	89·0	−1·8	55·6	−1·9	72·3	−1·9	33·4	96·5	28th	48·0	20th	48·5
		Bijapur	1,946	27·999	?	29·923	28·117	28th	27·907	21st	·210	68·7	88·7	?	60·0	?	74·4	?	28·7	95·2	19th	50·6	20th	44·6
40	Khandesh	Malegaon	1,430	28·500	−·072	29·938	28·603	28th	28·377	10th	·226	61·8	87·6	−2·2	55·6	+0·7	71·6	−0·8	32·0	96·9	28th	46·0	12th	50·9
		Ahmednagar	2,152	27·793	?	29·941	27·928	28th	27·697	10th	·231	64·8	86·5	?	52·6	?	69·5	?	33·9	94·3	28th	40·9	11th	53·4
41	Berar	Akola	930	29·021	−·045	29·935	29·142	28th	28·899	10th	·243	65·7	88·4	−1·9	57·2	+0·6	72·9	−0·7	31·2	96·9	28th	47·7	12th	49·2
		Amraoti	1,215	28·723	−·049	29·931	28·858	28th	28·612	10th	·246	67·0	87·6	−2·1	60·1	−0·8	73·9	−1·5	27·5	96·2	28th	52·9	12th	43·3
42	Central Provinces (West).	Khandwa	1,044	28·893	−·065	29·936	28·996	23rd	28·793	10th	·203	63·2	87·6	−0·9	56·0	+1·0	71·8	+0·1	31·6	98·2	28th	45·6	21st	52·6
		Hoshangabad	1,006	28·927	−·072	29·940	29·064	23rd	28·827	20th	·237	60·9	84·4	−0·8	56·4	+1·3	70·4	+0·3	28·0	94·8	28th	46·8	20th	48·0
		Nagpur	1,025	28·903?	−·072	29·921?	29·025	28th	28·786	20th	·239	65·0	85·6	?	59·3	?	72·5	?	26·3	94·1	28th	51·2	20th	42·9
43	Central Provinces (Central).	Chanda	634	29·328	?	29·931	29·452	28th	29·233	19th	·219	66·8	87·3	−4·3	58·0	−0·8	72·7	−2·6	29·3	94·2	28th	50·2	21st	44·0
		Seoni	2,033	27·894	−·066	29·936	28·035	28th	27·770	20th	·265	61·9	80·9	−3·0	53·5	−1·6	67·2	−2·3	27·4	91·0	28th	45·0	21st	46·0
		Jubbulpore	1,327	28·601	−·072	29·940	28·735	23rd	28·475	18th	·260	60·8	80·6	−1·3	52·1	+0·4	66·4	−0·5	28·5	88·9	28th	42·4	20th & 21st.	46·5
		Saugor	1,807	28·098?	−·073	29·922?	28·257	23rd	27·967	18th	·290	61·3	79·4	−1·2	56·4	+2·2	67·9	+0·5	23·0	89·8	28th	47·6	20th	42·2
49	Central India	Sutna	1,040	28·389	−·074	29·940	29·045	23rd	28·709	18th	·336	59·8	78·2	−1·0	54·0	+3·0	66·1	+1·0	24·2	87·9	2nd	45·2	20th	42·7
44	Central Provinces (East).	Raipur	970	28·971	−·057	29·930	29·096	28th	28·811	19th	·285	64·6	84·4	−2·4	60·2	+0·2	72·3	−1·1	24·2	92·3	28th	52·3	20th	46·0
		Sambalpur	486	29·471	−·067	29·927	29·591	28th	29·237	19th	·354	64·9	84·8	−3·1	61·1	+1·6	73·0	−0·8	23·7	92·1	28th	51·7	20th	40·4
39	Hyderabad (North).	Aurangabad	1,865	28·097	?	29·919	28·208	28th	28·002	10th	·206	68·1	88·6	?	56·7	?	72·6	?	31·9	96·6	28th	47·6	20th	49·0
		Indur	?				Not recorded.					70·0	86·9	?	60·0	?	73·5	?	26·9	93·8	28th	51·1	20th	42·7
		Bidar	2,165?	27·778	?	29·901	27·902	28th	27·672	20th & 21st	·230	72·6	85·8	?	61·4	?	73·6	?	24·4	91·5	19th	53·0	20th	38·5
53	Hyderabad (South).	Gulbarga	1,572	28·476	?	29·963	28·554	28th	28·390	21st	·164	68·7	89·7	?	60·9	?	75·4	?	28·8	95·4	27th & 28th	53·2	12th	42·2
		Raichur	1,309	28·624	?	29·904	28·751	28th	28·526	20th	·225	72·5	89·0	?	66·3	?	77·7	?	22·7	94·1	19th & 28th	56·2	20th	37·9
		Hyderabad (Deccan).	1,690	28·254	?	29·933	28·382	28th	28·143	20th	·239	67·1	87·2	−3·8	61·8	−0·9	74·5	−2·4	25·4	92·4	19th	54·3	20th	38·1
		Secunderabad	1,787	28·155	?	29·933	28·273	28th	28·046	20th	227	66·4	88·0	−3·0	62·2	−0·5	75·1	−1·8	25·8	94·6	19th	53·7	20th	40·9
		Hanamconda	?	29·062	?	29·998	29·204	28th	28·935	19th	·269	70·6	87·3	?	63·7	?	75·5	?	23·6	94·0	28th	57·2	20th & 21st.	36·8
	X.—West Coast	...	...	...	−·058	...	...	...	...	..	...	...	85·3	−0·8	70·3	+0·4	77·8	−0·2	14·9	...	...	...	...	23·6
37	Konkan	Bombay	37	29·925	−·060	29·803	30·007	12th	29·819	9th	·188	72·4	82·5	0	69·6	+1·2	76·1	+0·6	12·9	88·5	27th	64·0	20th	24·5
		Ratnagiri	110	29·836	−·045	29·888	29·924	28th	29·743	20th	·181	72·6	84·8	−1·5	68·0	+1·1	76·4	−0·2	16·8	91·9	28th	61·9	20th	30·0
		Mormugao	60	29·896	?	29·892	29·967	12th	29·809	19th	·158	71·8	84·4	?	69·8	?	77·1	?	14·6	89·0	27th	64·4	13th	24·6
		Goa	199	29·749	−·044	29·889	29·838	28th	29·649	20th	·189	72·1	82·4	?	68·1	?	75·3	?	14·3	88·0	27th	64·0	12th	24·0
		Karwar	44	29·898	−·059	29·876	30·001	28th	29·801	20th	·200	67·5	84·6	−1·6	65·2	−1·9	74·9	−1·8	19·4	87·8	27th	61·0	13th	26·8
32	Malabar	Cochin	10	29·922	−·065	29·860	30·001	28th	29·835	20th	·166	78·0	89·9	+0·4	75·0	+1·9	82·7	+1·2	14·9	91·5	28th	71·2	1st	20·3
		Calicut	27	29·908	−·070	29·865	30·011	28th	29·809	19th	·202	77·2	88·0	−0·8	72·6	+0·1	80·3	−0·4	15·4	89·8	28th	67·5	1st	22·3
		Mangalore	65	29·880	−·062	29·878	29·976	28th	29·784	19th	·192	75·5	86·7	−1·1	71·1	−0·3	78·9	−0·7	15·6	91·8	25th	66·5	13th & 14th	25·3
		Trivandrum	198	29·709	?	29·842	29·788	28th	29·623	19th	·165	76·2	84·1	?	73·6	?	78·9	?	10·5	85·5	3 days	70·5	st & 3rd.	15·0
	XI.—South India	...	...	...	−·063	...	...	...	...	...	...	...	87·6	−0·9	66·4	+0·6	77·0	−0·1	21·3	...	...	...	...	34·3
5	Madras (South)	Pambau	37	29·910	?	29·874	29·985	28th	29·761	19th	·224	79·3	84·6	?	74·0	?	79·3	?	10·6	88·3	20th	70·2	3 days	18·1
		Tinnevelly	168	29·784	?	29·884	29·892	28th	29·618	20th	·274	77·0	91·2	?	73·2	?	82·3	?	18·0	96·2	21st	66·9	4th	29·3
		Madura	447	29·498	−·072	29·887	29·602	28th	29·338	20th	·264	77·2	91·8	−0·3	71·1	+1·9	81·5	+0·8	20·7	97·5	21st	65·1	4th & 5th	32·4

—continued.

n India, Burma, etc., in February 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st January to 28th February 1898.	Normal rainfall for period, 1st January to 28th February.	Variation from normal of period, 1st January to 28th February.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·23	0·19	+1·06	...	...	...	...	**IX.—Deccan.**		
13	...	1	3	6	2	1	1	1	8·9	10·0	− 11	57	·362	1·7	0	0·09	− 0·09	0·05	0·02	+ 0·03	0·05	0·08	− 0·03	0·05	Belgaum	Bombay (Deccan).	38
4	2	2	3	9	...	3	...	5	11·2	6·5	+ 72	38	·264	1·0	1	0·09	+ 0·91	0·32	0·03	+ 0·29	0·32	0·14	+ 0·18	0·29	Sholapur.		
4	...	...	2	4	1	4	11	2	8·8	6·3	+ 40	60	·349	0·7	0	0	0	0·07	0·04	+ 0·03	0·07	0·10	− 0·03	0·07	Poona.		
3	...	2	7	4	...	2	6	4	5·1	P	P	70	·494	1·3	1	0·10	+ 0·90	0·39	0·02	+ 0·37	0·39	0·06	+ 0·33	0·39	Bijapur.		
5	2	...	...	...	...	4	11	6	10·2	5·0	+104	54	·296	1·3	1	0·18	+ 0·82	0·10	0·05	+ 0·05	0·10	0·21	− 0·11	0·10	Malegaon	Khandesh.	40
1	5	3	3	5	2	...	3	6	11·0	P	P	55	·330	1·2	0	P	P	0	0·14	− 0·14	0	0·44	− 0·44	0	Ahmednagar.		
10	1	2	2	3	...	3	5	2	4·4	3·8	+ 16	45	·288	1·2	0	0·18	− 0·18	0·15	0·13	+ 0·02	0·15	0·56	− 0·41	0·08	Akola	Berar.	41
...	2	4	8	2	5	3	4	...	5·4	3·7	+ 46	50	·320	1·1	2	0·27	+ 1·73	0·59	0·19	+ 0·40	0·59	0·58	+ 0·01	0·30	Amraoti.		
16	1	2	...	2	1	1	2	3	4·6	3·6	+ 28	44	·256	0·8	0	0·18	− 0·18	0·09	0·06	+ 0·03	0·09	0·37	− 0·28	0·05	Khandwa	Central Provinces (West).	42
19	...	7	1	...	1	...	...	...	1·5	2·9	− 48	57	·307	0·6	2	0·36	+ 1·64	0·50	0·23	+ 0·27	0·50	0·48	+ 0·02	0·28	Hoshangabad.		
16	3	3	1	1	1	...	...	3	5·0	5·1	− 2	57	·352	2·2	2	0·91	+ 1·09	2·64	0·27	+ 2·37	2·64	0·82	+ 1·82	1·42	Nagpur.		
9	5	4	2	1	2	...	2	3	2·5	2·7	− 7	67	·452	1·0	2	P	P	5·53	0·23	+ 5·30	5·53	0·60	+ 4·93	3·71	Chanda	Central Provinces (Central).	43
...	6	2	2	3	...	7	3	5	1·6	2·9	− 45	67	·373	1·5	2	1·55	+ 0·45	4·42	0·75	+ 3·67	4·42	1·38	+ 3·04	2·76	Seoni.		
5	2	3	1	8	2	3	3	1	2·6	2·5	+ 4	66	·351	1·9	3	0·91	+ 2·09	3·35	0·47	+ 2·88	3·35	1·23	+ 2·12	2·19	Jubbulpore.		
...	1	2	7	5	2	7	4	...	6·2	2·8	+121	51	·278	1·1	3	0·82	+ 2·18	1·39	0·30	+ 1·09	1·39	1·00	+ 0·39	0·67	Saugor.		
2	6	2	2	...	1	...	9	6	6·8	4·7	+ 45	61	·314	1·7	2	1·18	+ 0·82	2·01	0·59	+ 1·42	2·01	1·64	+ 0·37	1·25	Sutna	Central India	49
20	...	1	...	2	...	4	...	1	4·6	3·7	+ 24	60	·366	1·7	1	0·73	+ 0·27	1·74	0·33	+ 1·41	1·74	0·53	+ 1·21	1·71	Raipur	Central Provinces (East).	44
...	6	11	1	6	...	2	...	2	3·8	1·7	+124	72	·446	2·2	1	P	P	0·92	0·51	+ 0·41	0·92	0·81	+ 0·11	0·84	Sambalpur.		
8	...	7	4	...	1	6	1	1	3·8	P	P	41	281	1·0	0	P	P	0	P	P	0	P	P	0	Aurangabad	Hyderabad (North).	39
10	3	...	3	5	2	1	2	2	5·3	P	P	59	·435	1·1	2	P	P	1·36	0·01	+ 1·35	1·36	0·06	+ 1·30	0·76	Indur.		
...	4	2	4	3	5	10	...	...	7·2	P	P	58	·465	0·5	2	P	P	1·52	0·01	+ 1·51	1·52	0·01	+ 1·51	0·90	Bidar.		
20	...	5	...	1	1	...	...	1	8·2	P	P	50	·352	0·8	2	P	P	0·87	0·12	+ 0·75	0·87	0·20	+ 0·67	0·52	Gulbarga	Hyderabad (South).	53
...	2	2	10	6	4	2	1	1	7·5	P	P	52	·412	1·2	2	P	P	0·54	0·08	+ 0·46	0·54	0·12	+ 0·42	0·42	Raichur.		
16	...	...	3	3	1	...	3	2	4·8	P	P	65	·438	1·9	2	P	P	0·63	0·04	+ 0·59	0·63	0·13	+ 0·50	0·33	Hyderabad (Deccan).		
6	1	1	8	5	2	...	...	5	5·8	3·8	+ 53	62	·392	1·5	2	P	P	0·91	0·04	+ 0·87	0·91	0·13	+ 0·78	0·48	Secunderabad.		
7	1	...	1	13	5	...	...	1	8·5	P	P	65	·494	1·4	1	P	P	0·69	P	P	0·69	P	P	0·69	Hanamconda.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·35	0·15	+0·20	...	...	...	...	**X.—West Coast.**		
...	6	11	5	4	1	...	1	...	10·1	10·7	− 6	73	·697	1·1	1	0	+ 1·00	0·17	0·01	+ 0·16	0·17	0·14	+ 0·03	0·17	Bombay	Konkan.	37
8	4	3	3	7	1	...	...	2	5·6	9·8	− 43	67	·556	0·9	1	0	+ 1·00	0·45	0	+ 0·45	0·45	0·22	+ 0·23	0·45	Ratnagiri.		
3	3	3	2	15	...	1	...	1	9·1	P	P	84	·666	1·5	2	P	P	0·49	0	+ 0·49	0·49	0	+ 0·49	0·27	Mormugao.		
3	4	6	15	...	...	...	...	...	P	P	P	76	·600	1·2	0	P	P	0·06	0	+ 0·06	0·06	0·25	− 0·19	0·06	Goa.		
1	3	12	10	1	...	1	...	...	4·4	P	P	85	·570	0·7	1	0	+ 1·00	0·40	0	+ 0·40	0·40	0·12	+ 0·28	0·34	Karwar.		
3	12	12	1	...	...	...	...	...	7·3	P	P	75	·743	2·5		1·00	+ 1·00	1·32	0·62	+ 0·70	1·33	1·21	+ 0·12	1·05	Cochin	Malabar.	33
6	7	5	5	4	...	...	...	1	13·2	P	P	77	·710	3·8	0	0·13	+ 0·13	0	0·22	− 0·22	0	0·30	− 0·30	0	Calicut.		
5	...	1	13	8	...	...	...	1	2·7	3·5	− 23	74	·658	1·6	0	0	0	0·01	0·01	0	0·01	0·10	− 0·09	0·01	Mangalore.		
20	1	3	3	1	...	...	...	...	3·2	P	P	80	·728	4·1	1	P	P	0·28	0·52	− 0·24	1·41	1·15	+ 0·26	0·11	Trivandrum.		
...	...	...	...	...	...	...	.	...	...	...	...	...	...	...	..	...	...	0·56	0·26	+0·30	...	...	...	...	**XI.—South India.**		
1	...	18	7	...	...	1	1	...	8·3	P	P	82	·824	2·5	0	0·50	− 0·50	0·10	0·13	−0·03	2·98	1·93	+ 1·05	0·05	Pamban	Madras (South).	57
...	8	6	1	...	1	...	3	9	4·2	P	P	75	·701	4·7	4	1·50	+ 2·50	2·42	0·77	+1·65	4·77	2·03	+ 2·74	0·75	Tinnevelly.		
4	9	7	3	1	...	...	...	4	5·8	5·0	+ 16	72	·680	3·1	1	0·45	+ 0·55	1·63	0·31	+1·32	1·74	0·64	+ 1·10	1·63	Madura.		

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras (South Central).	Salem	940	29·033	−·078	29·927	29·148	28th	28·886	20th	·262	75·0	93·3	−0·1	67·5	+2·7	80·4	+1·3	25·8	99·4	20th	60·9	4th	38·5
		Coimbatore	1,348	28·598	−·070	29·909	28·716	28th	28·462	20th	·254	73·1	91·6	−0·4	67·6	+2·6	79·6	+1·1	24·0	95·4	19th	59·3	4th	36·1
35	Coorg	Mercara	3,781	26·231	−·059	?	26·349	28th	26·139	20th	·210	64·9	79·8	−1·4	58·6	+1·3	69·2	−0·1	21·2	85·0	28th	54·2	1st	30·8
36	Mysore	Chitaldroog	2,405	27·547	?	29·895	27·670	28th	27·446	20th	·224	71·2	88·1	?	63·7	?	75·9	?	24·4	92·6	28th	58·9	14th	33·7
		Bangalore	3,021	26·956	−·070	29·909	27·071	28th	26·843	19th	·228	67·0	85·5	+0·3	60·7	+1·8	73·1	+1·1	24·8	89·8	19th	54·9	21st	34·9
		Hassan	3,091	26·894	?	29·916	27·012	28th	26·794	19th	·218	68·8	85·3	?	56·3	?	70·9	?	29·0	89·1	28th	46·9	2nd	42·2
		Mysore	2,518	27·451	?	29·910	27·566	28th	27·334	19th	·232	70·3	88·5	?	63·0	?	75·8	?	25·5	92·4	19th	55·4	2nd	37·0
56	Madras (East Coast, South).	Negapatam	31	29·919	−·073	29·879	30·031	28th	29·760	19th	·271	77·7	83·6	−0·6	72·9	+1·4	78·3	+0·4	10·7	95·7	20th	66·0	3rd	29·7
		Cuddalore	12	29·948	?	29·889	30·068	28th	29·787	19th	·281	74·8	86·2	?	67·8	?	77·1	?	18·4	97·3	20th	60·8	4th	36·5
		Trichinopoly	255	29·698	−·078	29·891	29·810	28th	29·533	20th	·277	75·5	93·2	?	69·9	+2·1	81·6	?	23·3	101·6	20th	63·4	17th	38·2
		Madras	22	29·945	−·075	29·898	30·064	28th	29·780	19th	·284	75·6	86·5	−0·1	66·7	−1·3	76·6	−0·7	19·8	96·0	20th	60·0	3rd & 4th.	36·0
55	Madras (East Coast, Central).	Nellore	71	29·891	?	29·897	30·017	28th	29·694	19th	·323	73·8	89·6	?	67·5	?	78·6	?	22·1	100·8	19th	62·1	4th	38·7
		Masulipatam	15	29·963	−·049	29·913	30·087	28th	29·767	19th	·320	74·0	86·0	−0·8	67·5	−0·2	76·8	−0·5	18·5	96·6	19th	60·2	20th	36·4
54	Madras (Central)	Cuddapah	433	29·517	−·061	29·898	29·632	28th	29·395	19th	·257	75·9	93·7	−0·7	68·1	−0·1	80·9	−0·4	25·6	100·7	19th	61·4	20th	39·3
		Kurnool	923	29·017	−·056	29·907	29·143	28th	28·907	19th & 20th.	·236	70·4	91·8	−2·6	62·9	−0·8	77·4	−1·7	28·9	96·7	28th	51·7	20th	45·0
		Bellary	1,475	28·469	−·047	29·911	28·590	28th	28·368	20th	·222	72·8	92·1	−2·0	65·2	+0·4	78·6	−0·8	26·9	96·7	28th	59·1	3rd	37·6
52	Madras (East Coast, North).	Rajahmundry	112																					
		Cocanada	26	29·947	−·049	29·908	30·070	28th	29·722	19th	·348	72·5	84·5	−1·4	67·4	−2·2	76·0	−1·8	17·1	95·6	19th	64·0	4th	31·6
		Vizagapatam	31	29·945	−·049	29·914	30·066	28th	29·703	19th	·363	72·0	83·7	−2·9?	64·5	−3·4?	74·1	−3·2	19·2	89·3	20th	59·9	2nd	29·4
		Waltair	?	...	?	...	Not	record	ed.	...	...	73·6	82·0	?	68·6	?	75·3	?	13·4	86·7	20th	65·7	24th	21·0
		Gopalpur	21	29·945	?	29·906	30·056	28th	29·696	19th	·360	69·0	83·2	?	61·9	?	72·6	?	21·3	91·8	18th	55·1	3rd	36·7
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·822	?	?	26·050	23rd	25·660	20th	·390	45·9	63·8	?	38·3*	?	50·7*	?	25·5	72·0	28th	30·1	24th	41·9
		Pishin	?			Not	record	ed.				?	59·9	?	22·1	?	41·1	?	37·8	69·0	14th	10·9	5th	58·1
		Quetta	5,502	24·597	−·064	?	24·809	23rd	24·445	14th	·364	37·4	57·4	+5·3	30·8	−0·6	44·1	+2·4	26·6	66·7	28th	22·8	6th & 23rd.	43·9
		Kalat	?			Not	record	ed.	...	...	...	37·7	56·9	?	23·1	?	40·1	?	33·8	66·2	26th	15·0	3 days	51·2
		Chaman	4,311	25·685	?	?	25·838	23rd	25·521	15th	·317	43·1	60·6	?	37·0	?	48·8	?	23·6	68·3	14th	28·1	18th	40·2
30	Punjab	Leh	11,503	19·512	−·090	?	19·765	24th	19·149	18th	·616	16·9	35·4	+0·5	13·0	+2·5	24·2	+1·5	22·4	46·6	28th	1·0	20th	45·6
		Srinagar	5,204	24·846	?	?	25·079	23rd	24·627	19th	·452	34·2	49·9	?	30·4	?	40·2	?	19·5	59·9	28th	24·8	22nd	35·1
		Astor (Kashmir)	?	22·151	?	?	22·427	23rd	21·749	18th	·678	23·3	37·9	?	19·6	?	28·8	?	18·3	45·5	2nd	10·0	20th & 21st.	35·5
		Minimarg	?	20·348†	?	?	20.544	24th	19·988	18th	·556	17·8	39·0	?	11·4	?	25·2	?	27·6	54·4	3rd	−1·5	23rd	55·9
		Skardu	?	22·750	?	?	23·054	23rd	22·376	18th	·678	29·6	44·1	?	26·4	?	35·3	?	17·7	53·5	28th	19·2	22nd	34·3
		Dras	?	20·643	?	?	20·908	24th	20·248	18th	·660	1·0	27·9	?	−7·4	?	10·3	?	35·3	44·3	28th	−28·0	20th	72·3
		Gilgit	?	25·106	?	?	25·443	23rd	24·682	18th	·761	41·2	51·7	?	38·3	?	45·0	?	13·4	57·3	27th	32·7	22nd	24·6
		Chitral	?	24 821		?	25·100	23rd & 24th.	24·500	18th	·600	38·0	51·6	?	31·4	?	41·5	?	20·2	58·1	26th & 27th.	29·0	19th	29·1
		Killa Drosh	?			Not	record	ed.	...	...	...	43·5	56·5	?	36·6	?	46·6	?	19·9	66·7	10th	28·8	20th	37·9
		Para Chinar	6,000	24·385	?	?	24·604	23rd	24·118	18th	·486	36·8	51·3	?	31·7	?	41·5	?	19·6	58·2	5th	24·4	22nd	33·8
		Cherat	?	25·661	?	?	25·862	23rd	25·395	18th	·467	43·4	53·0	?	40·8	?	46·9	?	12·2	62·8	28th	32·0	19th	30·8
		Murree	6,333	23·752	−·064	?	23·930	28th	23·487	18th	·443	38·3	45·8	−1·7	35·4	+1·5	40·6	−0·1	10·4	56·7	27th	24·5	19th	32·2
		Poo	?			Not	record	ed.	...	...	...	?	44·0	?	26·8	?	35·4	?	17·2	54·4	1st	20·4	20th	34·0
		Simla	7,224	23·010	−·070	?	23·236	28th	22·739	19th	·497	38·1	45·1	−2·0	34·4	−1·6	39·8	−1·8	10·7	58·2	28th	23·0	19th	35·2

* Mean of 23 days.

† Aneroid reading.

I—*continued.*

in India, Burma, etc., in February 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st January to 28th February 1898.	Normal rainfall for period, 1st January to 28th February 1898.	Variation from normal of period, 1st January to 28th February 1898.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
3	...	12	10	1	...	1	...	1	6·5	5·6	+ 16	73	·844	2·4	1	0·09	+ 0·91	0·31	0·30	+ 0·01	0·31	0·61	− 0·30	0·31	Salem	Madras (South Central).	34
...	...	1	27	...	...	...	...	...	1·4	3·2	− 56	82	·680	3·8	1	0·30	+ 0·70	0·63	0·29	+ 0·34	0·67	0·48	+ 0·19	0·51	Coimbatore.		
26	...	1	1	...	...	...	...	...	2·6	4·0	− 35	71	·438	3·6	0	0·30	− 0·30	0	0·07	− 0·07	0	0·11	− 0·11	0	Mercara	Coorg.	35
2	...	1	6	6	1	3	4	5	6·6	?	?	54	·413	2·7	0	?	?	0	0·04	− 0·04	0	0·28	− 0·28	0	Chitaldroog	Mysore.	36
...	...	1	11	8	2	3	1	2	6·9	3·6	+ 92	72	·480	2·7	0	0·18	− 0·18	0	0·11	− 0·11	0	0·30	− 0·30	0	Bangalore.		
2	1	7	5	6	1	1	2	3	2·5	?	?	64	·442	3·8	1	?	?	0·14	0·09	+ 0·05	0·14	0·79	− 0·65	0·14	Hassan.		
...	3	5	6	2	2	4	4	2	7·0	?	?	67	·505	3·9	1	?	?	0·23	0·13	+ 0·10	0·23	0·21	+ 0·02	0·23	Mysore.		
4	...	14	2	...	...	1	...	7	12·8	3·6	+256	80	·763	3·8	1	0·55	+ 0·45	0·34	0·53	− 0·19	2·08	1·99	+ 0·09	0·34	Negapatam	Madras (East Coast, South).	56
1	11	1	...	1	...	...	3	11	1·4	?	?	84	·723	2·6	1	0·40	+ 0·60	0·23	0·31	− 0·08	0·28	1·36	− 1·08	0·21	Cuddalore.		
12	8	5	...	...	...	1	1	1	4·6	4·1	+ 12	74	·653	3·2	0	0	0	0	0·90	− 0·90	0·68	1·16	− 0·48	0	Trichinopoly.		
3	5	6	3	3	6	1	...	1	4·9	5·0	− 2	77	·676	3·3	1	0·09	+ 0·91	0·49	0·28	+ 0·21	0·49	1·17	− 0·68	0·49	Madras.		
20	...	...	...	...	...	...	4	4	4·0	?	?	78	·659	3·5	1	0·20	+ 0·80	0·20	0·09	+ 0·11	0·20	0·53	− 0·33	0.13	Nellore	Madras (East Coast, Central).	55
6	12	4	1	3	1	...	1	...	5·6	5·1	+ 10	82	·691	2·2	1	0·27	+ 0·73	1·75	0·17	+ 1·58	1·75	0·29	+ 1·46	1·75	Masulipatam		
...	..	17	5	2	...	2	...	2	?	?	?	72	·647	1·8	0	0·10	− 0·10	0·05	0·06	− 0·01	0·05	0·08	− 0·03	0·05	Cuddapah	Madras (Central)	54
22	...	...	..	2	2	1	...	1	?	?	?	55	·412	2·0	0	0	0	0·04	0	+ 0·04	0·04	0·08	− 0·04	0·02	Kurnool.		
16	...	...	...	6	...	...	...	6	2·5	4·0	− 38	51	·408	2·7	0	0·09	− 0·09	0	0·04	− 0·04	0	0·17	− 0·17	0	Bellary.		
...	14	2	1	...	...	...	2	9	7·5	?	?	70	·549	1·4	1	0·40	+ 0·60	1·35	0·43	+ 0·92	1·35	0·57	+ 0·78	1·32	Rajahmundry Cocanada.	Madras (East Coast, North).	52
28	...	...	...	...	...	...	...	..	0	2·0	−100	77	·610	1·7	2	0·18	+ 1·82	2·13	0·11	+ 2·02	2·13	0·30	+ 1·83	1·43	Vizagapatam.		
...	2	3	4	2	1	2	13	1	?	?	?	71	·587	1·8	...	...	...	No	raingau	ge.	...	...	...	...	Waltair.		
...	10	...	...	...	1	3	1	13	10·8	9·6	+ 13	72	·513	0·7	1	1·13	− 0·13	0·30	0·57	− 0·27	0·30	0·73	− 0·43	0·20	Gopalpur.		
																									XII.—Hill Stations.		
5	20	...	...	1	1	...	...	1	5·8	?	?	41	·128	1·9	3	?	?	1·03	1·59	− 0·56	1·04	4·10	− 3·06	0·56	Sharigh	Baluchistan.	48
			Not	rec	ord	ed.			?	?	?	?	?	?	1	?	?	0·65	2·36	− 1·71	0·65	5·20	− 4·55	0·65	Pishin.		
19	...	1	...	6	1	1	...	...	5·1	4·4	+ 16	70	·155	2·7	2	4·09	− 2·09	1·39	2·21	− 0·82	1·51	4·32	− 2·81	1·19	Quetta.		
...	2	...	1	1	8	3	8	5	?	?	?	60	·141	1·5	1	?	?	0·70	2·61	− 1·91	0·72	4·51	− 3·79	0·70	Kalat.		
1	...	1	7	13	4	1	1	...	10·0	?	?	51	·137	1·5	2	?	?	0·46	1·66	− 1·20	0·57	3·31	− 2·74	0·27	Chaman.		
...	...	...	...	...	...	1	27	...	2·0	?	?	44	·043	6·1	1	?	?	0·41	0·36	+ 0·05	0·47	0·66	− 0·19	0·22	Leh	Punjab.	30
4	1	4	1	6	5	1	2	4	6·4	?	?	90	·178	6·9	7	?	?	2·15	2·94	− 0·79	4·06	5·53	− 1·47	0·78	Srinagar.		
10	1	...	...	...	7	7	3	...	2·8	?	?	72	·093	5·9	3	?	?	1·59	?	?	2·80	?	?	0·93	Astor (Kashmir).		
2	1	8	7	6	...	...	2	2	4·0	?	?	87	·089	4·5	11	?	?	3·11	?	?	6·11	?	?	0·81	Minimarg.		
16	...	1	...	...	1	1	8	1	5·4	?	?	100	·166	6·7	1	?	?	0·15	1·45	− 1·30	0·41	3·73	− 3·32	0·11	Skardu		
27	...	...	...	...	...	...	1	...	0·6	?	?	68	·045	4·9	8	?	?	2·46	?	?	3·68	?	?	0·55	Dras.		
18	...	...	...	...	...	5	5	...	3·5	?	?	50	·132	7·4	0	?	?	0·13	0·11	+ 0·02	0·20	0·25	− 0·05	0·08	Gilgit.		
13	6	2	4	1	2	...	...	...	6·1	?	?	83	·192	3·9	7	?	?	1·65	?	?	2·28	?	?	0·53	Chitral.		
...	1	1	5	5	...	5	5	...	?	?	?	53	·150	6·1	4	?	?	1·26	?	?	2·71	?	?	0·46	Killa Drosh.‡		
...	8	5	4	3	2	2	2	2	5·5	?	?	68	·148	4·2	5	?	?	2·33	?	?	2·78	?	?	0·79	Para Chinar.		
1	11	4	...	1	3	...	1	7	12·4	?	?	62	·170	3·4	8	?	?	7·18	2·34	+ 4·84	7·62	5·28	+ 2·34	1·59	Cherat.		
15	3	...	...	8	1	...	...	1	9·2	8·2	+ 12	65	·146	2·9	10	3·36	+ 6·64	5·75	3·73	+ 2·02	7·39	7·25	+ 0·14	1·00	Murree.		
12	...	...	1	3	4	5	2	1	?	?	?	?	?	5·6	4	?	?	2·16	3·93	− 1·77	2·62	7·13	− 4·51	0·92	Poo.		
6	2	3			9	2	...	...	4·8	2·5	+ 92	62	·134	4·2	10	4·36	+ 5·64	5·20	2·68	+ 2·52	5·99	5·03	+ 0·96	1·21	Simla.		

‡ 6 variable.

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal of month.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
25	North-Western Provinces.	Chakrata	7,022	23·198	−·061	?	23·420	28th	22·917	19th	·503	37·3	49·1	−1·8	34·2	−1·4	41·7	−1·6	14·9	62·2	25th	25·1	19th	37·2
		Mussooree	6,705	23·456	?	?	23·677	28th	23·171	19th	·506	40·4	47·5	?	38·0	?	42·8	?	9·5	58·2	28th	31·0	19th	27·2
		Ranikhet	6,069	24·045	−·054	?	24·262	28th	23·750	19th	·512	42·8	52·6	−2·5	39·3	−1·3	46·0	−1·9	13·3	64·1	28th	32·5	12th	31·6
		Muktesar	?	22·757	?	?	22·988	28th	22·442	19th	·546	38·8	49·1	?	34·2	?	41·7	?	14·9	62·0	28th	28·1	6th & 19th.	33·9
13	Bengal	Yatung	10,480?				Not	record	ed.			?	43·1	?	25·2	?	34·2	?	17·9	54·9	27th	12·9	14th	42·0
		Darjeeling	7,408	22·941	−·012	?	23·158	28th	22·625	19th	·533	39·5	?	?	31·3	−2·8	?	?	?	?	?	27·6	21st	?
		Gantok	5,660	24·484	?	?	24·648	10th & 12th.	24·256	19th	·392	46·3	56·4	?	29·8	?	43·2	?	26·6	62·3	28th	23·0	6th	39·3
	Central India	Mount Abu	3,945	26·017	−·098	?	26·166	28th	25·806	10th	·360	57·4	66·0	−2·9	52·8	−0·4	59·4	−1·7	13·2	78·1	28th	41·6	10th	36·5
		Pachmarhi	3,528	26·440	−·089	?	26·591	28th	26·306	20th	·285	58·8	73·3	−1·3	51·4	+0·7	62·4	−0·6	21·9	82·8	28th	40·3	21st	42·5
	South India	Wellington	6,200	24·236	−·077	?	24·356	28th	24·150	20th	·206	57·8	71·5	+1·1	48·2	+1·5	59·9	+1·3	23·3	75·2	19th & 27th.	40·7	2nd	34·5
XIII.—Extra India.																								
	Ceylon	Trincomalee	12	29·909	?	29·847	30·002	28th	29·776	20th	·226	78·6	84·9	?	74·7	?	79·8	?	10·2	90·5	21st	70·0	18th & 19th	20·5
		Colombo	40	29·888	−·068	29·854	29·974	28th	29·795	20th	·179	78·4	89·5	?	73·1	?	81·3	?	16·4	91·5	25th	67·5	18th	24·0
	Persia	Meshed	3,104				Not	record	ed.			32·3	?	?	28·7	?	?	?	?	?	?	8·5	28th	?
		Resht	?																					
		Teheran	?*	26·066 25·400	? ?	? ?	26·455 25·580	28th 27th	25·750 25·200	13th 13th	·705 ·380	35·5	49·7	?	30·5	?	40·1	?	19·2	62·5	13th	15·5	28th	47·0
		Ispahan	?*	24·374 24·658	? ?	? ?	24·540 24·820	18th 28th	24·110 24·400	13th 13th	·430 ·420	34·5	52·9	?	27·5	?	40·2	?	25·4	64·9	12th	10·6	28th	54·3
		Bushire	14	30·072	−·003	30·045	30·249	17th	29·889	12th	·360	57·3	64·0	−2·0	51·2	−1·3	57·6	−1·7	12·8	81·6	24th	43·3	2nd	38·3
		Jask†	?	30·019	?	29·971	30·181	18th	29·836	14th	·345	66·2	76·2	?	62·1	?	69·2	?	14·1	78·8	7th	55·2	18th	23·5
	Arabia	Muscat	20	30·010	?	29·978	30·140	22nd & 23rd	29·836	14th	·304	70·5	73·5	?	63·4	?	70·9	?	5·1	75·6	15th	68·2	12th & 23rd	9·3
		Baghdad	220	30·006	+·043	30·219	30·312	28th	29·755	12th	·557	46·2	63·6	−2·0	41·1	+0·9	52·4	−0·6	22·5	74·1	24th	30·5	1st	43·6
		Aden	94	29·916	−·039	29·944	29·993	28th	29·824	15th	·169	75·1	82·1	−0·3	72·6	−0·4	77·4	−0·4	9·5	85·8	17th	67·4	8th & 9th	18·4
		Perim	?	29·778	?	?	29·857	19th	29·696	25th	·161	76·7	83·5	?	73·9‡	?	78·7‡	?	9·6	85·7	23rd	70·6	2nd	15·1
	Afghanistan	Kabul	?				Not	record	ed.			32·4	53·3	?	28·2	?	40·7	?	25·1	73·2	26th	19·6	19th	53·6
	Central Asia	Kashgar	?																					
	Arabian Sea Islands.	Amini Divi	15	29·953	?	29·896	30·035	28th	29·865	20th	·170	81·0	81·1	?	75·3	?	78·5	?	5·3	83·2	17th	69·5	8th	13·7
		Minicoy	10	29·902	?	29·837	29·993	28th	29·844	21st	·149	80·4	85·3	?	75·9	?	80·6	?	9·4	87·5	11th	69·0	1st	18·5
	Africa	Zanzibar	73	29·919	?	29·918	29·967	19th	29·874	1st	·093	83·1	88·3	?	81·0	?	84·7	?	7·3	90·4	27th	74·9	2d	15·5

* Aneroid uncorrected.
† Observations of 27 days.
‡ Mean of 24 days.

NOTE.—When a query is inserted against any reading or in the variation returns for any

—concluded.

n India, Burma, etc., in February 1898—concluded.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st January to 28th February 1898.	Normal rainfall for period, 1st January to 28th February.	Variation from normal of period, 1st January to 28th February.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
9	13	1	...	...	...	...	...	5	8·5	5·4	+ 57	68	·148	4·0	9	?	?	8·32	3·81	+ 4·51	9·47	7·34	+ 2·13	2·10	Chakrata .	North-Western Provinces.	25
...	3	2	15	...	1	...	2	5	?	?	?	65	·159	3.4	10	3·50	+6·50	8·16	2·89	+ 5·27	8·66	5·72	+ 2·94	1·67	Mussoorce.		
11	1	3	3	2	1	2	...	5	3·4	2·0	+ 70	67	·179	3·1	8	4·09	+3·91	6·16	1·95	+ 4·21	6·41	4·89	+ 1·52	1·72	Ranikhet.		
...	...	2	8	8	...	1	...	9	2·3	?	?	64	·142	3·7	8	?	?	3·91	?	?	4·19	?	?	1·09	Muktesar.		
...			Not	rec	ord	ed.			?	?	?	?	?	?	0	?	?	0	?	?	0	?	?	0	Yatung .	Bengal.	13
6	1	3	6	2	3	5	1	1	4·7	5·1	− 8	90	·716	6·1	6	2·65	+3·35	2·52	0·95	+1·57	13·13	1·61	+11·52	1·54	Darjeeling.		
23	...	1	...	...	1	...	...	...	2·9§	?	?	83	·274	0	15	?	?	10·48	2·29	+8·19	11·02	2·98	+ 8·04	1·71	Gantok.		
1	2	7	...	...	3	9	4	2	9·5	5·6	+70	48	·218	1·8	2	0·36	+1·64	0·64	0·36	+0·28	0·64	0·78	− 0·14	0·51	Mount Abu	Central India.	
16	...	...	...	2	3	1	3	3	9·0	3·8	+137	69	·350	1·4	3	0·82	+2·18	1·17	0·45	+0·72	1·17	0·96	+ 0·21	0·49	Pachmarhi.		
18	2	3	...	3	1	...	...	1	2·3	2·7	−15	69	·328	3·4	4	0·50	+3·50	1·22	1·53	−0·31	1·86	2·57	− 0·71	0·43	Wellington.	South India.	
																									XIII.—Extra India.		
6	5	4	...	...	1	8	...	4	1·3	?	?	80	·783	2·9	0	?	?	0·04	2·59	−2·55	12·55	10·03	+ 2·52	0·04	Trincomalee	Ceylon.	
6	1	9	7	3	...	...	2	...	5·6	6·2	−10	80	·784	3·5	5	?	?	1·96	2·63	−0·67	4·18	5·55	− 1·37	0·69	Colombo.		
			Not	reco	rded				?	?	?	84	·156	5·0	3	?	?	1·37	0·90	+0·47	1·68	1·13	+0·55	0·60	Meshed .	Persia.	
																									Resht.		
17	1	9	...	...	...	1	...	...	3·0	?	?	?	?	4·5	0	?	?	0·02	1·02	−1·00	1·18	1·18	0	0·02	Teheran.		
9	2	2	...	1	...	6	4	4	5·0	?	?	68‖	·138‖	2·5	0	?	?	0·06	0·04	+0·02	0·78	0·15	+0·63	0·06	Ispahan.		
1	10	6	1	4	...	...	...	6	9·0	?	?	69	·317	1·5	0	?	?	0	2·51	−2·51	1·33	5·90	−4·57	0	Bushire.		
...	9	4	5	...	...	...	1	8	14·0¶	?	?	71	·484	1·4	0	?	?	0	1·33	−1·33	0	2·04	−2·04	0	Jask.†		
...	2	...	...	4	1	3	12	6	5·3	?	?	64	·473	0·5	1	?	?	0·11	1·14	−1·03	0·19	3·50	−3·31	0·11	Muscat .	Arabia.	
6	13	2	...	...	4	...	...	3	4·0	?	?	74	·236	3·5	2	?	?	1·22	2·49	−1·27	2·47	4·08	−1·61	0·84	Baghdad.		
1	...	8	15	1	2	...	1	...	10·3‖	12·9	−20	76	·661	5·5	0	?	?	0·06	0·33	−0·27	0·15	0·61	−0·46	0·06	Aden.		
1	...	...	9	14	...	...	...	4	20·4	?	?	74	·677	6·0	0	?	?	0·11	0·25	−0·14	0·11	0·75	−0·64	0·09	Perim.		
15	1	...	...	...	3	8	1	...	?	?	?	?	?	2·1	3	?	?	0·33	0·72	−0·39	0·33	?	?	0·13	Kabul .	Afghanistan.	
																									Kashgar .	Central Asia.	
9	12	1	...	...	...	...	...	6	?	?	?	76	·807	3·0	0	?	?	0	?	?	0	?	?	0	Amini Divi	Arabian Sea Islands.	
...	14	7	...	1	...	...	2	4	5·0	?	?	76	·793	0·7	1	?	?	0·63	?	?	5·24	?	?	0·60	Minicoy .		
...	11	10	4	1	...	...	1	1	5·5	?	?	76	·860	6·2	2	?	?	0·34	?	?	1·87	?	?	0·15	Zanzibar .	Africa.	

station, the data for that station are not utilized in calculating the Provincial variations.

§ Mean of 23 days.
‖ " " 27 "
¶ " " 26 "

Tabl

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 8

Meteorological Province.	Station.	Elevation of barometer above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bul Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·872	29·774	·098	29·818	−·069	29·810	87·0	74·8†	12·2	90·7	69·3	21·4	82·9	85·6	80·0	+ 0·1	71·7	76·1	77·1	75·0
	Rangoon	...	·897	·757	·140	·823	−·086	·800	94·1	67·3	26·8	97·9	60·8	37·1	82·1	91·0	78·3	+ 1·9	64·7	70·3	72·0	69·0
	Diamond Island	...	·911	·797	·114	·849	−·083	·825	84·2	73·9	10·3	90·7	69·5	21·2	81·7	81·5	77·9	+ 1·3	69·8	73·0	72·7	71·8
	Cocos Island	111	·833‡	·739§	·094	·782	−·078	·825	84·4§	74·3‡	10·1	86·6	70·9	15·7	81·4‡	80·4§	77·9	+ 1·2	69·1§	73·2§	73·1‡	71·8
	Akyab	...	·940	·827	·113	·876	−·078	·838	85·0	61·2	23·8	92·3	55·2	37·1	75·9	81·2	72·7	+ 0·4	59·5	67·0	70·9	65·8
Assam.	Silchar	...	·889	·756	·133	·819	−·067	·876	81·2	55·7	25·5	86·5	48·5	38·0	70·8	79·3	67·5	+ 0·5	54·3	63·3	64·1	60·6
	Sibsagar	...	·653	·527	·116	·593	−·069	·894	71·6	52·6	19·0	79·9	46·0	33·9	62·8	69·7	60·6	− 0·8	52·6	60·2	63·3	58·7
	Dhubri	...	·868	·739	·129	·800	−·064	·873	75·8	56·2	19·6	83·3	50·8	32·5	66·2	75·1	64·4	− 0·3	54·5	60·4	62·3	59·1
Bengal and Orissa.	Chittagong	...	·890	·778	·112	·827	−·076	·859	83·6	58·0	25·6	89·0	49·9	39·1	75.5	81·0	70·7	+ 0·6	57·2	68·1	71·1‖	65·5
	Narayanganj	...	·948	·837	·111	·886	−·064	·861	80·4	59·5	20·9	85·6	50·6	35·0	72·7	79·2	70·0	+ 0·1	56·9‖	63·8	65·1	61·9
	Calcutta (Alipore)	...	·967	·844	·123	·895	−·058	·862	81·5	60·3	21·2	89·1	50·2	38·9	73·0	80·6	70·3	+ 0·3	57·7	63·2	64·2	61·7
	Saugor Island	...	·952	·833	·119	·880	−·069	·849	81·4	64·8	16·6	86·8	53·3	33·5	75·3	78·5	71·9	− 0·1	62·1	67·2	68·3	65·9
	Burdwan	...	·885‖	·756	·129	·808	−·071	·854	84·2	59·9	24·3	92·9	50·0	42·9	74·3‖	82·9	71·2	+ 1·1	56·4	64·3‖	65·3	62·0
	Berhampore	...	·915	·801	·114	·845	−·056	·861	80·5	56·3	24·2	88·5	47·6	40·9	71·3	80·0	67·8	− 0·7	53·4	61·9	68·0	59·4
	False Point	...	·966	·852	·114	·906	−·068	·869	82·3	61·6	20·7	86·7	50·5	36·2	78·2	79·7	70·8	− 1·3	60·4	68·3	69·2	66·0
	Cuttack	...	·910	·771	·139	·841	−·056	·863	88·7	62·4	26·3	95·4	54·1	41·3	75·4	86·7	74·3	− 1·4	60·4	64·5	65·4	63·4
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·921	27·828	·093	27·871	−·068	·856	76·2	54·6	21·6	86·0	45·6	40·4	67·6	74·3	64·8	− 0·8	49·2	55·3	57·5	54·0
	Patna	...	29·791	29·685	·106	29·732	−·068	·873	76·2	55·4	20·8	85·1	47·9	37·2	68·0	75·1	65·4	+ 0·2	52·2	60·2	62·1	58·2
	Darbhanga	...	·796	·690	·106	·737	−·076	·862	75·7	55·4	20·3	83·1	49·1	34·0	67·8	75·1	65·3	+ 0·4	54·0	61·0	63·2	59·4
	Allahabad	...	·668	·558	·110	·604	−·073	·876	78·1	52·9	25·2	87·6	44·2	43·4	68·4	77·5	64·8	− 0·5	50·7	60·0	62·8	57·8
	Lucknow	...	·599	·502	·097	·544	−·070	·882	77·0	51·6	25·4	87·5	43·3	44·2	66·4	74·4	63·9	− 1·3	50·3	59·1	62·8	57·4
Upper Sub-Himalayas.	Dehra Dun	...	27·674	27·592	·082	27·626	−·080	·889	67·5	46·7	20·8	79·0	39·1	39·9	58·6	62·8	55·3	− 2·1	43·8	51·2	52·6	49·2
	Roorkee	...	29·043	28·959	·084	28·993	−·075	·881	71·1	47·5	23·6	83·8	40·6	43·2	61·4	68·7	58·1	− 1·7	45·9	54·7	56·7	52·4
	Meerut	...	·203	29·120	·083	29·156	−·076	·888	71·3	49·9	21·4	83·7	43·3	40·4	61·7	69·7	59·7	− 1·1	48·2	54·5	57·0	53·2
	Lahore	...	·229	·153	·076	·181	−·103	·882	69·3	48·0	21·3	78·6	40·2	38·4	59·7	68·9	58·0	+ 1·3	45·8	54·1	57·7	52·5
	Ludhiana	...	·116	·040	·076	·069	−·089	·885	69·2	49·8	19·4	81·5	41·5	40·0	60·3	67·4	58·4	+ 0·8	47·4	53·8	55·8	52·3
Indus Valley and N.-W. Rajputana.	Peshawar	...	28·811	28·759	·082	28·796	−·116	·930	67·0	44·1	22·9	74·1	33·9	40·2	58·5	65·2	54·5	+ 2·0	41·2	50·2	52·4	47·9
	Mooltan	...	29·525‖	29·442	·083	29·474	−·110	·875	73·9	49·5	24·4	85·3	41·0	44·3	62·1‖	71·8	60·6	+ 2·0	45·9	54·9‖	59·3	53·4
	Jacobabad	...	·786	·661	·125	·713	−·108	·863	81·3	49·2	32·1	89·5	39·8	49·7	68·6	79·7	64·2	+ 2·4	43·5	54·8	59·1	52·5
	Kurrachee	...	·961	·859	·102	·902	−·097	·883	81·6	59·2	22·4	88·6	50·2	38·4	74·3	78·3	69·7	+ 1·5	52·3	60·4	63·6	58·8
East Rajputana, Central India, and Gujarat.	Jeypore	...	28·518	28·420	·098	28·459	−·083	·881	75·9	51·7	24·2	90·6	40·0	50·6	66·9	75·1	63·6	+ 0·3	46·9	55·4	58·2	53·5
	Ajmere	...	·327	·222	·105	·271	−·100	·877	77·0	50·1	26·9	91·0	38·4	52·6	66·2	75·7	63·5	+ 1·3	45·1	55·3	59·4	53·3
	Deesa	...	29·490	29·373	·117	29·422	−·084	·848	85·3	54·2	31·1	98·0	44·9	53·1	74·4	83·7	69·4	− 1·1	47·7	59·6	60·7	56·0
	Nowgong	...	·205	·098	·107	·144	−·081	·875	78·4	53·2	25·2	90·0	43·3	46·7	68·4	77·5	65·4	+ 0·5	49·4	58·1	60·2	56·0
	Agra	...	·406	·303	·103	·346	−·090	·878	76·3	53·4	22·9	88·2	42·9	45·3	66·0	74·3	64·1	− 0·2	49·3	57·4	60·1	55·6
Deccan.	Belgaum	...	27·416	27·301	·115	27·354	−·061	·775	86·3	56·6	29·7	93·1	50·8	42·3	77·0	83·7	70·2	− 2·6	53·6	59·6	60·4	57·9
	Sholapur	...	28·370	28·220	·150	28·290	−·058	·816	89·8	60·0	29·8	97·0	49·1	47·9	77·8	88·6	75·3	− 2·8	50·9	59·3	62·3	57·5
	Poona	...	·111	27·982	·129	·045	−·056	·818	89·3	55·5	33·8	98·0	48·1	49·9	76·2	87·0	71·9	− 1·2	51·7	59·1	61·6	57·5
	Akola	...	29·041	28·890	·151	·959	−·054	·845	88·7	57·2	31·5	99·4	47·6	51·8	77·3	87·9	72·5	− 0·6	49·3	60·0	63·5	57·6
	Buldana	2,132	27·819	27·694	·125	27·750	−·064	·821	84·3	60·8	23·5	94·3	54·4	39·9	74·3	82·9	71·9	− 1·3	50·1	55·9	58·9	55·0
	Khandwa	...	28·873	28·733	·140	28·797	−·100	·835	87·8	56·0	31·8	100·2	45·6	54·6	76·7	87·2	71·6	+ 0·3	48·2	58·9	62·1	56·4

† Mean of 23 days. ‡ Mean of 24 days. § Mean of 22 days. ‖ Mean of 27 days.

II.

Stations in India, Burma, etc., for February, 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from											Wind steadiness.		Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·737†	·814	·822	·791	−·019	85†	72	67	75	−1	4·1	5·1	4·6	+1·8	...	17	25	6	2	1	...	2	3	N. 31° E.	N. 45° E.	73	74	128	121	...	...	Port Blair	Burma Coast and Bay Islands.
·580	·588	·537	·568	−·006	86	54	37	59	−4	2·0	3·5	2·8	+0·9	...	7	10	3	7	12	7	8	2	S. 7° E.	S. 45° W.	11	17	104	91	...	...	Rangoon	
·677	·700	·688	·688	+·010	81	64	64	70	−2	3·3	3·1	3·2	+1·0	...	22	6	3	1	...	2	3	19	N. 15° W.	N. 32° W.	69	85	339*	195	...	...	Diamond Island.	
·645‡	·714‡	·723§	·694	+·020	75‡	66‡	69§	70	0	1·0‡	2·1§	1·6	−0·4	...	35	7	...	2	...	...	..	2	N. 7° E.	N. 9° E.	86	89	?	377	*Nil.*	*Nil.*	Cocos Island.¶	
·491	·548	·624	·554	+·031	90	61	59	70	+2	1·4	1·4	1·4	+0·3	...	4	20	6	...	...	2	6	18	N.	N. 25° W.	53	47	93	85	...	...	Akyab	
·407	·488	·400	·432	−·012	91	65	41	66	−4	4·3	3·8	4·1	+0·8	12	...	4	12	4	4	8	10	2	S. 4° E.	S. 25° E.	14	24	107*	56	...	...	Silchar	Assam.
·400	·489	·505	·465	+·012	100	86	70	85	+4	6·6	6·0	6·3	+1·0	10	10	15	1	...	6	6	1	4	N. 15° E.	N. 56° E.	27	53	71*	52	...	...	Sibsagar	
·408	·452	·391	·417	+·023	89	71	46	69	+3	2·5	2·6	2·6	+0·7	3	2	6	22	2	5	8	8	...	S. 22° E.	S. 16° E.	27	14	135*	101	...	...	Dhubri	
·472	·593	·629‖	·565	+·056	95	67	60‖	74	+4	1·7	1·8	1·8	−0·1	...	7	12	...	4	2	6	7	18	N. 34° W.	N. 43° W.	41	29	115*	93	...	...	Chittagong	
·441‖	·482	·437	·453	+·004	86‖	60	44	63	−1	3·1	3·3	3·2	+1·1	...	5	7	4	4	4	6	8	18	N. 49° W.	S. 75° W.	32	36	89	67	...	...	Narayanganj.	Bengal and Orissa.
·456	·460	·390	·435	−·033	84	56	38	59	−6	2·5	2·0	2·3	+0·4	3	11	4	3	1	4	9	11	10	N. 61° W.	S. 89° W.	36	25	66	80	...	...	Calcutta (Alipore).	
·537	·570	·565	·557	−·056	85	64	58	69	−6	2·6	2·2	2·4	+0·2	...	13	2	1	3	16	9	3	9	S. 72° W.	S. 52° W.	21	18	251	206	...	...	Saugor Island.	
·419	·473‖	·395	·429	+·034	79	56‖	36	57	+1	1·7‖	1·9	1·8	−0·2	11	13	4	2	...	4	5	7	9	N. 39° W.	N. 54° W.	35	41	31*	51	...	...	Burdwan.**	
·377	·435	·357	·390	−·007	81	58	35	58	−5	2·4	2·1	2·3	+0·3	8	5	2	4	...	4	1	17	15	N. 62° W.	N. 76° W.	46	48	59*	56	...	...	Berhampore	
·524	·571	·580	·558	−·070	93	58	57	69	−9	2·3	1·9	2·1	−0·6	...	5	3	9	5	11	12	6	5	S. 15° W.	S. 12° E.	23	17	163*	191	...	...	False Point	
·506	·471	·348	·442	−·074	88	53	28	56	−5	1·8	1·9	1·9	0	3	15	5	3	2	5	6	12	5	N. 46° W.	S. 7° W.	28	7	49	51	...	...	Cuttack	
·290	·291	·271	·284	+·031	67	43	33	48	+6	3·8	3·6	3·7	+1·4	1	12	1	2	4	7	3	3	23	N. 43° W.	N. 62° W.	41	55	218	172	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·355	·421	·390	·389	+·026	79	62	46	62	+5	3·1	2·4	2·8	+0·3	6	...	1	12	1	4	3	23	6	S. 83° W.	N. 80° W.	28	51	86*	78	...	...	Patna	
·403	·450	·426	·426	+·044	91	67	50	69	+6	1·6	1·8	1·7	+0·1	1	...	...	8	6	2	8	19	12	S. 81° W.	S. 78° W.	37	47	112	90	...	...	Darbhanga	
·347	·409	·383	·380	+·050	85	60	43	63	+7	2·5	2·6	2·6	+0·4	1	4	5	8	3	2	3	16	14	N. 52° W.	N. 63° W.	33	34	146	100	...	...	Allahabad	
·354	·406	·421	·394	+·091	92	64	53	70	+18	2·1	1·9	2·0	−1·0	5	8	3	6	1	1	...	31	1	N. 69° W.	S. 48° W.	45	44	60*	75	...	...	Lucknow	
·253	·288	·274	·272	−·011	80	60	50	63	+1	3·6	5·3	4·5	+0·2	5	3	4	6	6	5	7	15	5	S. 64° W.	S. 88° W.	20	28	39	43	...	...	Dehra Dun	Upper Sub-Himalayas.
·294	·343	·306	·314	+·023	89	63	46	66	+5	2·8	3·5	3·2	−0·2	11	...	1	2	16	2	2	1	21	N. 74° W.	N. 61° W.	5	31	58	68	...	...	Roorkee	
·322	·333	·302	·319	+·025	88	60	44	64	+6	2·6	3·8	3·2	+0·3	8	...	4	8	8	...	3	25	...	S. 66° W.	N. 59° W.	21	50	75*	61	...	...	Meerut	
·285	·348	·331	·321	+·039	83	68	49	67	+9	3·2	3·6	3·4	−0·3	7	8	5	9	7	4	...	9	7	N. 26° E.	N. 31° W.	14	31	55	54	...	...	Lahore	
·301	·332	·295	·309	+·006	83	64	46	64	0	4·2	3·7	4·0	−0·3	12	2	...	...	17	3	2	7	13	S. 45° W.	N. 50° W.	14	40	62	44	...	...	Ludhiana	
·229	·264	·239	·244	+·011	78	56	41	58	0	3·3	4·3	3·8	−0·6	10	7	11	7	5	3	...	5	8	N. 29° E.	N. 9° W.	28	9	87*	82	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·270	·340‖	·342	·317	+·043	75	62‖	46	61	+7	2·5	2·3	2·4	−0·5	31	1	9	...	3	1	4	...	6	N. 13° E.	N. 2° E.	11	16	17*	44	...	...	Mooltan	
·217	·248	·233	·233	+·002	60	37	24	40	−2	1·4	2·3	1·9	−1·5	2	5	5	8	8	8	1	10	9	N. 27° E.	N. 21° E.	1	24	130*	71	...	...	Jacobabad	
·323	·358	·401	·361	−·048	62	43	42	49	−9	1·5	1·9	1·7	−1·1	...	5	7	4	1	2	13	19	5	N. 86° W.	N. 69° W	44	20	246*	249	...	...	Kurrachee	
·272	·302	·284	·286	+·030	69	47	34	50	+7	2·1	2·9	2·5	−0·5	1	1	13	3	6	4	9	13	6	S. 68° W.	N. 18° W.	12	34	104	93	...	...	Jeypore	East Rajputana, Central India and Gujarat.
·247	·309	·308	·288	+·020	65	50	37	51	+5	1·8	2·1	2·0	−0·3	5	2	9	6	4	4	3	18	5	N. 71° W.	N. 82° W.	16	16	102	69	...	...	Ajmere	
·253	·321	·229	·268	+·039	59	39	21	40	+10	1·1	1·0	1·1	−1·3	...	5	6	5	5	5	5	17	8	N. 78° W.	N. 2° W.	24	30	221	211	...	...	Deesa	
·310	·354	·302	·322	+·031	75	52	33	53	+3	1·3	2·9	2·1	−0·9	2	5	4	11	2	2	3	16	11	N. 46° W.	N. 59° W.	27	37	61*	44	...	...	Nowgong	
·304	·361	·337	·334	+·047	73	57	41	57	+8	2·6	2·2	2·4	−0·1	...	...	6	...	10	...	17	...	23	N. 85° W.	N. 67° W.	30	41	155*	99	...	...	Agra	
·376	·298	·240	·305	−·023	82	33	23	46	+7	1·6	1·4	1·5	+0·3	...	4	10	7	5	8	6	11	5	S. 46° W.	S. 62° E.	3	14	221	237	...	...	Belgaum	Deccan.
·265	·281	·234	·260	−·060	51	29	17	32	−3	1·1	1·2	1·2	−0·3	4	3	3	5	22	2	4	3	10	S. 50° E.	S. 43° E.	23	24	210*	174	...	...	Sholapur	
·341	·293	·236	·290	+·006	77	33	19	43	+9	0·9	1·2	1·1	−0·4	1	...	...	4	7	...	16	22	6	S. 67° W.	N. 67° W.	55	27	236*	149	...	...	Poona	
·254	·294	·266	·271	−·021	54	32	21	36	−1	1·1	1·4	1·3	−0·2	7	2	7	7	5	3	3	4	18	N. 17° W.	N. 14° W.	21	23	104	98	...	...	Akola	
·237	·225	·204	·222	−·055	44	27	18	30	−4	1·0	0·6	0·8	−1·0	4	11	2	2	1	8	6	10	12	N. 67° W.	N. 17° W.	36	27	191*	147	0·03	0·03	Buldana	
·248	·285	·252	·262	−·045	54	31	20	35	−5	0·8	0·9	0·9	−0·5	5	1	7	2	6	1	10	12	11	N. 85° W.	N. 14° W.	30	31	113	93	...	...	Khandwa	

* Corrected. ¶ Wind direction 10 less. ** Wind direction 55.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86

Meteorological Province.	Station.	Elevation of barometer above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—*contd.*	Hoshangabad	...	28·955	28·817	·138	28·880	−·067	29·856	84·6	56·5	28·1	96·8	47·0	49·8	72·4	83·2	70·0	−0·3	49·4	59·2	63·6	57·4
	Nagpur	...	·930	·796	·134	·857	−·054	·844	86·1	59·3	26·8	95·1	51·0	44·1	74·7	84·3	71·9	−1·8	53·4	60·8	63·4	59·2
	Nagpur (Sanitary Commissioner's Office).	...	·950	·818	·132	·878	?	·854	87·4	58·9	28·5	96·9	50·6	46·3	76·3	86·1	72·8	?	53·1	61·1	64·1	58·4
	Jubbulpore	...	·619	·503	·116	·555	−·073	·856	80·9‡	52·1	29·0	93·3	42·3	51·0	70·2	79·3	66·0‡	−0·3	49·9	58·3	61·5	56·6
	Saugor	...	·130	·017	·113	·068	−·073	·844	79·8	56·4	23·4	93·7	47·8	45·9	69·9	78·7	67·7	+0·2	48·7	55·8	58·9	54·5
	Sutna	...	·911	·800	·111	·848	−·077	·868	78·6	54·0	24·6	89·9	45·2	44·7	69·6	77·9	65·6	+1·1	49·2	56·6	57·6	54·5
	Raipur	...	29·002	·874	·128	·932	−·053	·851	84·7	60·1	24·6	93·5	52·3	41·2	74·0	83·1	71·7	−0·4	53·8	60·3	62·4	58·8
	Hyderabad (Deccan).	...	28·274	·142	·132	·202	−·054	·830	87·6	61·8	25·8	94·6	54·2	40·4	78·0	85·8	74·2	−1·9	56·7	63·7	64·9	61·8
West Coast.	Bombay	...	29·943	29·830	·113	29·878	−·047	·855	82·5	69·6	12·9	88·4	63·9	24·5	76·4	79·6	75·6	+0·5	63·2	68·1	70·7	67·3
	Ratnagiri	...	·853	·746	·107	·790	−·044	·839	84·8	67·9	16·9	91·7	61·6	30·1	80·0	81·9	75·9	−0·3	63·4	68·6	70·5	67·5
	Karwar	...	·918	·800	·118	·850	−·054	·826	84·8	65·3	19·5	89·3	60·9	28·4	77·1	83·1	74·9	−1·6	63·8	69·1	72·0	68·3
	Cochin	...	·936	·831	·105	·875	−·042	·811	90·1†	75·1	15·0	93·4	71·0	22·4	84·6	87·0	82·3†	+1·5	72·0	74·7	76·5	74·4
South India.	Salem	...	·042	28·884	·158	28·967	−·069	·836	93·5	67·4	26·1	99·2	60·9	38·3	82·1	91·1	78·9	+1·3	65·4	71·3	73·5	70·1
	Mercara	...	26·251	26·149	·102	26·204	−·049	?	80·2	58·6	21·6	85·1	54·2	30·9	72·1	77·5	68·7	−0·1	54·4	62·2	62·4	59·7
	Chitaldroog	...	27·558	27·429	·129	27·489	−·060	·791	88·5	63·7	24·8	92·6	58·7	33·9	78·2	86·7	75·7	−1·3	55·3	62·9	63·0	60·4
	Bangalore	...	26·977	26·851	·126	26·913	−·062	·800	85·8	61·0	24·8	89·7	54·8	34·9	75·8	83·9	72·9	+1·0	57·2	63·1	63·2	61·2
	Hassan	...	·906	·790	·116	·847	−·061	·792	85·6	56·3	29·3	89·1	46·9	42·2	77·2	84·4	70·7	−0·3	54·3	61·3	61·3	59·0
	Mysore	...	27·462	27·322	·140	27·392	−·065	·797	88·7	63·1	25·6	92·6	55·6	37·0	77·7	87·3	75·6	+0·8	58·8	65·3	64·1	62·7
	Trichinopoly	...	29·705	29·559	·146	29·636	−·069	·821	93·6	70·0	23·6	101·4	63·6	37·8	84·3	91·6	80·3	+2·0	67·4	71·0	71·9	70·1
	Madras	...	·971	·854	·117	·908	−·060	·860	86·6	66·9	19·7	96·0	59·8	36·2	82·5	82·4	76·2	−0·9	?	72·4	72·7	71·0
	Bellary	...	28·486	28·341	·145	28·409	−·058	·813	92·3	65·2	27·1	96·8	59·1	37·7	80·9	90·1	78·9	−0·8	58·0	64·9	67·1	63·3
	Cocanada	...	29·975	29·843	·132	29·899	−·067	·862	84·8	67·3	17·5	95·4	64·0	31·4	80·0	82·7	75·6	−1·5	64·1	69·1	69·1	67·4
	Vizagapatam	...	·966	·846	·120	·896	−·054	·866	84·0	64·4	19·6	89·2	60·0	29·2	80·4	81·7	75·8	−2·3	63·6	70·2	71·2	68·3
Hill Station, Baluchistan.	Quetta	...	24·614	24·537	·077	24·569	−·073	?	57·6	30·7	26·9	66·9	22·6	44·3	47·6	54·3	43·3	+2·2	27·3	38·3	41·3	35·6
Hill Stations, Punjab.	Leh	...	19·522	19·476	·046	19·505	−·087	?	35·5	13·0	22·5	46·6	1·0	45·6	25·1	32·2	24·7	+3·3	10·7	20·2	27·5	19·5
	Srinagar	...	24·862	24·782	·080	24·815	−·120	?	50·2	30·3	19·9	59·9	24·8	35·1	40·0	48·1	39·7	+6·5	29·8?	37·9	45·6	37·8
	Murree	...	23·777	23·753	·024	23·758	−·062	?	45·9	35·7	10·2	56·5	24·5	32·0	40·6	42·4	39·4	+0·1	31·0	35·4	37·1	34·5
	Kailang	10,087	20·672	20·600	·072	20·642	−·099	?	35·9	13·9	22·0	44·7	0	44·7	25·0	29·7	22·0	+1·6	13·1	21·9	25·7	20·2
	Simla (Ridge)	...	23·038	22·996	·042	23·008	−·069	?	45·3	34·3	11·0	58·7	23·0	35·7	41·4	41·7	38·3	−2·7	31·5	35·2	36·6	34·4
Hill Stations, N.-W. P.	Chakrata	...	·229	23·188	·041	·202	−·062	?	49·4	34·3	15·1	64·2	25·3	38·9	41·8	42·7	39·6	−2·7	31·9	36·4	37·7	35·3
	Ranikhet	...	24·079	24·018	·061	24·037	−·050	?	52·9	39·3	13·6	66·2	32·7	33·5	47·7	49·2	44·6	−2·5	38·8	44·0	44·8	42·5
	Muktesar	...	22·819	22·766	·053	22·793	?	?	48·0	34·2	13·8	62·5	28·1	34·4	42·5	43·9	40·1	?	29·2	36·1	37·9	34·4
Hill Station, Nepal.	Katmandu	4,388	25·604	25·540	·064	25·567	−·081	?	66·4	40·3	26·1	75·5	36·2	39·3	54·2	62·4	52·4	−0·3	39·2	48·8	51·9	46·6
Hill Station, Bengal.	Darjeeling	...	22·970	22·944‡	·026	22·952	+·008	?	?	?	?	?	?	?	41·6	44·4‡	?	?	34·8	40·0	41·9‡	38·5
Hill Stations, Central India.	Mount Abu	...	26·050	25·978	·072	26·005	−·099	?	66·2	52·8	13·4	79·2	41·6	37·6	60·9	64·2	59·0	−1·3	43·9	48·8	50·4	47·7
	Pachmarhi	...	·478	26·391	·087	·428	−·074	?	73·5	51·4	22·1	85·2	40·3	44·9	66·8	72·5	62·0	−0·4	48·1	57·5	61·2	55·6
	Chikalda	3,642	·368	·274	·094	·315	−·073	?	75·4	57·9	17·5	85·1	45·3	39·8	66·8	74·7	66·2	−1·5	49·0	53·1	56·0	52·7

† Mean of 17 days. ‡ Mean of 27 days.

II—*continued.*

Stations in India, Burma, etc., for February 1898—continued.

Vapour Tension.					Humidity.					Cloud.				Wind Direction.											Wind Steadiness.		Wind Velocity.		Rainfall.			
														Number of winds from																			
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·270	·344	·351	·322	+·006	59	44	32	45	0	1·0	1·4	1·2	−0·4	30	...	8	2	...	6	8	2	...	S.	N. 61° E.	11	19	36**	71	...	...	Hoshangabad.	Deccan—*concld.*
·244	·367	·330	·347	+·010	67	42	29	46	+ 4	1·7	2·7	2·2	+0·3	3	5	6	6	6	9	7	5	9	S. 35° W.	N. 42° E.	5	22	131	123	...	...	Nagpur.	
·338	·358	·328	·341	?	67	40	28	45	?	1·1	2·3	1·7	?	3	10	7	8	4	8	5	4	7	N. 33° E.	?	11	?	48*	?	...	...	Nagpur (Sanitary Commissioner's Office).	
·338	·346	·332	·339	1+·017	86	47	35	56	+ 4	1·7	1·9	1·8	−0·3	3	6	7	...	7	3	9	11	10	N. 76° W	N. 17° W.	27	18	65	57	...	...	Jubbulpore.	
·253	·276	·259	·263	−·001	55	39	27	40	− 1	0·8	2·1	1·5	−0·1	...	4	3	9	5	1	4	22	8	N. 74° W.	N. 5° W.	28	14	149	73	...	...	Saugor.	
·298	·306	·228	·277	+·028	70	43	25	46	+ 3	1·4	1·8	1·6	−0·3	...	10	...	9	2	3	1	13	18	N. 42° W.	N. 41° W.	43	40	137*	117	...	...	Sutna.	
·236	·347	·295	·326	−·017	64	42	27	44	0	1·5	2·5	2·0	+0·4	16	3	3	2	2	5	14	5	6	S. 64° W.	N. 46° W.	27	18	115*	95	...	...	Raipur.	
·403	·420	·358	·394	−·042	72	44	29	48	− 2	1·1	2·0	1·6	+0·3	16	1	3	13	9	4	3	5	2	S. 59° E.	S. 50° E.	27	29	114*	97	...	...	Hyderabad (Deccan).	
·502	·583	·627	·574	−·027	69	63	63	65	− 3	0·9	0·9	0·9	−0·3	...	6	8	10	3	1	3	7	18	N 12° W.	N. 3° W.	36	58	243	254	...	...	Bombay.	West Coast.
·528	·552	·599	·560	−·027	77	54	55	62	0	1·1	0·5	0·8	+0·3	1	6	1	1	1	...	10	12	29	N. 65° W.	N. 47° W.	66	53	201	215	...	...	Ratnagiri.	
·578	·607	·639	·608	−·041	92	65	56	71	− 1	0·8	1·1	1·0	+0·5	2	8	2	...	...	...	3	13	28	N. 51° W.	N. 53° W.	77	69	106	86	...	...	Karwar.	
·746	·730	·774	·750	+·008	86	61	60	69	− 2	2·1	1·3	1·7	−0·1	6	9	4	...	...	...	2	18	17	N. 52° W.	N. 76° W.	64	33	109	132	...	...	Cochin.	
·605	·624	·593	·607	+·044	89	57	41	62	+ 4	2·3	3·4	2·9	+0·9	3	3	16	16	6	1	5	2	4	N. 70° E.	E	45	51	158	128	...	...	Salem.	South India.
·376	·450	·393	·406	−·009	76	58	43	59	− 1	3·3	4·4	3·9	+1·0	40	...	...	4	...	...	1	6	5	N. 66° W.	N. 55° E.	12	38	63	59	...	...	Mercara.	
·340	·385	·283	·336	+·004	58	40	22	40	+ 3	2·7	3·0	2·9	+1·4	...	4	5	14	11	2	2	7	11	N. 66° E.	N. 89° E.	18	48	138*	170	...	...	Chitaldroog	
·433	·435	·343	·404	+·008	80	49	30	53	+ 1	2·3	2·3	2·3	+0·4	1	3	7	19	12	4	4	2	4	S. 80° E.	S. 69° E.	45	65	165*	105	...	...	Bangalore.	
·406	·357	·280	·348	−·033	88	39	24	50	− 2	3·4	4·1	3·8	+1·0	...	2	14	13	10	4	6	2	5	N. 89° E.	S. 85° E.	36	67	60*	77	...	...	Hassan.	
·448	·471	·315	·411	−·009	77	49	24	50	− 1	4·0	4·0	4·0	+2·6	2	4	14	12	7	4	6	3	4	N. 78° E.	N. 87° E.	30	67	173*	201	...	...	Mysore.	
·643	·583	·522	·583	−·021	85	49	35	56	− 5	2·2	3·1	2·7	−0·1	10	8	29	4	...	...	1	3	1	N. 85° E.	N. 62° E.	62	71	110	97	...	...	Trichinopoly.	
?	·661	·677	·695	+·016	?	59	61	77	+ 3	4·3	3·4	3·9	+1·1	...	1	14	21	15	2	3	...	...	S. 85° E.	S. 85° E.	71	69	119	119	...	...	Madras.	
·399	·418	·380	·399	+·010	64	40	27	44	+ 4	13·5	4·3	3·9	+2·5	15	...	1	11	14	5	2	...	8	S. 55° E.	S. 57° E.	22	47	63?	92	...	...	Bellary.	
·568	·574	·532	·558	−·101	83	56	48	62	− 8	1·6	0·7	1·2	0	...	...	12	14	17	3	4	4	2	S. 73° E.	S. 49° E.	48	46	183*	164	...	...	Cocanada.	
·579	·606	·627	·604	−·023	95	59	58	71	+ 5	2·3	2·5	2·4	+0·9	17	...	5	5	10	11	6	2	...	S. 26° E.	S. 18° W.	39	45	2	47	...	...	Vizagapatam	
·118	·139	·129	·129	−·037	70	43	32	48	−18	2·9	3·3	3·1	−1·1	15	8	1	...	4	4	4	10	10	N. 69° W.	N. 83° W.	30	31	83*	88	...	...	Quetta.	Hill Station, Baluchistan.
·056	·072	·114	·081	+·005	70	53	62	62	− 6	6·1	7·1	6·6	−0·2	...	...	...	...	...	...	1	54	1	W.	S	99	23	49	29	...	...	Leh.	Hill Stations, Punjab.
·161?	·207	·285	·218	+·062	95?	83	83	87	+ 7	5·8	5·5	5·7	−1·1	8	5	5	...	9	3	2	8	16	N. 50° W.	S. 24° E.	25	13	119*	74	...	...	Srinagar.	
·128	·156	·168	·151	−·004	64	64	65	64	− 1	2·4	3·5	3·0	−2·7	33	3	...	...	15	4	...	...	1	S. 42° W.	S. 43° E.	25	40	218*	218	...	...	Murree.	
·078	·095	·109	·094	+·002	91	70	68	76	+ 3	6·0	6·3	6·2	−0·3	...	1	...	1	3	8	14	25	4	S. 65° W.	S. 72° W.	68	66	40	27	2·34	1·72	Kailang.	
·150	·144	·166	·154	+·002	78	58	65	67	+ 9	5·5	7·3	6·4	+0·7	7	5	6	1	1	22	11	1	1	S. 10° W.	S. 5° W.	37	31	115	131	...	...	Simla (Ridge).	
·157	·163	·177	·166	+·003	81	64	68	71	+ 8	3·6	4·2	3·9	−0·8	16	11	1	...	1	25	...	...	2	S.	S. 20° W.	23	2	205	134	...	...	Chakrata.	
·181	·187	·187	·185	−·011	77	60	57	65	+ 3	3·4	5·3	4·4	−0·1	10	4	9	4	1	4	9	11	4	N. 78° W.	S. 51° W.	18	20	98*	57	...	...	Ranikhet.	Hill Station, N.-W.P.
·130**	·149	·171	·150	?	68**	59	62	63	?	4·3	5·9	5·1	?	...	2	1	13	14	3	2	5	16	S. 87° E.	?	11	?	55*	?	...	...	Muktesar.	
·229	·286	·270	·259	+·010	90	68	46	68	+ 2	3·8	4·4	4·1	+0·6	2	4	...	4	7	...	1	27	11	N. 77° W.	N. 86° W.	48	48	29	29	1·99	0·89	Katmandu.	Hill Station, Nepal.
?	·232	·243‡	?	?	?	88	83‡	?	?	6·8§	6·0‖	6·4	+0·5	1	6	7	5	2	...	4	25	4	N. 65° W.	S. 79° W.	40	31	116	137	...	...	Darjeeling.¶	Hill Station, Bengal.
·191	·213	·213	·206	+·018	49	42	36	42	+ 6	1·6	1·8	1·7	−0·9	...	2	7	...	3	2	23	7	12	S. 79° W.	N. 63° W.	45	27	226*	140	...	...	Mount Abu	Hill Stations, Central India.
·305	·378	·421	·368	+·121	78	57	52	62	+17	1·3	2·3	1·8	−0·3	17	1	...	1	4	7	7	9	10	S. 68° W.	N. 64° W.	32	25	164*	98	...	...	Pachmarhi.	
·253	·253	·240	·248	−·032	52	39	28	40	− 1	1·1	1·3	1·2	−0·6	19	7	...	...	1	10	8	2	9	S. 71° W.	N. 83° W.	24	24	214*	148	0·50	0·31	Chikalda.	

* Corrected. § Mean of 20 days. ‖ Mean of 19 days. ¶ Wind observations 54. ** Mean of 26 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86

Meteorological Province.	Station.	Elevation of barcistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, S. India.	Wellington	...	24·244	24·186	·058	24·215	−·065	?	71·3	48·1	23·2	75·2	40·7	34·5	66·4	67·3	58·8	+0·9	45·8	55·3	57·8	53·0
Extra India.	Muscat	...	30·031	29·946	·085	29·989	−·045	29·957	73·5	68·4	5·1	75·8	66·3	9·5	71·9	73·5	71·0	+0·8	59·5	64·0	65·1	62·9
	Aden	...	29·940	·833	·107	·879	−·026	·905	82·1	72·5	9·6	85·7	67·4	18·3	78·0	80·3	77·1	+0·2	67·8	70·9	70·5†	69·7
	Perim	...	·801	·689	·112	·737	−·004	?	83·5	73·9‡	9·6	85·7	70·6	15·1	79·6	80·5	78·0‡	−0·2	68·6	71·8	71·5	70·6
	Minicoy	...	·918	·823	·095	·866	?	·801	85·4	?	?	87·5	?	?	83·2	83·4	?	?	?	75·9	75·7	?
	Zanzibar	...	·922	·799	·124	·861	+·016	·859	88·2	81·0	7·2	90·4	74·9	15·5	84·7	87·6	84·4	+1·0	76·2	78·1	78·4	77·6
	Port Victoria (Seychelles).	15	·921	·836	·085	·879	−·050	·818	83·7	76·9	6·8	85·8	74·3	11·5	81·4	82·3	80·0	−0·2	73·0	76·1	76·5	75·2
	Mauritius	181	?	?	?	·693	−·060	·820	?	?	?	92·1	64·1	28·0	?	?	78·6	+0·5	?	?	?	?

† Mean of 27 days. ‡ Mean of 24 days.

II—*concluded.*

Stations in India, Burma, etc., for February 1898—concluded.

Vapour tension.					Humidity.					Cloud.				Wind direction.											Wind steadiness.		Wind velocity.		Rainfall.		Station.	Meteorological Province.
														Number of winds from																		
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·290	·326	·382	·333	+·043	85	52	58	65	+ 6	2·7	4·9	3·8	+1·2	7	6	3	1	25	9	2	...	2	S. 44° E.	S. 39° E.	47	65	57	60	...	...	Wellington.	Hill Station, S. India.
·391	·495	·510	·465	−·073	57	63	62	61	−11	1·1	0·5	0·8	−1·6	...	4	6	5	1	...	—	9	31	N. 35° W.	N. 7° W.	64	31	127	99	...	...	Muscat.	Extra India.
·621	·664	·620†	·635	−·015	78	69	60†	69	− 2	4·9	1·1	3·0	−0·9	1	...	3	28	9	11	3	1	—	S. 63° E.	N. 87° E.	68	73	341†	356	...	...	Aden.	
·628‡	·678	·651	·652	−·042	75‡	67	62	68	− 4	5·3	1·9	3·6	+1·2	1	—	1	8	37	1	—	1	7	S. 53° E.	S. 64° E.	61	73	493	430	...	...	Perim.	
?	·797	·786	?	?	?	70	68	?	?	0	0	0	?	...	29	13	1	2	...	...	1	9	N. 6° E.	?	77	?	122‡	?	...	...	Minicoy.	
·841	·875	·849	·855	+·001	80	74	65	73	− 2	6·3	4·0	5·2	+1·2	...	21	13	10	4	3	1	1	3	N. 35° E.	N. 34° E.	55	63	131‡	159	...	...	Zanzibar.	
·760	·830	·836	·809	−·005	82	77	76	78	0	6·6	7·4	7·0	+0·5	5	11	4	1	...	...	...	9	26	N. 36° W.	N. 27° W.	71	56	198	145	18·21	3·94	Port Victoria (Seychelles).	
?	?	?	·746	?	?	?	?	77	0	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	245	274	3·70	1·28	Mauritius.	

* Corrected.

G. I. C. P. O.—No. 5 Meteor.—15-6-98.—385.

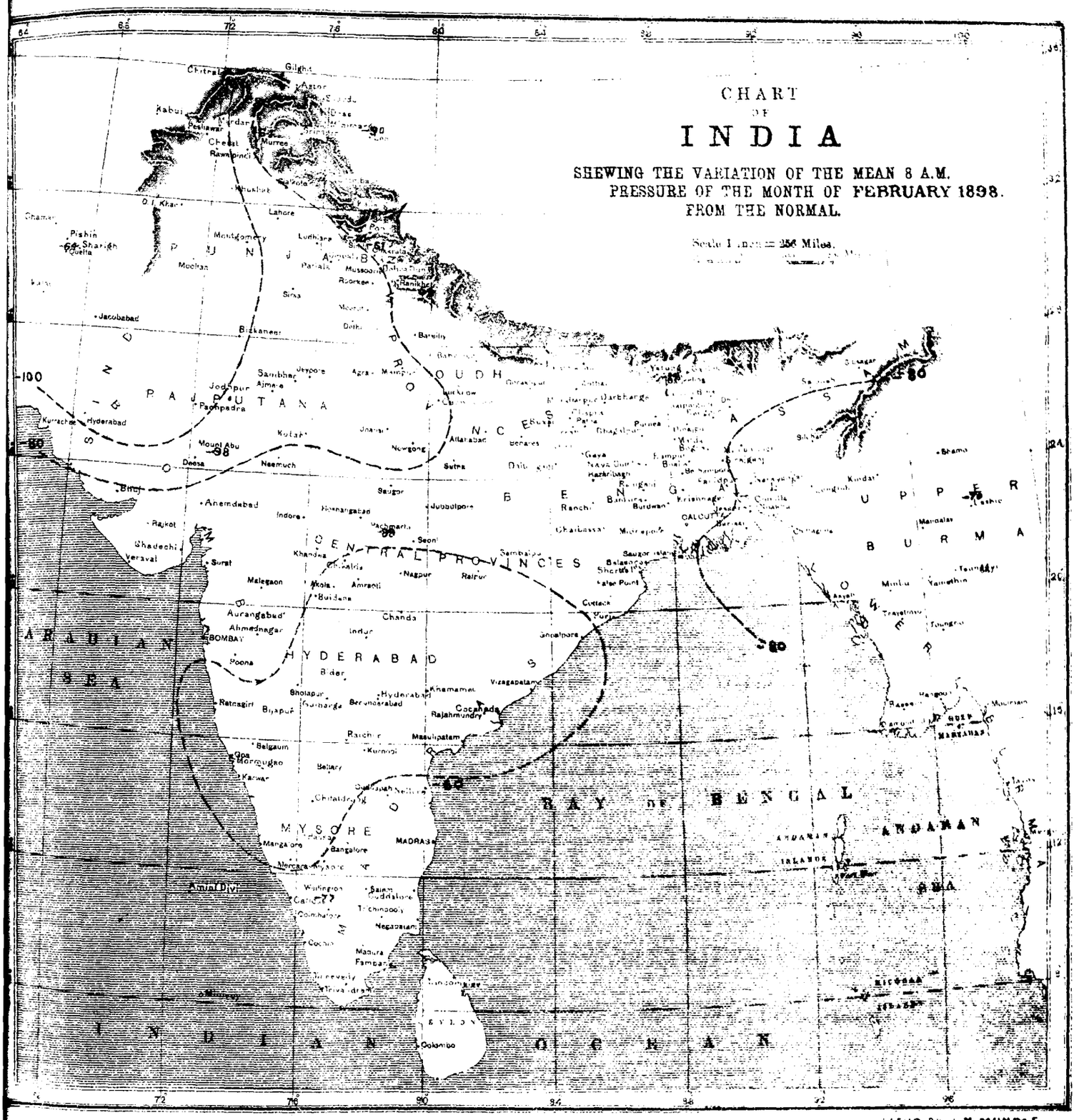
LITHO. BY J.N. MUNDLE.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation :—

Velocity of 0 to 2 miles per hour	...	one feather added to the wind arrow
" " 2 to 5 " " "	...	two feathers " " " "
" " 5 to 10 " " "	...	three " " " " "
" " 10 to 20 " " "	...	four " " " " "
over 20 " " "	...	five " " " " "



LITHO BY J N MUNDLE.

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

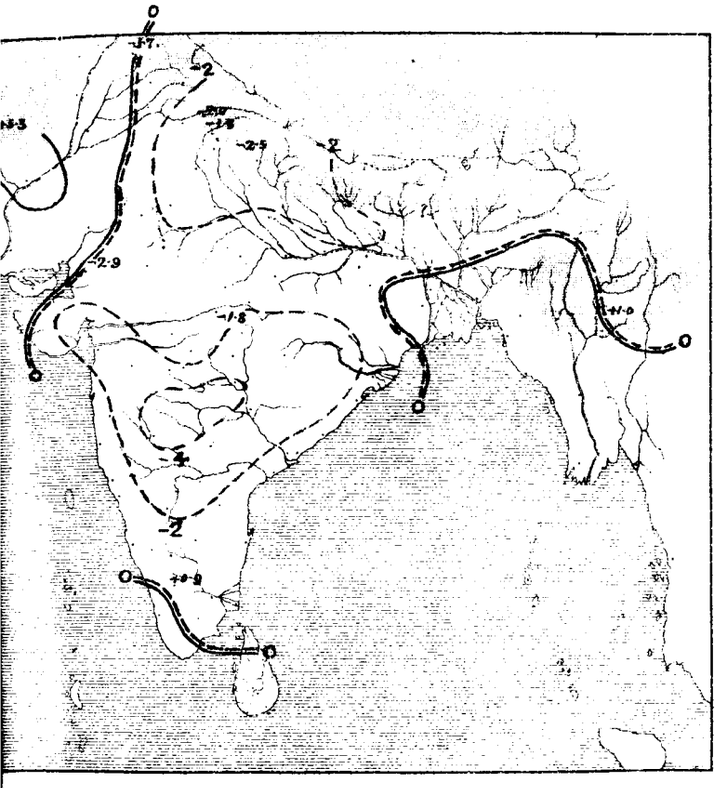
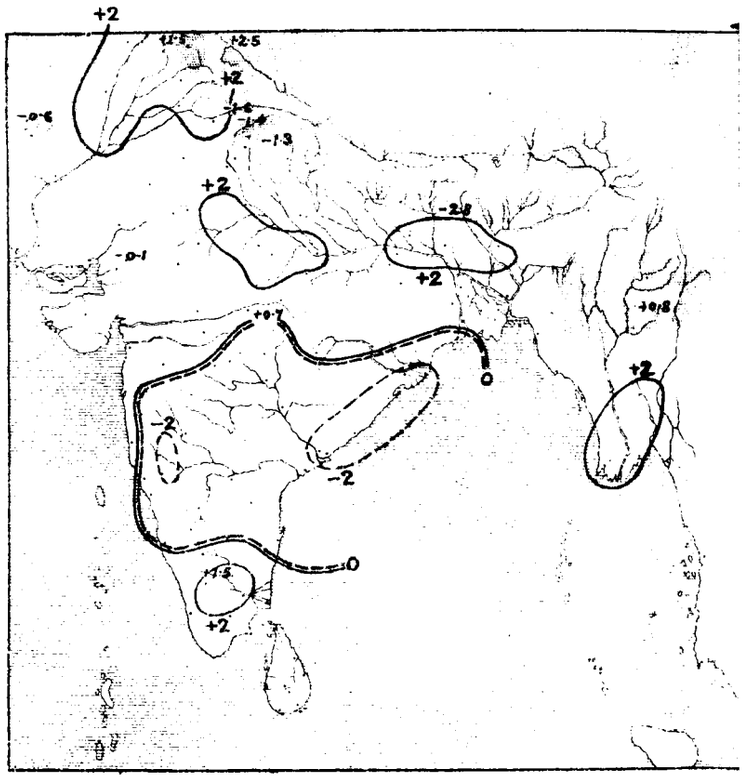


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

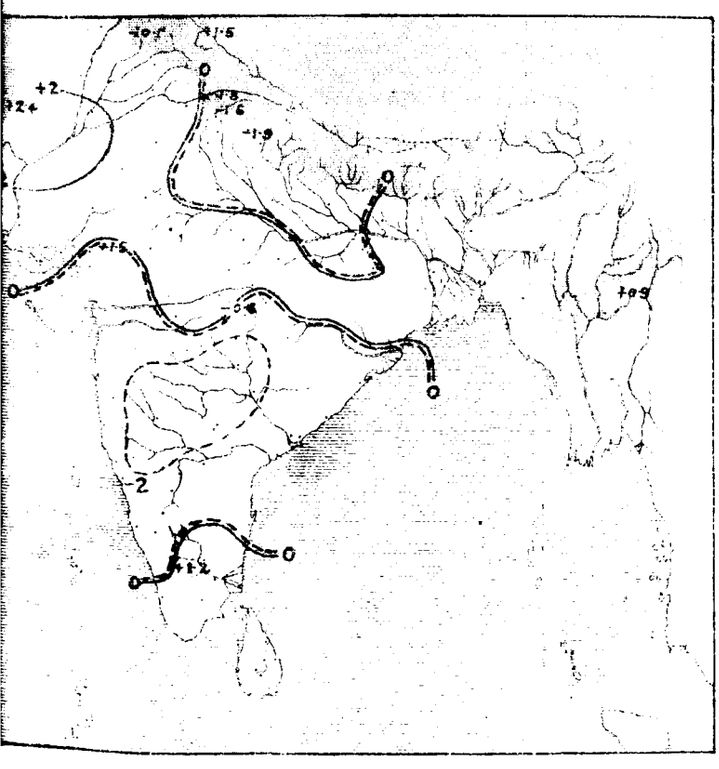
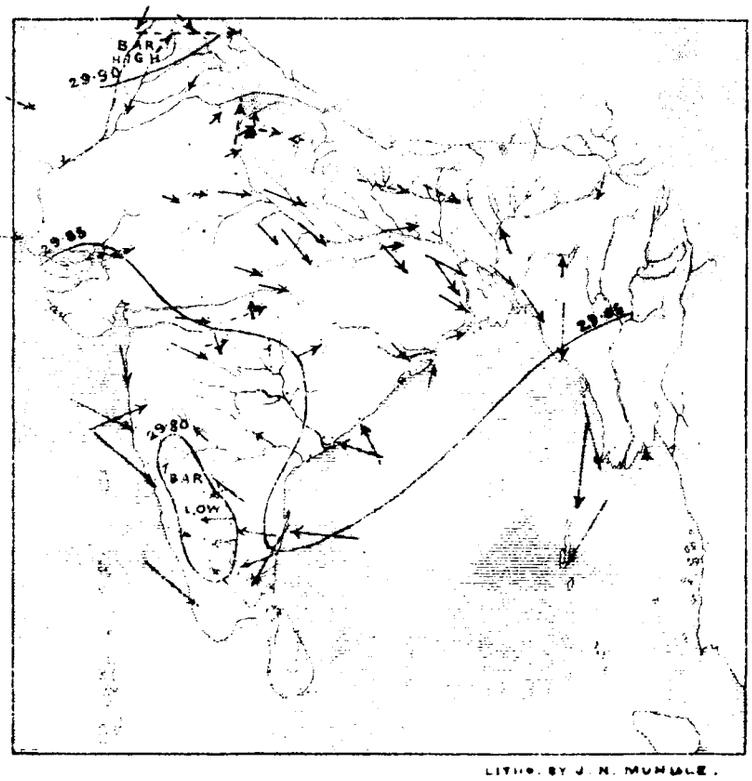


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF FEBRUARY 1898.

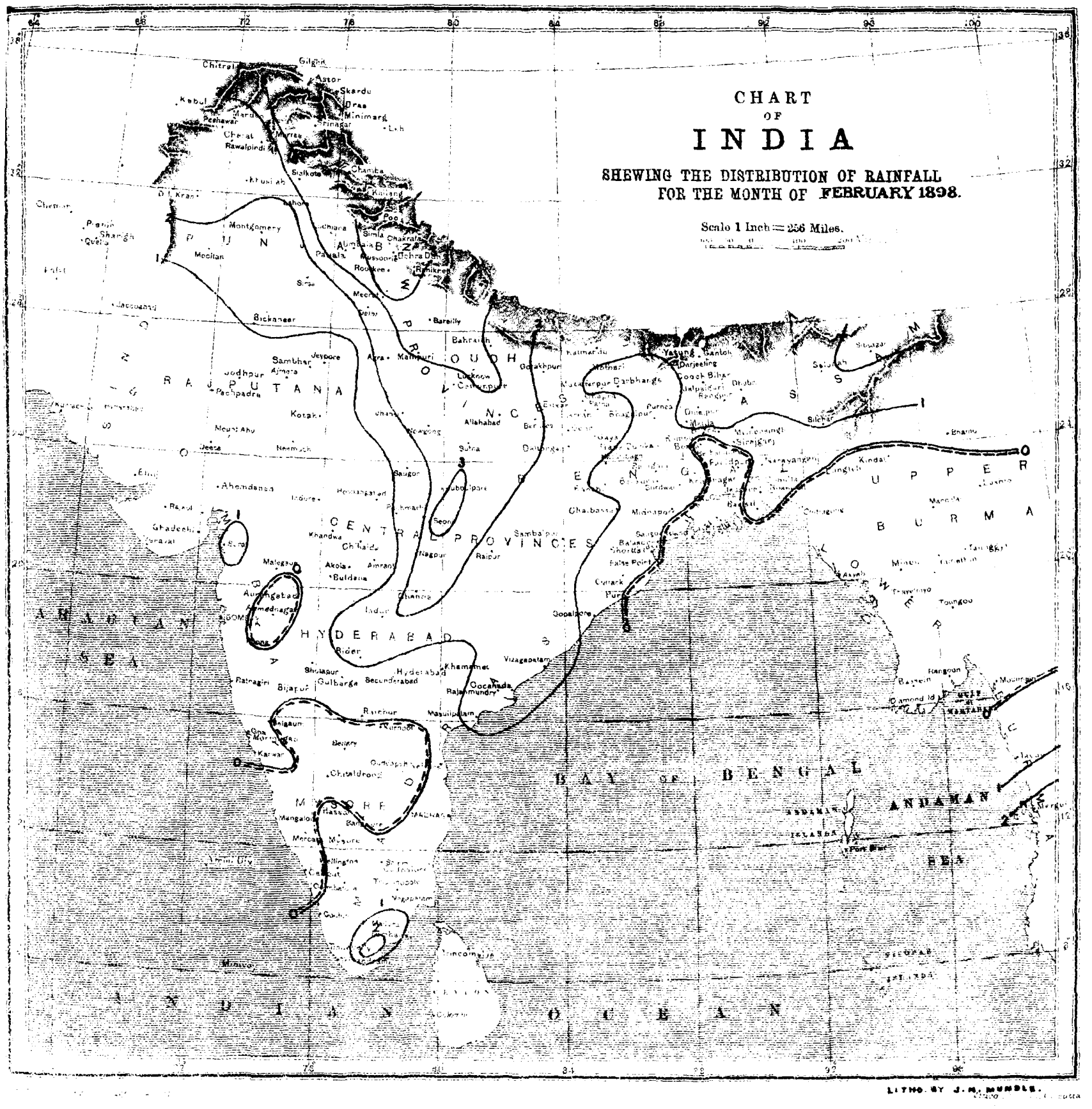


LITHO. BY J. N. MUKHERJEE.

Explanation.

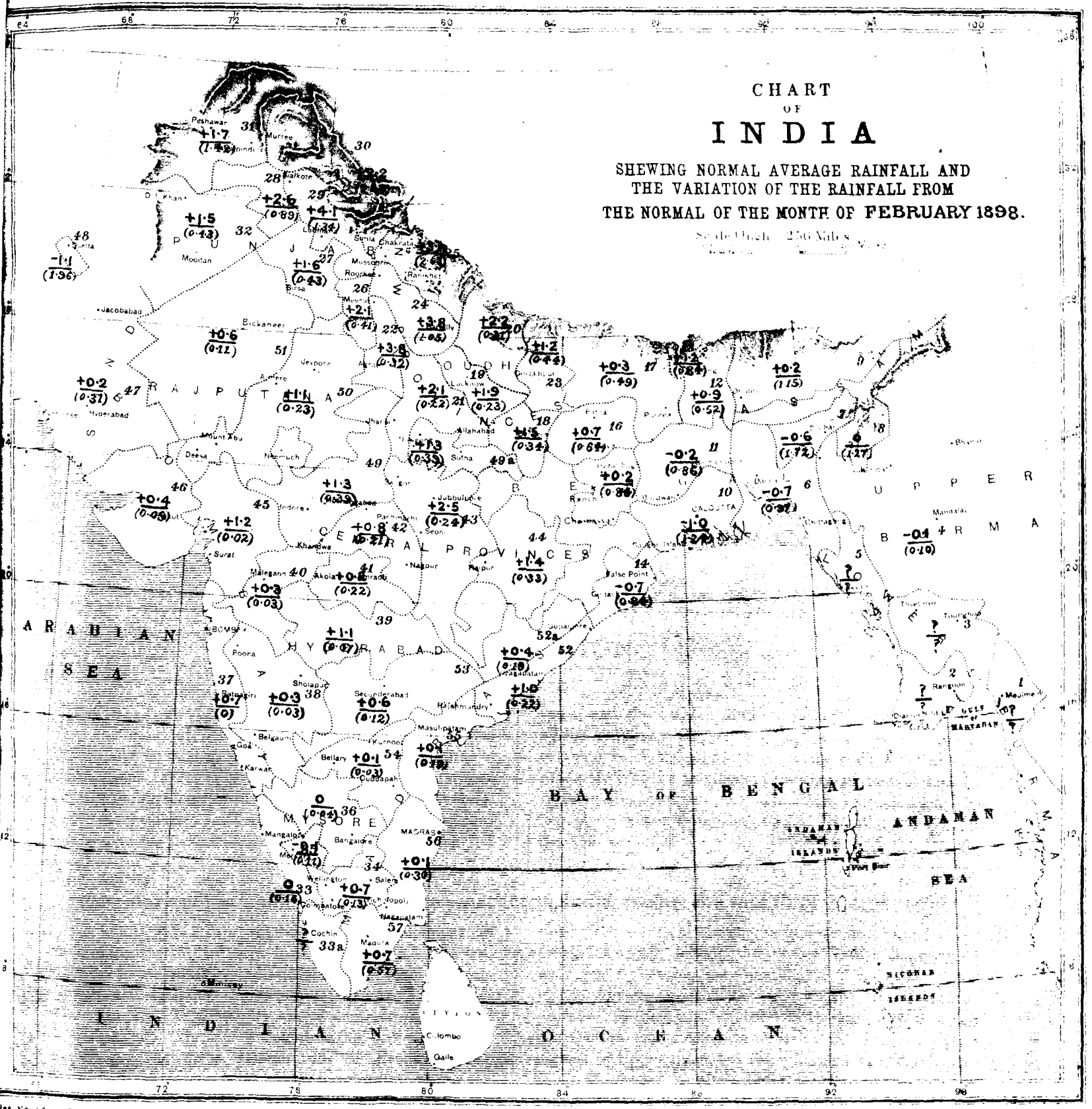
Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of 5th of an inch being equal to 100 per cent.



Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North, Punjab
32. West do.
33. Malabar
33a. Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a. Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do. do. (a)
53. Hyderabad South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, MARCH, 1898.

INTRODUCTION.

THIS review of the weather in India during the month of March 1898 is based on observations taken daily at 8 A.M. at 217 stations, and on additional observations taken at 8 A.M. and 4 P.M. at 87 stations. In the rainfall summary the rainfall data of the meteorological observatories and the weekly rainfall telegrams received during the month from District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the preparation of the review, are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay is given.

Summary of the chief features of the weather in India during the month of March, 1898.

The month of March is usually the commencement of the hot weather in Northern and Central India. The hottest area in February in India is defined by the isotherm of 80°, and includes the South Deccan and the Tinnevelly, Madura, Trichinopoly and Coimbatore districts of South Madras. The North Punjab is the coolest area at this time. The mean temperature of Peshawar and Rawalpindi, allowance being made for elevation above the sea, is slightly below 56°. Temperature during the next month increases least rapidly in Southern India, and most rapidly in Central and Northern India, the rise of temperature varying from 3° in Southern India to about 10° in Northern India. The area of highest mean temperature for the month of March includes the whole of the Deccan, Berar, and the greater part of the Central Provinces. In that area the mean daily temperature of the month slightly exceeds 85°, the highest mean temperatures being those at Cuddapah (87°·7), Sironcha (87°·0), Kurnool (86°·9) and Bellary (85°·6). The temperature in the South and Central Deccan, allowance being made for elevation above the sea, ranges from 87° to 89°. The lowest temperatures during the month of March, as in February, obtain in the North Punjab, where the mean daily temperature averages 65° during the month.

The slow change from the cold weather distribution of pressure to the hot weather and south-west monsoon distribution commences in March. Pressure continues highest in Upper India, but the difference of pressure between Upper and Southern India usually diminishes from a mean of ·2″ in February to a mean of ·1″ in March. An important change in the distribution of pressure occurs during this month, accompanying the setting in of southerly winds on the Bengal coast. The combination of these winds with the westerly winds of the Gangetic Plain and the easterly winds down the Assam Valley tends to give a permanent cyclonic circulation in North-Eastern India and to develop a shallow depression, the central area of which usually lies over Chota Nagpur and the Bilaspur and Sambalpur districts of the Central Provinces.

The following gives a brief statement of the more important meteorological features and changes of conditions during the month of March 1898.

Weather in Northern India at the commencement of the month was determined by the passage of a primary cold-weather depression and storm across Northern India and the formation of a secondary depression in the Punjab. This storm probably formed in West Persia on the 25th and 26th of February and passed into Sind on the afternoon of the 28th. The primary depression passed through Rajputana on the 1st, the North-Western Provinces and the eastern districts of Central India on the 2nd, Assam and Bengal on the 3rd, and Upper Burma on the 4th. The depression gave moderate cloud in Northern India during its passage eastwards and thunderstorms, chiefly in Chota Nagpur, Bihar, North Bengal and Assam, on the 2nd and 3rd.

The secondary depression formed in the North and Central Punjab on the 1st, and began to fill up on the 2nd. A rapid increase of pressure occurred in North-Western India during the next 24 hours which gave marked anticyclonic conditions in that area on the 3rd and following days. This disturbance gave moderate rain in Baluchistan and the North Punjab, and moderate snow in Chitral, Kashmir and the Punjab Himalayas.

A warm wave of moderate intensity preceded the march of the storm across Northern India. The chief feature of the weather subsequent to the storm was a cool wave of unusual intensity. It reduced temperature between 10° and 27° over Northern India in a period of 48 to 72 hours.

The cool wave was, in part only, due to, or an after-effect of, the storm. It was mainly the result of the prevalence of very marked anticyclonic conditions in South-East Europe and the Black Sea from the 25th to the 28th of February. This gave rise to the advance of an abnormally cool and dry air current across Persia and Baluchistan into Northern India. The following gives da ta showing the effect of this air movement from the north-west and west into Persia and Baluchistan.

Station.	Mean temperature of day.				
	25th February.	26th February.	27th February.	27th February.	1st March.
	°	°	°	°	
Teheran	49·9	37·6	25·6	21·9	18·5
Ispahan	48·9	41·7	31·9	24·9	15·6
*Meshed	36·1	22·3	16·3	13·3	8·3
Kabul	45·6	52·3	46·0	45·0	40·3
Kalat	39·3	47·5	47·9	44·9	37·2
Chaman	51·0	58·0	57·0	48·5	37·5
Quetta	43·3	49·3	54·2	49·8	42·3
Chitral	44·5	45·5	45·5	39·0	43·1

* 8 A.M. temperature.

The cool wave affected Baghdad, Bushire and Muscat slightly, producing a fall of only 5° to 7°. It reduced temperature 31°·4 at Teheran, 33°·3 at Ispahan and 27°·8 at Meshed between the 25th of February and the 1st of March.

The cool wave required about three days to advance from North-West Persia to Baluchistan.

The cool wave due to this cause was strengthened in India by that following the storm of the 1st to the 4th in Northern India. The following table giving variation data for the larger provinces in Northern India illustrates the progress of the cool wave in that area :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	1st March.	2nd March.	3rd March.	4th March.	5th March.
	°	°	°	°	°
Punjab	+3·1	−3·5	−14·0	−12·4	− 8·5
Sind and Rajputana	+5·2	−7·8	−15·8	−14·5	− 8·8
North-Western Provinces and Oudh.	+2·6	+4·4	− 9·6	−14·3	−11·0
Central India	+6·5	+3·8	−11·5	−15·0	−10·1
Bihar	−0·2	+3·8	+ 1·7	−12·0	−12·2
Chota Nagpur	+1·6	+4·1	+ 3·2	−11·2	−10·3
Bengal	−2·7	+0·7	+ 2·0	− 6·0	−12·6
Assam	−0·9	+2·6	+ 3·0	− 4·5	− 8·7

The reduction of temperature was hence greatest on the 2nd in Baluchistan and Upper Sind, on the 3rd in Rajputana, on the 4th in Rajputana, Central India and the north-eastern districts of the Central Provinces, and on the 5th in Bengal. The cool wave reduced temperature below the normal almost as largely by day as by night. The following gives data illustrating this feature :—

Date.	Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of date.		
		Maximum.	Minimum.	Mean.
		°	°	°
2nd March	Baluchistan (Quetta)	−35·0	−19·3	−27·2
2nd ,,	Upper Sind (Jacobabad)	−24·2	−11·6	−17·9
3rd ,,	Punjab	−18·8	− 9·1	−14·0
3rd ,,	Rajputana	−19·7	−16·1	−17·9
3rd ,,	Central India	−10·3	−12·7	−11·5
4th ,,	Central Provinces and Berar	−14·9	−15·9	−15·4

DATE.	PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF DATE		
		Maximum.	Minimum.	Mean.
		°	°	°
4th March	Central India	—16·5	—13·3	—14·9
4th "	Rajputana	—15·2	—20·5	—17·9
4th "	North-Western Provinces and Oudh.	—17·2	—11·4	—14·3
4th "	Punjab	—14·7	—10·1	—12·4
5th "	Bengal and Assam	—10·1	—12·4	—11·3
5th "	Central Provinces and Berar	—11·9	—12·2	—12·1
5th "	North-Western Provinces and Oudh.	—11·7	—10·3	—11·0
6th "	Bengal and Assam	— 7·9	—10·8	— 9·4

The following gives the mean maximum reduction of temperature due to the action of the cool wave in Northern and Central India :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE PRECEDING 8 A.M. OF DATE.				Reduction of temperature.
	Greatest excess.	Date.	Greatest defect.	Date.	
	°		°		°
Punjab	+3·1	1st	—14·0	3rd	17·1
Sind and Rajputana	+5·2	1st	—15·8	3rd	21·0
North-Western Provinces and Oudh.	+4·4	2nd	—14·3	4th	18·7
Central India and Gujarat	+5·5	1st	—14·8	4th	20·3
Bihar	+3·8	2nd	—12·2	5th	16·0
Chota Nagpur	+4·1	2nd	—11·2	4th	15·3
Bengal	+2·0	3rd	—12·6	5th	14·6
Central Provinces and Berar	+4·4	2nd	—15·4	4th	19·8

A comparison of the figures in the final column of the preceding statement shows that the reduction of temperature was nearly as large in Northern and Central India as in Persia and Baluchistan.

The lowest night temperatures of the month were generally recorded in Northern and Central India during the advance of this cool wave. They were lower at many stations than have hitherto been registered in March. The following gives data for the most representative stations :—

STATION.	Lowest minimum temperature recorded in March 1898.	Date on which recorded.	Lowest minimum temperature recorded in March, previous to 1898.	Year in which recorded.
	°		°	
Jacobabad	40·0	3rd	39·6	1882 and 1892.
Peshawar	37·9	"	37·9	1891 and 1892.
Lahore	40·2	4th	41·6	1891
Jeypore	38·2	"	44·2	1892
Roorkee	42·0	6th	40·2	1874
Lucknow	45·7	4th	35·2	1869
Allahabad	45·4	5th	45·9	1880
Patna	46·4	4th	46·3	1871
Burdwan	51·8	5th	52·3	1892
Calcutta	50·2	4th and 5th	52·3	1880
Saugor Island	54·5	5th	56·9	1887
Jubbulpore	38·4	4th	42·5	1878
Nagpur	46·6	"	47·4	1878

Temperature fell almost as largely below the normal at the hill stations in North-Western India as on the adjacent plains. The following gives data for four stations for the 3rd, the date when the reduction of temperature was greatest in the hills :—

STATION.	VARIATION FROM NORMAL OF TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF 3RD MARCH.		
	Maximum.	Minimum.	Mean.
	°	°	°
Murree	—22·3	—15·3	—18·8
Simla	— 9·8	—16·7	—13·3
Chakrata	— 1·3	— 4·5	— 2·9
Ranikhet	— 2·7	—11·6	— 7·2

Temperature continued more or less below the normal over Northern and Central India until the 12th, when it began to increase and was on the 14th and 15th in general excess. The following gives data showing these features :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF								
	7th Mar.	8th Mar.	9th Mar.	10th Mar.	11th Mar.	12th Mar.	13th Mar.	14th Mar.	15th Mar.
	°	°	°	°	°	°	°	°	
Punjab	—3·5	—1·5	—2·3	—2·7	—0·9	—0·4	+2·6	+2·2	+3·7
North-Western Provinces and Oudh.	—5·8	—1·9	+0·2	—2·0	+0·6	—1·5	—0·7	+2·9	+5·7
Sind and Rajputana.	—2·0	+1·5	+0·1	+0·9	—0·1	+0·4	+3·8	+5·6	+4·6
Central India	—4·4	—0·6	+2·3	+2·2	+0·9	+0·7	+2·3	+3·9	+5·6
Bihar	—8·2	—5·0	—3·3	—2·0	—0·8	—1·3	—1·7	+0·5	+2·3
Chota Nagpur	—5·9	—2·5	—1·3	+1·5	+3·4	+2·7	+1·7	+2·2	+3·9
Bengal	—9·1	—6·5	—4·0	—3·4	—1·6	—0·5	—0·9	—0·1	+1·5
Assam	—8·0	—5·1	—3·8	—2·7	—0·6	—1·3	+0·5	+1·8	+2·4
Central Provinces and Berar.	—5·5	—2·3	+0·3	+2·8	+2·5	+3·0	+2·8	+1·9	+3·8

Temperature was throughout this period most largely in defect in South-West Bengal. The following gives data for the four stations at which the reduction of temperature below the normal was greatest throughout the period:—

Station.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	7th March.	8th March.	9th March.	10th March.	11th March	12th March	13th March
	°	°	°	°	°	°	°
Burdwan . . .	−8·5	− 6·8	−2·1	−1·6	+0·7	+1·5	+0·1
Berhampore . .	−10·3	− 6·7	−3·5	−4·3	−2·5	−1·5	−2·5
Calcutta . . .	−9·5	− 7·1	−5·0	−2·9	−1·7	+1·5	+0·9
Jessore . . .	−11·7	−10·7	−7·4	−5·7	−4·2	−3·5	− 3·2

The air was intensely dry during this period over the whole of the interior. It contained from one-third to one-fourth only of the amount of vapour normally present in March. Hence the humidity was largely below the normal during the period in Northern and Central India. The following gives the lowest humidities (below 5) recorded during the period:—

Station.	Date.	Hour.	Humidity.
			%
Jacobabad	3rd March	10 A.M.	0
Buldana	" "	"	0
"	" "	4 P.M.	0
"	4th "	10 A.M.	0
"	" "	4 P.M.	0
Deesa	2nd "	"	1
Poona	4th "	10 A.M.	1
Deesa	3rd "	4 P.M.	3
Poona	" "	"	4
Mount Abu	5th "	"	4
Deesa	" "	10 A.M.	4

Fine weather prevailed over nearly the whole of India during the remainder of the month. A series of four depressions which originated in Persia gave showery weather in Persia, Baluchistan, Afghanistan and the North Punjab between the 8th and 24th. The four depressions were similar in character. They formed in West Persia and advanced rapidly eastwards, filling up partially as they passed through Baluchistan. These depressions gave rainy weather on the Persian plateau on the 5th and 6th, the 9th, 10th, 11th and 12th, the 15th and 16th and the 20th and 21st and to Baluchistan during the periods, the 1st, the 12th to the 14th, the 16th to the 18th and the 24th.

The rainfall in Baluchistan during the first two periods was not large. The third depression, on the other hand, gave general and moderately heavy rain, and the fourth very light local rain. Each of the depressions passed across Northern India as a low pressure wave and gave some cloud but little or no rain. There was a slight tendency shown to the formation of a secondary depression in the North Punjab in the case of the second and third depressions. The depression gave light to moderate cloud and rain or snow in the North Punjab and adjacent hill districts (more especially Chitral).

The first and second depressions and disturbances slightly affected temperature in Upper India. Over the remainder of Northern and Central India temperature was in considerable to large excess from the 15th to the 19th as is shown below:—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	15th March.	16th March.	17th March.	18th March.	19th March.
	°	°	°	°	°
Punjab	+3·7	+3·7	+4·6	+4·7	+2·1
Sind and Rajputana . . .	+4·6	+2·0	+2·7	+3·1	+0·5
North-Western Provinces and Oudh.	+5·7	+5·6	+4·9	+4·5	+6·1
Central India and Gujarat .	+4·5	+3·1	+3·1	+4·7	+1·8
Bihar	+2·3	+3·8	+4·7	+5·4	+4·5
Chota Nagpur	+3·9	+7·2	+5·1	+4·2	+4·8
Bengal	+1·5	+3·5	+3·0	+4·3	+3·7
Assam	+2·4	+4·3	+4·4	+3·7	+5·3
Central Provinces and Berar .	+3 8	+4·1	+3·6	+4·0	+4·1

The third depression was followed by the advance of a cool wave across Northern India. The cool wave advanced from Baluchistan on the 19th and 20th across Rajputana and the Punjab on the 21st, Central India and the North-Western Provinces on the 22nd, Bihar on the 23rd and Central and South-West Bengal on the 24th. The advance of this cool wave is shown clearly by the variation data given below:—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	19th March.	20th March.	21st March.	22nd March.	23rd March.	24th March.
	°	°	°	°	°	°
Baluchistan (Quetta) .	−7·7	−12·0	−8·5	−1·7	+6·2	+5·2
Punjab . . .	+2·1	− 4·1	−7·8	−5·1	−1·2	+1·7
Sind and Rajputana .	+0·5	− 1·8	−6·9	−4·6	+1·5	+3·3
North-Western Provinces and Oudh.	+6·1	+ 2·6	−3·5	−7·3	−5·4	−3·1
Central India and Gujarat.	+1·8	− 1·5	−4·7	−6·6	−3·1	−0·1
Bihar	+4·5	+ 5·0	+2·9	−4·7	−6·0	−3·6
Chota Nagpur . .	+4·8	+ 5·3	+2·8	−2·9	−5·3	−1·9
Bengal . . .	+3·7	+ 3·7	+3·4	−1·5	−5·7	−4·2
Assam	+5·3	+ 3·5	+4·6	+0·2	−3·4	−3·1
Central Provinces and Berar.	+4·1	+ 2·3	−0·2	−4·0	−3·8	−1·9

The reduction of temperature below the normal was greatest on the 21st in the Punjab and Sind, on the 22nd in the North-Western Provinces and Rajputana, and on the 23rd and 24th in Bengal.

This period was also characterized by great dryness of the air in Northern and Central India. The following gives examples of the very low humidities recorded :—

STATION.	Date.	Hour.	Humidity.
			%
Deesa	20th March	4 P.M.	4
Poona	" "	"	6
Mount Abu	21st "	"	7
Sutna	" "	"	6
Akola	" "	"	8
Poona	" "		6
Mount Abu	22nd "	10 A.M.	4
Sutna	" "	4 P.M.	7
Khandwa	" "	"	4
Nagpur	" "	10 A.M.	8
Akola	" "	"	8
Poona	" "	4 P.M.	6
"	23rd "	"	4
Buldana	" "	10 A.M.	5
"	" "	4 P.	4

Temperature increased in Northern and Central India on the 24th, 25th and 26th and was generally above the normal in that area during the remainder of the month. The following gives variation data :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	26 th March.	27th March.	28th March.	29th March.	30th March.	31st March.
	°	°	°	°	°	°
Punjab	+2·3	+3·3	+3·7	+3·8	+5·0	+7·1
Sind and Rajputana	+1·4	+4·3	+3·3	+4·0	+3·6	+4·8
North-Western Provinces and Oudh.	+0·5	+3·7	+1·8	+2·1	+0·8	+1·7
Central India and Gujarat.	+1·0	+1·1	+0·9	+2·5	+2·3	+1·4
Bihar	—0·9	+3·0	+4·3	+2·6	+2·0	+0·5
Chota Nagpur	+2·1	+3·2	+4·6	+4·9	+4·2	+3·2
Bengal	—0·4	+1·2	+3·0	+2·9	+3·5	+0·2
Assam	+1·6	+2·9	+5·0	+5·1	+4·3	+3·4
Orissa	—2·8	—3·0	—0·5	+0·2	+0·6	+0·8
Central Provinces and Berar.	+0·9	+4·1	+2·9	+2·9	+2·9	+1·8

The highest temperatures of the month were generally recorded during the last three days of the month in Northern and Central India. They were not very remarkable. The highest recorded were as follows :—

STATION.	Highest maximum temperature recorded in March 1898.	Date on which recorded.
	°	
Midnapur	106·9	31st March
Burdwan	105·8	28th "
Lucknow	103·8	27th "
Montgomery	103·0	31st "
Jacobabad	106·4	30th "
Pachpadra	106·3	30th "

Temperature fell considerably below the normal in the Madras Presidency from the 24th to the 26th and was more or less largely in defect for some days. The following gives variation data for each day from the 25th to the 29th :—

DATE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature.	Mean minimum temperature.	Mean temperature.
	°	°	°
25th March	—1·5	—2·1	—1·8
26th "	—2·5	—3·2	—2·9
27th "	—2·0	—4·0	—3·0
28th "	—1·4	—3·1	—2·3
29th "	—0·7	—1·7	—1·2
30th "	+0·1	—0·5	—0·2
31st "	+0·8	+0·1	+0·5

Pressure.—The mean pressure of the Indian area was ·013″ below the normal. The abnormal features of the mean distribution of pressure for the month were similar in character to those of the preceding five months. Pressure was, relatively to the general condition, in defect in North-Eastern India, Burma, the Bay and Southern India. The deficiency was most marked in Lower Burma, Tenasserim, the south-east of the Bay and the Andaman Sea. It was ·036″ at Tavoy, and averaged ·034″ in Lower and Central Burma. Pressure was locally in excess in North-Western and Central India and the North Deccan, and the excess was most marked in Berar, the western and central parts of the Central

Provinces and in Sind and Cutch, ranging between ·02″ and ·036″. The excess was absolutely greatest at Raipur and Hyderabad (each +·032″) and perhaps Saugor (+·036″).

Pressure was also in relative excess at the majority of the hill stations, as compared with the neighbouring plains stations. The positive vertical pressure anomalies were in no case large and averaged ·02″.

The following table gives the mean pressure variations and anomalies of the month for the eleven meteorological provinces:—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of March 1898.	Pressure anomaly, March 1898.
	″	″
Burma Coast and Bay Islands	—·047	—·034
Burma Inland	—·020	—·007
Assam	—·027	—·014
Bengal and Orissa	—·022	—·009
Gangetic Plain and Chota Nagpur	—·013	0
Upper Sub-Himalayas	—·005	+·008
Indus Valley and North-West Rajputana	+·006	+·019
East Rajputana, Central India and Gujarat	+·005	+·018
Deccan	—·001	+·012
West Coast	—·026	—·013
South India	—·015	—·002

Temperature.—The mean temperature conditions of the month did not differ very largely from the normal. The month was much finer and more free from cloud than usual over nearly the whole of India. These conditions tended to give higher temperature than usual. The most noteworthy feature of the month was a cool wave of unusual intensity which advanced across Northern India in the first week of the month and gave unusually low temperature, more especially by night, over the whole of Northern India until the end of the second week of the month. As a result of these two opposing conditions, the mean temperature of the month differed little from the normal, although it was characterized by excessively low temperature in Northern India both by day and night during a part of the month and by much larger range of temperature than usual.

The mean maximum or day temperature of the month was in excess over the whole area, except Lower Burma, the Gangetic Plain, the Punjab, the Indus Valley and Baluchistan. The deficiency in these areas was small in amount except in the North Punjab at Peshawar (—4°) and probably in the adjacent hills. The day temperature was in moderate to considerable excess in Upper Burma, Assam and West Bengal. The excess was more than 3° at Silchar (+4°·9), Kindat (+3°·6), Bhamo (+3°·3) and Lashio (+3°·2), and perhaps Chaibassa and Balasore.

The normal data for the last two stations are doubtful due to inaccurate observations for several years at these two stations.

The mean minimum or night temperature was generally below the normal, but was in slight excess in the Punjab, Lower Burma and the western half of the Peninsula. It was in moderate to considerable defect in Upper Burma, Bengal, Orissa and the Madras coast districts where the deficiency ranged between 2° and 5½°. It was greatest in South-West Bengal, for which area comparative data are given below:—

STATION.	MEAN MINIMUM TEMPERATU		
	Actual, March 1898.	Normal, March.	Variation of actual from normal.
	°	°	°
Jessore	62·8	68·3	—5·5
Burdwan	64·0	68·5	—4·5
Berhampore	61·7	66·0	—4·3
Calcutta	65·7	69·7	—4·0
Balasore	65·7	69·8	—4·1
Saugor Island	71·5	75·0	—3·5

The unusually low temperature in Bengal was chiefly an effect of the prolonged cool and dry conditions, and of the abnormal prevalence of northerly land winds in that area from the 5th to the 13th.

Lower night temperatures were recorded in Northern and Central India during the advance of the cool wave in the first week of the month than have been previously registered in March. The following gives the more noteworthy examples:—

STATION.	Lowest minimum temperature recorded in March 1898.	Date on which recorded.	Lowest minimum temperature recorded in March previous to 1898.	Year in which recorded.
	°		°	
Calcutta	50·2	4th and 5th	52·3	1880
Berhampore	48·1	5th	52·2	1878
Malda	45·2	5th	48·3	1892
Jalpaiguri	47·1	4th	47·1	1885
Hazaribagh	44·2	4th	46·2	1878
Patna	46·4	4th	46·3	1871
Motihari	43·9	4th	42·9	1897
Bahraich	42·0	4th	40·1?	1893
Allahabad	45·4	5th	45·9	1880
Bareilly	41·2	4th	43·1	1885
Roorkee	42·0	6th	40·2	1874

STATION.	Lowest minimum temperature recorded in March 1898.	Date on which recorded.	Lowest minimum temperature recorded in March previous to 1898.	Year in which recorded.
	°		°	
Sirsa	37·7	3rd	42·0	1878
Peshawar	37·9	3rd	37·9	1891 & 1892
Bickaneer	31·5	4th	47·1	1897
Pachpadra	33·0	3rd	33·1	1882
Ajmere	35·9	4th	39·2	1878
Jacobabad	40·0	3rd	39·6	1882 & 1892
Kurrachee	47·4	3rd	52·0	1882
Peshin	8·9	2nd	20·9	1897
Kalat	10·0	3rd	15·4	1897
Chaman	13·1	2nd and 3rd	30 1	1897
Quetta	15·8	2nd	22·0	1882
Kabul	21·6	3rd	19·8	1897
Minimarg	4·1	5th	3·0	1896
Murree	20·0	2nd	22·5	1897
Simla	23·4	23rd	28·8	1893
Mussooree	27·5	3rd	28·0	1891
Darjeeling	26·8	5th	34·3	1891

The variations of the mean day and night temperatures of the month were generally inverse in character, and hence the mean temperature of the month differed only slightly from the normal. The mean temperature of the month was normal or in slight excess in Assam and Upper Burma and in East Rajputana, part of Central India and the western half of the Peninsula. The greatest positive variations in these areas were in Berar at Akola (+2°·0) and Amraoti (+1°·9) and in Assam at Silchar (+1°·1).

Over the remainder of India the mean temperature of the month was below the normal, but the variations were generally small. They were moderate in the Indus Valley and in South-West Bengal. The following gives comparative data for stations in these two areas :—

PROVINCE.	STATION.	MEAN DAILY TEMPERATURE.		
		Actual, March 1898.	Normal, March.	Variation of actual from normal.
		°	°	°
1ST AREA	False Point	77·5	80·0	−2·5
	Saugor Island	79·0	81·1	−2·1
	Berhampore	77·4	79·5	−2·1
	Jessore	78·3	80·4	−2·1
2ND AREA	Peshawar	62·1	64·1	−2·0
	Hyderabad (Sind)	76·8	79·0	−2·2

A noteworthy feature of the month was the unusually high temperature at the hill stations in the North-West Himalayas (except Murree). The following gives data in illustration :—

STATION.	VARIATION FROM NORMAL OF		
	Maximum temperature March 1898.	Minimum temperature, March 1898.	Mean temperature, March 1898.
	°	°	°
Ranikhet	+3·3	+2·8	+3·1
Chakrata	+2·5	+3·4	+3·0
Simla	+2·4	+1·8	+2·1
Kailang	+5·0	+4·5	+4·8
Leh	+1·6	+2·5	+2·1

The following table gives temperature variation data of the month of March 1898 for the eleven meteorological provinces of India : —

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, March 1898.	Mean minimum temperature, March 1898.	Mean daily temperatu;e, March 1898.
	°	°	°
Burma Coast and Bay Islands	−0·3	−0·2	−0·2
Burma Inland	+2·0	−1·7	+0·2
Assam	+2·9	−2·2	+0·4
Bengal and Orissa	+1·2	−3·3	−1·0
Gangetic Plain and Chota Nagpur.	+0·3	−1·7	−0·7
Upper Sub-Himalayas	−0·4	−0·6	−0·4
Indus Valley and North-West Rajputana.	−0·7	−0·8	−0·8
East Rajputana, Central India and Gujarat.	+0·5	−0·7	−0·1
Deccan	+0·9	+0·2	+0·6
West Coast	+1·0	+0·4	+0·7
South India	+0·4	−1·9	−0·7

Winds—were practically normal in Lower Burma and at Port Blair. They were feeble and more westerly than usual in the interior of Bengal, but less westerly at Saugor Island and False Point. The air movement was steadier and slightly stronger than the normal in Chota Nagpur and the North-Western Provinces. It was remarkably variable in direction and unsteady in the Punjab. Winds were less steady than usual in the Central Provinces, Berar and the East Deccan, and had an abnormally strong easterly element in that area and Mysore. Winds were

considerably weaker and less steady than usual at the Seychelles and Zanzibar, but were stronger at Aden.

Humidity and cloud.—The air was very slightly damper locally on the mean of the month at Madras (where the mean humidity of the month was 4 above the normal), Peshawar (3 above) and Akyab (2 above). The air was very dry and the amount of aqueous vapour largely below the normal over the whole of the interior. The increased dryness was most marked in four areas, *viz.*, (1) Cachar and South and Central Bengal, (2) the Deccan and Mysore, (3) Rajputana, Sind and the South Punjab, and (4) the hill districts of the Punjab and the North-Western Provinces. The mean humidity of the month was more than 15 below the normal at Berhampore and Chakrata (each—18), Silchar and Calcutta (each—17) and at Wellington in the Nilgiris (—17). The deficiency in the humidity averaged 9 and in the amount of aqueous vapour ·097″ in Bengal and Orissa.

Cloud.—There was somewhat more cloud than usual in Baluchistan, Upper Sind, the West Punjab and Kashmir. Over the remainder of India there was less cloud than usual, the deficiency increasing in actual amount eastwards and southwards from Upper India. The deficiency was greatest and very large in amount in South Bihar, Chota Nagpur, Bengal, Cachar and Burma, in which it ranged between 2·0 and 3·2 and was absolutely greatest at Silchar (—3·2) and Saugor Island (—3·1). Skies were hence unusually free from cloud in North-Eastern India and at several stations in that area, including Calcutta, Darbhanga and Rangoon, the mean cloud amount of the month was less than 0·3.

The following table gives variation data of the mean aqueous vapour pressure, mean humidity and mean cloud amount of ten meteorological provinces for the month of March 1898:—

Meteorological Province.	Variation from normal of		
	Mean aqueous vapour pressure, March 1898.	Mean humidity, March 1898.	Mean cloud amount, March 1898.
	″		
Burma Coast and Bay Islands	—·021	—1	—1·6
Assam	—·062	—9	—2·2
Bengal and Orissa	—·097	—9	—2·5
Gangetic Plain and Chota Nagpur	—·042	—6	—1·7
Upper Sub-Himalayas	—·042	—7	—0·3
Indus Valley and North-West Rajputana.	—·066	—8	—0·3
East Rajputana, Central India and Gujarat.	—·072	—9	—0·5
Deccan	—·055	—7	—0·8
West Coast	—·016	—4	—0·8
South India	—·069	—5	—1·2

Rainfall.—The rainfall of the month was as largely in defect over the whole of India as it was in excess in February. A cold-weather storm which passed acros Northern India at the commencement of the month gav rain in Baluchistan and the North Punjab and sporad showers, chiefly in North-Eastern India. Four low pre sure waves advanced from Persia across Baluchistan an Northern India between the 9th and 24th. These depre sions gave moderate to heavy rain in Persia and Baluchista and showers in the northern districts of the Punjab an snow in Chitral and Afghanistan. The passage of thes depressions across Northern India gave some cloud bu practically no rain. Thunderstorms gave light to moderat showers in Assam, Travancore and Malabar in the la week of the month.

Over by far the greater part of India the rainfall wa absolutely or practically *nil*. The Central, West an South Punjab, the North-Western Provinces, Rajputan Sind, Central India, Berar, Khandesh, Gujarat, Kathiawa Cutch, Konkan, Hyderabad, the Madras Deccan, the great part of the Madras coast districts and Burma had pract cally no rain. There were only three out of the 57 rainfa divisions in which the total rainfall of the month average more than 1 inch. These were Baluchistan (1·98 inches Assam (Surma) (1·02 inches) and the North Punjab (1·6 inches). As the normal rainfall of March is small ov nearly the whole country, the deficiency was generally sma and unimportant. It was large and serious in Assam. Th Assam (Brahmaputra) received an average of only 0·92 inc or 3·21 inches less than the normal, and Assam (Surm 1·02 inches or 7·44 inches less than the normal. In t Baluchistan plateau the rainfall of the month was large excess, most stations receiving from three to fi times their normal amount.

The following gives comparative rainfall data of t month for the eleven meteorological provinces of t Empire —

Meteorological Province.	Rainfall.		
	Mean actual for March 1898.	Mean normal for March.	Variatio from norm March 1898.
	Inch.	Inches.	Inches.
Burma Coast and Bay Islands	0·01	0·64	—0·62
Burma Inland	0	0·41	—0·4
Assam	0·48	5·24	—4·76
Bengal and Orissa	0·12	1·58	—1·4
Gangetic Plain and Chota Nagpur	0·10	0·50	—0·4
Upper Sub-Himalayas	0·06	0·89	—0·8
Indus Valley and North-West Rajputana.	0·24	0·45	—0·1
East Rajputana, Central India and Gujarat.	0·01	0·15	—0·1
Deccan	0·10	0·46	—0·3
West Coast	0·16	0·51	—0·3
South India	0·07	0·54	—0·4

* A reference to Table I will show that the means in columns 2 and 3 derived from a smaller number of stations than the means in the first colun The sum of the figures in columns 2 and 3 therefore will not agree with t figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian land area as determined from the 8 A.M. observations was ·013″ below the normal, and hence almost exactly the same amount in defect as in the corresponding months of 1894, 1895, 1896 and 1897. In March 1894 it was ·017″ in defect, in March 1895 ·018″ in defect, in March 1896 ·022″ in defect and in March 1897 ·020″ in defect. The deficiency in each of the three years 1894-96 accompanied and was, partly at least, due to the prevalence of higher temperature than usual (more especially in Northern India), whereas in March 1897, as in March 1898, it accompanied lower temperature than usual on the mean of the month over nearly the whole of Northern and Central India.

Relatively to the general condition, pressure was in local excess in North-Western and Central India and the interior of the northern half of the Peninsula. The excess was most pronounced in the Indus Valley and in a part of Rajputana, Central India, Berar and the Central Provinces, and was more than ·020″ at stations for which data are given below :—

AREA.	STATION.	Variation of mean 8 A. M. pressure of March 1898 from normal.	Pressure anomaly, March 1898.
		″	″
NORTH-WESTERN PROVINCES	Cawnpore	+·009	+·022
PUNJAB	Montgomery	+·013	+·026
	Rawalpindi	+·012	+·025
SIND	Hyderabad	+·019	+·032
	Jacobabad	+·013	+·026
	Kurrachee	+·010	+·023
RAJPUTANA	Sambhar	+·016	+·029
	Jeypore	+·013	+·026
CUTCH	Bhuj	+·016	+·029
CENTRAL INDIA	Indore	+·012	+·025
	Nowgong	+·008	+·021
CENTRAL PROVINCES	Saugor	+·023	+·036
	Raipur	+·019	+·032
	Seoni	+·008	+·021
BERAR	Akola	+·013	+·026
	Amraoti	+·013	+·026

Pressure was locally in defect over the remainder of India, and the deficiency exceeded ·020″ in South-East Bengal, Arakan, Lower Burma, Tenasserim and the Andamans.

The following gives data for stations in those areas :—

AREA.	STATION.	Variation from normal of mean 8 A. M. pressure of March 1898.	Pressure anomaly, March 1898.
		″	″
LOWER BURMA AND ARAKAN.	Toungoo	—·052	—·039
	Rangoon	—·051	—·038
	Tavoy	—·049	—·036
	Akyab	—·046	—·033
	Thayetmyo	—·046	—·033
	Diamond Island	—·045	—·032
	Bassein	—·041	—·028
ASSAM	Sibsagar	—·037	—·024
SOUTH-EAST BENGAL	Chittagong	—·039	—·026
	Narayanganj	—·037	—·024
	Barisal	—·037	—·024
	Mymensingh	—·035	—·022

The contrast between the local excess of pressure in the centre and north of the Peninsula and Central India and the deficiency of pressure in the south-east of the Bay and Lower Burma was as marked in March as in the preceding five months.

Pressure was in slight excess at the majority of the hill stations in Northern India and the vertical pressure anomalies were generally positive and moderate in amount. The following gives data for nine pairs of stations :—

HILL STATION.	Variation from normal pressure.	PLAIN STATION.	Variation from normal pressure.	Vertical pressure anomaly (Hill—Plain)
	″		″	″
Quetta	+·025	Jacobabad	+·013	+·012
Leh	—·025	Lahore	—·001	—·024
Kailang	—·025	Lahore	—·001	—·024
Murree	+·007	Peshawar	—·010	+·017
Simla	+·012	Ludhiana	—·005	+·017
Chakrata	+·015	Roorkee	—·016	+·031
Ranikhet	+·010	Bareilly	—·009	+·019
Darjeeling	+·021	Dhubri	—·017	+·038
Mount Abu	+·001	Deesa	0	+·001

The chief features of the mean pressure distribution of the month were :—

(1) Moderate general deficiency of pressure.

(2) Local deficiency of pressure in North-Eastern

India, Burma and the south of the Peninsula. The deficiency was most marked in Lower Burma and the east of the Bay.

(3) Local excess of pressure over the remainder of India, small in amount except in the Indus Valley, part of Rajputana, Central India, the Central Provinces and Berar where it was slightly above ·02″.

(4) Slight to moderate excess of pressure at the majority of the hill stations, as compared with the neighbouring plains.

Barometric depressions and cold-weather storm of the month.

Cold-weather storm of the 1st to the 4th of March.—This storm apparently originated as a shallow depression in the Persian area on the 25th and 26th of February. Skies were heavily clouded at Baghdad and in Persia on these days, and light to moderate rain fell at Baghdad. The disturbance passed through East Persia on the 27th and Baluchistan on the 28th, but was of very slight itensity. It gave a few light showers of little importance to Baluchistan on the 28th. Winds increased in the Persian Gulf and off the Mekran coast, and were of force 4 to 6 at 8 A.M. of the 1st. Thus the S.S. *Patna* in Lat. 24° 34′ N. and Long. 61° 6′ E., at 8 A.M. had a violent duststorm at that hour and winds of force 4 to 6 throughout the day.

The feeble primary depression was probably passing through Rajputana at 8 A.M. of the 1st, but was completely obscured by a deep secondary depression which had formed and developed very rapidly in the North and Central Punjab. The following gives data of this depression :—

Station.	Pressure.			Wind.		Cloud.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	″	″	″				
Bickaneer .	29·809	—·199	?	SSW	5	1	Dusthaze.
Sirsa . .	·807	—·244	—·143	SSE	5	1	...
Lahore .	·768	—·292	—·182	SE	2	0	...
Rawalpindi.	·755	—·282	—·177	E	1	9	...
Khushab .	·728	—·288	?	ENE	10	4	Fine.
Peshawar .	·733	—·326	—·248	Calm	3	10	...
D. I. Khan.	·766	—·404	—·219	W	2	9	...
Mooltan .	·732	—·300	—·248	Calm	0	0	...

Pressure had given way from two to four-tenths of an inch over the north and centre of the Punjab where it was now about a quarter of an inch below the normal.

Winds were light in the central area, more especially at the western stations which reported calms at 8 A.M. The strongest winds at 8 A.M. reported by any of the plains stations were of velocity 14 miles per hour, (at Montgomery). Strong winds prevailed in the southern quadrant considerably to the south of the central depression, more especially at Jacobabad, Kurrachee and Bhuj, where they were blowing at the rate of between 18 and 24 miles per hour.

Pressure had given way almost as largely at the hill stations in Upper India as at the level of the plains. The following gives data :—

Station.	Pressure.		Wind.		Cloud.	Rainfall.	Weather.
	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	8 A.M. velocity in miles.			
	″	″				Inch.	
Cherat . .	—·261	?	S	2	8	...	Fine.
Murree . .	—·230	—·122	SE	12	10	...	...
Srinagar .	—·265	?	NNW	2	10	...	...
Minimarg .	—·221	?	Calm	0	10	0·20	Snowing.
Skardu . .	—·199	?	W	...	10	...	Severe gale.
Dras . .	—·167	?	Calm	...	10	0·18	Snowstorm.
Leh . .	—·124	—·142	SW	...	10	...	...

Skies had clouded over at all these stations and snow was beginning to fall on the higher elevations of Kashmir. Winds were strong, especially at the more exposed stations (*e.g.*, Murree and Skardu,) and weather was stormy. The mean temperature of the previous 24 hours was largely in excess in Rajputana, Central India and the Central Provinces. At several stations (including Ajmere, Khandwa and Hoshangabad) the excess was more than 8°. The cold wave in the rear of the storm was now affecting Baluchistan where temperature had fallen 5° below the normal.

2nd March.—The primary depression had advanced eastwards during the previous 24 hours, and was at 8 A.M. of the 2nd in the eastern districts of the North-Western

Provinces. The following gives data showing its position and character at that hour :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch	
Saugor	29·883	—·042	—·048	WSW	2	3	...	Fine.
Sutna	·846	—·089	—·090	S	5	1	...	,,
Allahabad	·807	—·128	—·121	SSE	7	2	...	,,
Lucknow	·822	—·094	—·103	E	2	3	0·01	Distant lightning.
Cawnpore	·815	—·084	— 1·23	ESE	3	3	0·03	,,
Mainpuri	·862	—·026	?	WNW	3	8	...	...
Jhansi	·916	—·003	—·045	NW	1	8	...	Dust haze.

Pressure had given way briskly to rapidly in the area now covered by the primary depression and was about a tenth of an inch below the normal. Skies were more or less clouded in the North-Western Provinces, and light showers had been received in the Punjab and the North-Western Provinces during the previous twenty-four hours.

Pressure had increased rapidly in the Punjab, and skies were clearing in that area. The secondary depression had almost filled up. The following gives data :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
Bickaneer	29·985	+·176	?	WSW	21	0	...	Duststorm
Sirsa	·954	+·147	—·016	WSW	13	0	...	,,
Lahore	·901	+·133	—·065	W	9	0	...	Gale of wind.
Rawalpindi	·879	+·124	—·114	W	7	10	0·21	Showery.
Khushab	·911	+·183	?	NNE	13	0	0·09	Thunderstorm with hail.
Peshawar	·911	+·178	—·110	S	6	1	0·55	Showery.
D. I. Khan	·886	+·120	—·118	N	14	0	...	Duststorm
Mooltan	·900	+·168	—·091	SSW	5	0	...	,,

Strong winds had prevailed in the Punjab, Sind and Rajputana, ranging from 4 to 23 miles per hour during the whole 24 hours period. Numerous duststorms were reported, more especially at Jacobabad, Bickaneer, Mooltan and Dera Ismail Khan, stations to the west and south of the central secondary depression.

A further fall of pressure had occurred at the hill stations in Northern India, in part only due to the filling up of the depression at the level of the plains and in part to the continuance of the stormy weather in the hills. The following gives data :—

STATION.	PRESSURE.		WIND.		Cloud.	Rainfall.	WEATHER.
	Change in past 24 hours.	Variation from normal	Direction at 8 A.M.	8 A. M. velocity in miles.			
	"	"				Inches	
Cherat	—·028	?	NW	20	8	0·37	Snowstorm.
Chitral	—·200	?	Calm	...	10	1·50	
Murree	—·130	—·250	SSE	8	0	0·60	Thunderstorm with hail.
Srinagar	—·257	?	NNW	18	10	...	Severe nor'-wester.
Gilgit	—·277	?	Calm	...	10	0·32	
Minimarg	—·254	?	SE	...	10	...	Snowing.
Skardu	—·302	?	ENE	...	9	0·09	Snowstorm.
Leh	—·168	—·317	S	...	10	...	
Dras	—·357	?	WSW	...	10	0·23	Snowstorm.
Simla	—·224	—·202	Var	...	10	0·10	Thunderstorm.
Chakrata	—·175	—·098	SSW	10	10	0·03	Thunderstorm with hail.
Ranikhet	—·116	—·044	S	4	0	0·03	Distant lightning.

The weather was very stormy in these hill districts on the morning of the 2nd. For example at Srinagar 46·5 miles of wind were recorded by the anemometer between 11 A.M. and noon, 51·2 miles between noon and 1 P.M. and 29·1 miles from 1 P.M. to 2 P.M.

Moderate to heavy snow had fallen in Afghanistan, Chitral, Kashmir and the Punjab Himalayas, and light snow on the higher elevations in Baluchistan.

The wave of low temperature had now extended to Upper India, and temperature had fallen during the previous 24 hours 5° to 23° over the greater part of the Punjab hills and plains, and in Baluchistan. The wave was unusually severe, in fact the most severe of the whole cold weather season of 1897-98.

3rd March.—Pressure had given way briskly in Assam and East Bengal and the primary depression had hence advanced rapidly eastwards from the eastern districts of the North-Western Provinces to that area during the pre-

vious 24 hours. The following gives data for stations in the area of depression in Bengal :—

Station.	Pressure. 8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather
	"	"	"				Inch.	
Dhubri .	29·845	—·082	—·073	WSW	3	10	...	
Narayanganj.	·858	—·066	—·067	E	4	1	...	Foggy.
Barisal .	·8[illegible]	—·032	—·063	Calm	2	0	...	
Silchar .	·871	—·094	—·080	Calm	2	10	0.04	
Sibsagar .	·859	—·076	—·104	NE	3	10	...	

Light showers had been received in Bihar, Chota Nagpur and North Bengal during the previous 24 hours, and skies at 8 A.M. were overcast in Assam and North Bengal but were clear in Burma.

Pressure had again increased very rapidly in North-Western India and was now in large excess, so that steep gradients for north-westerly to westerly winds obtained.

The following gives data showing the mean total increase of pressure in that area during the previous 48 hours :—

Province.	Change of pressure in 24 hours preceding 8 A.M. of date. 2nd March.	3rd March.	Total increase of pressure in 48 hours.	Mean pressure variation from normal on 3rd March.
	"	"	"	
Punjab	+·128	+·265	·393	+·184
Sind	+·162	+·081	·243	+·190
Rajputana . . .	+·114	+·180	·294	+·178
North-Western Provinces	—·049	+·209	·160	+·114
Central India . .	+·010	+·207	·217	+·149

The cool wave had now extended eastwards as far as Bihar and southwards as far as the Central Provinces and the North Konkan, and had reduced temperature very largely over Central and North-Western India. The fall during the previous 24 hours at stations in these districts ranged between 15° and 18°. The mean temperature of the previous 24 hours averged 16° below the normal in Sind and Rajputana, 14° below in the Punjab and 12° below in Central India and Gujarat.

Pressure had increased very rapidly at the hill stations in North-Western India, as is shown by the following data :—

Station.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"				Inch.	
Cherat .	+·276	?	NNE	7	0	...	Clear.
Chitral .	+·500	?	Calm	4	0	...	"
Murree .	+·247	—·006	"	3	0	...	Frosty.
Srinagar .	+·440	?	SSE	16	0	...	Severe gale o wind.
Gilgit .	+·537	?	Calm	4	0	..	Foggy.
Minimarg .	+·306	?	"	6	0	0·10	Clear.
Skardu .	+·394	?	S	13	9	...	Severe gale o wind.
Leh . .	+·131	—·194	W	8	9	...	Cloudy.
Dras . .	+·350	?	Calm	3	0	...	
Simla .	+·106	—·095	"	11	0	0·01	Dust haze.
Chakrata .	+·016	—·085	"	10	0	0·04	Showery.
Ranikhet .	—·016	—·063	NE	5	0	...	Frosty.

Skies had cleared at the great majority of these stations and fine bright weather with light winds and abnormally low temperature now prevailed.

4th March.—Pressure had increased slightly to briskly in Assam and Bengal, but had fallen slightly in Burma and the feeble disturbance passed through that area during the day. It gave little cloud and hence did not affec weather appreciably in that area.

It is interesting to note that the pressure changes a Darjeeling relative to those at the adjacent plains station were similar to those in Upper India. Thus pressure de creased more rapidly at Darjeeling than in North Benga on the 3rd. It continued to fall during the next 48 hours a that station, whilst it was rising briskly at the adjacen plains stations and commenced to increase again on th 6th, 48 hours after the increase on the plains.

The cool wave extended into Bengal on the 5th an 6th and temperature was remarkably low over the whol of Northern and Central India from the 5th to the 10th.

Four feeble disturbances affected Baluchistan and th Punjab during the remainder of the month. The follow ing gives a very brief account of them :—

(1) Feeble cold-weather disturbance in Northern India on the 8th and 9th.—This disturbanc

apparently originated in Persia on the 5th and 6th. Rain or snow fell on the 4th at Baghdad, Kazeroon, Shiraz, Sivand and Dasht Arjin, and on the 5th at Bushire, Dasht Arjin, Shiraz, Sivand and Kazeroon. The area of low pressure or primary depression passed through Baluchistan on the 8th, Rajputana on the 9th, Bihar, Chota Nagpur and the eastern districts of the North-Western Provinces on the 10th and Bengal on the 11th. The disturbance gave slight cloud on its passage across Northern India, but no rain.

The pressure changes at the hill stations in Upper India were noteworthy. They are given below with corresponding data for the three plains stations of Jacobabad, Peshawar and Sialkot:—

STATION.	PRESSURE CHANGE DURING 24 HOURS PRECEDING 8 A.M. OF DATE.				
	7th March.	8th March.	9th March.	10th March.	11th March.
	"	"	"	"	"
Quetta	+·103	—·071	+·068	+·009	—·061
Chaman	+·151	—·107	+·141	—·025	—·078
Jacobabad	+·030	—·013	+·004	+·031	—·084
Minimarg	—·038	+·149	—·122	+·200	+·052
Skardu	—·084	+·143	—·134	+·195	+·039
Leh	—·116	+·082	—·019	+·032	+·192
Dras	—·051	+·160	—·147	+·145	+·076
Murree	+·028	+·004	—·025	+·036	—·034
Peshawar	+·068	—·033	+·005	+·012	—·132
Sialkot	+·030	—·023	—·026	+·015	—·100

The disturbance was hence preceded by a large rise at Quetta and Chaman on the 7th, and caused a considerable fall on the 8th, followed by a considerable rise on the 9th. These changes were followed 24 hours afterwards by similar changes, but larger in amount, at the high level stations in Kashmir. The changes also were much larger at these stations than in the Punjab plains, and were apparently not directly related to them.

Light to moderate rain or snow fell on the Baluchistan plateau, and in Afghanistan, Kashmir and the districts of Rawalpindi, Peshawar, Hazara and Kohat in the Punjab.

(2) Feeble cold-weather disturbance in Baluchistan and Northern India from the 12th to the 16th.—This disturbance apparently originated in West Persia as a wave of low pressure. The following gives the changes of pressure in that area from the 8th to the 12th:—

STATION.	PRESSURE CHANGE DURING 24 HOURS PRECEDING 8 A.M. OF DATE.				
	8th March.	9th March.	10th March.	11th March.	12th March.
	"	"	"	"	"
Baghdad	—·085	—·378	+·075	+·079	+·275
Ispahan	—·080	+·060	—·180	+·070	—·020
Teheran	—·160	+·127	—·337	+·065	—·045
Bushire	+·013	—·092	—·206	+·148	+·034
Jask	—·028	+·090	—·061	—·117	+·106
Quetta	—·071	+·068	+·009	—·061	—·024
Chaman	—·107	+·141	—·025	—·078	—·054

Pressure was very high in South and Central Russia and the Black Sea from the beginning of the month up to the 9th, and a low pressure area lay over the western half of the Mediterranean, which was practically unchanged in position from the 5th to the 12th. The depression shown by the large fall at Baghdad on the 8th must hence have formed in West Persia and Mesopotamia. It passed eastwards giving a large fall to Teheran, Ispahan on the 8th, to Bushire on the 9th, to Jask on the 10th and 11th, and to Quetta and Chaman on the 11th and 12th. The data also indicate that the depression decreased in intensity as it advanced eastwards, and the storm was of feeble intensity when passing through Baluchistan on the 11th and 12th.

Weather was more or less disturbed in Persia on the 9th and 10th. Thus, Kazeroon had heavy rain on these days, Dasht Arjin a gale and thunderstorm on the 10th and thunderstorm with hail on the 12th, and Sivand heavy rain from 11 P.M. of the 9th to 6 P.M. of the 10th. Snow was also reported to have fallen on the neighbouring mountain ranges.

The primary depression or wave of low pressure passed through Baluchistan and Sind on the 12th, Rajputana on the 13th (when it was very faintly indicated), the North-Western Provinces on the 14th, Bengal on the 15th, and Assam and Upper Burma on the 16th.

There was a tendency to the establishment of a secondary depression in the North Punjab on the 14th and 15th, but it failed to develop.

The disturbance gave light to moderate showers in Baluchistan on the 12th, 13th and 14th, and light showers in the North Punjab on the 14th and 15th (*i.e.*, during the 24 hours preceding 8 A.M. of these dates), and to Kashmir on the 15th and 16th.

The disturbance barely affected the weather in the Gangetic Plain, Central India and Bengal. It gave some cloud but one or two light local showers of no importance.

(3) Feeble cold-weather disturbance in Baluchistan and Northern India from the 16th to the 20th.—This disturbance, like the previous, appears to

have originated in West Persia and Mesopotamia during a period when high pressure conditions obtained in South-East Europe and the east of the Mediterranean, and a nearly stationary depression lay over the west of the Mediterranean.

The following gives the changes of pressure in the Persian area from the 13th to the 17th :—

STATION.	PRESSURE CHANGE DURING 24 HOURS PRECEDING 8 A.M. OF DATE.				
	13th March.	14th March.	15th March.	16th March.	17th March.
	"	"	"	"	"
Baghdad	+·070	—·474	+·216	+·079	+·080
Ispahan	+·050	—·030	—·170	+·040	+·120
Teheran	0	—·025	—·175	+·085	+·145
Bushire	+·102	—·119	—·135	+·142	+·137
Jask	+·094	—·043	+·156	—·008	—·188
Quetta	+·028	—·054	—·028	+·010	—·044
Chaman	+·029	—·004	—·043	—·053	+·001

The preceding data show that a depression formed, probably near Baghdad, on the 13th and 14th, and that it affected the West Persian stations on the 14th and 15th, and Jask and Baluchistan on the 16th and 17th. The depression filled up partially as it advanced eastwards, and was of slight intensity in Baluchistan.

Weather was disturbed with much rain on the Persian plateau, as is shown by the extracts from the weather reports sent by the Telegraph Masters at certain stations on the Indo-European line. The following gives a *résumé* of these reports :—

DATE.	STATION.	Wind direction at 8 A.M.	WEATHER.
15th March	Kazeroon	E to W	Rain all night.
" "	Dasht Arjin	W	Thunderstorm and snow.
" "	Shiraz	NNW	Frequent rain and showers.
" "	Sivand	NE	Showery during night.
16th "	Kazeroon	N to NW	Showers during day.
"	Dasht Arjin	W	Snowstorm.
" "	Shiraz	NW	Snow during afternoon.

The wave of low pressure due to the eastward transmission of this disturbance passed through Baluchistan on the 16th and 17th, Rajputana on the 18th, the North-Western Provinces and Bihar on the 19th, Bengal on the 20th, and Upper Burma on the 21st.

The disturbance gave rise to a shallow and feeble secondary depression in the North Punjab on the 18th. The double disturbance gave moderately heavy rain in Baluchistan from the 16th to the 18th, light to moderate showers in the North Punjab on the 18th and 19th, and rain or snow in Kashmir and the adjacent high elevations on the 18th, 19th and 20th. In the Gangetic Plain and Bengal cloud formed during the passage of the low pressure area, but no rain fell in any part of that area.

(4) Feeble disturbance and depression of the 21st to the 24th.—Another disturbance, similar to the preceding in character, originated in the Persian area on the 19th and 20th. The following gives data of the from pressure change at the Persian and Baluchistan stations the 19th to the 23rd :—

STATION.	PRESSURE CHANGE DURING 24 HOURS PRECEDING 8 A.M. OF DATE.				
	19th March.	20th March.	21st March.	22nd March.	23rd March.
	"	"	"	"	"
Baghdad	—·126	—·349	+·142	+·312	+·136
Ispahan	?	?	—·050	+·220	—·060
Teheran	+·050	—·145	—·135	+·135	+·185
Bushire	—·067	—·286	+·193	+·149	+·076
Jask	—·037	—·005	+·125	—·008	+·058
Quetta	+·080	+·106	—·059	—·041	+·024
Chaman	+·100	+·043	—·035	—·071	+·013

The depression due to this disturbance was hence even larger in amount at Baghdad and Bushire than in the case of the two preceding storms or depressions. It affected these stations on the 19th and 20th, and Quetta and Chaman on the 21st and 22nd. The disturbance, judged by the fall of the barometer, was very slight in Baluchistan. It gave much rain on the Persian plateau, as is shown by the following statement :—

DATE.	STATION.	Wind direction at 8 A.M.	WEATHER.
20th March	Kazeroon	S	Rain during previous night.
" "	Dasht Arjin	NW	Heavy rain and gale of wind.
" "	Shiraz	ENE	Heavy rain.
21st "	Sivand	NW	Rain from 2 P.M. of 20th to 5-30 P.M. of 21st.
" "	Kazeroon	Var	Heavy rain and thunder all night.
" "	Dasht Arjin	NW	Heavy rain with north-west gale.

Fine weather obtained in Persia during the remainder of the month.

The wave of low pressure due to this disturbance passed through Sind and West Rujputana during the 22nd. It is not possible to trace its further progress as its presence was obscured by other and larger pressure changes due to general actions over the whole of India. The disturbance which had given moderate to heavy rain in Persia failed to give rain in Baluchistan.

The pressure changes during the remainder of the month were largish in amount but apparently irregular in character. The chief feature during the period from the 28th to the 30th was a shallow depression and area of deficient pressure in the submontane districts of the North-Western Provinces and Bihar. Very dry weather with clear skies and moderate to strong westerly winds obtained, as usual under these conditions, in the Gangetic Plain from the 26th to the end of the month.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-West of India.

The following is a statement of the information relating to the snowfall of the month of March 1898 in the Himalayan and Afghan mountain areas, received up to date :—

I.—AFGHAN MOUNTAIN DISTRICTS.

(1) *Hills bordering the Dera Ismail Khan District.*—The Political Officer, Wano, has sent the following account of the snowfall of the month on the mountain ranges in Waziristan :—

"Snow fell during the month on the following occasions :—

9th March.—Heavy fall of snow measuring about 9 inches on the Marwattai Hills from 6,500 to 10,000 feet.

13th March.—Slight snow, about 3 inches in amount, on the Marwattai Hills from 7,900 to 10,000 feet.

14th March.—Heavy fall of snow, varying in amount from 6 to 9 inches, on the Marwattai Hills from 6,500 to 10,000 feet.

15th March.—Snow fell as on the 13th.

17th March.—Snow fell as on the 14th.

24th March.—Snow fell as on the 13th.

"It melted soon after falling except in ravines and on the north side.

"On each occasion the snow on the hills was accompanied by rain in the Wano plain, and on the 14th there was a heavy hailstorm in the Wano plain. On the 31st March a few inches of snow only were remaining on hills from 8,000 feet upwards on the northern slopes and in ravines.

"The snowfall of the month was slightly above the normal of the month "

(2) *Kulachi Border.*—Snow fell during the month on the following dates :—

15th March.—Snow fell to a depth of 3 feet on the highest peaks of the Suleiman range, *viz*, Kat, Ubashta, Marmaz, Mizraighar and Kaisar.

16th March.—The fall on this date occurred in the same area as on the 15th, but measured only 1½ feet in depth.

As the sun was hot, the snow soon melted away.

The snowfall, as compared with the fall in the previous year, was considerably less than usual and soon melted. The crops were good.

(3) *Kurrum Valley.*—The following report for the Kurrum Valley has been received from the Civil Surgeon, Kurrum. It gives data for the months of February and March.

"The following gives the occasions on which snow fell in February and March :—

February—

5th.—Fall of snow on hills down to 9,000 feet.

6th.— Ditto.

7th.—Snow fell at Para Chinar (6,000 feet), melting next day.

8th, 11th, 13th and 14th.—Snow fell down to about 8,000 feet (2,000 feet above station)

18th.—Snow fell at Para Chinar to a depth of 1 inch and slightly below the station, melting next day.

16th, 17th and 18th.—Snow fell on hills down to about 9,000 feet.

27th and 28th.—Snow occurred on hills down to 10,000 feet.

March—

1st.—Snow fell on hills down to 10,000 feet.

5th, 6th and 7th.—Snow occurred on hills down to 8,000 fee t.

8th.—Slight fall (½ inch) at Para Chinar.

11th to 18th.—Snow fell daily on hills above Para Chinar down to 8,000 feet.

"The falls of snow on February 7th and 15th and March 8th were only slight at Para Chinar, but on the Peiwar Kotal (8,000 feet high) there must have been two or three feet and on the higher peaks of the Sufed Koh seven feet of snow.

"Rain and snowfall in the Kurrum Valley have both been less than in previous years. It was only the heavy rain in the middle of March which saved the crops."

(4) *Kurrum.*—The following report has been received from the Officer on special duty, Kurrum :—"Snow fell on

the 1st, 5th, 6th, 8th, 11th, 12th, 13th, 14th, 15th, 16th, 17th and 18th March in the Kurrum Valley. Throughout the month under report there were slight falls of snow only on the higher ranges of the Sufed Koh, except on the 8th March when it descended down to about 4,000 feet; and the snowfall on that day at the Para Chinar station measured ¼ inch, but melted soon.

"On account of the hot weather the snow was melting rapidly on the hills around the Para Chinar station at the end of the month. The depth of the accumulated snow on the higher summits of the Sufed Koh, *viz.*, Sikaram and Badina, was reported to be about two feet at the end of the month"

(5) *Kabul.*—Snow fell on the 1st, 6th, 7th, 8th and 9th. The total fall was only 12½ inches. Rain fell on the 11th, 12th, 14th, 15th, 17th, 18th and 24th. The heaviest fall was on the 14th when 1·05 inches were recorded. The rainfall during the month (excluding snow) was 3·65 inches.

The plains and surrounding hills were clear of snow at the end of the month. The Paghman Hill was still covered with snow.

II.—KASHMIR AND PUNJAB HIMALAYAS.

(1) *Hills adjacent to Murree.*—Light snow fell at Murree on the 2nd, 7th, 9th, and 19th, totalling 10 inches in amount. No snow fell at Kahuta.

(2) *Lahoul.*—The following is a statement of the snowfall at Kailang from December to the end of March:—

		Feet.	Inches.
December	12th	0	6½
January	25th	0	6½
February	4th	0	1
"	5th	0	1
"	10th	0	10
"	11th	0	10
"	15th	0	2½
"	17th	0	2
"	18th	0	3
March	2nd	0	3

The Superintendent of the Kailang Observatory describes the winter in the following terms:—"Rain fell on the 14th, 15th and 19th of March, totalling 0·42 inch. The fall on the 2nd March was accompanied by very strong winds, but only 3 inches of snow fell which was thickly mixed with dust.

"People who have just arrived from Kulu say that there is much less snow on the Rotang Pass than in other years. Immediately below the pass on the Lahoul side the snow is disappearing on the slopes. This is extraordinary so early in the season.

"The fall of snow in December, January and February extended to all parts of the valley. On the higher hills, the amount fallen may have been two to three times more than that given for the valley. The natives say that when one foot of snow falls at the bottom of the valley three feet fall on the passes.

"During December and January dry weather prevailed, 20 to 30 days being clear during that peried. February was cloudy, but very little snow fell also during that month. The last fall of snow occurred on the 2nd of March. On the 14th, 15th and 19th of March it rained unusually early for Lahoul.

"No snow is to be seen around Kailang; the fields are quite free of it and the southern slopes also up to about 14,000 feet. The slopes looking to the north are also to a great extent free of snow up to about 12,000 feet.

"If the winter had been a normal one at least two feet of snow ought at this time of year to cover the flat ground round about Kailang.

"The winter has been very mild and the temperature unusually high. Only once the minimum came down to zero, while in previous years it fell for days below zero even to 10° below it.

"The amount of cloud was decidedly less than in former winters, and the air mostly dry.

"The fields in Lahoul are sown only about the beginning of May.

"Little wind has been observed this winter in the higher regions. The snow on the crests of the high hills has seldom been seen driven high into the air by winds. In normal winters this happens frequently.

"The Headman of Lahoul, aged 65 years with whom I have talked about this mild snowless winter, said that in about 20 years such winters appeared once or at the most twice."

(3) *Chitral.*—The Officer Commanding in Chitral has sent the following information of the weather and snowfall in March at Drosh and in Chitral generally:—"During the first sixteen days of March 5·2 inches of rain and 17 inches of snow fell in Chitral. On the 15th and 16th, 14 inches of snow fell in the fort of Chitral. This snowfall was unusually heavy for the season. There was at the middle of the month at Ziarat (7,000 feet high) on the Lowarai Pass about 5 feet of snow lying. It rained or snowed incessantly from 5 A.M. on the 17th to 5 P.M. of the 19th. The snowfall on the Lowarai Pass was unusually heavy and was the heaviest fall of the season.

"The weather cleared on the 20th and fine dry weather with coldish winds prevailed until the 24th, when rainy snowy weather again set in.

"The depth of snow on the Lowarai Pass was reported to be very large at the end of the month.

"The Chitralis say they have never seen so much rain and snow in March."

(4) *Chamba.*—The following report has been received from the Deputy Conservator of Forests, Chamba State :—"Snow fell as follows at the observing stations :—

DATE.	DEPTH OF SNOWFALL AT								
	Surkhigalli.	Kalatop, 8,000 feet.	Bhandal, 6,000 feet.	Thanela, 7,000 feet.	Chanan, 6,500 feet.	Kundi.	Chitrari, 6,500 feet.	Ulansa.	Barmaur, 7,000 feet.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
4th Feb. 1898 .	...	...	...	...	...	...	...	...	0 3
5th " .	...	...	...	...	...	...	...	...	0 1
10th " .	...	...	...	...	...	...	...	...	1 6
11th " .	...	...	...	...	...	...	...	...	2 4
15th " .	...	...	...	...	...	...	...	...	2 1
16th " .	...	0 9	0 3	...	...	0 1	0 2	1 1	2 1
17th " .	0 6	3 0	0 8	5 5	4 5	1 6	1 5	2 6	1 2
18th " .	0 3	1 0	1 6	...	...	0 8	0 9	1 1	1 10
1st Mar. " .	...	...	...	...	...	0 1	0 1	0 1	?
TOTAL .	0 9	4 9	2 5	5 5	4 5	2 4	2 5	4 9	11 4

"The snowstorm of the 1st March was more or less local and was chiefly confined to the high ranges. Hailstorms occurred on the 1st and 2nd in some places, following a severe gale of wind.

"After the storm, ending 18th February, the weather cleared and continued fine until the 28th February, when a gale commenced to blow and the sky clouded over again. There was at the end of the month practically no accumulation at all up to 10,000 feet or higher, and the depth of snow on the passes must be most unusually small. The Sach Pass (14,300 feet high) was open about a month earlier than usual.

"The weather was unusually dry and the amount of cloud much less than usual during the month and the crops were suffering from the drought.

"The snowfall ceased earlier than usual and was much below the normal amount. The weather has been clearer and warmer throughout the winter than usual, the amount of cloud being much less than in ordinary years.

"The Forester in Pangi reports that it was the mildest winter he had known during his 26 years' service in Chamba."

(5) *Kulu.*—The following report has been received from the Assistant Commissioner, Kulu :—

"There were falls of rain on the 1st, 2nd and 3rd March with snow on high elevations in the whole sub-division, and on the 6th, 7th, 9th and 18th March there were snowfalls on the high passes of the Kulu Tahsil. These falls did not occur below 10,000 feet.

"There has been much hot sunshine and the snow has melted rapidly. It has been cold only on rainy days. A few Lahoulis have succeeded in crossing the Rotang Pass. Except the Rotang and Hamta, nearly all the passes in the sub-division were open for foot passengers at the end of the month.

"The following table gives the reported depth of snow on the higher passes and peaks of the sub-division at the end of the month under report :—

DISTRICT.	Name of Pass.	Height above sea-level in feet.	DEPTH OF SNOW ON END OF					
			March 1898.	March 1897.	March 1896.	March 1895.	March 1894.	March 1893.
		Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
KULU.	Rotang . . .	13,000	10	12	15	17	16	27
	Hamta . . .	14,500	6	14½	12	10	15	25
	Barsai . . .	?	2	4	4	6	11	14
	Chander Khani . .	?	3	8	4	5	11	26
	Bujadhar . . .	?	3½	7	3½	5	10	15½
	Lohri Achri . .	?	3	11	8	6	10	12
	Bhubbu . . .	10,000	2	5	3	5	6	12
	Pastari . . .	?	1½	...	...	5	4	10
	Majhang . . .	?	...	1	...	...	1½	6
PLACH.	Srikhand . . .	15,000	9	18	10	20	20	40
	Chul . . .	?	3	4	2	6	6	20
	Maghin . . .	?	3	4	2	5	8	19
	Tikar . . .	?	...	4	2	5	8	14
	Dundku . . .	?	3	6	4	6	9	15
	Nohnu . . .	?	...	2	...	2	3	6
	Ramgarh . . .	?	...	½	...	...	½	?
	Jalori . . .	10,500	4	4	3	6	8	14
	Raghopur .	?	4	4	3	7	10	14
	Lambri . . .	?	3	3	3	5	7	15
	Sakiran . . .	?	...	4	3	5	8	15
	Supakun . .	?	4	6	2	6	10	15
	Basleo . . .	11,000	4½	4	3	6	8	15
	Plach . . .	?	6	6	3	8	9	20
	Tirath . . .	?	7	8	4	11	12	25
	Gargarasan . .	...	6	8	4	12	...	...

"The snowfall of the month was very light compared with that of the same period in previous years."

(6) *Upper Sutlej Valley and neighbouring mountain ranges.*—The following report for the period 16th February to 15th March has been received from the Deputy Conservator of Forests, Bushahr Division :—

"During the period snow fell on the 16th, 17th, 18th and 19th of February and again on the 1st, 2nd, 5th and 10th of March. On the 16th February ½ inch snow was measured at Kilba, and the depth of accumulated snow on Hattu, 10,000 feet, was 6 feet. At Kilba on the 18th February 5 inches fell, and on the 1st of March 2 inches of

snow with heavy rain in low valleys. On the 5th of March the fall at 8,500 feet was 2 inches, and on the 10th March only a slight fall was registered.

"On the higher ranges north of the Sutlej snowstorms were more frequent than in the lower valleys. The weather during the period was unsettled. The storms recorded were accompanied by high winds, and on the 2nd of March a blizzard raged for nearly 24 hours over the hills between Narkanda and Phagu on the Hindustan-Thibet road.

"The depth of snow on different passes at the end of the month was as follows :—

Name of Pass.	Elevation.	Depth of snow.
	Feet.	Feet.
Hattu	10,000	6
Buldar	16,000	15 to 20
Rupin	15,000	12 to 18
Chenicil	13,000	8
Narkanda	9,000	3

"The temperature was normal. The humidity seems to have been greater than usual, and the amount of cloud much greater than usual.

"The snowfall commenced late in the season, but was in good time to save the crops which promise well."

III. ASSAM HIMALAYAS.

Sadiya.—The following report has been received from the Assistant Political Officer, Sadiya :—"The snowfall was plentiful and fell somewhat early this year."

Lakhimpur.—The Sub-Divisional Officer at Lakhimpur reports that "no snow was observed this year on the ranges visible from the station. The snowfall in the interior of the hills is reported to have been much less than usual."

Summary.—The snowfall of the month and also of the season up to the end of March was much less than usual over the whole of the Western Himalayas. It was locally heavy in Baluchistan and also in Chitral, but was as largely below the normal in Afghanistan as in Kashmir and the Punjab Himalayas.

Summary of Special Storm Reports.

The following gives a statement of the more important thunderstorms or hailstorms in the various provinces of India, and more especially in Assam, during the month. The accounts of the hailstorms are derived from reports received from the local authorities :—

1st March.—Violent duststorm at Jacobabad from north-north-west.

Duststorm at Pachpadra from 6 P.M. to 6-45 P.M. 7·2 miles of wind were registered by the anemometer between 6 P.M. and 6-10 P.M.

9th „ Severe duststorm at Baghdad. The observer notes "A strong ESE wind set in at 8 A.M., which by 11-30 A.M. developed into a sandstorm of unusual magnitude. Till 0·30 P.M. it was found impossible to read the anemometer. The wind vane moved unceasingly between south and east. The atmosphere was impregnated with fine yellow dust, and the streets, court-yards of houses and even rooms had the appearance of layers of sand laid on them through a sieve."

26th „ Duststorm at Jeypore at 5-20 P.M. The greatest velocity of the wind was 25 miles per hour.

27th March.—Duststorm at Jeypur in the early morning. 4·3 miles of wind were recorded between 1-10 A.M. and 1-20 A.M.

27th March.—Duststorm at Srinagar at 4 P.M. The velocity of the strongest winds was 25 miles per hour.

29th March.—Thunderstorm and hailstorm at Darjeeling, 5 to 6 P.M.

30th March.—Severe duststorm during the night at Nagpur.

31st March.—Violent duststorm with thunder and lightning during the night at Nagpur.

The following reports of hailstorms in Assam have been received from the Director of Land Records and Agriculture, Assam.

16th March.—Severe hailstorm in the town of Goalpara. The storm came from north-west and lasted about half an hour. The largest stones were about an inch in diameter. The roofs of the Treasury, Court-house and part of the circuit-house were carried away and the walls damaged. The corrugated iron roofs of the stable and cookshed were blown off. One man was killed and two injured.

20th March.—Severe hailstorm in the Thowra Pandehing Mouza of the Sibsagar sub-division

The storm came from west and lasted 20 minutes. The largest stones were of the size of ripe betelnuts. One woman was killed and several men wounded. 80 houses were blown down. The tobacco and muga crops were destroyed.

20th March.—Hailstorm in the Bakata Mouza of the Sibsagar Sadar sub-division. The storm was severe. It came from west and lasted 25 minutes. The stones were as large as plums. Some houses were blown down by the violent winds.

21st March.—Hailstorm in the Sidhipur village of the Cachar district. The storm was not severe and did no injury to the crops.

21st March.—Hailstorm in the town of Silchar. The largest stones were of the size of marbles. Slight damage was inflicted on the crops. Hailstorm in the Haflang sub-division in the Cachar district. These storms were not severe.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Winds were rather unsteady in the north, being under the influence of the varying pressure conditions of the neighbouring land area. Over the remainder of the Arabian Sea ordinary northerly winds of the north-east monsoon obtained, but they were, as is usually the case, much less steady in the second than in the first half of the month. Winds were more or less above their normal strength on at least 24 days during the month. They were strongest on the 2nd (when they averaged 4·8 in force) and lightest on the 15th and 31st (2·3). The mean force for the whole of the month was 3·2 and the normal for the period is 2·7.

Weather was steadily fine throughout the month over the whole area except in the neighbourhood of Ceylon, where occasional showers were experienced during the first five days of the month.

In the Persian Gulf the air movement was very abnormal, the wind blowing chiefly from between east and north instead of from between north and west.

Bay of Bengal.—The air movement over the Bay was fairly normal during the greater part of the month except in the west, where winds were much more southerly than usual. Weather was feebly disturbed with occasional showers and squalls in the immediate neighbourhood of the East Ceylon coast, but was even finer than usual over the remainder of the Bay throughout the month. The mean intensity of the air movement for the whole of the month was 2·5 or only 0·1 above the normal.

Equatorial Belt.—There are no data available for the eastern half of the equatorial belt. In the western half of the belt winds from between east and north prevailed on most days during the first half of the month and exceedingly variable winds during the second half, due probably to the northward advance of the belt of calms. The data for the Seychelles indicate that the winds were not only very unsteady and weaker than usual over the area represented by that station, but also much more easterly than usual.

Temperature of the Air.

March was less disturbed than usual except in Baluchistan and the Punjab. A cold weather storm affected Northern India from the end of February to the 4th of March. It was followed by a cool wave of unusual severity which passed across Northern India and Burma from west to east during the period from the 2nd to the 6th, and temperature continued more or less below the normal over nearly the whole of Extra-Tropical India until the 13th. Four feeble disturbances gave showery weather in Baluchistan, the North Punjab and Chitral between the 8th and 24th, but the snowfall accompanying them was not sufficiently extensive to exercise much influence on temperature in Northern India.

Temperature hence increased above the normal generally on the 14th and 15th and was more or less in excess over the greater part of India during the remainder of the month. The month was hence somewhat cooler than usual over nearly the whole of India, but the variations were nowhere large.

The mean maximum or day temperature of the month was above the normal over the whole of India, except Sind, the Punjab, the North-Western Provinces, Bihar and Lower

Burma. The excess in these areas was generally small but exceeded 2° in the areas for which data are given below :—

Province.	Station.	Mean maximum temperature. Actual, March 1898.	Normal, March.	Variation of actual from normal, March 1898.
		°	°	°
Assam and Upper Burma.	Silchar	90·2	85·3	+4·9
	Kindat	93·6	90·0	+3·6
	Bhamo	91·6	88·3	+3·3
	Lashio	88·4	85·2	+3·2
	Sibsagar	81·8	79·2	+2·6
	Yamethin	101·0	98·4	+2·6
West Bengal	Chaibassa	98·1	94·1	+4·0
	Burdwan	96·4	93·6	+2·8
	Ranchi	89·8	87·1	+2·7
	Calcutta	92·6	90·4	+2·2

The mean maximum or day temperature was 2° or more in defect in the North Punjab as represented by Peshawar (—4°·0) and Murree (—2°·0).

A noteworthy feature of the month was the high day temperature at the hill stations to the east of Kashmir, as is shown below :—

Station.	Mean maximum temperature. Actual, March 1898.	Normal, March.	Variation of actual from normal, March 1898.
	°	°	°
Leh	48·1	46·5	+1·6
Kailang	46·3	41·3	+5·0
Simla	59·2	56·8	+2·4
Chakrata	64·5	62·0	+2·5
Ranikhet	68·4	65·1	+3·3

The highest maximum temperatures of the month were recorded over nearly the whole of Northern and Central India during the last week of the month and generally on the 30th and 31st.

The mean minimum or night temperature of the month was below the normal over the whole of India, with the exception of Lower Burma, the Punjab and the western half of the Peninsula, where it was above the normal to a slight extent. The deficiency in Central and North-Eastern India was slight to considerable in amount and was more than 2° in the large area including Upper Burma, Assam, Bengal, North Bihar, the eastern districts of the North-Western Provinces, Cutch and the greater part of Madras. The following gives comparative data for stations at which the deficiency was more than 3°:—

Province.	Station.	Mean minimum temperature. Actual, March 1898.	Normal, March.	Variation of actual from normal, March 1898.
		°	°	°
Burma	Kindat	56·8	60·6	—3·8
	Akyab	65·8	68·8	—3·0
Bengal	Jessore	62·8	68·3	—5·5
	Burdwan	64·0	68·5	—4·5
	Berhampore	61·7	66·0	—4·3
	Balasore	65·7	69·8	—4·1
	Calcutta	65·7	69·7	—4·0
	Chittagong	63·7	67·7	—4·0
	Saugor Island	71·5	75·0	—3·5
	False Point	68·8	72·2	—3·4
	Cuttack	69·7	72·7	—3·0
North-Western Provinces.	Benares	59·2	62·3	—3·1
Sind	Hyderabad	61·4	64·5	—3·1

The mean minimum or night temperature of the month was hence abnormally low in South and West Bengal and Orissa.

The lowest minima temperatures of the month were registered during the progress of the cool wave across Northern India and generally on the 3rd, 4th and 5th. The following gives the more noteworthy :—

Station.	Lowest minimum temperature recorded in March 1898.	Date on which recorded.	Lowest minimum temperature recorded in March, previous to 1898.	Year in which recorded.
	°		°	
Calcutta	50·2	4th and 5th	52·3	1880
Berhampore	48·1	5th	52·2	1878
Malda	45·2	5th	48·3	1892
Jalpaiguri	47·1	4th	47·1	1885
Hazaribagh	44·2	4th	46·2	1878
Patna	46·4	4th	46·3	1871
Motihari	43·9	4th	42·9	1897
Bahraich	42·0	4th	40·1 ?	1893
Allahabad	45·4	5th	45·9	1880
Bareilly	41·2	4th	43·1	1885
Roorkee	42·0	6th	40·2	1874
Sirsa	37·7	3rd	42·0	1878
Peshawar	37·9	3rd	37·9	1891 and 1892
Bickaneer	31·5	4th	47·1	1897

STATION.	Lowest minimum temperature recorded in March 1898.	Date on which recorded.	Lowest minimum temperature recorded in March previous to 1898.	Year in which recorded.
	°		°	
Pachpadra . . .	33·0	3rd	33·1	1882
Ajmere . . .	35·9	4th	39·2	1878
Jacobabad . . .	40·0	3rd	39·6	1882 and 1892.
Kurrachee . . .	47·4	3rd	52·0	1882

Lower night temperatures were hence recorded at nearly all stations in Northern India in the first week of March 1898 than have been previously recorded in March.

Remarkably low night temperatures were also recorded at many of the hill stations and in the Persian area, *e.g.* :—

STATION.	Lowest minimum temperature recorded in March 1898.	Date on which recorded.	Lowest minimum temperature recorded in March previous to 1898.	Year in which recorded.
	°		°	
Peshin	8·9	2nd .	20·9	1897
Kalat	10·0	3rd . .	15·4	1897
Chaman . . .	13·1	2nd and 3rd.	30·1	1897
Quetta	15·8	2nd .	22·0	1882
Kabul	21·6	3rd . .	19·8	1897
Minimarg . . .	4·1	5th . .	3·0	1896
Murree	20·0	2nd . .	22·5	1897
Simla	23·4	23rd . .	28·8	1893
Mussooree . . .	27·5	3rd . .	28·0	1891
Darjeeling . . .	26·8	5th . .	34·3	1891

The lowest night temperatures at some of these hill stations were from 6° to 17° lower than have been hitherto recorded in March.

In consequence of the unusually low night temperature in the early part of the month and the higher day temperature in the latter part of the month, the absolute range of temperature during the month was unusually great. It exceeded 65° at the stations for which data are given below :—

STATION.	Highest maximum temperature observed during the month of March 1898.	Lowest minimum temperature observed during the month of March 1898.	Absolute range during month.
	°	°	°
Pachpadra	106·3	33·0	73·3
Bickaneer	102·1	31·5	70·6
Jacobabad	106·4	40·0	66·4
Jeypore	103·5	38·2	65·3
Peshin	85·0	8·9	76·1
Kalat	81·9	10·0	71·9
Chaman	84·3	13·1	71·2

As the variations of the mean maximum and minimum temperatures from the normal were opposite in character the variations of the mean temperature of the month were generally small in amount.

The mean temperature of the month was normal or in slight excess in Assam, Upper Burma, the Konkan, the West Deccan, Berar, Khandesh, the western districts of the Central Provinces, the greater part of Central India and East Rajputana. The excess was more than 1° at Akola (+2°·0), Amraoti (+1°·9), Khandwa and Cochin (each +1°·4), Poona (+1°·2), and perhaps Saugor and Sialkot (each +1°·2) and Yamethin (+1°·1).

The mean temperature of the month was below the normal over the remainder of India and in Baluchistan. The variations were generally small, but exceeded 2° at stations for which data are given below :—

PROVINCE.	STATION.	MEAN DAILY TEMPERATURE. Actual, March 1898.	Normal, March.	Variation of actual from normal, March 1898.
		°	°	°
SIND . . .	Hyderabad . .	76·8	79·0	−2·2
SOUTH BENGAL AND ORISSA.	False Point . .	77·5	80·0	−2·5
	Saugor Island . .	79·0	81·1	−2·1
	Jessore . . .	78·3	80·4	−2·1
	Berhampore . .	77·4	79·5	−2·1

The mean temperature of the month was in moderate to considerable excess at the hill stations in the Western Himalayas (except Murree), *e. g* :—

STATION.	MEAN DAILY TEMPERATURE. Actual, March 1898.	Normal, March.	Variation of actual from normal, March 1898.
	°	°	°
Leh	36·1	34·0	+2·1
Kailang	34·1	29·1	+5·0
Simla	52·8	50·7	+2·1
Chakrata	56·0	53·0	+3·0
Ranikhet	60·1	57·0	+3·1

The following table gives comparative data of the month for 56 meteorological divisions of India :—

Province.	Division.	Actual Temperature.					Variation from normal of month of		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum temperature.	Minimum temperature.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	92·2	72·3	82·2	19·9	29·8	−0·4	+0·6	−1·0
	Lower Burma (Deltaic)	91·8	71·7	81·8	20·2	30·5	−0·3	−0·3	0
	Central do.	99·1	66·6	82·9	32·5	48·5	+0·4	−0·3	+0·7
	Upper do.	96·9	63·3	80·1	33·6	51·3	+2·3	−1·7	+4·0
	Arakan	88·3	65·8	77·1	22·5	39·1	−0·6	−3·0	+2·4
Bengal and Assam	Eastern Bengal	89·4	63·7	76·6	25·7	47·1	+1·4	−2·9	+4·3
	Assam (Surma)	90·2	60·6	75·4	29·6	50·1	+4·9	−2·8	+7·7
	Do. (Brahmaputra)	84·6	60·5	72·6	24·2	41·9	+1·8	−1·9	+3·7
	Deltaic Bengal	92·8	64·9	78·8	27·9	51·8	+0·9	−4·3	+5·2
	Central do.	93·3	62·4	77·9	31·0	54·6	+1·5	−3·8	+5·3
	North do.	86·8	60·5	73·7	26·3	49·8	0	−2·3	+2·3
	Bengal Hills	62·2	35·9	49·1	26·3	44·2	+1·0	−4·6	+5·6
	Orissa	90·7	70·1	80·5	20·6	37·8	+1·8	−3·5	+5·3
	Chota Nagpur	92·7	62·3	77·5	30·5	56·0	+2·3	−1·3	+3·6
	South Bihar	91·9	62·7	77·3	29·2	54·2	−0·6	−1·2	+0·6
	North do.	89·2	59·8	74·6	29·4	53·8	−0·2	−1·7	+1·5
North-Western Provinces and Oudh.	North-Western Provinces (East)	92·1	59·4	75·8	32·7	56·7	−1·3	−2·9	+1·6
	Oudh (South)	92·1	59·8	76·0	32·3	58·1	+0·8	−0·8	+1·6
	Do. (North)	89·1	57·3	73·2	31·8	58·9	?	?	?
	North-Western Provinces (Central)	91·4	61·5	76·5	29·9	57·4	+0·8	+0·3	+0·5
	Do. do. (West)	87·8	59·1	73·5	28·8	56·6	−1·4	−1·3	−0·1
	Do. do. (East Submontane)	90·2	60·2	75·2	30·0	57·0	−0·6	−2·3	+1·7
	Do. do. (West do.)	84·6	55·4	70·0	29·2	54·5	+0·3	+1·6	−1·3
	Do. do. (Hills)	65·3	48·5	56·9	16·8	44·5	+2·9	+3·1	−0·2
Punjab	Punjab (South-East)	87·3	62·1	74·7	25·2	56·8	−0·8	−0·1	−0·7
	Do. (South)	88·0	55·5	71·8	32·5	64·6	−0·7	−1·6	+0·9
	Do. (Central)	82·1	59·7	69·4	25·4	58·4	−1·6	+1·8	−3·4
	Do. (Submontane)	84·3	56·0	70·2	28·3	56·1	+0·4	+0·3	+0·1
	Do. (Hills)	53·7	34·9	44·3	18·8	50·8	+0·7	+1·6	−0·9
	Do. (North)	74·3	51·4	62·9	22·9	53·9	−2·5	+0·5	−3·0
	Do. (West)	84·9	56·6	70·8	28·3	60·3	+0·3	−0·1	+0·4
Bombay and Malabar Coast Districts (Madras).	Malabar	90·1	76·2	83·2	13·9	21·5	+1·2	+0·2	+1·0
	Madras (South Central)	98·2	67·9	83·1	30·4	41·3	+0·9	−2·4	+3·3
	Coorg	84·7	62·4	73·6	22·3	31·3	+0·2	+1·2	−1·0
	Mysore	92·8	64·8	78·8	28·0	39·3	+1·0	−1·0	+2·0
	Konkan	87·7	74·4	81·0	13·3	23·8	+0·9	+0·5	+0·4
	Bombay Deccan	98·2	67·1	82·7	31·1	45·6	+1·1	+0·5	+0·6
	Hyderabad (North)	97·4	68·2	82·8	29·3	49·9	?	?	?
	Khandesh	97·6	64·1	80·9	33·5	57·7	+1·2	+0·4	+0·8
Central Provinces and Berar.	Berar	100·6	68·0	84·3	32·6	64·5	+1·8	+2·1	−0·3
	Central Provinces (West)	98·0	66·0	82·0	32·0	60·2	+1·6	+0·7	+0·9
	Do. (Central)	93·8	62·5	78·2	31·3	58·1	+0·1	−0·3	+0·4
	Do. (East)	97·0	67·4	82·2	29·6	53·5	+0·2	−0·6	+0·8
Bombay (North)	Gujarat	98·1	67·9	83·0	30·2	55·1	?	?	?
	Kathiawar and Cutch	93·1	63·9	78·5	29·2	52·3	+0·1	−2·6	+2·7
	Sind	89·7	62·0	75·9	27·7	29·8	−0·8	−1·5	+0·7
	Baluchistan Hills	65·8	39·0	52·5	26·8	68·9	−1·5	−1·1	−0·4
Rajputana and Central India.	Central India (East)	92·5	60·5	76·6	32·0	59·0	+0·2	−0·5	+0·7
	Rajputana (East), Central India (West)	92·4	61·0	76·8	31·4	62·5	+1·4	−0·6	+2·0
	Do. (West)	92·7	60·0	76·4	32·6	68·8	+0·6	−1·4	+2·0
Madras	East Coast (North)	89·7	71·8	80·8	17·9	32·6	+0·5	−2·8	+3·3
	Hyderabad (South)	98·5	70·4	84·5	28·1	41·8	+1·1	−0·2	+1·3
	Madras (Central)	101·0	70·6	85·8	30·4	43·1	+0·3	−2·4	+2·7
	East Coast (Central)	94·6	69·8	82·3	24·8	38·9	+0·9	−2·7	+3·6
	Do. (South)	91·5	70·8	81·2	20·8	33·7	+0·5	−1·9	+2·4
	Madras (South)	93·8	73·4	83·6	20·4	30·9	−1·0	−1·6	+0·6

At the commencement of the month temperature was in considerable to large excess in North-Western and Central India in front of a cold weather storm which was passing through Rajputana on the 1st. The following gives data of this area of large excess of temperature :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, March 1898.	Mean minimum temperature, March 1898.	Mean temperature, March 1898.
	°	°	°
Punjab	+4·0	+2·2	+3·1
Sind	+3·4	+3·5	+3·5
Rajputana	+6·8	+6·0	+6·4
Central India	+6·1	+6·8	+6·5
Central Provinces (West)	+6·2	+10·5	+8·4

Temperature was, on the other hand, in slight to moderate defect in Bengal and the eastern half of the Peninsula. The area of high temperature in front of the depression was transferred across Northern India to Burma during the next 72 hours. The following table giving data for the stations at which the excess of temperature was greatest from the 2nd to the 5th illustrates this feature : —

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
2nd March	Sutna	+8·1	+9·6	+8·9
Do.	Jhansi	+8·6	+7·1	+7·9
Do.	Allahabad	+3·0	+8·5	+5·8
3rd Do.	Sambalpur	+2·2	+8·1	+5·2
Do.	Chaibassa	+5·7	+4·6	+5·2
Do.	Purnea	+3·1	+6·7	+4·9
Do.	Dinajpur	+1·5	+7·6	+4·6
4th Do.	Bhamo	+5·1	+4·6	+4·9
Do.	Mandalay	+3·3	+5·4	+4·4
Do.	Yamethin	+4·2	+4·5	+4·4

A cool wave of unusual severity followed the storm and spread rapidly across Northern India during the period from the 1st to the 4th. The following data illustrate its progress :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	2nd March.	3rd March.	4th March.	5th March.	6th March.
	°	°	°	°	°
Baluchistan (Quetta)	−27·2	−12·3	− 6·2	−3·3	+ 5·3
Punjab	− 3·5	−14·0	−12·4	−8·5	− 4·8
Sind and Rajputana	− 7·8	−15·8	−14·5	−8·8	− 5·3
North-Western Provinces and Oudh.	+ 4·4	− 9·6	−14·3	−11·0	− 8·4
Central India	+ 3·8	−11·5	−15·0	−10·1	− 7·6
Bihar	+ 3·8	+ 1·7	−12·0	−12·2	− 9·4
Chota Nagpur	+ 4·1	+ 3·2	−11·2	−10·3	− 8·2
Bengal	+ 0·7	+ 2·0	− 6·0	−12·6	−10·3

The following gives examples of the greatest depression of temperature below the normal on each day of the period :—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
2nd March	Quetta	−35·0	−19·3	−27·2
Do.	Jacobabad	−24·2	−11·6	−17·9
Do.	Hyderabad (Sind)	− 7·7	−19·3	−13·5
Do.	Kurrachee	−11·5	−13·7	−12·6
3rd Do.	Ajmere	−19·3	−17·5	−18·4
Do.	Jeypore	−18·4	−18·1	−18·3
Do.	Murree	−22·3	−15·3	−18·8
Do.	Simla	− 9·8	−16·7	−13·3
Do.	Bickaneer	−21·5	−14·0	−17·8
4th Do.	Bickaneer	−15·8	−25·7	−20·5
Do.	Jubbulpore	−16·0	−19·2	−17·6
Do.	Seoni	−19·9	−15·5	−17·7
Do.	Jeypore	−14·7	−19·7	−17·2
Do.	Ajmere	−14·8	−19·2	−17·0
5th Do.	Jessore	−14·6	−17·2	−15·9
Do.	Calcutta	−11·9	−16·0	−14·0
Do.	Berhampore	−13·8	−13·8	−13·8
Do.	Dinajpur	−14·7	−12·2	−13·5
Do.	Bogra	−13·9	−12·4	−13·2

The reduction of temperature was hence greatest on the 2nd in Baluchistan and Sind, on the 3rd in Rajputana, on the 4th in Rajputana, the eastern districts of Central India and the northern districts of the Central Provinces, and

on the 5th in Bengal. The cool wave hence advanced across Northern India in three days at the rate of about 500 miles per diem. The following comparison of the mean temperature of the 1st and 5th in Northern and Central India is interesting, as it shows the effect of the cool wave in reducing temperature from another point of view :—

PROVINCE.	ACTUAL MEAN TEMPERATURE RECORDED ON		VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF		Change from 1st to 5th.
	1st March.	5th March.	1st March.	5th March.	
	°	°	°	°	°
Baluchistan (Quetta) . . .	42·3	44·0	—4·8	— 3·3	+1·5
Punjab	67·0	56·2	+3·1	— 8·5	—11·6
Sind and Rajputana . . .	77·0	62·6	+5·2	— 8·8	—14·0
North-Western Provinces and Oudh.	72·0	58·8	+2·6	—11·0	—13·6
Central India	79·0	62·8	+6·5	—10·1	—16·6
Bihar.	71·5	60·8	—0·2	—12·2	—12·0
Chota Nagpur	74·4	63·2	+1·6	—10·3	—11·9
Bengal	71·2	62·6	—2·7	—12·6	— 9·9
Assam	69·0	63·0	—0·9	— 8·7	— 7·8
Orissa	77·3	70·9	—1·4	— 9·6	— 8·2
Central Provinces and Berar .	80·9	62·6	+3·5	—12·1	—15·6

Skies were exceptionally clear and the air abnormally dry during the advance of this cool wave, and very low night temperatures, the lowest of this month, were registered during the first week of the month in Northern India. They are lower than have been previously recorded in the month of March at the great majority of stations in Northern India both in the plains and in the Himalayas. The following gives data in illustration :—

	STATION.	Lowest minimum temperature recorded in March 1898.	Date on which recorded.	Lowest minimum temperature recorded in March previous to 1898.	Year in which recorded.
		°		°	
HILL STATIONS .	Murree . .	20·0	2nd	22·5	1897
	Simla . .	23·4	23rd	28·8	1893
	Chakrata. .	33·1	3rd, 4th and 5th	27·0	1873
	Ranikhet. .	33·0	3rd	31·5	1874
	Darjeeling .	26·8	5th	34·3	1891
PLAINS STATIONS	Peshawar .	37·9	3rd	37·9	1891 and 1892.
	Mooltan . .	42·9	4th	41·0	1878
	Jacobabad .	40·0	3rd	39·6	1882 and 1892.
	Kurrachee .	47·4	3rd	52·0	1882
	Lahore . .	40·2	4th	41·6	1891
	Ludhiana .	40·6	4th	40·6	1878
	Jeypore . .	38·2	4th	44·2	1892
	Meerut . .	41·1	4th	42·0	1874
	Roorkee . .	42·0	6th	40·2	1874
	Agra . .	45·4	4th	43·0	1864
	Lucknow .	45·7	4th	45·2	1880
	Nowgong .	44·0	4th	43·1	1880
	Jubbulpore .	38·4	4th	42·5	1878
	Sutna . .	45·2	5th	44·2	1880
	Allahabad .	45·4	5th	45·9	1880
	Patna . .	46·4	4th	46·3	1871
	Hazaribagh .	44·2	4th	46·2	1878
	Burdwan . .	51·8	5th	52·3	1892
	Berhampore .	48·1	5th	52·2	1878
	Calcutta . .	50·2	4th and 5th	52·3	1880
	Saugor Island .	54·5	5th	57·4	1880 and 1892.
	Narayangunj .	53·3	5th	53·8	1892
	Chittagong .	51·1	5th	53·2	1874
	Silchar . .	47·5	5th and 6th	48·0	1880
	Dhubri . .	51·3	5th	51·0	1897

Pressure increased considerably in Southern and Central Russia on the 24th and 25th of February and was excessively high on the 25th and following three or four days. Strongish northerly and north-westerly winds hence prevailed over the Persian area, and the rapid reduction of temperature due to this air movement commenced in West Persia on the 26th and 27th, and extended rapidly eastwards, as is shown by the following statement in

which data are also given for stations on the coast of the Persian Gulf and in Baluchistan :—

STATION.	MEAN TEMPERATURE OF DAY.				Reduction of temperature during period.
	25th Feb.	26th Feb.	27th Feb.	28th Feb.	
	°	°	°	°	°
Teheran	49·9	37·6	25·6	21·9	28·0
*Meshad	36·1	22·3	16·3	13·3	22·8
Ispahan	48·9	41·7	31·9	24·9	24·0
Baghdad	55·1	51·7	53·5	49·1	6·0
Bushire	63·4	66·4	59·0	60·7	4·4
Jask	66·8	68·1	70·5	71·8	...
Quetta	43·3	49·3	54·2	49·8	...
Kabul	45·6	52·3	46·0	45·0	7·3
Chitral	44·5	45·5	45·5	39·0	6·5
Kalat	39·3	47·5	47·9	44·9	...
Para Chinar	45·0	46·3	46·6	46·3	...

* 8 A.M. temperature.

Hence during the period from the 25th to the 28th the mean temperature was reduced from 20° to 28° on the Persian plateau. It fell slightly at Baghdad, and was practically unchanged in Baluchistan and Afghanistan.

The following gives comparative data for stations in Baluchistan and Afghanistan from the 28th February to the 3rd March :—

STATION.	MEAN TEMPERATURE OF DAY.				Reduction of temperature during period.
	28th Feb.	1st March.	2nd March.	3rd March.	
	°	°	°	°	°
Jask	71·8	64·3	56·8	61·1	15·0
Quetta	49·8	42·3	19·7	34·7	30·1
Kabul	45·0	40·3	30·6	33·9	14·4
Chitral	39·0	43·1	40·0	38·1	5·0
Kalat	44·9	37·2	17·1	26·8	27·8
Para Chinar	46·3	41·7	31·5	35·1	14·8
Cherat	56·2	54·9	38·4	33·1	23·1
Chaman	48·5	37·5	21·6	24·6	26·9

During the same period, temperature increased 20° at Ispahan and 13° at Teheran.

The reduction of temperature in Baluchistan, Afghanistan and the Indus Valley frontier hills was hence as large as on the Persian plateau and occurred about three days later and required practically the same period (three days) to give the maximum decrease of temperature. It is hence certain that the wave of low temperature which followed the first cold-weather storm of the month was in part only an effect of the snowfall in the Kashmir and Punjab Himalayas. It was chiefly due to an outflow of abnormally cool and dry air from an anticyclone over Russia across Persia, Baluchistan and Afghanistan into the plains of Northern India. The cool wave took about seven days to traverse the distance between West Persia and Bengal.

Temperature continued abnormally low over the whole of Northern and Central India and the Deccan during the next week. The following table gives mean temperature variations from the 6th to the 12th :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF						
	6th March.	7th March.	8th March	9th March.	10th March.	11th March.	12th March.
	°	°	°	°	°		°
Punjab	−4·8	−3·5	−1·5	−2·3	−2·7	−0·9	−0·4
Sind and Rajputana	−5·3	−2·0	+1·5	+0·1	+0·9	−0·1	+0·4
North-Western Provinces and Oudh.	−8·4	−5·8	−1·9	+0·2	−2·0	+0·6	−1·5
Central India	−7·6	−4·4	−0·6	+2·3	+2·2	+0·9	+0·7
Bihar	−9·4	−8·2	−5·0	−3·3	−2·0	−0·8	−1·3
Chota Nagpur	−8·2	−5·9	−2·5	−1·3	+1·5	+3·4	+2·7
Bengal	−10·3	−9·1	−6·5	−4·0	−3·4	−1·6	−0·5
Assam	−9·5	−8·0	−5·1	−3·8	−2·7	−0·6	−1·3
Orissa	−8·0	−4·1	−3·9	−3·2	−2·7	+0·6	+0·8
Central Provinces and Berar.	−8·3	−5·5	−2·3	+0·3	+2·8	+2·5	+3·0
Deccan	−1·2	−1·1	−1·0	−1·8	−2·2	−1·4	−0·9

Temperature was throughout the period most largely in defect in Bengal. The following gives comparative data for the stations at which the reduction of temperature was greatest from the 6th to the 9th :—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
6th March	Jessore	−11·2	−16·5	−13·9
,,	Calcutta	−9·5	−13·1	−11·3
,,	Berhampore	−9·9	−12·7	−11·3
,,	Burdwan	−7·1	−10·8	−9·0
,,	Darjeeling	−12·9	−13·2	−13·1
,,	Dhubri	−12·4	−11·2	−11·8
7th ,,	Darjeeling	−16·8	−12·5	−14·7
,,	Jessore	−8·5	−14·9	−11·7
,,	Berhampore	−8·1	−12·5	−10·3
,,	Saugor Island	−5·9	−16·0	−11·0

Date.	Station.	Variation from normal of Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
8th March	Darjeeling	— 8·4	—10·7	— 9·6
"	Jessore	— 6·9	—14·5	—10·7
"	Calcutta	— 4·6	— 9·6	— 7·1
9th "	Chittagong	— 5·5	—11·0	— 8·3
"	Jessore	— 2·9	—11·8	— 7·4

Remarkably low night temperatures hence prevailed in Bengal during the whole of this period, due largely to the abnormal dryness of the air accompanying the prevalence of northerly winds.

Temperature increased slowly from the 7th to the 12th, and rather rapidly on the 13th and 14th, and was again above the normal in Burma and North-Eastern India on the 15th.

A feeble cool wave affected North-Western India on the 9th and 10th. The following gives data :—

Province or Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 9th March.	10th March.	11th March.
	°	°	°
Baluchistan (Quetta)	—2·8	—5·6	+5·4
Sind	—4·1	—2·0	+0·5
Punjab	—2·3	—2·7	—0·9
Rajputana	+3·2	+3·1	—0·5

The reduction of temperature was due chiefly to rainfall accompanying a feeble disturbance in Baluchistan and Upper India.

Temperature was considerably to largely above the normal in North-Western and Central India, and was practically normal in North-Eastern India on the 13th. The following gives comparative data for that day :—

Province.	Variation from normal of Mean maximum temperature, 13th March.	Mean minimum temperature, 13th March.	Mean temperature, 13th March.
	°	°	°
Burma	+1·1	—2·8	—0·9
Bengal and Assam	+3·1	—3·5	—0·2
N.-W. Provinces and Oudh	+0·9	—2·3	—0·7
Punjab	+1·5	+3·7	+2·6
Sind and Rajputana	+4·0	+3·6	+3·8
Central India and Gujarat	+3·0	+1·0	+2·0
Central Provinces and Berar	+2·9	+2·7	+2·8
Bombay	+1·9	+0·6	+1·3
Madras	—0·5	—4·5	—2·5

Temperature continued in moderate to large genera excess in Northern and Central India and the Nort Deccan during the next three days, as is shown below :—

Province or Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 15th March.	16th March.	17th March.
	°	°	°
Punjab	+3·7	+3·7	+4·6
Sind and Rajputana	+4·6	+2·0	+2·7
North-Western Provinces and Oudh	+5·7	+5·6	+4·9
Central India and Gujarat	+4·5	+3·1	+3·1
Bihar	+2·3	+3·8	+4·7
Chota Nagpur	+3·9	+7·2	+5·1
Bengal	+1·5	+3·5	+3·0
Assam	+2·4	+4·3	+4·4
Orissa	+0·2	+1·0	+1·6
Central Provinces and Berar	+3·8	+4·1	+3·6

A cool wave of moderate intensity following heavy rair and snow in the Baluchistan and Afghanistan plateaux anc Kashmir advanced across North-Western India on the 18th and following days.

The following variation data show its progress :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 18th March.	19th March.	20th March.	21st March.	22nd March.	23rd March.	24th March.
	°	°	°	°	°	°	°
Baluchistan (Quetta)	—7·0	—7·7	—12·0	—8·5	—1·7	+6·2	+5·2
Punjab	+4·7	+2·1	— 4·1	—7·8	—5·1	—1·2	+1·7
Sind and Rajputana	+3·1	+0·5	— 1·8	—6·9	—4·6	+1·5	+3·3
North-Western Provinces and Oudh.	+4·5	+6·1	+ 2·6	—3·5	—7·3	—5·4	—3·1
Central India and Gujarat.	+4·7	+1·8	— 1·5	—4·7	—6·6	—3·1	—0·1

The reduction of temperature due to this cool wav was greatest on the 19th and 20th in Baluchistan, on th 21st in the Indus Valley and West Rajputana, on the 22n in East Rajputana and the western districts of the North Western Provinces, on the 23rd in the eastern districts o the North-Western Provinces and Bihar, and on the 24t in Central and South-West Bengal.

The following gives data for each day of two stations at which the reduction of temperature was greatest :—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
18th March.	Quetta	− 8·2	− 5·8	− 7·0
	Jacobabad	− 8·3	− 5·3	− 6·8
19th ,,	Quetta	− 8·8	− 6·6	− 7·7
	Jacobabad	− 5·8	+ 3·0	− 1·4
20th ,,	Quetta	−13·0	−10·9	−12·0
	Peshawar	−11·5	− 8·4	−10·0
21st ,,	Jacobabad	− 7·3	−11·5	− 9·4
	Dera Ismail Khan	−13·5	− 4·4	− 9·0
22nd ,,	Ludhiana	−12·3	− 7·8	−10·1
	Meerut	−10·3	− 9·8	−10·1
23rd ,,	Allahabad	− 7·8	− 8·3	− 8·1
	Gaya	− 6·7	− 8·2	− 7·5
24th ,,	Jessore	+ 0·1	−14·8	− 7·4
	Dhubri	− 2·4	− 9·7	− 6·1
	False Point	− 2·2	−10·4	− 6·3

Temperature fell in Madras on the 25th and 26th, and was in slight to moderate defect during the remainder of the month, as is shown below :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	26th March.	27th March.	28th March.	29th March.	30th March.	31st March.
	°	°	°	°	°	°
Madras	−2·9	−3·0	−2·3	−1·2	−0·2	+0·5

Temperature was generally above the normal over Northern and Central India during the last week of the month, as is shown by the following data :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	26th March.	27th March.	28th March.	29th March.	30th March.	31st March.
	°	°	°	°	°	°
Punjab	+2·3	+3·3	+3·7	+3·8	+5·0	+ 7·1
Sind and Rajputana	+1·4	+4·3	+3·3	+4·0	+3·6	+4·8
North-Western Provinces and Oudh.	+0·5	+3·7	+1·8	+2·1	+0·8	+1·7
Central India and Gujarat.	+1·0	+1·1	+0·9	+2·5	+2·3	+1·4
Bihar	−0·9	+3·0	+4·3	+2·6	+2·0	+0·5
Chota Nagpur	+2·1	+3·2	+4·6	+4·9	+4·2	+3·2
Bengal	−0·4	+1·2	+3·0	+2·9	+3·5	+0·2
Assam	+1·6	+2·9	+5·0	+5·1	+4·3	+3·4
Orissa	−2·8	−3·0	−0·5	+0·2	+0·6	+0·8
Central Provinces and Berar.	+0·9	+4·1	+2·9	+2·9	+2·9	+1·8

The chief feature of the temperature conditions of the last week of the month was the high temperature prevailing in Upper India. The highest temperatures of the month in Northern India were generally recorded during the last four days of the month. They were not, however, remarkable.

The following gives the most noteworthy :—

STATION.	Highest maximum temperature recorded in March 1898.	Date on which recorded.
	°	
Midnapore	106·9	31st
Burdwan	105·8	28th
Lucknow	103·8	27th
Montgomery	103·0	31st
Jacobabad	106·4	30th
Pachpadra	106·3	30th

The following table giving data for the 31st shows the conditions prevailing at the end of the month :—

PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 31st March.	Mean minimum temperature, 31st March.	Mean temperature, 31st March.
	°	°	°
Burma	+0·8	+0·9	+0·9
Bengal and Assam	+3·1	+0·7	+1·9
North-Western Provinces and Oudh	+3·4	0	+1·7
Punjab	+7·5	+6·6	+7·1
Sind and Rajputana	+4·4	+5·1	+4·8
Central India and Gujarat	+2·4	+0·3	+1·4
Central Provinces and Berar	+1·7	+1·8	+1·8
Bombay	+1·8	+2·0	+1·9
Madras	+0·8	+0·1	+0·5

The following gives the variations of the mean daily temperature from the normal, week by week during the month, in nine of the larger provinces or political divisions of the empire :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING					
	5th March 1898.	12th March 1898	19th March 1898	26th March 1898.	2nd April 1898.	For whole month.
	°	°	°	°	°	°
Burma	+0·3	−3·0	+1·0	+0·9	+1·1	−0·1
Bengal and Assam	−3·0	−4·0	+2·7	−0·6	+2·5	−0·7
North-Western Provinces and Oudh.	−4·9	−2·7	+4·1	−2·5	+2·5	−0·8
Punjab	−4·9	−2·3	+3·4	−1·8	+5·0	−0·3
Sind and Rajputana	−6·0	−0·6	+3·2	−0·7	+4·0	−0·3
Central India and Gujarat	−3·6	−0·6	+3·3	−2·0	+1·6	−0·5
Central Provinces and Berar.	−2·8	−1·1	+3·5	−1·0	+2·9	+0·7
Bombay	−0·3	+0·6	+2·1	+1·0	+1·1	+0·8
Madras	−1·3	−2·4	+0·1	+0·9	−0·5	−0·7

Winds.

Winds were practically normal in direction and strength in March at Port Blair and Rangoon. They were also slightly weaker in Bihar, Bengal and Orissa, but were much more westerly than usual at the inland stations :—

STATION.	MEAN WIND DIRECTION.			MEAN VELOCITY IN MILES PER DIEM.		
	Actual, March 1898.	Normal, March.	Increased westing.	Actual, March 1898.	Normal, March.	Variation from normal.
Calcutta . . .	S 88° W	S 36° W	52°	79	118	—39
Chittagong . . .	S 56° W	S 36° W	20°	142	129	+13
Berhampore . . .	S 81° W	S 71° W	10°	65	84	—19
Cuttack . . .	S 82° W	S 16° W	66°	57	79	—22

Winds were, on the other hand, less westerly than usual at False Point and Saugor Island, as shown below :—

STATION.	MEAN WIND DIRECTION.		
	Actual, March 1898.	Normal, March.	Decreased westing.
False Point	S 5° W	S 50° W	45°
Saugor Island . . .	S 10° W	S 26° W	16°

Winds were slightly stronger and much steadier than usual in Chota Nagpur and the North-Western Provinces. They were, as in the interior of Bengal, more westerly and less northerly than usual. The following gives mean data for five representative stations :—

STATION.	MEAN WIND DIRECTION.			MEAN STEADINESS.		
	Actual, March 1898.	Normal, March.	Westerly deflection.	Actual percentage, March 1898.	Normal percentage, March.	Variation from normal.
Patna	N 78° W	N 73° W	+ 5°	69	52	+17
Allahabad . . .	N 72° W	N 62° W	+10°	73	40	+33
Lucknow . . .	N 87° W	N 56° W	+31°	77	44	+33
Meerut . . .	S 87° W	N 60° W	Large	66	44	+22
Lahore . . .	N 25° W	N 10° W	+15°	29	31	— 2

Winds were very unsteady during the month in the North and West Punjab and Upper Sind. They were normal in strength in Central India and Rajputana, and were on the mean of the month more westerly than usual in Rajputana.

The following gives comparative data of the mean air movement of the month in Northern and Central India :—

PROVINCE.	MEAN VELOCITY IN MILES PER DIEM.		
	Average actual, March 1898.	Average normal, March.	Variation from normal.
Punjab	56	64	— 8
North-Western Provinces and Oudh .	100	85	+15
Bihar	85	102	—17
Chota Nagpur	236	194	+42
Bengal	119	139	—20
Rajputana	141	139	+ 2
Central India	84	95	—11

Winds were more variable than usual in the Central Provinces and Berar. The chief feature of the air movement in these provinces was the strongly marked easterly element in the winds of the month. This feature is shown clearly by the comparative data of six stations given below :—

STATION.	MEAN WIND DIRECTION.			MEAN STEADINESS.		
	Actual, March 1898.	Normal, March.	Easterly deflection.	Actual percentage, March 1898.	Normal percentage, March.	Variation from normal.
Akola . . .	N 58° E	N 43° W	Large	9	42	—33
Khandwa . .	N 14° E	N 45° W	59°	21	45	—24
Hoshangabad .	N 48° E	N 60° W	Large	2	12	—10
Nagpur . .	N 77° E	N 1° E	76°	27	12	+15
Raipur . . .	N 38° W	N 77° W	39°	23	25	— 2
Hyderabad (Deccan).	S 79° E	S 41° E	38°	31	23	+ 8

Winds were less steady and slightly weaker than usual at the Madras coast stations. They were, on the other hand, steadier than usual at the Mysore stations and were much more easterly than the normal at Bangalore, as was also

the case in the Madras Deccan. The following gives data :—

STATION.	MEAN WIND DIRECTION.			MEAN STEADINESS.		
	Actual, March 1898.	Normal, March 1898.	Easterly deflection.	Actual percentage, March 1898.	Normal percentage, March.	Variation from normal.
Bangalore . .	S 75° E	S 27° E	48°	55	46	+ 9
Bellary . . .	S 78° E	S 35° E	43°	39	19	+20

Winds varied very irregularly in the Bombay Deccan and the west coast districts from their normal directions. The chief feature was the abnormal prevalence of southerly winds over a part of the former area, as is shown by the following data :—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.		
	Actual, March 1898.	Normal, March.	Actual percentage, March 1898.	Normal percentage, March.	Variation from normal.
Poona	S 70° W	N 63° W	33	43	—10
Sholapur	S 84° E	N 44° E	22	5	+17
Belgaum	N 51° W	N 81° W	19	17	+ 2

The following gives data of the mean air movement of the month in different parts of the Peninsula :—

DIVISION.	MEAN VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Average actual, March 1898.	Average normal, March.	Variation from normal.	Average actual percentage, March 1898.	Average normal percentage, March.	Variation from normal.
Bombay Deccan . .	219	217	+2	25	22	+3
Konkan . . .	169	198	—29	71	63	+8
Mysore . . .	158	128	+30	52	40	+12
Coorg . . .	36	83	—47	13	22	—9
Madras Coast . .	98	124	—26	57	66	—9
South Madras . .	124	109	+15	47	44	+3
Central Provinces .	85	98	—13	20	24	—4
Berar	151	145	+6	16	45	—29

Winds were unusually strong and somewhat steadier than usual at Aden and were practically normal at Perim, as is shown by the following data :—

STATION.	MEAN VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, March 1898.	Normal, March.	Variation from normal.	Actual percentage, March 1898.	Normal percentage, March.	Variation from normal.
Perim	426	441	—15	68	55	+13
Aden	461	366	+95	74	72	+ 2

They were, on the other hand, very variable at Zanzibar and the Seychelles and also feebler than usual. The following gives data :—

STATION.	MEAN VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, March 1898.	Normal, March.	Variation from normal.	Actual percentage, March 1898.	Normal percentage, March.	Variation from normal.
Zanzibar	102	141	—39	8	21	—13
Seychelles . . .	90	127	—37	23	56	—33

The following gives the chief features of the mean air movement of the month in India :—

(1) Winds were lighter than usual in Bengal and, at the inland stations, were marked by a strong westerly component. At the coast stations, the mean winds of the month were less westerly than usual.

(2) Winds were stronger and steadier than usual in Chota Nagpur and the North-Western Provinces, but were remarkably unsteady in the Punjab.

(3) Winds, on the mean of the month, were much more easterly than usual in Berar, the Central Provinces, the Deccan and Mysore.

(4) Winds were considerably lighter than usual at Zanzibar and the Seychelles.

Humidity and cloud.

The mean humidity conditions of the Burma coast stations were practically normal. The aqueous vapour pressure was in moderate defect at Port Blair. The following gives data for three stations :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, March 1898.	Normal, March.	Variation of actual from normal.	Actual, March 1898.	Normal, March.	Variation of actual from normal.
	"	"	"	%	%	
Akyab . . .	·684	·678	+·006	73	71	+2
Rangoon . . .	·660	·671	—·011	63	64	—1
Port Blair . . .	·812	·863	—·051	74	76	—2

The air was somewhat damper than usual on the mean of the month in the North Punjab and Kashmir, as is shown below :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, March 1898.	Normal, March.	Variation from normal.	Actual, March 1898.	Normal, March.	Variation from normal.
	"	"	"	%	%	
Peshawar . . .	·334	·328	+·006	60	57	+3
Srinagar . . .	·281	·232	+·049	79	77	+2

The air was drier than usual over the remainder of India. The following gives comparative data for the various provinces :—

PROVINCE.	ABSOLUTE HUMIDITY.			RELATI HUMIDITY.		
	Average actual, March 1898.	Average normal, March.	Variation from normal.	Average actual, March 1898.	Average normal, March.	Variation from normal.
	"	"	"	%	%	
Assam	·479	·541	—·062	62	71	— 9
Bengal . . .	·527	·628	—·101	56	66	—10
Bihar	·396	·419	—·023	46	50	— 4
Chota Nagpur . .	·220	·284	—·064	25	34	— 9
North-Western Provinces and Oudh . . .	·292	·337	—·045	39	45	— 6
Punjab . . .	·321	·359	—·038	48	54	— 6
Rajputana . . .	·231	·315	—·084	26	36	—10
Central India . .	·246	·299	—·053	29	36	— 7
Central Provinces . .	·279	·326	—·047	28	35	— 7
Berar . . .	·226	·292	—·066	20	29	— 9
Bombay Coast . .	·738	·754	—·016	69	73	— 4
Deccan . . .	·326	·370	—·044	32	36	— 4
Madras Coast .	·706	·740	—·034	68	69	— 1
Mysore . . .	·336	·440	—·104	38	49	—11

The deficiency was very marked over nearly the whole of the interior and was almost entirely due to the amount of aqueous vapour present in the air being much less than usual, in some cases as much as 30 to 40 per cent. below the normal amount of the period.

The deficiency was very pronounced in four areas. The first area included Cachar and the central and southern districts of Bengal. The following gives data for stations in that area :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, March 1898.	Normal, March.	Variation from normal.	Actual, March 1898.	Normal, March.	Variation from normal.
	"	"	"	%	%	
Berhampore . . .	·344	·499	—·155	38	56	—18
Calcutta . . .	·456	·634	—·178	49	66	—17
Silchar . . .	·455	·579	—·124	55	72	—17
Narayanganj . .	·512	·624	—·112	55	66	—11

The second area included the hill districts of the Punjab and the North-Western Provinces, where the mean humidity of the month was from 10 to 18 below the normal, as is shown below :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, March 1898.	Normal, March.	Variation from normal.	Actual, March 1898.	Normal, March.	Variation from normal.
	"	"	"	%	%	
Chakrata . . .	·152	·194	—·042	35	53	—18
Ranikhet . . .	·197	·232	—·035	39	53	—14
Simla	·146	·185	—·039	38	50	—12

The third area included the greater part of Rajputana, the South-West Punjab and Sind. The following gives data :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, March 1898.	Normal, March.	Variation from normal.	Actual, March 1898.	Normal, March.	Variation from normal.
	"	"	"	%	%	
Ludhiana . . .	·295	·364	—·069	41	54	—13
Jeypore . . .	·221	·305	—·084	25	37	—12
Deesa . . .	·181	·299	—·118	19	29	—10
Kurrachee . . .	·461	·591	—·130	51	65	—14
Mooltan . . .	·305	·389	—·084	41	52	—11

The fourth area of great deficiency of aqueous vapour included the Deccan and Mysore, for which data are given in the following table :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, March 1898.	Normal, March.	Variation from normal.	Actual, March 1898.	Normal, March.	Variation from normal.
	"	"	"	%	%	
Mercara	·406	·484	—·078	53	63	—10
Hassan	·338	·454	—·116	43	56	—13
Bangalore	·343	·455	—·112	39	50	—11
Mysore	·342	·455	—·113	38	48	—10
Hyderabad (Deccan).	·388	·465	—·077	35	45	—10
Sholapur	·256	·344	—·088	21	31	—10
Buldana	·183	·282	—·099	16	28	—12
Khandwa	·225	·302	—·077	21	31	—10
Raipur	·274	·359	—·085	26	36	—10
Wellington	·241	·334	—·093	43	60	—17

The humidity data for Bellary are certainly wrong and probably also those of Nagpur and Pachmarhi.

The month of March was abnormally dry, in fact one of the driest on record, and as already pointed out, the great dryness of the air was due mainly to the decreased amount of vapour present in the air. The march of the first storm of the month was followed by an abnormally dry as well as cool wave, and the introduction of this great mass of dry air from the Persian area followed by the continuance of fine weather resulted in the prevalence throughout the whole month of great and abnormal dryness of the air. The period from the 1st to the 8th was characterized by remarkably low humidities over the whole of Northern and Central India and the Deccan. The following gives the most noteworthy :—

Station.	Date.	Hour.	Aqueous vapour pressure.	Humidity.
			"	%
Kurrachee	1st March	4 P.M.	·058	8
Jacobabad	,, ,,	,,	·031	6
Mount Abu	2nd ,,	10 A.M.	·030	8
Jacobabad	,, ,,	4 P.M.	·054	7
Deesa	,, ,,	,,	·018	1
Sholapur	,, ,,	,,	·117	6
Kurrachee	,, ,,	10 A.M.	·049	8
Jacobabad	3rd ,,	,,	0	0
Buldana	,, ,,	,,	0	0
Buldana	3rd March	4 P.M.	0	0
Poona	,, ,,	,,	·043	4
Deesa	,, ,,	,,	·022	3
Khandwa	4th ,,	,,	·088	8
Buldana	,, ,,	10 A.M.	0	0
Do.	,, ,,	4 P.M.	0	0
Poona	,, ,,	10 A.M.	·023	1
Akola	,, ,,	4 P.M.	·114	9
Deesa	,, ,,	,,	·041	5
Cuttack	,, ,,	,,	·076	6
Buldana	5th ,,	10 A.M.	·046	5
Mount Abu	,, ,,	4 P.M.	·031	4
Deesa	,, ,,	10 A.M.	·056	4
Saugor	6th ,,	4 P.M.	·056	5
Calcutta	8th ,,	,,	·163	11
Berhampore	,, ,,	,,	·135	9

Zero humidities were recorded by the observers at Jacobabad and Buldana. This of course implies that the formula employed for the determination of the actual vapour pressure and humidity is not correct for great differences between the wet and dry bulb thermometers.

The period from the 20th to the 23rd was also marked by great dryness of the air. The following gives the lowest humidities recorded during this period :—

Station.	Date.	Hour.	Aqueous vapour pressure.	Humidity.
			"	%
Deesa	20th March	4 P.M.	·057	4
Poona	,, ,,	,,	·127	6
Mount Abu	21st ,,	,,	·062	7
Sutna	,, ,,	,,	·068	6
Akola	,, ,,	,,	·148	8
Poona	,, ,,	,,	·113	6
Mount Abu	22nd ,,	10 A.M.	·045	4
Sutna	,, ,,	4 P.M.	·090	7
Khandwa	,, ,,	,,	·082	4
Nagpur	,, ,,	10 A.M.	·117	8
Akola	,, ,,	,,	·168	8
Poona	,, ,,	4 P.M.	·118	6
Do.	23rd ,,	,,	·076	4
Buldana	,, ,,	10 A.M.	·082	5
Do.	,, ,,	4 P.M.	·062	4

The mean humidity of the month was practically normal at Zanzibar, the Seychelles, Aden, Bushire and Baghdad and was slightly below it at Muscat.

The driest stations in India during the month (at which the mean humidity percentages of the month were less than 25) are given below :—

STATION.	RELATIVE HUMIDITY.		
	Actual, March 1898.	Normal, March.	Variation from normal.
	%	%	
Deesa	19	29	—10
Khandwa	21	31	—10
Buldana	16	28	—12
Saugor	23	32	— 9
Sholapur	21	31	—10
Mount Abu	21	32	—11

The variations of the mean distribution of cloud during the month from the normal differed very largely in general character from the variations of the humidity conditions of the lower air strata.

The mean amount of cloud of the month was in slight excess in Baluchistan, Upper Sind, the western half of the Punjab and at the higher level hill stations in the Western Himalayas, as is shown by the following data :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, March 1898.	Normal, March.	Variation from normal.
Quetta	4·4	4·1	+0·3
Jacobabad	3·6	3·0	+0·6
Mooltan	1·2	2·6	—1·4
Peshawar	5·1	4·8	+0·3
Leh	6·9	6·3	+0·6
Kailang	6·5	6·2	+0·3

Cloud was more or less below the normal over the whole of India, except the districts in Upper India named above in which there was a slight excess. The deficiency increased in amount from Upper India eastwards to South Bengal and Burma and southwards to Southern India. The following gives comparative data for Northern and Central India and Burma :—

AREA.	MEAN CLOUD AMOUNT.		
	Average Actual, March 1898.	Average Normal, March.	Variation from normal.
Burma	0·4	2·2	—1·8
Assam	2·1	4·3	—2·2
Bengal	0·5	3·0	—2·5
Bihar	0·2	2·0	—1·8
Chota Nagpur	0·4	2·7	—2·3
North-Western Provinces and Oudh	2·0	2·6	—0·6
Punjab	3·3	3·7	—0·4
Rajputana	2·0	2·5	—0·5
Central India	1·1	2·4	—1·3

Skies were hence abnormally free from cloud over the greater part of Bengal and Bihar. The mean cloud amount of the month was less than 0·5 at the stations for which data are given below :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, March 1898.	Normal, March.	Variation from normal.
Calcutta	0·1	2·5	—2·4
Darbhanga	0·1	1·3	—1·2
Rangoon	0·2	2·1	—1·9
Cuttack	0·3	2·4	—2·1
Berhampore	0·3	2·8	—2·5
Patna	0·3	2·6	—2·3
Burdwan	0·4	2·5	—2·1
Hazaribagh	0·4	2·7	—2·3
Ratnagiri	0·3	0·7	—0·4

Cloud was in slight defect at the lower hill stations of Upper India and was normal in amount at Darjeeling. The following gives comparative data for five stations :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, March 1898.	Normal, March.	Variation from normal.
	c	c	c
Murree	5·8	5·9	—0·1
Simla	4·6	4·8	—0·2
Chakrata	3·3	3·9	—0·6
Ranikhet	2·6	3·7	—1·1
Darjeeling	5·3	5·2	+0·1

Cloud was also slightly below the normal at Mount Abu and Pachmarhi, as is shown below:—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, March 1898.	Normal, March.	Variation from normal.
Mount Abu	1·5	2·5	—1·0
Pachmarhi	1·6	2·1	—0·5

Cloud was more or less considerably in defect over the whole of the Peninsula. The deficiency was more marked in the eastern than the western half. Comparative data for this large area of decreased cloud in March are given below :—

AREA.	MEAN CLOUD AMOUNT.		
	Average Actual, March 1898.	Average Normal, March.	Variation from normal.
Berar	1·8	2·0	—0·2
Central Provinces	1·3	2·0	—0·7
Bombay Deccan	1·1	2·1	—1·0
Madras Deccan	1·4	2·3	—0·8
Mysore	1·1	2·7	—1·6
Coorg	3·1	4·0	—0·9
West Coast	0·9	1·7	—0·8
Madras Coast	1·2	1·8	—0·6

The mean cloud amount was less than 1·0 at the stations for which data are given below :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, March 1898.	Normal, March.	Variation from normal.
Belgaum	0·8	1·9	—1·1
Ratnagiri	0·3	0·7	—0·4
Bombay	0·6	1·6	—1·0
Bangalore	0·5	2·3	—1·8
Mysore	0·9	2·3	—1·4
Chitaldrug	0·8	2·3	—1·5

There was, on the other hand, more cloud at Muscat, Aden, Perim and Zanzibar than usual but less at the Seychelles.

The chief abnormal features of the cloud distribution of the month were :—

1st.—Slight excess in Sind, the western half of the Punjab and Baluchistan.

2nd.—Moderate to large deficiency in Burma, Bengal, Assam, Bihar, Chota Nagpur, the North-Western Provinces, Rajputana and Central India, and slight deficiency on the lower hills in Upper India. Cloud was very largely below the normal in Burma, Bengal, Orissa, Bihar and Chota Nagpur.

3rd.—Moderate to considerable deficiency in the Peninsula, most pronounced in the Deccan, Mysore and Coorg.

4th.—Skies were practically free from cloud during the whole month in the Burma coast districts, South and West Bengal, Chota Nagpur and Bihar.

Rainfall.

The normal rainfall of the month of March is small in amount over by far the greater part of India, ranging between an average of a hundredth of an inch and an inch in amount over the whole of India, except the following districts :—

1st.—South Madras, where it slightly exceeds an inch.

2nd.—Bengal, Orissa and Assam, in which it ranges from an inch in Orissa and Central Bengal, to 3 inches in East Bengal, 4 inches in the Assam Valley and 9 inches in Cachar.

3rd.—The hill districts of the North-Western Provinces and the hill, submontane and north-west divisions of the Punjab in which it ranges between one inch in the submontane districts and three inches on the outer ranges of the Punjab hills.

The greater part of the rainfall of the month occurred during the passage of five depressions across Northern India. These depressions affected Northern India during the following periods:—The 1st to the 4th, the 9th and 10th, the 12th to the 15th and the 16th to the 20th. A fifth depression, the feeblest of the series, advanced from Baluchistan into North-Western India on the 22nd and filled up in that area. The first depression gave light to moderate rain in Baluchistan, the North Punjab and Kashmir and snow on the adjacent hills, and showers in North-Eastern India, chiefly Bihar, North Bengal and Assam.

The remaining four depressions, although they each gave some cloud in their passage across Northern India, only gave rain in Baluchistan, the North Punjab and Kashmir. The rainfall was abundant in Baluchistan and light to moderate in the North Punjab and Kashmir. Moderate to heavy snow fell in Chitral and the Afghan mountain districts.

The following table gives comparative rainfall data for the 57 meteorological or rainfall divisions of the Empire :—

Province.	Division.	Rainy days. Average actual, March 1898.	Rainy days. Average normal, March.	Rainfall. Average actual, March 1898.	Rainfall. Average normal, March.	Rainfall. Variation from normal.
				Inches.	Inches.	Inches.
Burma	Tenasserim	0·1	?	0·04	?	?
	Lower Burma (Deltaic)	0	?	0·02	?	?
	Central ditto	0	?	0	?	?
	Upper ditto	0·1	?	0·02	0·31	—0·29
	Arakan	0	?	0	?	?
Bengal and Assam	Eastern Bengal	0·5	3·3	0·26	2·60	—2·34
	Assam (Surma)	2·3	8·7	1·02	8·46	—7·44
	Do. (Hills)	1·9	5·5	0·72	3·58	—2·86
	Do. (Brahmaputra)	1·8	7·6	0·92	4·13	—3·21
	Deltaic Bengal	0	2·6	0·04	1·68	—1·64
	Central do.	0·2	1·8	0·04	1·03	—0·99
	North do.	0·3	1·8	0·08	1·23	—1·15
	Bengal Hills	1·3	3·2	0·35	1·84	—1·49
	Orissa	0	2·1	0	1·21	—1·21
	Chota Nagpur	0·1	1·9	0·03	0·98	—0·95
	Bihar (South)	0·4	0·9	0·12	0·45	—0·33
	Do. (North)	0·4	0·9	0·12	0·46	—0·34
North-Western Provinces and Oudh.	North-Western Provinces (East)	0	0·7	0·01	0·26	—0·25
	Oudh (South)	0·1	0·7	0·03	0·30	—0·27
	Do. (North)	0	0·9	0·03	0·43	—0·40
	North-Western Provinces (Central)	0	0·7	0·01	0·28	—0·27
	Do. do. (West)	0	1·1	0	0·42	—0·42
	Do. do. (East Submontane)	0·1	0·7	0·02	0·29	—0·27
	Do. do. (West do.)	0	1·8	0·01	0·88	—0·87
	Do. do. (Hills)	0·3	3·6	0·06	2·10	—2·04
Punjab	Punjab (South-East)	0	0·9	0	0·47	—0·47
	Do. (South)	0	0·9	0	0·49	—0·49
	Do. (Central)	0·1	1·5	0·02	0·89	—0·87
	Do. (Submontane)	0	1·7	0	1·14	—1·14
	Do. (Hills)	0·5	4·4	0·12	3·45	—3·33
	Do. (North)	3·9	3·1	1·60	1·97	—0·37
	Do. (West)	0	1·0	0·02	0·54	—0·52
Bombay and Malabar Coast Districts (Madras).	Malabar	0·3	0·8	0·12	0·44	—0·32
	Travancore	1·0	?	0·47	?	?
	Madras (South Central)	0·1	0·9	0·05	0·54	—0·49
	Coorg	0·9	?	0·35	?	?
	Mysore*	?	?	0·04	0·36	—0·32
	Konkan	0·2	0·2	0·08	0·07	+0·01
	Bombay Deccan	0·6	0·4	0·29	0·19	+0·10
	Hyderabad North	0	?	0	0·26	—0·26
	Khandesh	0	0·1	0	0·03	—0·03
Central Provinces and Berar.	Berar*	?	?	0·04	0·16	—0·12
	Central Provinces (West)	0	0·6	0	0·28	—0·28
	Do. (Central)	0·1	0·8	0·02	0·41	—0·39
	Do. (East)	0·1	1·1	0·04	0·53	—0·49
Bombay (North)	Gujarat	0	0	0	0·01	—0·01
	Kathiawar	0	0·1	0	0·05	—0·05
	Sind	0	?	0	0·28	—0·28
	Baluchistan Hills	4·7	?	1·98	1·14	+0·84
Rajputana and Central India.	Central India (East)	0	?	0·01	0·26	—0·25
	Rajputana (East) and Central India (West)	0	?	0	0·24	—0·24
	Rajputana (West)	0	?	0	0·14	—0·14
Madras	East Coast (North)	0·1	0·8	0·03	0·51	—0·48
	Do. (do.) (a)	0·5	2·0	0·13	1·01	—0·88
	Hyderabad (South)	0·2	?	0·08	0·38	—0·30
	Madras (Central)	0·1	0·3	0·04	0·14	—0·10
	East Coast (Central)	0	0·3	0	0·21	—0·21
	Do. (South)	0	0·5	0	0·36	—0·36
	Madras (South)	0·3	1·5	0·16	1·06	—0·90

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

The rainfall of the month was actually or practically *nil*, *i.e.*, less than a tenth of an inch) in Sind, Cutch, Gujarat, Kathiawar, the Punjab (except the most northern districts), the North-Western Provinces, Chota Nagpur, North,

Central and Deltaic Bengal, Orissa, Burma, the Central Provinces, Berar, Rajputana, Central India, the Konkan, Mysore, Hyderabad and the whole of the Madras Presidency except the southern division, Malabar and Travancore. It was less than an inch in total amount over the whole of the remainder of India with the exception of three areas, *viz.*:—

(1) The Baluchistan Plateau.
(2) The North Punjab.
(3) Assam (Surma) or Cachar.

Baluchistan received more frequent rain than usual. The chief periods of rainfall were—

1st.—The 1st, when light showers fell on the plateau.

2nd.—The 8th and 9th, when light to moderate rain was received, chiefly at the stations over 4,000 feet in elevation.

3rd.—The 12th to the 14th. Moderate rain was received at stations above 4,000 feet and local showers at stations below that level.

4th.—The 16th to the 18th. Moderate to heavy rain fell over practically the whole of Baluchistan. Falls in 24 hours exceeding one inch were recorded at a large number of stations.

5th.—The 24th, when light local showers fell at the higher stations in Baluchistan.

The rainfall was associated with a series of depressions, all of which originated in Western Persia and advanced eastwards across Central and Eastern Persia and Baluchistan. The total rainfall of the month was in largish excess, as is shown by the comparative data given in the following table:—

PROVINCE.	RAINFALL.		
	Actual, March 1898.	Normal, March.	Variation from normal.
	Inches.	Inches.	Inches.
Baluchistan Hills	1·98	1·14	+0·84

The following gives data for six stations at which the excess was largest:—

STATION.	RAINFALL.		
	Actual, March 1898.	Normal, March.	Variation from normal.
	Inches.	Inches.	Inches.
Peshin	3·18	1·61	+1·57
Quetta	3·56	1·77	+1·79
Bostan	3·77	1·39	+2·38
Killa Abdulla	5·40	1·43	+3·97
Kachh	4·36	2·06	+2·30
Mudgorge	4·14	1·63	+2·51

Kashmir received rain from the same disturbances as Baluchistan. The periods of rainfall were the 1st and 2nd, the 8th and 9th, the 13th to the 15th and the 17th to the 19th. The falls were, however, generally very light and the total rainfall of the month was unusually small. Twelve out of the twenty-one reporting stations had totals of less than one inch. The rainfall ranged between 7·69 inches at Pattan and *nil* at Jummo and three other stations. Normal averages are not yet available for Kashmir, but a comparison with the rainfall data of the past five years shows that the precipitation in March 1898 was scanty and much below the normal.

No rain fell over by far the greater part of the Punjab. The only plains districts which received rain were Jhelum, Rawalpindi, Peshawar, Hazara, Kohat, Bannu and Dera Ismail Khan and the fall in the Jhelum and Dera Ismail Khan districts was very small in amount. These seven districts in the North Punjab had rain on four occasions during the month, *viz.*, the 2nd, the 9th, the 14th and 15th and the 18th to the 20th. The following gives comparative rainfall data of the month for these districts:—

DISTRICT.	RAINFALL.		
	Average actual, March 1898.	Average, normal, March.	Variation from normal.
	Inches.	Inches.	Inches.
Jhelum	0·17	1·11	−0·94
Rawalpindi	0·94	2·04	−1·10
Peshawar	2·08	1·53	+0·55
Hazara	2·75	4·36	−1·61
Kohat	1·62	2·03	−0·41
Bannu	0·50	0·95	−0·45
D. I. Khan	0·12	0·64	−0·52

The rainfall of the month was below the normal in all these districts except Peshawar, the most northerly.

The rainfall of the month was very deficient in Bengal. Light showers fell on the 2nd and 3rd over the whole province. East Bengal had local showers on the 22nd, 23rd and 30th and Sikkim on the 19th, 20th, 29th and 30th. The following comparative data for the nine divisions of

the province indicate the general deficiency :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, March 1898.	Average normal, March.	Variation from normal.	Average actual, March 1898.	Average normal, March.	Variation from normal.
				Inch.	Inches.	Inches.
Eastern Bengal . .	0·5	3·3	—2·8	0·26	2·60	—2·34
Deltaic „ . .	0	2·6	—2·6	0·04	1·68	—1·64
Central „ . .	0·2	1·8	—1·6	0·04	1·03	—0·99
North „ . .	0·3	1·8	—1·5	0·08	1·23	—1·15
Bengal Hills . .	1·3	3·2	—1·9	0·35	1·84	—1·49
Orissa . . .	0	2·1	—2·1	0	1·21	—1·21
Chota Nagpur . .	0·1	1·9	—1·8	0·03	0·98	—0·95
South Bihar . .	0·4	0·9	—0·5	0·12	0·45	—0·33
North „ . .	0·4	0·9	—0·5	0·12	0·46	—0·34

March was an unusually dry month in Assam. Weather was showery on the 3rd and 4th, the 17th to the 23rd and the 29th to the 31st. The falls were as a rule remarkably light and rarely exceeded an inch in amount. The Brahmaputra division obtained an average of only 0·92 inch or 22 per cent. of the normal and the Surma division of 1·02 inches or only 12 per cent. of the normal. The fall for the whole province averaged barely one-sixth of the normal amount. The following gives data for the eight districts of Assam :—

District.	Number of rainy days.			Rainfall.		
	Average actual, March 1898.	Average normal, March.	Variation from normal.	Average actual, March 1898.	Average normal, March.	Variation from Normal.
				Inches.	Inches.	Inches.
Cachar . . .	2·9	9·5	—6·6	1·36	8·70	—7·34
Sylhet . . .	1·6	7·9	—6·3	0·61	8·25	—7·64
Goalpara . . .	0·5	3·4	—2·9	0·41	2·37	—1·96
Kamrup . . .	1·0	5·3	—4·3	0·49	3·81	—3·32
Darrang . . .	1·5	5·8	—4·3	0·75	3·04	—2·29
Nowgong . . .	1·9	5·6	—3·7	0·72	2·71	—1·99
Sibsagar . . .	2·4	9·0	—6·6	0·90	4·44	—3·54
Lakhimpur . . .	3·5	11·3	—7·8	2·09	6·18	—4·09

By far the greater part of Madras was rainless throughout the month. The Tinnevelly district received light showers from the 4th to the 7th and Travancore, Malabar and Coorg had light showers during the last week of the month. The following gives comparative data for the eight divisions of the Presidency :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, March 1898.	Average normal, March.	Variation from normal.	Average actual, March 1898.	Average normal, March.	Variation from normal.
				Inch.	Inches.	Inch.
Malabar . . .	0·3	0·8	—0·5	0·12	0·44	—0·32
Madras (South Central)	0·1	0·9	—0·8	0·05	0·54	—0·49
Madras (East Coast, North).	0·1	0·8	—0·7	0·03	0·51	—0·48
Madras (East Coast, North) (a)	0·5	2·0	—1·5	0·13	1·01	—0·88
Madras Central .	0·1	0·3	—0·2	0·04	0·14	—0·10
Madras (East Coast Central).	0	0·3	—0·3	0	0·21	—0·21
Madras (East Coast, South).	0	0·5	—0·5	0	0·36	—0·36
Madras (South) . .	0·3	1·5	—1·2	0·16	1·06	—0·90

Table

Abstract of Observations taken at 8 A.M. at 217

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level, in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·047	...	...	...	...	...	...	...	91·6	−0·3	71·5	−0·2	81·6	−0·2	20·2	...	...	...	...	30·6
		Car Nicobers	25	29·875	?	?	29·931	1st	29·816	28th	·115	79·7	88·6	?	73·6	?	81·1	?	15·0	90·5	28th & 31st	68·2	19th	22·3
1	Tenasserim and Bay Islands.	Port Blair	61	29·877	?	29·869	29·955	1st	29·813	28th	·142	77·9	89·7	?	74·7†	?	82·3†	?	15·0	92·5	28th	71·4	8th	21·1
		Mergui	96	29·834	?	29·862	29·902	1st	29·789	16th & 28th	·113	80·3	90·4	?	73·2	?	81·8	?	17·2	94·1	29th	70·4	3rd & 4th	23·7
		Tavoy	26	29·900	−·049	29·857	29·971	1st	29·860	28th	·111	75·6	92·8	−0·2	71·0	+0·9	81·9	+0·4	21·8	97·2	29th	64·5	3rd	32·7
		Moulmein	94	29·819	?	29·852	29·895	1st	29·769	28th	·126	77·2	93·4	−0·5	72·6	+0·3	83·0	−0·1	20·8	97·4	30th	64·4	7th	33·0
2	Lower Burma	Rangoon	41	29·880	−·051	29·858	29·954	1st	29·814	16th	·140	73·5	97·6	+1·3	69·5	−1·4	83·0	−0·1	28·1	101·7	31st	60·8	8th	40·9
		Bassein	27	29·894	−·041	29·860	29·961	1st	29·827	28th	·134	75·6	94·1	−0·2	70·3	+0·1	82·2	−0·1	23·8	99·2	26th	64·8	7th	34·4
		Diamond Island.	41	29·889	−·045	29·865	29·958	1st	29·826	28th	·132	78·8	83·8	−1·9	75·2	+0·5	79·1	−0·7	8·6	88·6	10th	72·4	2 days	16·2
5	Arakan	Akyab	20	29·910	−·046	29·873	29·971	1st	29·844	2 days	·127	72·5	88·3	−0·6	65·2	−3·0	77·1	−1·8	22·5	92·8	3 days	53·7	7th	39·1
3	Central Burma	Toungoo	183	29·711	−·052	29·840	29·782	1st	29·640	16th	·142	73·4	97·7	0	68·8	+1·3	83·3	+ 0·7	28·9	102·7	31st	60·1	2 days	42·6
	II.—Burma Inland.		...	...	−·020	...	...	...	...	...	...	...	97·5	+2·0	63·5	−1·7	80·5	+0·2	34·0	...	...	...	...	51·8
8	Central Burma	Thayetmyo	134	29·764	−·046	29·843	29·848	1st	29·68	16th	·166	74·3	100·4	+0·7	64·4	−1·8	82·4	−0·6	36·0	105·1	29th	50·7	8th	54·4
4	Upper Burma	Mindu	?	29·739	−·015	?	29·868	1st	29·646	16th	·222	75·3	99·6	+0·3	68·2	−0·6	83·9	−0·2	31·4	104·6	23rd	55·0	7th	49·6
		Yamethin	657	29·236	−·022	29·851	29·323	24th	29·145	17th	·178	75·7	101·0	+2·6	67·3	−0·4	84·2	+1·1	33·7	106·5	2 days	56·2	10th	50·3
		Mandalay	250	29·647	−·015	29·863	29·747	9th	29·539	21st	·209	75·7	98·8	+1·7	66·3	−1·3	82·6	+0·2	32·5	103·6	2 days	56·2	2 days	47·4
		Kindat	?	29·536	−·010	?	29·670	9th	29·411	28th	·259	64·3	93·6	+3·6	56·8	−3·8	75·2	−0·1	36·8	100·8	30th	45·5	6th	55·3
		Bhamo	?	29·518	−·013	?	29·659	9th	29·395	21st	·264	66·2	91·6	+3·3	57·9	−2·4	74·8	+0·5	33·7	100·1	30th	46·4	7th	53·7
4 (a)	Burma Hill Stations.	Taunggyi	?				Not re	corded.				70·0	83·7	?	52·3	?	68·0	?	31·4	87·1	28th	45·0	9th	42·1
		Lashio	?	27·143	+·019	?	27·247	9th	27·056	17th	·191	61·2	88·4	+3·2	53·4	−2·2	70·9	+0·5	35·0	91·5	2 days	45·0	9th	46·5
	III.—Assam.		...	...	−·027	...	...	...	...	...	...	...	86·5	+2·9	60·5	−2·2	73·5	+0·4	26·0	...	...	...	...	45·3
7	Surma	Silchar	104	29·838	−·026	29·896	29·968	6th	29·719	16th	·249	68·6	90·2	+4·9	60·6	−2·8	75·4	+1·1	29·6	97·6	30th	47·5	2 days	50·1
9	Brahmaputra	Sibsagar	333	29·599	−·037	29·902	29·737	9th	29·448	21st	·289	63·9	81·8	+2·6	58·5	−1·6	70·2	+0·5	23·3	88·7	31st	49·4	6th	39·3
		Dhubri	115	29·792	−·017	29·866	29·945	6th	29·643	21st	·302	68·6	87·6	+1·1	62·4	−2·1	75·0	−0·5	25·2	97·7	30th	51·3	5th	46·4
	IV.—Bengal and Orissa.		...	...	−·022	...	...	...	...	...	...	...	90·5	+1·2	64·1	−3·3	77·6	−1·0	26·7	...	...	...	...	48·8
6	East Bengal	Chittagong	87	29·838	−·039	29·876	29·938	6th	29·741	20th	·197	71·4	87·2	+1·0	63·7	−4·0	75·5	−1·5	23·5	93·7	13th	51·1	5th	42·6
		Lungleh	?				Not re	corded.				68·4	77·7	?	?	?	?	?	?	86·8	24th	?	...	?
		Noakhali	43	29·872	?	29·862	29·998	6th	29·769	16th	·229	73·4	87·0	?	63·3	?	75·2	?	23·7	92·5	14th	45·4	5th	47·1
		Comilla	36	29·879	?	29·863	30·003	6th	29·766	16th	·237	72·3	91·5	?	64·0	?	77·8	?	27·5	96·3	5 days	48·1	5th	48·2
		Sirajganj	49	29·837	?	29·837	29·991	6th	29·710	16th	·281	68·8	91·4*	?	60·9	?	76·2*	?	30·5	100·4	30th	46·5	4th & 5th	53·9
		Narayanganj	26	29·880	−·037	29·856	30·023	6th	29·760	20th	·263	71·6	90·7	+0·7	65·6	−2·8	78·2	−1·1	25·1	97·1	21st	53·3	5th	43·8
		Barisal	13	29·895	−·037	29·853	30·024	6th	29·781	20th	·243	73·7	90·6	+2·7	66·3	−2·9	78·5	−0·1	24·3	96·3	3 days	51·2	5th	45·1
		Mymensingh	59	29·849	−·035	29·861	29·989	6th	29·726	16th	·263	68·9	87·8	+1·3	62·1	−2·0	75·0	−0·4	25·7	95·6	21st	46·8	5th	48·8
10	Deltaic Bengal	Faridpur	46	29·861	?	29·856	30·008	6th	29·730	20th	·278	68·6	91·3	?	61·4	?	76·3	?	29·9	99·8	30th	46·5	5th	53·3
		Jessore	33	29·871	−·028	29·851	30·024	6th	29·747	16th	·277	72·5	93·8	+1·3	62·8	−5·5	78·3	−2·1	31·0	102·5	30th	46·6	5th	55·9
		Calcutta	21	29·894	−·017	29·861	30·040	5th	29·779	20th	·261	72·2	92·6	+2·2	65·7	−4·0	79·2	−0·9	26·9	99·9	20th	50·2	5th	49·7
		Saugor Island	25	29·880	−·027	29·850	30·025	6th	29·763	20th	·262	76·1	86·5	−0·7	71·5	−3·5	79·0	−2·1	15·0	87·9	18th	54·5	5th	43·4
		Krishnagar	47	29·863	?	29·860	30·022	5th	29·734	16th	·288	72·7	93·8	?	61·2	?	77·5	?	32·6	103·2	28th & 30th.	46·4	5th	56·8
		Midnapore	149	29·765	?	29·864	29·907	5th	29·646	20th	·261	75·6	98·5	?	66·6	?	82·6	?	31·9	106·9	31st	55·2	5th	51·7

* Mean of 0 days. † Mean of 29 days.

ons in India, Burma, etc., in March, 1898.

Wind Direction. Number of winds from NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st March 1898.	Normal rainfall for period, 1st to 31st March.	Variation from normal of period, 1st to 31st March.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·01	0·64	−0·62	...	...	...	...	**I.—Burma Coast and Bay Islands.**		
8	2	...	...	...	1	4	6·8	?	?	81	·815	2·8	0	?	?	0	?	?	0	?	?	0	Car Nicobars		
...	1	2	...	...	8	12	4·5	4·4	+ 2	86	·824	1·7	0	?	?	0	0·47	−0·47	0	0·47	− 0·47	0	Port Blair .	Tenasserim and Bay Islands.	1
...	...	...	...	...	...	...	2·4	2·0	+ 20	81	·837	2·2	0	?	?	0·08	2·48	−2·40	0·08	2·48	− 2·40	0·08	Mergui.		
...	...	...	...	...	...	8	1·8	?	?	87	·776	0·3	0	?	?	0	1·48	−1·48	0	1·48	− 1·48	0	Tavoy.		
3	7	2	7	10	2	...	3·3	3·0	+ 10	83	·773	1·3	0	0·36	−0·36	0	0·41	−0·41	0	0·41	− 0·41	0	Moulmein.		
...	...	...	5	14	11	1	4·0	5·0	− 20	85	·709	1·8	0	0·36	−0·36	0	0·28	−0·28	0	0·28	− 0·28	0	Rangoon .	Lower Burma.	2
...	...	...	...	2	2	22	6·9	4·9	+ 41	83	·742	0·5	0	0	0	0	0·02	−0·02	0	0·02	− 0·02	0	Bassein.		
1	...	...	...	...	4	15	1·5	7·9	− 81	75	·740	1·4	0	0	0	0	0·01	−0·01	0	0·01	− 0·01	0	Diamond Island.		
17	2	3	...	...	1	...	4·3	3·7	+ 16	79	·644	1·5	0	0·82	−0·82	0	0·42	−0·42	0	0·42	− 0·42	0	Akyab. .	Arakan.	5
1	1	6	4	...	...	...	2·7	2·8	− 4	78	·663	1·0	0	0·18	−0·18	0	0·05	−0·05	0	0·05	− 0·05	0	Toungoo .	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0·41	−0·41	...	...	...	...	**II.—Burma Inland.**		
2	...	1	11	7	3	6	2·4	5·2	− 54	59	·508	0	0	0	0	0	0·05	−0·05	0	0·05	− 0·05	0	Thayetmyo .	Central Burma.	3
...	...	9	2	...	1	5	7·3	?	?	52	·466	0	0	?	?	0	0	0	0	0	0	0	Minbu .	Upper Burma.	4
1	...	9	9	...	...	2	4·6	?	?	53	·479	0	0	?	?	0	0·14	−0·14	0	0·14	− 0·14	0	Yamethin.		
8	2	3	10	...	2	...	4·7	?	?	53	·472	0	0	?	?	0	0·19	−0·19	0	0·19	− 0·19	0	Mandalay.		
1	5	3	2	...	13	4	2·1	?	?	86	·526	0·1	0	?	?	0	1·27	−1·27	0	1·27	− 1·27	0	Kindat.		
7	1	1	...	6	2	4	4·3	?	?	78	·499	0·6	0	?	?	0	0·81	−0·81	0	0·81	− 0·81	0	Bhamo.		
1	...	1	12	12	1	...	?	?	?	37	·270	0·1	0	?	?	0	0	0	0	0	0	0	Taunggyi.	Burma Hill Stations.	4 (4)
Not recorded.							?	?	?	70	·378	5·5	0	?	?	0·05	0·77	−0·72	0·05	0·77	− 0·72	0·05	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·48	5·24	−4·76	...	...	...	...	**III.—Assam.**		
...	3	1	...	...	1	...	2·0	3·3	− 39	72	·517	2·0	4	10·00	−6·00	1·02	8·71	−7·69	1·02	8·71	− 7·69	0·43	Silchar .	Surma.	7
9	...	...	...	1	...	4	3·3	2·8	+ 18	92	·548	4·4	2	9·96	−7·96	0·42	5·07	−4·65	0·42	5·07	− 4·65	0·23	Sibsagar .	Brahmaputra.	9
8	13	...	...	2	2	2	4·4	6·3	− 30	72	·514	0·8	0	2·07	−2·07	0	1·93	−1·93	0	1·93	− 1·93	0	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·12	1·58	−1·46	...	...	...	...	**IV.—Bengal and Orissa.**		
8	3	9	5	...	...	...	6·0	5·8	+ 3	79	·630	1·8	1	2·92	−1·92	2·13	2·52	−0·39	2·13	2·52	−0·39	2·13	Chittagong .	East Bengal.	6
Not recorded							?	?	?	49	·331	?	0	?	?	0	3·35	−3·35	0	3·35	− 3·35	0	Lungleh.		
3	3	7	4	7	2	3	4·0	?	?	82	·691	3·0	0	3·46	−3·46	0	3·40	−3·40	0	3·40	− 3·40	0	Noakhali.		
...	2	11	11	...	1	1	4·6	?	?	71	·586	3·4†	1	4·22	−3·22	0·18	3·16	−2·98	0·18	3·16	− 2·98	0·18	Comilla.		
1	4	6	4	1	5	...	2·1	?	?	75	·544	1·9	0	2·40	−2·40	0·12	1·38	−1·26	0·12	1·38	− 1·26	0·06	Sirajganj.		
1	2	4	8	5	3	3	4·5	4·7	− 4	80	·636	3·2	0	3·50	−3·50	0	2·67	−2·67	0	2·67	− 2·67	0	Narayanganj.		
3	1	3	7	2	1	...	2·4	?	?	79	·676	2·4	0	3·27	−3·27	0	2·52	−2·52	0	2·52	− 2·52	0	Barisal.		
2	8	11	...	...	2	1	?	?	?	76	·555	2·6	1	3·54	−2·54	0·40	2·02	−1·62	0·40	2·02	− 1·62	0·28	Mymensingh.		
...	...	...	8	1	...	...	1·2	?	?	79	·571	0·3‡	0	3·73	−3·73	0·01	2·60	−2·59	0·01	2·60	− 2·59	0·01	Faridpur .	Deltaic Bengal.	10
2	...	2	3	5	1	2	2·2	3·2	− 31	70	·583	1·1	0	3·27	−3·27	0	2·15	−2·15	0	2·15	− 2·15	0	Jessore.		
2	...	...	2	12	2	...	3·3	5·5	− 40	75	·631	0·7	0	2·36	−2·36	0	1·57	−1·57	0	1·57	− 1·57	0	Calcutta.		
2	...	...	7	10	5	1	11·8	12·3	− 4	81	·748	2·0	0	1·92	−1·92	0	1·24	−1·24	0	1·24	− 1·24	0	Saugor Island.		
1	1	2	6	5	8	4	4·4	?	?	60	·494	0·9*	0	2·00	−2·00	0	1·33	−1·33	0	1·33	− 1·33	0	Krishnagar.		
2	...	...	7	...	...	3	4·5	?	?	51	·445	0·3†	0	2·42	−2·42	0	1·52	−1·52	0	1·52	− 1·52	0	Midnapore.		

‡ Mean of 28 days.

Table

Abstract of Observations taken at 8 A.M. at 217

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura	238	29·587	?	29·843	29·734	5th	29·473	28th	·261	73·8	96·1	?	65·5	?	80·8	?	30·6	105·1	28th & 30th.	51·0	5th	54·1
		Raniganj	334	29·567	?	29·858	29·716	6th	29·455	16th	·261	72·5	95·6	?	64·0	?	79·8	?	31·6	105·4	28th	49·4	5th	56·0
		Burdwan	99	29·809	−·001	29·858	29·963	6th	29·686	16th	·277	73·2	96·4	+2·8	64·6	−3·9	80·5	−0·6	31·8	105·8	28th	51·8	5th	54·0
		Naya Dumka	489	29·402	?	29·860	29·536	6th	29·284	16th	·252	74·6	93·0	?	63·1	?	78·1	?	29·9	102·9	30th	50·1	5th	52·8
		Berhampore	67	29·834	−·018	29·851	29·983	6th	29·712	20th	·271	69·8	?	?	61·7	−4·3	?	?	?	?	...	48·1	5th	?
		Rampur Boalia.	70	29·827	?	29·848	29·978	6th	29·709	16th	·269	71·1	91·1	?	61·3	?	76·2	?	29·8	102·6	30th	48·1	4th	54·5
		Malda	72	29·813	?	29·839	29·963	6th	29·674	17th	·289	69·2	90·5	?	58·4	?	74·5	?	32·1	101·6	30th	45·2	5th	56·4
		Bogra	61	29·831	?	29·847	29·980	6th	29·697	17th	·283	68·5	91·0	+1·5	61·1	−2·5	75·9	−0·5	29·9	101·1	29th	47·2	5th	53·9
12	North Bengal	Dinajpur	123	29·771	−·015	29·853	29·915	6th	29·631	17th	·284	68·2	89·2	0	59·2	−2·3	74·2	−1·2	30·0	100·8	30th	45·5	5th	55·3
		Rangpur	123	29·774	?	29·855	29·924	6th	29·637	17th	·287	69·0	86·7	?	60·6	?	73·7	?	26·1	96·0	30th	47·5	5th	48·5
		Jalpaiguri	284	29·609	−·022	29·860	29·754	6th	29·460	21st	·294	67·1	86·0	+1·0	60·8	?	73·4	?	25·2	95·4	2 days	47·1	4th	48·3
		Cooch Behar	156	29·735	?	29·847	29·889	6th	29·595	21st	·294	68·3	85·4	?	61·5	?	73·4	?	23·9	94·3	30th	47·4	5th	46·8
17	North Bihar	Purnea	125	29·769	−·013	29·853	29·917	6th	29·629	17th	·288	66·3	89·6	−0·6	59·5	−0·9	74·6	−0·8	30·1	100·5	30th	46·8	6th	53·7
14	Orissa	Balasore	46	29·870	−·005	29·864	30·022	8th	29·751	20th	·271	73·9	96·1	+5·0	65·7	−4·1	80·9	+0·5	30·4	103·5	3 days	55·0	5th	48·5
		False Point.	21	29·899	−·022	29·862	30·035	8th	29·765	21st	·270	75·9	86·1	−1·6	68·8	−3·4	77·5	−2·5	17·3	95·5	19th	57·0	6th	38·5
		Cuttack	80	29·841	−·016	29·864	29·970	6th	29·713	2 days	·257	73·5	98·8	+2·0	69·7	−3·0	84·3	−0·5	29·1	105·4	2 days	60·1	5th	45·3
		Shortt's Island.	?	29·894	?	?	30·045	6th	29·768	20th	·277	76·7	86·0	?	73·1	?	79·6	?	12·9	92·0	18th	65·6	6th	26·4
		Puri*	20	29·902	?	29·865	30·026	6th	29·771	21st	·255	77·4	86·7	?	73·2	?	80·0	?	13·5	92·2	23rd	62·1	5th	30·1
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·013	...	...	...	...	...	...	...	91·1	+0·3	60·8	−1·7	75·9	−0·7	30·3	...	...	...	...	55·4
15	Chota Nagpur	Hazaribagh.	2,007	27·885	−·016	29·867	27·960	6th	27·799	17th	·181	72·2	89·3	+0·6	63·7	−0·2	76·5	+0·2	25·6	98·8	28th	44·2	4th	54·6
		Ranchi	2,128	27·784	?	29·879	27·881	7th	27·703	20th	·178	73·2	89·8	+2·7	63·6	?	76·7	?	26·2	98·1	28th	46·2	5th	51·9
		Daltonganj	730?	29·200	?	29·911	29·328	6th	29·101	28th	·227	67·8	93·7	?	57·0	?	75·4	?	36·7	103·1	29th	42·0	5th	61·1
		Chaibassa	760	29·153	?	29·880	29·308	6th	29·037	17th	·271	71·9	98·1	+4·0	64·8	−2·4	81·4	+0·8	33·3	106·7	31st	50·5	5th	56·2
16	South Bihar	Gaya	375	29·528	−·016	29·867	29·664	6th	29·418	17th	·246	73·7	92·8	−0·9	64·6	−1·6	78·7	−1·3	28·2	103·4	29th	50·8	4th	52·6
		Dehri	351	29·549	?	29·864	29·686	5th	29·428	17th	·258	73·5	92·9	?	65·1	?	79·0	?	27·8	103·4	29th	49·1	5th	54·3
		Patna	183	29·711	−·025	29·852	29·848	6th	29·577	17th	·271	71·1	90·8	−0·3	62·9	−0·7	76·9	−0·5	27·9	101·4	28th	46·4	4th	55·6
		Arrah	190	29·693	?	29·841	29·832	6th	29·566	17th	·266	69·7	91·9	?	59·8	?	75·9	?	32·1	101·8	29th	47·1	4th	56·1
		Buxar	239	29·653	?	29·854	29·793	3rd	29·531	17th	·262	70·1	91·1	?	61·3	?	76·2	?	29·8	101·0	29th	46·4	4th	54·6
17	North Bihar	Bhagalpur	160	29·728	?	29·844	29·880	6th	29·590	17th	·290	72·6	90·6	?	61·6	?	76·1	?	29·0	102·5	30th	48·7	5th & 7th	53·8
		Darbhanga	166	29·721	−·024	29·846	29·856	9th	29·591	16th	·265	69·0	87·9	+0·2	60·7	−2·5	74·3	−1·2	27·2	98·2	29th	48·5	5th	49·7
		Muzaffarpur	178	29·702	?	29·840	29·844	6th	29·552	17th	·292	69·8	88·4	?	59·4	?	74·0	?	29·0	98·7	29th	46·8	4th	51·9
		Motihari	224	29·652	?	29·843	29·797	9th	29·488	17th	·309	65·4	87·7	?	57·1	?	72·4	?	30·6	99·0	29th	43·9	4th	55·1
		Chapra	181	29·713	?	29·854	29·862	6th	29·576	17th	·286	69·7	91·1	?	60·7	?	75·9	?	30·4	101·3	28th	46·4	4th	54·9
18	N.-W. Provinces (East).	Benares	267	29·647	0	29·879	29·821	3rd	29·531	28th	·290	68·6	91·9	−1·4	59·2	−3·1	75·6	−2·3	32·7	102·3	29th	46·2	5th	56·1
		Allahabad	309	29·606	−·004	29·879	29·795	3rd	29·489	28th	·306	71·5	92·2	−1·1	59·5	−2·7	75·9	−1·9	32·7	102·6	27th & 29th.	45·4	5th	57·2
23	N.-W. Provinces (East Sub-montane).	Gorakhpur	256	29·610	−·023	29·833	29·741	7th	29·450	17th	·291	69·1	90·2	−0·6	60·2	−2·3	75·2	−1·5	30·0	103·6	30th	46·6	4th	57·0
19	South Oudh	Lucknow	368	29·528	−·009	29·867	29·708	3rd	29·422	17th	·286	69·2	92·1	+0·8	59·8	−0·8	76·0	0	32·3	103·8	27th	45·7	4th	58·1
20	North Oudh	Bahraich	403	29·466	?	29·844	29·614	3rd	29·320	17th	·294	67·8	89·1	?	57·3	?	73·2	?	31·8	100·9	31st	42·0	4th	58·9
21	N.-W. Provinces (Central).	Cawnpore	416	29·487	+·009	29·871	29·678	3rd	29·383	28th	·295	70·1	91·4	+1·5	59·4	−0·8	75·4	+0·4	32·0	102·9	27th	45·0	5th	57·9
		Mainpuri	516	29·382	?	29·877	29·570	3rd	29·280	29th	·290	67·1	89·5	?	58·3	?	73·9	?	31·2	101·3	31st	43·1	3rd	58·2

* Mean of 30 days.

continued.

tions in India, Burma, etc., in March, 1898—continued.

Wind Direction. Number of winds from N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st March 1898.	Normal rainfall for period, 1st to 31st March.	Variation from normal of period, 1st to 31st March.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	1	...	8	2	2·8	P	P	42	·357	0·4	0	1·85	−1·85	0·03	1·18	−1·15	0·03	1·18	−1·15	0·03	Bankura .	Central Bengal.	11
1	...	...	...	...	3	13	5	2·7	P	P	36	·293	0·4	0	1·58	−1·58	0	0·82	−0·82	0	0·82	−0·82	0	Raniganj.		
...	...	...	...	1	6	1	1	1·5	3·4	−56	58	·489	0·9	0	2·31	−2·31	0·01	1·58	−1·57	0·01	1·58	−1·57	0	Burdwan.		
1	...	...	...	1	2	5	16	1·3	P	P	38	·325	0·9	1	1·54	−0·54	0·20	0·85	−0·65	0·20	0·85	−0·65	0·20	Naya Dumka.		
1	...	...	...	4	14	4	1	2·7	3·4	−21	61	·458	0·5	0	1·96	−1·96	0·02	1·05	−1·03	0·02	1·05	−1·03	0·02	Berhampore.		
...	1	...	3	6	8	1	1	2·8	P	P	64	·506	0·3	0	1·65	−1·65	0·07	0·93	−0·86	0·07	0·93	−0·86	0·05	Rampore Boalia.		
7	...	1	3	6	6	4	4	2·1	P	P	61	·445	0·6	0	1·19	−1·19	0·07	0·80	−0·73	0·07	0·80	−0·73	0·07	Malda.		
		Not	re	cord	ed.			?	P	P	71	·509	1·0	1	1·80	−0·80	0·13	1·06	−0·93	0·13	1·06	−0·93	0·13	Bogra.		
1	6	8	2	2	5	4	3	5·7	P	P	65	·454	1·0	0	1·23	−1·23	0	0·87	−0·87	0	0·87	−0·87	0	Dinajpur .	North Bengal.	1
...	7	8	3	7	1	3	1	2·9	P	P	74	·541	1·7	0	1·57	−1·57	0·01	1·24	−1·23	0·01	1·24	−1·23	0·01	Rangpur.		
8	6	6	2	...	2	4	3	2·4	P	P	74	·492	0	0	1·96	−1·96	0·04	1·50	−1·46	0·04	1·50	−1·46	0·04	Jalpaiguri.		
1	1	5	6	2	1	...	...	1·3†	P	P	87	·609	1·7	1	P	P	0·11	1·63	−1·52	0·11	1·63	−1·52	0·11	Cooch Behar		
1	7	5	1	2	3	4	2	4·0	3·4	+18	65	·426	1·3	1	0·80	+0·20	0·28	0·40	−0·12	0·28	0·40	−0·12	0·28	Purnea .	North Bihar.	17
4	2	...	...	3	6	2	4	3·8	P	P	75	·639	0·1	0	2·96	−2·96	0	1·45	−1·45	0	1·45	−1·45	0	Balasore .	Orissa.	14
4	1	...	...	4	9	10	3	7·1	10·9	−35	88	·797	1·9	0	1·54	−1·54	0	0·93	−0·93	0	0·93	−0·93	0	False Point.		
1	2	1	...	1	5	4	...	3·5	3·5	0	78	·650	1·0	0	1·96	−1·96	0	1·41	−1·41	0	1·41	−1·41	0	Cuttack.		
4	1	...	...	2	14	8	2	14·2	P	P	82	·755	0	0	P	?	0	0·80	−0·80	0	0·80	−0·80	0	Shortt's Island.		
4	2	1	...	...	8	7	2	10·2	P	P	85	·808	1·0‡	0	1·00	−1·00	0	0·61	−0·61	0	0·61	−0·61	0	Puri.*		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·10	0·50	−0·40	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
7	...	...	...	1	3	10	10	9·8	7·4	+32	32	·257	0·7§	1	1·88	−0·88	0·18	0·75	−0·57	0·18	0·75	−0·57	0·16	Hazaribagh	Chota Nagpur.	15
...	...	...	1	2	4	6	11	6·2	P	P	30	·250	0·7	0	2·80	−2·80	0	1·38	−1·38	0	1·38	−1·38	0	Ranchi.		
...	...	1	1	11	13	5	...	4·5	P	P	52	·356	0·3	0	1·80	−1·80	0·02	0·70	−0·68	0·02	0·70	−0·68	0·01	Daltonganj.		
...	...	1	...	1	4	8	3	?	P	P	48	·389	0·2	0	2·42	−2·42	0	1·27	−1·27	0	1·27	−1·27	0	Chaibassa.		
...	...	...	3	6	12	3	...	5·2	3·3	+58	45	·373	0·7	1	1·07	−0·07	0·64	0·43	+0·21	0·64	0·43	+0·21	0·64	Gaya . .	South Bihar.	16
...	...	...	...	6	16	7	...	7·2	P	P	39	·311	0·1	0	1·17	−1·17	0·03	0·69	−0·66	0·03	0·69	−0·66	0·03	Dehri.		
...	1	1	...	...	3	17	1	3·3	3·4	− 3	49	·382	0·2	0	0·81	−0·81	0·08	0·38	−0·30	0·08	0·38	−0·30	0·06	Patna.		
2	1	1	1	...	5	14	7	5·1	P	P	47	·345	0	0	0·88	−0·88	0·03	0·40	−0·37	0·03	0·40	−0·37	0·03	Arrah.		
...	1	2	1	...	8	16	...	7·8	P	P	44	·329	0·3	0	1·00	−1·00	0	0·32	−0·32	0	0·32	−0·32	0	Buxar.		
1	2	...	2	3	7	6	...	2·8	P	P	36	·368	0·6	1	0·76	+0·24	0·68	0·40	+0·28	0·68	0·40	+0·28	0·68	Bhagalpur.	North Bihar.	17
1	1	4	4	...	5	8	4	3·8	4·5	−16	62	·445	0·3	1	0·76	+0·24	0·19	0·32	−0·13	0·19	0·32	−0·13	0·15	Darbhanga.		
...	1	2	1	...	1	2	2	6·5	P	P	58	·432	0	0	1·00	−1·00	0·05	0·40	−0·35	0·05	0·40	−0·35	0·05	Muzaffarpur.		
2	8	7	...	2	6	5	1	5·4	P	P	75	·470	0·1	0	0·78	−0·78	0·02	0·41	−0·39	0·02	0·41	−0·39	0·02	Motihari.		
...	1	1	1	...	13	7	1	3·8	P	P	51	·372	0·1	0	0·80	−0·80	0·03	0·37	−0·34	0·03	0·37	−0·34	0·03	Chapra.		
...	2	...	...	...	12	12	...	5·2§	4·8	+ 8	49	·348	0·2	0	0·64	−0·64	0·03	0·28	−0·25	0·03	0·28	−0·25	0·03	Benares .	N.-W. Provinces (East).	18
...	1	2	2	1	6	12	6	6·5	4·6	+41	40	·321	0·7	0	0·73	−0·73	0	0·32	−0·32	0	0·32	−0·32	0	Allahabad.		
5	4	2	1	...	5	8	4	3·3	3·6	− 8	53	·386	1·0	0	0·73	−0·73	0·05	0·42	−0·37	0·05	0·42	−0·37	0·03	Gorakhpur .	N.-W. Province (East Submontane).	23
...	1	1	1	...	1	12	3	2·6	4·0	−35	46	·334	0·5	0	1·00	−1·00	0·01	0·37	−0·36	0·01	0·37	−0·36	0·01	Lucknow .	South Oudh.	19
1	...	2	1	...	2	6	12	2·8	P	P	54	·383	0·4	0	P	P	0·06	0·47	−0·41	0·06	0·47	−0·41	0·06	Bahraich .	North Oudh.	20
1	...	1	1	1	8	11	2	4·4	P	P	41	·304	0·3	0	0·80	−0·80	0·05	0·24	−0·19	0·05	0·27	−0·22	0·03	Cawnpore .	N.-W. Provinces (Central).	21
...	...	2	1	1	...	20	3	0·4	P	P	46	·313	2·7	0	P	P	0·04	0·24	−0·20	0·04	0·24	−0·20	0·04	Mainpuri.		

† Mean of 25 days. ‡ Mean of 26 days. § Mean of 21 days.

Table

Abstract of Observations taken at 8 A.M. at 217

Number of District.	Meteorological Province or District.	Station.	Elevation of barometer above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas		...	...	−·005	...	...	...	...	...	...	...	84·2	−0·4	56·1	−0·6	70·1	−0·4	28·1	...	...	...	...	56·9
24	N.-W. Provinces (West Submontane).	Bareilly	568	29·307	−·009	29·862	29·464	3rd	29·164	21st	·300	65·6	86·9	−0·6	57·5	−1·5	72·2	−1·1	29·4	97·4	28th & 31st	41·2	4th	56·2
		Dehra Dun	2,233	27·639	−·029	29·883	27·754	24th	27·489	21st	·265	62·2	81·5	+2·1	54·6	−0·8	68·1	+0·7	26·9	91·0	3 days	38·5	3rd & 4th	52·5
		Roorkee	887	28·982	−·013	29·877	29·133	3rd	28·856	21st	·277	61·5	85·3	−0·5	53·9	−2·6	69·6	−1·6	31·4	96·7	27th & 31st.	40·0	4th	56·7
22	N.-W. P. (West)	Meerut	738	29·148	−·004	29·881	29·337	3rd	29·030	21st	·307	64·4	85·4	−1·5	56·4	−1·4	70·9	−1·5	29·0	97·7	31st	41·1	4th	56·6
26	South-East Punjab.	Delhi	718	29·176	−·007	29·885	29·383	3rd	29·079	21st	·304	66·7	87·3	−0·8	62·1	−0·1	74·7	−0·5	25·2	99·7	31st	42·9	4th	56·8
28	Central Punjab.	Lahore	702	29·199	−·001	29·906	29·450	3rd	29·058	1st	·392	62·1	82·1	−1·6	56·7	+1·8	69·4	+0·1	25·4	98·6	31st	40·2	4th	58·4
27	South Punjab	Sirsa	662	29·251	+·007	29·811	29·492	3rd	29·144	1st	·348	62·4	88·0	−0·7	55·5	−1·6	71·8	−1·2	32·5	102·3	31st	37·7	3rd	64·6
		Patiala	818	29·067	?	29·884	29·267	3rd	28·966	29th	·301	65·3	84·9	?	56·6	?	70·8	?	28·3	98·2	31st	42·0	4th	56·8
29	Punjab (Submontane).	Ludhiana	812	29·076	−·005	29·892	29·23	3rd	28·974	29th	·318	63·4	84·1	+1·1	57·3	+0·2	70·7	−0·5	26·8	98·0	31st	40·6	4th	57·4
		Sialkot	830	29·862	+·002	29·901	29·288	3rd	28·924	1st	·364	62·6	83·8	+2·0	55·7	+0·3	69·7	+1·2	28·1	98·1	30th	41·1	4th	57·0
		Umballa	892	28·989	?	29·887	29·174	3rd	28·879	29th	·295	60·4	85·2	?	55·1	?	70·2	?	30·1	98·0	31st	44·0	4th	54·0
31	North Punjab	Rawalpindi	1,643	28·228	+·012	29·923	23·392	3rd	28·067	1st	·325	58·0	75·9	−0·9	51·3	+0·9	63·6	0	24·6	93·6	31st	37·9	4th & 5th	55·7
	VII.—Indus Valley and North-West Rajputana.		...	...	+·006	...	...	...	...	...	...	...	87·5	−0·7	58·7	−0·8	73·2	−0·8	28·8	...	...	...	...	61·9
31	North Punjab	Peshawar	1,110	28·839	−·010	29·939	29·038	3rd	28·639	1st	·399	57·9	72·7	+4·0	51·5	0	62·1	−2·0	21·2	90·0	30th	37·9	3rd	52·1
22	West Punjab	Khushab	612	29·303	?	29·913	29·551	3rd	29·117	1st	·434	63·9	82·4	?	56·1	?	69·3	?	26·3	99·3	31st	40·5	2nd & 4th	58·8
		Montgomery	558	29·355	+·013	29·905	29·616	3rd	29·158	1st	·458	65·6	86·5	+1·3	55·6	−0·3	71·1	+0·5	30·9	103·0	31st	39·5	4th	63·5
		D. I. Khan	594	29·369	−·001	29·939	29·622	3rd	29·198	1st	·424	62·0?	76·1?	−8·4?	58·3?	−2·2?	67·2?	−5·3?	17·8?	89·8?	31st	42·5?	3rd	47·3
		Mooltan	420	29·519	0	29·929	29·751	3rd	29·317	1st	·434	63·8	86·4	−0·1	58·0	+0·2	72·2	+0·1	28·4	101·4	30th	42·9	4th	58·5
47	Sind	Jacobabad	186	29·748	+·013	29·903	29·977	3rd	29·594	31st	·383	67·8	90·5	−0·6	60·0	+0·6	75·3	0	30·5	106·4	30th	40·0	3rd	66·4
		Hyderabad	96	29·864	+·019	29·916	30·090	3rd	29·722	31st	·368	69·6	92·1	−1·2	61·4	−3·1	76·8	−2·2	30·7	103·1	23rd	40·5	2nd	62·6
		Kurrachee	30	29·948	+·010	29·930	30·165	3rd	29·829	31st	·336	70·6	86·4	−0·7	64·6	−1·9	75·5	−1·3	21·8	97·9	29th	47·4	3rd	50·5
51	West Rajputana	Bickaneer	771	29·152	?	29·916	29·386	3rd	29·047	1st	·339	69·8	90·0	+0·6	61·7	−1·4	75·9	−0·4	28·3	102·1	31st	31·5	4th	70·6
		Pachpadra	380	29·560	?	29·916	29·797	3rd	29·453	26th	·344	64·7	95·0	?	57·1	?	76·1	?	37·9	106·3	30th	33·0	3rd	73·3
		Jodhpore	782	29·149	?	29·919	29·383	3rd	29·058	26th	·325	69·1	93·0	?	61·3	?	77·2	?	31·7	103·7	30th	41·1	3rd	62·6
	VIII.—East Rajputana, Central India and Gujarat.		...	...	+·005	...	...	...	...	...	...	...	92·9	+0·5	62·4	−0·7	77·7	−0·1	30·5	...	...	...	...	58·7
50	East Rajputana	Jeypore	1,421	28·508	+·013	29·986	28·692	3rd	28·418	26th	·274	69·7	91·8	+1·8	60·7	−0·2	76·3	+0·8	31·1	103·5	31st	38·2	4th	65·3
		Kotah	?	29·101	?	?	29·308	3rd	28·989	27th	·319	73·7	94·6	?	64·9	?	79·8	?	29·7	104·5	31st	48·0	4th	56·5
		Sambhar	1,254	28·674	+·016	29·928	28·868	3rd	28·582	26th	·286	68·1	90·7	+2·5	58·6	−0·7	74·7	+0·9	32·1	102·0	31st	38·0	4th	64·0
		Ajmere	1,611	28·331	+·003	29·953	28·519	3rd	28·250	26th	·269	67·6	90·0	+0·7	58·9	−0·3	74·5	+0·2	31·1	99·9	25th	35·9	4th	64·0
		Oodeypur	1,925	28·027	?	29·946	28·181	3rd	27·936	26th	·245	70·2	90·6	?	60·3	?	75·5	?	30·3	101·0	31st	39·3	4th	61·7
		Deesa	466	29·482	0	29·914	29·665	3rd	29·389	26th & 29th	·276	73·4	96·6	+0·7	62·7	−1·2	79·7	−0·3	33·9	105·4	29th & 30th	42·0	3rd	63·4
46	Kathiawar and Cutch.	Bhuj	395	29·573	+·016	29·933	29·742	3rd	29·485	28th	·257	72·7	93·8	+0·1	63·2	−2·6	78·5	−1·3	30·6	102·8	30th	50·0	4th	52·8
		Rajkot	429	29·385	+·006	29·931	29·688	3rd	29·427	28th	·261	70·8?	95·4?	−0·9?	60·7?	−1·9?	78·0?	−1·4	34·7	103·9	13th	47·0	4th	56·9
		Veraval	?	29·931	?	29·891	30·070	3rd	29·858	28th	·212	72·0	87·7	?	63·7	?	75·7	?	24·0	100·6	15th	52·3	4th	48·3
		Bhavnagar Para.	35	29·918	?	29·899	30·076	3rd	29·834	28th	·242	73·8	97·7	?	64·8	?	81·3	?	32·9	104·6	31st	48·7	5th	55·9
49	Central India	Nowgong	757	29·177	+·008	29·917	29·365	3rd	29·076	28th	·289	68·1	91·7	−1·6	59·6	−1·2	75·7	−1·4	32·1	102·0	27th & 31st	44·0	4th	58·0
		Indore	1,823	28·124	+·012	29·922	28·261	3rd	28·045	26th	·216	73·2	94·2	+1·6	60·1	−0·5	77·2	+0·6	34·1	101·6	29th	40·6	4th	61·0
		Neemuch	1,630	28·333	?	29·947	28·499	3rd	28·228	26th	·271	73·5	92·6	+0·7	61·3	−0·3	77·0	+0·2	31·3	101·8	31st	40·5	4th	61·3
45	Gujarat	Surat	39	29·914	−·022	29·896	30·034	3rd	29·840	17th	·194	74·8	93·0?	?	66·5	+0·8	82·8?	?	32·5	107·1	18th	50·6	3rd	56·5
		Ahmedabad	164	29·792	?	29·906	29·974	3rd	29·706	28th	·268	74·6	98·1	?	67·9	?	83·0	?	30·2	106·3	30th	51·2	3rd	55·1
22	N.-W. P. (West)	Agra	555	29·360	0	29·894	29·563	3rd	29·257	26th	·306	68·9	90·2	−1·3	61·7	−1·2	76·1	−1·3	28·5	102·0	27th & 31st	45·4	4th	56·6
	N.-W.P. (Central)	Jhansi	858	29·083	+·005	29·915	29·275	3rd	28·978	26th	·297	75·2	93·3	+0·1	66·9	+1·4	80·1	+0·8	26·4	105·6	27th	49·4	4th	56·2

continued.

ions in India, Burma, etc., in March 1898—continued.

Wind Direction. Number of winds from N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March 1898.	Normal rainfall for period, 1st to 31st March.	Variation from normal of period, 1st to 31st March.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·06	0·89	−0·83	...	...	...	...	VI.—Upper Sub-Himalayas.		
...	1	1	...	...	1	3	12	2·8	4·3	− 35	56	·354	1·4	0	1·82	− 1·82	0	0·94	−0·94	0	0·94	−0·94	0	Bareilly	N.-W. Provinces (West, Sub-montane).	24
4	1	...	...	...	...	...	2	1·8	2·3	− 22	52	·294	2·3	0	2·64	− 2·34	0	1·07	−1·07	0	1·07	−1·07	0	Dehra Dun.		
1	...	...	1	...	1	...	8	2·5	2·9	− 14	61	·341	1·4	0	1·82	−1·82	0	0·72	−0·72	0	0·72	−0·72	0	Roorkee.		
...	...	...	...	...	1	16	...	2·9	2·7	+ 7	47	·298	1·6	0	1·55	−1·55	0	0·77	−0·77	0	0·77	−0·77	0	Meerut.	N.-W. P. (West).	23
...	...	...	2	...	1	13	13	5·8	3·9	+ 49	40	·266	2·3	0	1·18	− 1·18	0	0·56	−0·56	0	0·56	−0·56	0	Delhi.	South-East Punjab.	26
9	...	1	4	1	...	4	5	3·0	3·1	− 3	64	·363	3·0	0	1·36	− 1·36	0	0·73	−0·73	0	0·73	−0·73	0	Lahore.	Central Punjab.	28
4	3	4	4	4	2	5	3	5·9	3·8	+ 55	47	·276	1·6	0	0·55	− 0·55	0	0·37	−0·37	0	0·37	−0·37	0	Sirsa.	South Punjab.	27
1	1	...	...	...	17	2	...	5·3	?	?	66‡	·425‡	1·8	0	?	?	0	?	?	0	?	?	0	Patiala		
2	3	...	2	...	...	1	5	2·0	1·8	+ 11	55	·329	3·2	0	2·36	− 2·36	0	0·99	−0·99	0	0·99	−0·99	0	Ludhiana	Punjab (Submontane).	28
3	3	2	1	...	...	2	4	1·7	1·9	− 11	62	·349	2·1	0	2·64	− 2·64	0	1·18	−1·18	0	1·18	−1·18	0	Sialkot.		
...	...	2	...	...	...	1	10	2·8	?	?	35	·358	1·1	0	?	?	0·02	0·73	−0·71	0·02	0·73	−0·71	0·02	Umballa.		
4	3	1	...	...	1	4	4	4·4	2·6	+ 69	67	·322	6·0	4	3·91	+0·09	0·68	1·76	−1·08	0·68	1·76	−1·08	0·21	Rawalpindi.	North Punjab.	41
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·24	0·45	−0·19	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
1	...	2	...	8	4	1	...	3·2	3·7	− 14	75	·365	5·1	5	3·55	+1·45	2·35	1·70	+0·65	2·35	1·70	+0·65	0·90	Peshawar.	North Punjab.	31
5	4	2	1	1	4	2	...	6·5	?	?	53	·313	3·3	0	1·60	− 1·60	0·16	0·54	−0·38	0·16	0·54	−0·38	0·09	Khushab.	West Punjab.	32
7	4	2	4	3	1	2	3	5·3	?	?	41	·264	2·4	0	1·00	− 1·00	0	0·51	−0·51	0	0·51	−0·51	0	Montgomery.		
4	3	...	...	...	2	6	7	3·1	2·1	+ 48	62	·347	4·3	0	1·55	− 1·55	0·09	0·63	−0·54	0·09	0·63	−0·54	0·08	D. I. Khan		
3	7	...	1	...	2	...	1	0·9	2·1	− 57	54	·323	2·2	0	1·18	− 1·18	0	0·38	−0·38	·0	0·38	−0·38	0	Mooltan.		
3	1	5	3	2	1	2	4	4·5	3·9	+ 16	39	·276	3·1	0	0·73	− 0·73	0	0·14	−0·14	0	0·14	−0·14	0	Jacobabad.	Sind.	47
6	...	...	...	2	8	...	6	9·1	8·3	+ 10	43	·328	3·0	0	0·50	− 0·50	0	0·14	−0·14	0	0·14	−0·14	0	Hyderabad.		
2	5	4	1	...	2	7	6	7·9	11·8	− 33	59	·491	1·7	0	0·55	− 0·55	0	0·23	−0·23	0	0·23	−0·23	0	Kurrachee.		
3	3	3	2	3	6	5	4	6·1	4·3	+ 42	35	·253	3·0	0	?	?	0	0·20	−0·20	0	0·20	−0·20	0	Bickaneer.	West Rajputana.	51
3	10	4	1	2	4	3	4	7·6	4·1	+ 85	30	·194	2·2	0	?	?	0	0·07	−0·07	0	0·07	−0·07	0	Pachpadra.		
3	8	1	...	...	4	2	1	2·6	?	?	27	·202	2·4	0	?	?	0	?	?	0	?	?	0	Jodhpore.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·01	0·15	−0·14	...	...	...	...	VIII.—East Rajputana Central India and Gujarat		
7	4	3	...	...	1	2	10	4·4	5·7	− 23	33	·253	2·1	0	0·50	− 0·50	0	0·39	−0·39	0	0·39	−0·39	0	Jeypore.	East Rajputana	50
2	3	...	2	1	3	4	7	3·7	?	?	27	·228	1·3	0	?	?	0·04	0·07	−0·03	0·04	0·07	−0·03	0·04	Kotah.		
5	...	2	1	1	...	7	...	4·9	6·2	− 21	35	·245	2·4	0	0·64	− 0·64	0	0·36	−0·36	0	0·36	−0·36	0	Sambhar.		
1	1	...	1	3	1	4	2	4·1	3·6	+ 14	43	·295	2·1	0	0·27	− 0·27	0	0·17	−0·17	0	0·17	−0·17	0	Ajmere.		
2	1	...	...	...	1	5	6	3·6	?	?	23	·208	1·7	0	?	?	0	?	?	0	?	?	0	Oodeypur.		
6	7	8	2	...	...	3	3	9·0	8·9	+ 1	28	·245	1·2	0	0·18	− 0·18	0	0·05	−0·05	0	0·05	−0·05	0	Deesa.		
6	1	3	1	...	...	8	10	8·8	8·3	+ 6	43	·362	2·0	0	?	?	0	0·09	−0·09	0	0·09	−0·09	0	Bhuj.	Kathiawar and Cutch.	18
15	5	3	...	...	...	3	4	6·3	8·1	− 22	54	·415	1·8	0	0	0	0	0·01	−0·01	0	0·01	−0·01	0	Rajkot.		
18	3	...	1	...	...	...	7	6·2	?	?	50	·402	1·2	0	?	?	0	0	0	0	0	0	0	Veraval.		
2	2	...	...	...	1	2	24	7·3	?	?	27	·238	1·3	0	?	?	0	?	?	0	?	?	0	Bhavnagar Para.		
1	1	1	...		10	4	1	2·0	2·3	− 13	45	·315	1·3	0	0·55	− 0·55	0	0·27	−0·27	0	0·27	−0·27	0	Nowgong.	Central India.	19
2	11	1	...	...	...	...	1	1·9	3·7	− 49	48	·408	0·9	0	0	0	0·06	0·02	+0·04	0·06	0·02	+0·04	0·06	Indore.		
3	15	5	1	1	3	1	1	6·5	9·1	− 29	35	·306	1·4	0	0·18	− 0·18	0	0·08	−0·08	0	0·08	−0·08	0	Neemuch.		
12	5	2	3	1	...	...	2	4·1	6·5	− 37	50	·445	0·6	0	0	0	0	0	0	0	0		0	Surat.	Gujarat	15
4	10	5	...	...	...	...	10	5·2	?	?	32	·283	2·2	0	?	?	0	0·01	−0·01	0	0·01	−0·01	0	Ahmedabad.		
...	1	...	3	...	4	...	21	5·7	4·5	+ 27	42	·296	2·2	0	0·82	− 0·82	0·02	0·31	−0·29	0·02	0·31	− 0·29	0·02	Agra.	N.-W. P. (West).	22
1	...	...	...	1	7	3	6	2·1	3·4	− 38	32	·283		0	1·00	− 1·00	0	0·35	−0·35	0	0·35	−0·35	0	Jhansi.	N.-W.P. (Central)	21

‡ Mean of 30 days.

Table

Abstract of Observations taken at 8 A.M. at 217 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan	...	...	...	−·001	...	...	...	...	...	...	...	97·1	+0·9	66·6	+0·2	81·9	+0·6	30·5	...	...	...	...	51·9
38	Bombay Deccan	Belgaum	2,524	27·418	−·013	29·878	27·490	1st	27·363	21st	·127	73·9	94·6	+0·8	64·4	+0·3	79·5	+0·6	30·2	99·2	22nd	60·4	5th	38·8
		Sholapur	1,590	28·345	−·005	29·885	28·434	1st	28·283	22nd	·151	79·6	100·2	−0·3	70·7	+1·9	85·5	+0·8	29·5	105·2	31st	60·0	4th	45·2
		Poona	1,840	28·107	−·013	29·912	28·182	1st	28·039	28th	·143	74·0	100·0	+2·9	63·7	−0·6	81·9	+1·2	36·3	107·0	31st	50·5	4th	56·5
		Bijapur	1,946	27·993	?	29·880	28·074	1st	27·930	22nd	·144	78·6	98·1	?	69·7	?	83·9	?	28·4	102·7	23rd	61·0	5th	41·7
40	Khandesh	Malegaon	1,430	28·499	−·019	29·902	28·601	3rd	28·432	28th	·169	73·8	98·5	+1·2	64·1	+0·4	81·3	+0·8	34·4	104·3	31st	41·9	4th	62·4
		Ahmednagar	2,152	27·795	P	29·893	27·866	1st	27·734	17th	·132	76·6	96·6	?	64·1	?	80·4	?	32·5	101·3	31st	48·4	4th	52·9
41	Berar	Akola	930	29·009	+·013	29·898	29·132	3rd	28·924	28th	·208	78·4	100·6	+1·8	68·0	+2·1	84·3	+2·0	32·6	107·7	31st	43·2	4th	64·5
		Amraoti	1,215	28·719?	+·013	29·895?	28·837	3rd	28·640	28th	·197	80·3?	99·6	+1·3	71·0?	+2·5?	85·3?	+1·9	28·6	105·3	30th	48·4	4th	56·9
42	Central Provinces (West).	Khandwa	1,044	28·892	+·001	29·910	29·064	3rd	28·795	28th	·269	74·8	99·5	+2·0	65·7	+0·7	82·6	+1·4	33·8	107·7	31st	43·1	4th	64·6
		Hoshangabad	1,006	28·926	+·004	29·913	29·109	3rd	28·821	28th	·288	73·1	97·2	+1·1	64·9	+0·6	81·1	+0·9	32·3	104·4	30th & 31st.	45·8	4th	58·6
		Nagpur	1,025	28·897?	?	29·893?	29·001	3rd	28·813	28th	·188	75·5	97·4	0	67·4	P	82·4	P	30·0	104·1	19th	46·6	4th	57·5
43	Central Provinces (Central).	Chanda	634	29·318	?	29·908	29·416	7th	29·232	28th	·184	75·5	97·8	P	63·2	?	80·5	P	34·6	104·2	30th	45·2	5th	59·0
		Seoni	2,033	27·909	+·008	29·903	28·001	3rd	27·806	28th	·195	74·2	92·0	?	61·9	−1·6	77·0	?	30·1	99·5	29th & 30th.	45·0	4th	54·5
		Jubbulpur	1,327	28·588	P	29·901	28·759	3rd	28·480	27th	·279	70·8	93·1	0	58·3	−2·8	75·7	−1·4	34·8	101·0	29th & 30th	38·4	4th	62·6
		Saugor	1,807	28·127?	+·023	29·903?	28·268	3rd	28·046	27th	·222	75·5?	92·4	+0·1	66·7	+2·3	79·6	+1·2	25·7	101·3	27th	45·1	3rd	56·2
49	Central India	Sutna	1,040	28·879	0	29·906	29·057	3rd	28·786	28th	·271	71·3	91·5	−0·1	61·0	0	76·3	−0·1	30·5	101·0	29th	45·2	5th	55·8
44	Central Provinces (East).	Raipur	970	28·966	+·019	29·903	29·074	5th	28·874	20th	·200	75·3	96·6	+0·3	68·2	−0·3	82·5	0	28·6	102·9	4 days	47·4	4th	55·5
		Sambalpur	486	29·442	−·002	29·888	29·567	5th	29·340	20th	·227	73·6	97·1	+0·1	66·5	−0·9	81·8	−0·4	30·6	104·6	30th & 31st	53·2	5th	51·4
39	Hyderabad (North).	Aurangabad	1,865	28·089	P	29·897	28·169	1st & 3rd.	28·021	31st	·148	80·4	99·5	P	66·9	?	83·2	?	32·6	106·4	31st	47·6	5th	58·8
		Indur	?	...		Not recorded.						79·7	97·4	?	68·1	?	82·8	?	29·3	103·6	31st	56·1	5th	47·5
		Bidar	2,165?	27·781	?	29·872	27·860	1st	27·712	21st	·148	80·4	95·4	?	69·5	?	82·5	?	25·9	99·5	23rd & 31st	56·2	4th	43·3
53	Hyderabad (South).	Gulbarga	1,502	28·457?	?	29·915	28·556	1st	28·383	22nd	·173	78·3	99·4	?	69·4	?	84·4	?	30·0	104·5	23rd	62·2	4th	42·3
		Raichur	1,309	28·612	?	29·870	28·703	1st	28·528	22nd	·175	80·4	98·7	?	73·4	?	86·1	?	25·3	103·5	23rd	65·1	4th	38·4
		Hyderabad (Deccan).	1,690	28·243	−·024	29·889	28·325	9th	28·175	21st	·150	76·8	98·6	+0·9	69·2	−0·3	83·9	+0·3	29·4	103·4	23rd	61·7	5th	41·7
		Secunderabad	1,787	28·149	−·019	29·894 (a)	28·232	1st	28·075	21st	·157	75·3	98·9	+1·2	69·5	0	84·2	+0·6	29·4	105·7	23rd	62·6	4th	43·1
		Hanamconda	P	29·043	?	28·979	29·124	6th	28·954	21st	·170	77·7	97·0	?	70·4	?	83·7	?	26·6	102·7	16th & 21st	59·2	4th	43·5
	X.—West Coast	...	...	...	−·026	...	...	...	...	...	...	...	88·8	+1·0	75·2	+0·4	82·0	+0·7	13·6	...	...	...	...	22·8
37	Konkan	Bombay	37	29·905	−·031	29·882	29·993	2nd	29·832	21st	·161	77·2	86·4	+0·8	73·5	0	80·0	+0·4	12·9	89·0	5th	62·5	3rd	26·5
		Ratnagiri	110	29·821	−·023	29·870	29·894	1st	29·747	21st	·147	78·5	88·7	+1·0	73·3	+1·0	81·0	+1·0	15·4	94·9	11th	65·9	4th	29·0
		Mormugao	60	29·888	?	29·883	29·952	1st	29·822	21st	·130	80·7	88·7	?	76·3	?	82·5	?	12·4	92·0	22nd & 26th	71·4	3rd & 10th	20·6
		Goa	199	29·740	P	29·877	29·802	1st	29·675	21st	·127	79·5	85·9	?	75·0	?	80·5	?	10·9	89·0	11th	70·0	3rd	19·0
		Karwar	44	29·896	−·022	29·871	29·963	1st	29·839	20th & 21st	·124	76·7	88·6	+0·8	73·5	+0·4	81·1	+0·6	15·1	90·8	10th	66·5	10th	24·3
33	Malabar	Cochin	10	29·932	−·026	29·870	29·984	1st	29·880	20th	·104	82·1	92·9	+2·3	77·1	+0·4	85·0	+1·4	15·8	94·5	4 days	72·7	10th	21·8
		Calicut	27	29·913	−·031	29·869	29·975	1st	29·870	28th	·105	81·2	90·6	+0·1	75·5	−0·4	83·1	−0·2	15·1	92·3	31st	70·5	10th	21·8
		Mangalore	65	29·883	−·023	29·880	29·941	1st	29·829	20th	·112	80·7	90·1	+1·2	76·5	+0·7	83·3	+1·0	13·6	94·8	11th	71·4	10th	23·4
		Trivandrum	198	29·721?	?	29·851?	29·776	1st	29·676	20th	·100	78·9	86·9	P	75·8	?	81·4	?	11·1	89·5	3 days	70·5	9th	19·0
	XI.—South India	...	...	...	−·015	...	...	...	...	...	...	...	93·5	+0·4	69·5	−1·9	81·5	−0·7	24·0	...	...	...	...	36·3
57	Madras (South).	Pamban	37	29·930	?	29·894	29·995	1st	29·857	28th	·138	82·5	88·4	P	75·2	?	81·8	?	13·2	92·3	30th	70·0	16th	22·3
		Tinnevelly	168	29·791	?	29·890	29·869	1st	29·726	21st	·143	79·6	97·0	?	74·0	?	85·6	?	23·0	102·4	30th & 31st	67·9	29th	34·5
		Madura	447	29·512	−·014	29·900	29·584	1st	29·449	20th & 21st.	·135	78·9	95·9	−1·0	70·9	−1·6	83·4	−1·3	25·0	100·6	20th	64·7	16th	35·3

(a) Not reduced to sea level.

—continued.

India, Burma, etc., in March, 1898—continued.

Wind Direction. Number of winds from N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st March 1898.	Normal rainfall for period, from 1st to 31st March.	Variation from normal of period, 1st to 31st March.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·10	0·46	−0·36	...	...	...	...	**IX.—Deccan.**		
17	1	2	2	2	2	1	2	2	10·2	11·6	−12	53	·431	0·7	4	1·00	+3·00	1·74	0·35	+1·39	1·74	0·35	+1·39	0·55	Belgaum	Bombay Deccan.	38
12	2	2	2	5	...	4	1	3	9·3	7·4	+24	27	·278	0·4	0	0·36	−0·36	0	0·34	−0·34	0	0·34	−0·34	0	Sholapur.		
7	1	...	3	...	3	9	3	4	8·8	8·3	+ 6	36	·317	0·6	0	0·36	−0·36	0	0·05	−0·05	0	0·05	−0·05	0	Poona.		
3	...	...	2	2	1	8	12	3	5·0	?	?	55	·537	0·3	0	0·03	−0·03	0·06	0·30	−0·24	0·06	0·30	−0·24	0·05	Bijapur.		
7	1	1	...	...	...	3	11	8	11·4	6·4	+78	34	·284	1·9	0	0	0	0	0·03	−0·03	0	0·03	−0·03	0	Malegaon	Khandesh.	40
...	10	3	2	3	1	1	2	9	8·1	?	?	38	·355	0·8	0	?	?	0·01	0·16	−0·15	0·01	0·16	−0·15	0·01	Ahmednagar.		
7	...	1	8	7	1	1	3	3	4·8	4·4	+ 9	26	·261	1·7	0	0·82	−0·82	0·02	0·55	−0·53	0·02	0·55	−0·53	0·02	Akola	Berar.	41
...	1	7	10	4	3	3	3	...	5·2	4·0	+30	33	·352	1·6	0	0·45	−0·45	0·04	0·40	−0·36	0·04	0·40	−0·36	0·04	Amraoti.		
7	...	5	2	2	2	2	7	4	5·0	4·6	+ 9	23	·208	0·4	0	0·18	−0·18	0	0·13	−0·13	0	0·13	−0·13	0	Khandwa	Central Provinces (West).	42
13	2	12	4	...	...	...	...	...	1·6	2·6	−38	35	·291	0·8	0	0·36	−0·36	0	0·23	−0·23	0	0·23	−0·23	0	Hoshangabad		
18	8	1	...	1	1	...	...	2	5·2	4·5	+16	34	·310	2·1	0	1·00	−1·00	0	0·61	−0·61	0	0·61	−0·61	0	Nagpur.		
10	3	2	10	2	...	...	3	1	2·1	3·2	−34	46	·417	0·7	0	?	?	0	1·49	−1·49	0	1·49	−1·49	0	Chanda	Central Provinces (Central).	43
...	5	12	2	4	1	3	1	3	1·9	3·4	−44	43	·352	0·9	0	1·73	−1·73	0·05	0·70	−0·65	0·05	0·70	−0·65	0·05	Seoni.		
5	1	3	...	11	5	5	1	...	2·4	3·0	−20	43	·328	1·5	0	0·82	−0·82	0	0·51	−0·51	0	0·51	−0·51	0	Jubbulpore.		
...	2	6	5	9	5	2	2	...	4·5	3·2	+41	27	·247	1·1	0	0·64	−0·64	0·04	0·26	−0·22	0·04	0·26	−0·22	0·04	Saugor.		
...	3	1	...	...	4	1	6	16	6·0	5·5	+9	33	·263	0·6	0	0·91	−0·91	0	0·50	−0·50	0	0·50	−0·50	0	Sutna	Central India.	49
22	...	4	1	...	1	3	...	...	3·4	4·7	−28	35	·311	0·9	0	1·00	−1·00	0	0·81	−0·81	0	0·81	−0·81	0	Raipur	Central Provinces (East).	44
...	5	15	2	8	...	...	1	...	4·2	2·0	+110	52	·439	0·8	0	?	?	0	1·20	−1·20	0	1·20	−1·20	0	Sambalpur.		
14	...	13	2	1	...	1	...	...	4·2	?	?	23	·241	0·6	0	?	?	0·07	0·06	+0·01	0·07	0·06	+0·01	0·07	Aurangabad.	Hyderabad (North).	39
14	6	1	1	2	2	2	1	2	3·5	?	?	51	·520	0·5	0	?	?	0	0·27	−0·27	0	0·27	−0·27	0	Indur.		
...	3	4	1	...	2	17	3	1	7·0	?	?	40	·424	0	0	?	?	0	0·34	−0·34	0	0·34	−0·34	0	Bidar.		
20	...	6	...	3	...	2	...	...	6·8	?	?	30	·297	0	1	?	?	0·40	0·21	+0·19	0·40	0·21	+0·19	0·40	Gulbarga	Hyderabad (South).	53
...	7	2	4	1	4	2	6	5	6·7	?	?	43	·459	0	0	?	?	0·05	0·41	−0·36	0·05	0·41	−0·36	0·05	Raichur.		
18	1	...	3	2	1	...	5	1	3·8	?	?	48	·447	0·2	0	?	?	0	0·75	−0·75	0	0·75	−0·75	0	Hyderabad (Deccan).		
5	2	3	13	1	...	1	3	3	5·3	5·0	+ 6	46	·403	0·4	0	?	?	0	0·75	−0·75	0	0·75	−0·75	0	Secunderabad		
5	1	...	1	14	9	...	...	1	8·6	?	?	53	·508	0·8	0	?	?	0	?	?	0	?	?	0	Hanamconda		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·16	0·51	−0·35	...	...	...	...	**X.—West Coast.**		
2	10	6	5	3	4	...	...	1	10·0	11·5	−13	70	·670	0·9	0	0·09	−0·09	0	0·03	−0·03	0	0·03	−0·03	0	Bombay	Konkan.	37
13	4	2	1	8	2	...	...	1	4·8	9·9	−52	67	·661	0·6	0	0	0	0	0·01	−0·01	0	0·01	−0·01	0	Ratnagiri.		
...	5	4	3	8	8	3	...	...	7·5	?	?	79	·840	2·6	0	?	?	0	0	0	0	0	0	0	Mormugao.		
2	6	16	6	...	...	1	...	...	?	?	?	78	·787	2·5	0	?	?	0	0	0	0	0	0	0	Goa.		
1	11	8	7	1	...	...	3	...	4·1	?	?	83	·756	1·3	0	0	0	0	0	0	0	0	0	0	Karwar.		
1	15	14	1	...	...	...	...	...	6·6	?	?	72	·797	1·2	0	2·45	−2·45	0·12	2·44	−2·32	0·12	2·44	−2·32	0·09	Cochin	Malabar.	33
8	2	4	9	1	1	1	...	5	9·4	?	?	75	·796	0·8	1	0·63	+0·37	0·88	0·52	+0·36	0·88	0·52	+0·36	0·87	Calicut.		
4	...	1	15	10	1	...	...	...	2·8	3·4	−18	75	·793	1·1	0	0·10	−0·10	0	0·06	−0·06	0	0·06	−0·06	0	Mangalore.		
13	6	3	1	...	...	...	2	6	3·6	?	?	73	·731	0·9	1	?	?	0·47	1·57	−1·10	0·47	1·57	−1·10	0·47	Trivandrum.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·07	0·54	−0·47	...	...	...	...	**XI.—South India.**		
2	...	10	12	5	2	...	...	...	7·4	?	?	74	·824	2·3	0	1·30	−1·30	0	0·79	−0·79	0	0·79	−0·79	0	Pamban	Madras (South)	57
...	9	8	1	...	...	1	2	10	5·5	?	?	71	·724	1·3	0	2·40	−2·40	0	1·41	−1·41	0	1·41	−1·41	0	Tinnevelly.		
27	11	11	2	3	1	...	...	1	5·2	4·1	+27	74	·742	1·3	0	0·36	−0·36	0·02	0·61	−0·59	0·02	0·61	−0·59	0·02	Madura.		

Table

Abstract of Observations taken at 8 A.M. at 217 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	MADRAS, SOUTH CENTRAL.	Salem	940	29·010	−·021	29·927	29·118	1st	28·975	21st	·143	78·4	99·2	+0·8	67·9	−2·7	83·6	−1·0	31·3	103·4	4 days	60·9	9th & 12th.	42·5
		Coimbatore	1,342	28·607	−·021	29·912	28·677	7th	28·528	21st	·149	75·3	97·2	+0·9	67·8	−2·0	82·5	−0·6	29·4	101·4	3 days	61·3	13th	40·1
35	COORG	Mercara	3,781	26·255	?	?	26·315	1st	26·216	4th	·099	70·2	84·7	+0·2	62·4	+1·2	73·6	+0·7	22·3	89·5	21st	58·2	12th	31·3
36	MYSORE	Chitaldroog	2,405	27·553	?	29·870	27·632	1st	27·496	21st	·136	78·1	95·2	?	70·5	?	82·9	?	24·7	98·7	23rd & 31st.	65·9	16th	32·8
		Bangalore	3,021	26·971	−·024	29·895	27·035	1st	26·917	28th	·118	72·3	91·3	+1·0	63·3	−1·0	77·3	0	28·0	95·3	22nd & 31st.	53·9	11th	41·4
		Hassan	3,091	26·911	?	29·905	26·980	1st	26·867	20th & 21st.	·113	73·6	91·2	?	60·0	?	75·6	?	31·2	94·5	31st	49·4	12th	45·1
		Mysore	2,518	27·462	?	29·904	27·526	1st	27·415	20th & 21st.	·111	73·9	93·4	?	65·4	?	79·4	?	28·0	97·4	22nd	59·4	12th	38·0
56	MADRAS, EAST COAST, SOUTH.	Negapatam	31	29·929	−·015	29·889	29·991	1st	29·863	20th	·128	80·7	88·2	+0·5	74·7	−0·6	81·5	−0·6	13·5	95·5	20th	68·0	16th	27·5
		Cuddalore	12	29·951	?	29·892	30·031	1st	29·875	21st	·156	78·8	89·2	?	68·8	?	79·1	?	20·4	95·3	15th	60·8	8th	34·5
		Trichinopoly	255	29·706	−·021	29·898	29·780	1st	29·639	21st	·141	78·0	98·9	+1·4	70·4	−2·2	84·6	−0·4	28·5	103·6	20th & 21st.	64·4	16th	39·2
		Madras	22	29·945	−·016	29·898	30·031	1st	29·856	21st	·175	78·5	89·8	+0·6	69·2	−2·8	79·5	−1·1	20·6	96·5	15th	63·0	12th	33·5
55	MADRAS, EAST COAST, CENTRAL.	Nellore	71	29·871	?	29·876	29·977	1st	29·752	21st	·225	78·1	96·9	?	69·9	?	83·4	?	27·0	105·8	20th & 22nd.	65·1	2nd & 9th.	40·7
		Masulipatam	15	29·940	−·015	29·890	30·039	1st	29·831	21st	·208	78·6	92·3	+0·9	69·7	−2·7	81·1	−0·9	22·6	100·7	15th	63·7	3rd	37·0
54	MADRAS, CENTRAL	Cuddapah	433	29·497	−·004	29·871	29·587	1st	29·400	20th	·187	82·1	101·9	+0·7	72·8	−2·2	87·4	−0·8	29·1	108·3	21st & 22nd.	64·4	9th & 12th.	43·9
		Kurnool	922	28·995	−·007	29·870	29·090	1st	28·893	21st	·197	77·3	100·6	−0·1	68·3	−3·7	84·5	−1·9	32·3	105·3	22nd & 23rd.	61·8	12th	43·5
		Bellary	1,475	28·450	−·014	29·872	28·540	1st	28·355	21st	·185	80·0	100·5	+0·2	70·7	−1·2	85·6	−0·5	29·8	105·2	22nd	63·2	10th	42·0
52	MADRAS, EAST COAST, NORTH.	Rajahmundry	112									...	...	...	...	...	...	...	...	...	...	...	...	...
		Cocanada	26	29·926	−·006	29·887	30·020	1st & 7th.	29·812	21st	·208	78·4	93·3	?	72·5	−1·2	82·9	?	20·8	101·6	15th	66·5	3rd	35·1
		Vizagapatam	31	29·914	−·019	29·883	30·022	7th	29·781	21st	·241	79·0	90·9	+0·5	71·6	−2·8	81·3	−1·2	19·3	100·2	17th	63·9	9th	36·3
		Waltair	?			Not	recorded.					79·0	87·3	?	73·9	?	80·7	?	13·4	95·1	23rd	68·9	8th	26·2
		Gopalpur	21	29·905	?	29·866	30·028	6th	29·773	21st	·255	75·1	87·2	?	69·2	?	78·2	?	18·0	95·8	15th	63·1	6th	32·7
	XII.—Hill Stations.																							
48	BALUCHISTAN	Sharigh	?	25·853	?	?	25·940	3rd & 8th.	25·730	2nd	·210	55·9	71·1	?	46·4	?	58·8	?	24·7	90·0	31st	29·0	2nd	61·0
		Pishin	?				Not recorded.					?	67·0	?	32·9	?	50·0	?	34·1	85·0	30th	8·9	2nd	76·1
		Quetta	5,502	24·676	+·025	?	24·763	3rd	24·560	17th	·203	47·1	63·0	−1·5	38·6	−1·1	50·9	−1·3	24·4	80·2	30th	15·8	2nd	64·4
		Kalat	?				Not recorded.					46·0	63·3	?	32·6	?	48·0	?	30·7	81·9	31st	10·0	3rd	71·9
		Chaman	4,311	25·744	?	?	25·880	3rd	25·606	16th	·274	53·2	64·5	?	44·6	?	54·6	?	19·9	84·3	30th	13·1	2nd & 3rd.	71·2
30	PUNJAB	Leh	11,503	19·673	−·025	?	19·901	23rd	19·323	2nd	·578	30·8	48·1	+1·6	24·1	+2·5	36·1	+2·1	24·0	62·6	30th & 31st.	8·0	5th	54·6
		Srinagar	5,204	24·921	?	?	25·051	13th	24·492	2nd	·559	41·8	60·8	?	37·8	?	49·4	?	23·0	78·3	31st	25·8	5th	52·5
		Astor (Kashmir).	?	22·242	?	?	22·401	22nd & 23rd	21·795	2nd	·606	35·0	45·5	?	30·0	?	37·8	?	15·5	64·3	31st	16·0	2nd	48·3
		Minimarg	?	20·457	?	?	20·595	13th	20·029	2nd	·566	29·4	43·8	?	21·8	?	32·8	?	22·0	55·9	26th	4·1	5th	51·8
		Skardu	?	22·895	?	?	23·094	23rd	22·368	2nd	·726	39·5	53·6	?	35·5	?	44·6	?	18·1	70·4	31st	23·7	5th	46·7
		Dras	?	20·773	?	?	20·974	23rd	20·243	2nd	·731	20·5	40·7	?	10·2	?	25·5	?	30·5	48·3	15th	−15·0	5th	63·3
		Gilgit	?	25·196	?	?	25·391	23rd	24·635	2nd	·756	48·3	57·4	?	44·8	?	51·1	?	12·6	73·9	31st	34·9	4th & 5th.	39·0
		Chitral	?	(a) 24·942	?	?	25·100	5 days	24·500	2nd	·600	38·2	55·3	?	32·0	?	43·7	?	23·3	73·1	31st	25·0	3rd	48·1
		Killa Drosh	?				Not recorded.					45·7	57·6	?	38·2	?	47·9	?	19·4	75·7	31st	24·2	3rd	51·5
		Para Chinar	6,000	24·466	?	?	24·618	24th	24·213	2nd	·405	45·0	56·4	?	39·0	?	47·7	?	17·4	74·3	31st	24·3	2nd	50·0
		Cherat	?	25·715	?	?	25·819	13th	25·520	2nd	·299	52·1	60·4	?	48·0	?	54·2	?	12·4	82·4	31st	25·5	2nd	56·9
		Murree	6,333	23·845	+·007	?	23·952	24th	23·570	2nd	·382	49·0	56·7	−2·0	44·3	+0·5	50·5	−0·8	12·4	73·2	31st	20·0	2nd	53·2
		Poo*	?				Not recorded.					?	56·5	?	36·4	?	46·5	?	20·1	71·0	30th	21·4	3rd	49·6
		Simla	7,224	23·122	+·012	?	23·240	24th	22·895	2nd	·345	51·3	59·2	+2·4	46·3	+1·8	52·8	+2·1	12·9	68·8	26th	23·4	23rd	45·4
25	N.-W. PROVINCES.	Chakrata	7,022	23·301	+·015	?	23·435	24th	23·102	21st	·332	51·8	64·5	+2·5	47·4	+3·4	56·0	+3·0	17·1	74·7	18th	33·1	3 days	41·6
		Mussooree	6,705	23·547	?	?	23·637	9th	23·34	21st	·292	53·5	62·8	?	48·4	?	55·6	?	14·4	74·8	15th	27·5	3rd	47·3

(a) Aneroid.

* Mean of 30 days.

I—*continued.*

in India, Burma, etc., in March 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean Humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st March 1898.	Normal rainfall for period, 1st to 31st March.	Variation from normal of period, 1st to 31st March.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
5	...	10	9	1	1	2	1	2	6·2	5·5	+13	64	·636	0·3	0	1·64	−1·64	0	0·88	−0·88	0	0·88	−0·88	0	Salem	Madras (South Central)	34
...	1	9	17	3	1	...	...	...	2·3	3·3	−30	76	·673	3·7	1	1·13	0·18	0·15	0·59	−0·44	0·15	0·59	−0·44	0·15	Coimbatore.		
30	...	...	1	...	...	...	...	...	1·4	3·4	−59	60	·442	1·1	1	2·00	−1·00	0·26	0·87	−0·61	0·26	0·87	−0·61	0·20	Mercara	Coorg.	5
...	2	...	3	7	1	6	8	4	8·0	?	?	45	·435	0·5	0	?	?	0	0·22	+0·22	0	0·22	−0·22	0	Chitaldroog	Mysore	36
...	...	3	6	6	5	9	1	1	7·4	3·6	+105	61	·484	0·3	0	0·82	−0·82	0	0·54	+0·54	0	0·54	−0·54	0	Bangalore.		
2	1	4	6	7	2	1	4	4	3·3	?	?	58	·476	0·6	0	?	?	0	0·51	+0·51	0	0·51	−0·51	0	Hassan.		
...	...	6	2	2	5	12	3	1	8·9	?	?	61	·511	0·4	0	?	?	0	0·67	−0·69	0	0·67	−0·67	0	Mysore.		
6	1	6	3	2	...	3	...	10	11·9	3·6	+231	75	·794	3·1	0	0·73	−0·73	0	0·54	−0·54	0	0·54	−0·54	0	Negapatam	Madras, East Coast, South.	56
...	1	1	1	1	8	1	11	7	1·2	?	?	82	·809	0·9	0	1·50	−1·50	0	0·37	−0·37	0	0·37	−0·37	0	Cuddalore.		
22	2	1	...	1	3	...	1	1	4·1	3·8	+8	71	·679	1·1	0	0·82	0·82	0	0·55	−0·55	0	0·55	−0·55	0	Trichinopoly.		
...	2	...	...	1	4	10	4	10	5·2	6·4	−19	74	·765	1·5	0	0·64	−0·64	0	0·39	−0·39	0	0·39	−0·39	0	Madras.		
14	...	...	...	8	9	...	...	...	5·3	?	?	75	·724	0·7	0	0·40	−0·40	0	0·21	−0·21	0	0·21	−0·21	0	Nellore	Madras, East-Coast, Central.	55
10	3	2	...	8	5	1	1	1	5·9	6·8	−13	80	·781	2·3	0	0·27	−0·27	0	0·12	−0·12	0	0·12	−0·12	0	Masulipatam.		
...	...	10	7	10	...	1	...	3	?	?	?	56	·611	0·3	0	0·20	−0·20	0	0·06	−0·06	0	0·06	−0·06	0	Cuddapah	Madras, Central.	54
29	...	...	2	...	...	...	...	...	?	?	?	44	·418	0·1	1	0·67	+0·33	1·07	0·54	+0·53	1·07	0·54	+0·53	1·07	Kurnool.		
16	1	...	1	1	8	1	2	1	3·1	4·6	−33	46	·475	0·6	0	0·73	−0·73	0	0·22	−0·22	0	0·22	−0·22	0	Bellary.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Rajahmundry	Madras, East Coast, North.	52
6	3	2	...	1	...	4	11	4	6·7	?	?	72	·694	1·4	0	0·60	−0·60	0	0·53	−0·53	0	0·53	−0·53	0	Cocanada.		
31	...	...	...	...	...	...	...	...	0	3·0	−100	71	·713	1·3	0	1·09	−1·09	0	0·39	−0·39	0	0·39	−0·39	0	Vizagapatam.		
...	1	1	1	1	1	2	23	1	?	?	?	70	·690	1·5	...	...	...		No	Rain	Gauge.				Waltair.		
5	10	...	...	...	4	4	...	8	10·5	11·8	−11	76	·659	0	0	1·13	−1·13	0	0·78	−0·78	0	0·78	−0·78	0	Gopalpur.		
																									XII.—Hill Stations.		
10	13	...	...	...	...	1	2	5	6·2	?	?	47	·213	2·0	4	?	?	1·93	1·15	+0·78	1·93	1·15	+0·78	0·75	Sharigh	Baluchistan.	48
			Not	rec	orde	d.			?	?	?	?	?	?	6	?	?	3·18	1·61	+1·57	3·18	1·61	+1·57	1·07	Pishin.		
23	1	1	...	1	1	1	3	...	4·2	4·8	−13	69	·231	4·1	8	4·91	+3·09	3·56	1·70	+1·86	3·56	1·70	+1·86	0·71	Quetta.		
...	...	1	1	2	17	5	2	3	?	?	?	65	·203	3·1	5	?	?	2·27	1·55	+0·72	2·27	1·55	+0·72	0·77	Kalat.		
...	...	3	7	11	7	3	...	...	10·8	?	?	61	·258	3·2	6	?	?	2·03	1·39	+0·64	2·03	1·39	+0·64	0·69	Chaman.		
...	...	1	...	...	2	2	24	2	3·5	?	?	50	·087	6·2	0	?	?	0	0·24	−0·24	0	0·24	−0·24	0	Leh	Punjab.	30
6	3	3	2	6	4	1	1	5	9·0	?	?	89	·239	5·0	4	?	?	0·76	2·50	−1·74	0·76	2·50	−1·74	0·21	Srinagar.		
11	...	...	...	...	12	8	...	...	2·4	?	?	69	·144	6·4	6	?	?	3·86	?	?	3·86	?	?	1·48	Astor (Kashmir).		
9	1	6	7	7	...	...	...	1	4·2	?	?	86	·150	6·0	12	?	?	4·41	?	?	4·41	?	?	0·81	Minimarg.		
14	3	...	1	...	1	...	12	...	5·4	?	?	97	·240	6·8	0	?	?	0·23	1·52	−1·29	0·23	1·52	−1·29	0·09	Skardu.		
30	...	...	...	...	...	...	1	...	1·4	?	?	79	·099	5·3	10	?	?	2·23	?	?	2·23	?	?	0·70	Dras.		
19	...	1	1	1	...	2	7	...	3·9	?	?	58	·196	7·7	4	?	?	1·50	0·29	+1·21	1·50	0·29	+1·21	0·58	Gilgit.		
27	2	...	...	...	2	...	...	...	3·7	?	?	91	·216	6·5	12	?	?	15·25	?	?	15·25	?	?	3·40	Chitral		
1	...	7	5	7	...	6	1	1	?	?	?	63	·190	7·1	13	?	?	12·12	?	?	12·12	?	?	3·25	Killa Drosh. (b)		
...	8	5	1	...	...	4	6	7	5·4	?	?	66	·196	5·5	9	?	?	6·27	?	?	6·27	?	?	2·20	Para Chinar.		
2	14	4	1	2	2	1	...	5	18·4	?	?	55	·208	5·3	4	?	?	1·77	4·93	−3·16	1·77	4·93	−3·16	0·63	Cherat.		
13	1	1	...	13	3	...	...	...	8·7	9·4	−7	50	·171	5·5	7	5·36	+1·64	3·12	3·65	−0·53	3·12	3·65	−0·53	0·62	Murree.		
6	...	...	6	10	2	1	3	2	?	?	?	?	?	3·8	1	?	?	0·34	4·11	−3·77	0·34	4·11	−3·77	0·15	Poo.		
6	7	10	2	1	3	...	...	...	5·7	2·8	+104	35	·126	3·7	1	4·64	−3·64	0·11	2·24	−2·13	0·11	2·24	−2·13	0·10	Simla.		
12	16	1	...	...	...	1	...	1	10·0	5·9	+69	41	·153	2·3	1	4·80	−3·80	0·17	2·39	−2·22	0·17	2·39	−2·22	0·10	Chakrata.	North-Western Provinces.	5
...	3	1	7	2	...	...	5	13	?	?	?	43	·168	2·5	0	?	?	0·09	2·58	−2·49	0·09	2·58	−2·49	0·09	Mussooree.		

(b) 3 variables.

Table

Abstract of Observations taken at 8 A.M. at 217 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	N.-W. Provinces —*contd.*	Ranikhet	6,069	23·116	+·010	?	24·237	24th	23·877	21st	·360	56·8	68·4	+3·3	51·7	+2·8	60·1	+3·1	16·7	77·0	30th & 31st	33·0	3rd	44·0
		Muktesar	?	22·856	?	?	22·981	24th	22·725	3rd	·256	52·6	65·3	?	46·4	?	55·9	?	18·9	73·8	30th	28·9	3rd	44·9
13	Bengal	Yatung	10,480?	?			Not	recorded.				?	52·2	?	32·8	?	42·5	?	19·4	62·0	13th	22·9	5th	39·1
		Darjeeling	7,408	23·000	+·021	?	23·214	1st	22·873	21st	·341	48·9	57·7	+1·0	?	?	?	?	?	69·0	17th	?	...	?
		Gantok	5,660	24·555	?	?	24·599	10th	24·453	1st	·146	52·8	66·7	?	33·4	?	50·1	?	33·3	72·2	6 days	26·0	7th	46·2
	Central India	Mount Abu	3,945	26·093	+·001	?	26·138	3rd	26·034	26th	·104	68·2	77·8	−0·7	62·3	+0·5	70·1	−0·1	15·5	86·2	30th	43·6	3rd	42·6
		Pachmarhi	3,528	26·506	+·009	?	26·557	9th	26·443	28th	·114	73·1	85·8	+1·3	59·3	−1·1	72·6	+0·1	26·5	92·7	31st	39·8	5th	52·9
	South India	Wellington	6,200	24·276	−·033	?	24·318	1st	24·236	28th	·082	64·1	75·9	+2·2	49·2	−3·6	62·6	−0·7	26·7	80·7	29th	41·2	9th	39·5
	XIII.—Extra India.																							
	Ceylon	Trincomalee	12	29·927	?	29·865	29·980	7th	29·866	28th	·114	80·5	87·7	?	75·5	?	81·6	?	12·2	90·5	31st	71·0	23rd	19·5
		Colombo	40	29·904	−·029	29·873	29·958	1st	29·857	28th	·101	80·5	90·8	?	73·9	?	82·4	?	16·9	94·5	31st	70·0	10th	24·5
	Persia	Meshed	3,104				Not	recorded				40·0	?	?	34·6	?	?	?	?	?	?	0	1st	?
		Resht	?	30·119b	?	?	30·583	1st	29·800	11th	·783	40·6	48·1	?	35·1	?	41·6	?	13·0	68·4	20th	13·2	1st	55·2
		Teheran	§?	25·988	?	?	26·455	1st	25·670	15th	·785	42·4	52·8	?	36·2	?	44·5	?	16·6	71·5	28th	10·0	1st	61·5
				25·338	?	?	25·560	2nd	25·100	15th	·460													
		Ispahan	§?	24·348	?	?	24·690	1st	24·050	15th	·640	43·3	57·1	?	32·8	?	45·0	?	24·3	74·3	31st	6·0	1st	68·3
				24·638	?	?	24·950	1st	24·350	15th	·600													
		Bushire	14	29·992	−·004	29·965	30·308	1st	29·719	20th	·589	64·2	70·0	−2·6	58·0	−0·2	64·0	−1·4	12·0	82·1	30th	46·3	1st	35·8
		Jask	?	30·044	?	29·996	30·324	2nd	29·890	11th	·434	69·3	76·3	?	64·0	?	70·2	?	12·3	85·3	29th & 31st.	47·3	2nd	38·0
	Arabia	Muscat	20	29·995	?	29·962	30·287	1st	29·780	16th	·507	72·3	75·1	?	70·3	?	72·7	?	4·8	83·8	16th	62·1	3rd	21·7
		Baghdad	220	29·840*	−·097	30·051*	30·222	1st	29·416	20th	·806	54·5†	67·8 (a)	−6·2	48·2 (a)	+1·5	58·0	−2·4	19·6	84·1	26th	33·5	1st	50·6
		Aden	94	29·867	−·035	29·894	29·999	1st	29·782	17th	·217	78·1	83·1	−2·1	76·0	+1·3	79·5	−0·4	7·1	86·3	29th	70·9	26th	15·4
		Perim	?	29·730*	?	?	29·862	1st.	29·667	28th	·195	77·9*	85·1*	?	75·6†	?	80·4†	?	9·5	86·9	14th	73·8	3 days	13·1
	Afghanistan	Kabul	?				Not re	corded.				39·7	54·7	?	35·2	?	45·0	?	19·5	78·2	31st	21·6	3rd	56·6
	Central Asia	Kashgar	‖?	25·547	?	?	25·740	8th	25·155	19th	·585	38·9	55·9	?	34·2	?	45·1	?	21·7	83·3	30th	19·5	3rd	63·8
	Arabian Sea Islands	Amini Devi	15																					
		Minicoy	10	29·903	?	29·838	29·953	1st	29·851	20th	·102	83·3	87·8	?	76·5 (b)	?	82·2	?	11·3	89·7	23rd & 29th.	72·0	4th	17·7
	Africa	Zanzibar	73	29·883	?	29·882	29·942	31st	29·837	28th	·105	82·2	86·5	?	79·9	?	83·2	?	6·6	89·9	17th	77·6	10th	12·3

† Mean of 27 days.
§ Aneroid uncorrected.
(b) Uncorrected.

NOTE.—When a query is inserted against any reading or in the variation returns for any station, the data for

(a) Mean of 26 days.
‖ Aneroid corrected.

I—*concluded.*

in India, Burma, etc., in March, 1898—concluded.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind velocity. Mean velocity in miles per hour.	Normal.	Percentage variations.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st March 1897.	Normal rainfall for period, 1st to 31st March.	Variation from normal of period, 1st to 31st March.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of Districts.
11	1	2	2	1	1	5	6	2	4·5	2·6	+73	41	·197	1·9	0	4·00	−4·00	0·04	2·24	−2·20	0·04	2·24	−2·20	0·03	Ranikhet.	N.-W. Provinces—*contd.*	
...	1	2	4	4	1	2	4	13	1·4	?	?	32	·122	2·9	0	?	?	0·07	?	?	0·07	?	?	0·07	Muktesar.		
			Not	reco	rded				?	?	?	?	?	?	2	?	?	0·66	?	?	0·66	?	?	0·35	Yatung .	Bengal.	13
14	...	5	5	3	...	2	2	...	7·3	6·6	+11	77	·272	3·5	1	3·38	−2·38	0·45	1·65	−1·20	0·45	1·65	−1·20	0·34	Darjeeling.		
31	...	...	...	...	...	...	...	...	?	?	?	83	·334	?	4	?	?	3·05	5·05	−2·00	3·05	5·05	−2·00	2·65	Gantok.		
4	5	8	..	...	1	5	4	4	7·3	6·7	+ 9	25	·177	1·7	0	0·27	−0·27	0	0·12	−0·12	0	0·12	−0·12	0	Mount Abu.	Central India.	
21	...	2	1	...	2	2	2	1	5·6	4·6	+22	35	·283	1·4	0	0·73	−0·73	0	0·32	−0·32	0	0·32	−0·32	0	Pachmarhi.		
21	3	7	...	...	...	...	...	...	2·8	2·8	0	46	·278	0·3	0	3·13	−3·13	0·03	2·81	−2·78	0·03	2·81	−2·78	0·03	Wellington .	South India.	
																									XIII.—Extra India.		
9	2	6	...	1	...	13	...	...	1·0	?	?	79	·827	1·9	0	?	?	0	1·40	−1·40	0	1·40	−1·40	0	Trincomalee	Ceylon.	
...	...	5	9	13	3	1	...	...	5·8	5·0	+16	78	·818	1·9	3	?	?	4·23	4·65	−0·42	4·23	4·65	−0·42	2·24	Colombo .		
			No	reco	rded				?	?	?	83	·215	6·3	4	?	?	1·46	2·20	−0·74	1·46	2·20	−0·74	0·54	Meshed .	Persia.	
			Not	reco	rded				?	?	?	(c) 90	(c) ·236	?	14	?	?	5·31	?	?	5·31	?	?	1·11	Resht .		
21	2	4	3	...	...	...	1	...	3·0	?	?	?	?	5·1	7	?	?	4·02	3·03	+0·99	4·02	3·03	+0·99	1·15	Teheran.		
11	1	...	...	1	3	7	7	1	6·0	?	?	62	·188	3·7	2	?	?	1·34	1·21	+0·13	1·34	1·21	+0·13	0·90	Ispahan.		
3	6	8	4	4	1	1	...	4	8·3	8·9	− 7	71	·434	3·6	3	?	?	4·69	0·87	+3·82	4·69	0·87	+3·82	2·60	Bushire.		
...	2	5	13	...	...	...	3	8	9·0	?	?	79	·580	3·0	5	?	?	2·33	1·18	+1·15	2·33	1·18	+1·15	0·88	Jask.		
...	1	1	4	5	6	1	6	7	?	?	?	69	·550	3·1	5	?	?	1·43	?	?	1·43	?	?	0·39	Muscat .	Arabia.	
7	4	2	2	4	4	...	4	3	6·0	?	?	76†	·336†	6·0*	5	?	?	1·18	?	?	1·18	?	?	0·29	Baghdad.¶		
...	2	9	14	5	1	...	...	...	9·7*	14·9	−35	77	·739	6·5	0	?	?	0	1·16	−1·16	0	1·16	−1·16	0	Aden.		
3	...	1	15	8	...	...	1	2	18·1	?	?	82*	·785*	6·6*	3	?	?	1·54	0·13	+1·41	1·54	0·13	+1·41	1·00	Perim.		
11	1	...	1	...	1	4	10	1	?	?	?	76*	·186*	5·2	8	?	?	4·05	5·94	−1·89	4·05	5·94	−1·89	1·05	Kabul‡ .	Afghanistan.	
7	3	3	5	...	1	1	10	...	?	?	?	?	?	7·2	3	?	?	0·45	0·25	+0·20	0·45	0·25	+0·20	0·20	Kashgar .	Central Asia.	
3	8	5	2	2	1	...	5	5	4·3	?	?	70	·796	0·3	0	?	?	0	?	?	0	?	?	0	Amini Devi.	Arabian Sea Islands.	
...	5	6	4	4	6	6	...	...		?	?	83	·913	6·3	10	?	?	6·10	?	?	6·10	?	?	3·14	Minicoy .		
																									Zanzibar .		

that station are not utilized in calculating the provincial variations.

* Mean of 30 days. ‡ Wind observations of 29 days. ¶ Wind observations of 30 days. (c) Mean of 28 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, wet-bulb. Mean minimum.	Temperature, wet-bulb. Mean 10 hours.	Temperature, wet-bulb. Mean 16 hours.	Temperature, wet-bulb. Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·894	29·779	·115	29·826	−·025	29·817	89·8	74·7†	15·1	92·5	71·4	21·1	84·3	88·0	80·7	−0·8	72·3	76·6	78·7	75·9
	Rangoon	...	·887	·732	·155	·812	−·046	·789	97·8	69·5	28·3	101·8	60·8	41·0	83·6	93·9	80·8	+0·3	67·4	73·8	74·8	72·0
	Diamond Island	...	·909	·792	·117	·840	−·040	·816	83·8	75·2	8·6	88·8	72·3	16·5	81·5	82·4	78·1	−0·3	71·5	73·9	74·6	73·3
	Cocos Island	111	·838†	·731‖	·107	·775	−·021	·817	87·6‖	75·3†	12·3	91·6	72·8	18·8	83·2†	84·0‖	79·4	−0·2	70·5†	74·9†	75·0‖	73·5
	Akyab	...	·925	·799	·126	·857	−·041	·820	88·4	65·8	22·6	92·9	53·8	39·1	81·3	84·0	76·5	−1·5	64·0	73·1	75·0	70·7
Assam.	Silchar	...	·848	·694	·154	·767	−·033	·822	90·5	60·4	30·1	97·6	47·4	50·2	79·3	89·0	74·8	+1·4	57·4	67·2	67·9	64·2
	Sibsagar	...	·615	·460	·155	·538	−·037	·831	81·9	58·5	23·4	91·1	49·3	41·8	71·9	80·1	68·8	+1·2	58·2	65·7¶	68·3	64·1
	Dhubri	...	·813‡	·662§	·151	·735	−·013	·808	87·6‖	62·3	25·3	97·7	51·0	46·7	76·1¶	86·6‖	73·8	−0·3	59·0	65·2	66·6‖	63·6
Bengal and Orissa.	Chittagong	...	·855	·731	·124	·787	−·037	·823	87·4	63·8	23·6	94·2	51·1	43·1	81·4**	84·3	75·3	−1·5	62·6	72·2	75·5	71·6
	Narayanganj	...	·895	·761	·134	·824	−·025	·798	91·1	65·6	25·5	97·4	53·2	44·2	80·9	89·9	77·9	−0·5	61·9	69·3	68·9	66·7
	Calcutta (Alipore)	...	·909	·772	·137	·834	−·019	·800	92·9	65·9	27·0	100·1	50·2	49·9	81·7	91·9	78·8	−0·4	61·9	67·7	67·1	65·6
	Saugor Island	...	·902	·771	·131	·830	−·026	·799	86·6	71·7	14·9	97·9	54·3	43·6	80·7	83·5	77·3	−2·1	68·7	73·7	75·0	72·5
	Burdwan	...	·824	·684	·140	·745	−·014	·790	97·1	64·6	32·5	105·9	51·8	54·1	85·9	95·1	80·3	−0·2	59·0	68·1	69·6	65·6
	Berhampore	...	·850	·713	·137	·773	−·013	·787	?	61·7	?	?	48·1	?	83·7	93·2	?	?	55·0	65·9	65·6	62·2
	False Point	...	·922	·794	·128	·857	−·024	·819	86·2	68·8	17·4	95·5	57·0	38·5	82·8	83·2	75·6	−2·1	7·6	75·1	75·9	72·9
	Cuttack	...	·857	·704	·153	·785	−·014	·806	99·2	69·7	29·5	105·4	60·1	45·3	83·1	96·5	82·3	+0·3	66·6**	70·5	69·0	68·7
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·906	27·801	·105	27·849	−·013	·781	89·6	63·7	25·9	98·8	44·2	54·6	80·8	87·9	76·5	+1·1	51·1	58·6	60·9	56·9
	Patna	...	29·728	29·598	·130	29·658	−·014	·793	91·3	62·9	28·4	101·4	46·4	55·0	81·4	90·1	77·2	+0·1	54·0	63·9	66·2	61·4
	Darbhanga	...	·736	·606	·130	·665	−·021	·786	88·4	60·7	27·7	98·2	48·5	49·7	79·6	87·9	74·8	−0·8	58·1	65·7	68·2	64·0
	Allahabad	...	·626	·501	·125	·553	+·003	·814	92·3	59·5	32·8	102·8	45·6	57·2	82·4	92·0	75·9	−1·9	52·2	62·3	64·8	59·8
	Lucknow	...	·554	·440	·114	·491	−·003	·816	92·8	59·8	33·0	105·3	45·6	59·7	82·0	90·1	76·5	+0·3	53·3	63·0	65·5	60·6
Upper Sub-Himalayas.	Dehra Dun	...	27·374	27·586	·088	27·622	−·008	·821	82·0	54·6	27·4	93·7	38·5	55·2	71·9	78·4	67·3	+0·4	48·4	57·0	57·8	54·4
	Roorkee	...	29·006	28·910	·096	28·951	−·005	·812	85·9	53·8	32·1	97·7	40·0	57·7	74·6	83·7	69·2	−0·5	49·6	59·6	60·6	56·6
	Meerut	...	·176	29·078	·098	29·119	+·004	·828	85·8	56·6	29·2	97·6	41·1	56·5	75·9	84·9	70·8	−0·5	51·9	59·4	61·0	57·4
	Lahore	...	·217	·128	·089	·166	−·002	·849	82·7	56·6	26·1	98·5	40·2	58·3	71·8	82·5	69·4	+1·6	51·5	60·1	63·4	58·3
	Ludhiana	...	·097	·018	·079	·052	+·002	·842	84·8	57·5	27·3	99·2	40·7	58·5	74·0	83·1	70·5	+1·7	51·7	58·9	60·8	57·1
Indus Valley and N.-W. Rajputana.	Peshawar	...	28·857	28·783	·074	28·814	+·002	·940	73·3	51·6	21·7	90·0	37·9	52·1	65·9	71·2	61·8	−1·2	48·4	56·3	58·6	54·4
	Mooltan	...	29·538**	29·422	·116	29·474	+·011	·873**	86·9	58·0	28·9	102·4	42·9	59·5	73·3**	84·6	71·7	+0·5	50·7	59·1**	63·3	57·7
	Jacobabad	...	·778	·646	·132	·706	+·021	·852	91·0	60·1	30·9	106·3	40·0	66·3	79·3	89·6	74·8	−0·1	50·7	59·0	62·7	57·5
	Kurrachee	...	·965	·861	·104	·910	−·004	·891	86·5	64·5	22·0	97·8	47·2	50·6	80·0	82·2	74·5	−1·0	58·3	64·9	68·2	63·8
E. Rajputana, Central India, and Gujarat.	Jeypore	...	28·535	28·423	·112	28·473	+·023	·857	92·1	60·5	31·6	103·4	38·1	65·3	81·7	90·4	75·8	+1·2	49·3	58·9	62·1	56·8
	Ajmere	...	·348	·238	·110	·289	+·008	·856	90·2	58·7	31·5	99·7	35·9	63·8	80·4	88·6	74·6	+1·2	49·2	61·0	64·6	58·3
	Udaipur	...	·046	27·936	·110	27·991	?	·852	90·8	60·3	30·5	101·1	39·5	61·6	81·8	89·3	75·2	?	49·6	59·4	62·4	57·1
	Deesa	...	29·502	29·374	·128	29·432	+·010	·847	96·7	62·9	33·8	105·6	42·2	63·4	85·7	95·2	80·5	−0·2	49·9	60·0**	63·3	57·7
	Nuwgong	...	·196	·078	·118	·129	+·017	·838	92·2	59·5	32·7	102·9	44·0	58·9	81·9	91·8	76·0	−0·5	51·1	61·2	64·0	58·9
	Agra	...	·380	·265	·115	·311	−·005	·826	90·9	61·7	29·2	102·9	45·6	57·3	80·3	89·0	75·3	+0·4	52·2	61·8	64·4	59·5
Deccan.	Belgaum	...	27·434	27·298	·136	27·365	−·010	·752	95·1	64·4	30·7	99·2	60·4	38·8	84·8§	90·7¶	78·0	+0·9	59·6	62·1§	66·5¶	62·4
	Sholapur	...	28·354	28·197	·157	28·272	−·010	·766	100·5	70.7	29·8	106·0	59·9	46·1	89·6	98·4	85·0	+0·9	55·2	63·3	66·4	61·7
	Poona	...	·108**	27·965**	·143	·042**	−·009	·778	100·1	63·7	36·4	106·8	50·5	56·3	87·7**	96·8**	81·3**	+1·4	54·7	61·5**	64·3**	60·2
	Akola	...	29·016	28·866	·150	·936	+·008	·799	100·9	68·0	32·9	107·6	43·2	64·4	90·7	99·7	85·0	+2·3	54·7	64·7	68·2	62·5
	Buldana	2,132	27·822	27·690	·132	27·751	−·004	·775	95·6	70·7	24·9	101·3	51·5	49·8	86·5	93·8	83·6	+1·5	53·0	59·2	62·5	58·2
	Khandwa	...	28·899	28·751	·148	28·820	0	·798	99·7	65·4	34·3	107·7	43·1	64·6	89·2	98·9	82·7	+1·7	51·3	62·0	66·1	59·6

† Mean of 29 days.
‡ " 25 "
§ Mean of 27 days.
‖ Mean of 28 days.
¶ Mean of 26 days.
** Mean of 30 days.

II.

87 stations in India, Burma, etc., for March, 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from										Wind Steadiness.		Wind Velocity.		Rainfall.			
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·762†	·816	·857	·812	−·051	88†	69	65	74	−2	1·7	2·1	1·9	−1·0	1	7	16	14	11	1	1	5	6	N. 61° E.	N. 62° E.	43	64	107	103	...	...	Port Blair	Burma Coast and Bay Islands.
·650	·707	·622	·660	−·011	89	61	40	63	−1	0·2	0·1	0·2	−1·9	...	2	1	1	10	18	17	11	2	S. 25° W.	S. 22° W.	60	56	99	114	...	...	Rangoon	
·723	·740	·755	·739	−·026	83	69	68	73	−2	0·4	0·5	0·5	−2·2	...	26	...	...	...	...	2	6	28	N. 32° W.	N. 42° W.	84	83	396*	206	...	...	Diamond Island,	
·685†	·756†	·748‖	·730	−·038	78†	66†	64‖	69	−3	0·6	0·4	0·5	−1·1	...	46	...	...	...	...	4	...	7	N. 9° W.	N. 9° W.	79	70	?	399	*Nil*	*Nil*	Cocos Island	
·586	·715	·752	·684	+·006	90	66	64	73	+2	1·1	0	0·6	−1·4	...	4	14	9	2	1	8	6	18	N. 12° W.	N. 53° W.	31	24	102	93	...	...	Akyab	
·445	·513	·406	·455	−·124	83	51	30	55	−17	1·3	1·0	1·2	−3·2	20	1	2	8	2	2	12	12	3	S. 57° W.	S. 56° E.	23	20	84*	70	...	...	Silchar	Assam.
·491	·558	·541	·530	−·016	98	73	53	75	−4	3·8	4·5	4·2	−1·7	12	10	21	2	7	1	5	1	3	N. 41° E.	N. 55° E.	37	64	95*	68	...	...	Sibsagar	
·465	·491¶	·396‖	·451	−·046	82	53¶	31‖	55	−6	0·8‖	1·0‖	0·9	−1·6	3	1	6	16	1	5	12	9	1	S. 19° E.	S. 59° E.	14	9	103*	153	...	...	Dhubri	
·572	·693	·775	·680	−·003	93	64	66	74	0	1·5	0·4	1·0	−2·2	1	4	5	2	6	6	22	9	7	S. 56° W.	S. 36° W.	39	20	142	129	...	...	Chittagong	Bengal and Orissa.
·522	·576	·439	·512	−·112	80	53	31	55	−11	0·5	0·9	0·7	−2·6	...	4	2	4	11	14	14	7	6	S. 20° W.	S. 27° W.	37	53	115	117	...	...	Narayanganj	
·515	·509	·344	·456	−·178	79	46	22	49	−17	0·1	0·1	0·1	−2·4	...	5	2	1	3	4	15	19	13	S. 88° W.	S. 36° W	55	49	79	118	...	...	Calcutta (Alipore),	
·681	·754	·770	·735	−·076	85	71	67	74	−4	0·8	0·3	0·6	−3·1	...	3	3	1	10	24	13	3	5	S. 10° W.	S. 26° W.	52	61	283	309	...	...	Saugor Island	
·440	·464	·391	·432	−·084	70	37	23	43	−10	0·2	0·5	0·4	−2·1	18	4	2	...	...	2	7	13	16	N. 70° W.	S. 82° W.	47	41	30*	76	...	...	Burdwan	
·354	·413	·266	·344	−·155	63	35	17	38	−18	0·3	0·3	0·3	−2·5	7	1	1	1	...	5	17	17	13	S. 81° W.	S. 71° W.	60	49	65*	84	...	...	Berhampore	
·674**	·778	·804	·752	−·034	94**	69	70	78	−3	0·7	0·4	0·6	−2·6	...	4	2	4	9	26	7	8	2	S. 5° W.	S. 50° W.	50	37	169*	266	...	...	False Point	
·623	·584	·348	·518	−·134	86	52	20	53	−8	0·1	0·5	0·3	−2·1	6	12	4	3	3	10	12	6	6	S. 82° W.	S. 16° W.	18	37	57	79	...	...	Cuttack	
·227	·227	·206	·220	−·064	38	21	15	25	−9	0·3	0·4	0·4	−2·3	...	22	...	...	...	1	7	5	27	N. 40° W.	N. 74° W.	74	54	236	194	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·309	·373	·335	·339	−·052	53	34	23	37	−8	0·2	0·4	0·3	−2·3	1	2	4	3	...	...	4	38	10	N. 78° W.	N. 73° W.	69	52	80*	81	...	...	Patna	
·461	·459	·439	·453	+·006	85	45	33	54	0	0·1	0·1	0·1	−1·2	1	...	1	8	6	1	11	23	11	S. 80° W.	S. 78° W.	42	31	90	113	...	...	Darbhanga	
·301	·310	·261	·291	−·068	58	27	17	34	−8	0·7	1·0	0·9	−1·1	...	4	...	2	1	2	3	29	21	N. 72° W.	N. 62° W.	73	40	182*	110	...	...	Allahabad	
·332	·337	·317	·329	−·031	63	31	22	39	−4	1·1	1·5	1·3	−1·5	7	1	...	2	...	1	...	47	4	N. 87° W.	N. 56° W.	77	44	69*	98	...	...	Lucknow	
·270	·291	·228	·263	−·030	63	37	23	41	−7	2·2	3·4	2·8	−0·7	2	9	4	2	3	2	11	24	4	N. 84° W.	N. 80° W.	45	27	46	50	...	...	Dehra Dun	Upper Sub-Himalayas.
·308	·323	·232	·288	−·040	74	37	20	44	−5	1·4	2·8	2·1	−0·4	19	1	...	...	6	...	3	...	33	N. 50° W.	N. 64° W.	45	25	61	72	...	...	Roorkee	
·334	·302	·232	·289	−·068	71	33	18	41	−8	2·1	2·7	2·4	−0·1	13	...	...	...	3	...	5	36	5	S. 87° W.	N. 60° W.	66	44	81*	66	...	...	Meerut	
·326	·377	·343	·348	−·006	69	48	30	49	−1	3·1	3·0	3·1	−0·1	3	12	4	6	7	3	2	9	16	N. 25° W.	N. 10° W.	29	31	74	70	...	...	Lahore	
·321	·317	·247	·295	−·069	65	36	23	41	−13	3·6	3·7	3·7	−0·4	15	3	...	...	6	...	3	8	27	N. 58° W.	N. 45° W.	48	34	50	50	...	...	Ludhiana	
·307	·345	·350	·334	+·006	79	55	47	60	+	4·7	5·4	5·1	+0·3	20	8	5	2	6	4	6	4	7	N. 40° W.	N. 18° E.	8	16	80*	91	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·282	·325	·308	·305	−·081	57	39	26	41	−11	1·4**	0·9	1·2	−1·4	34	1	13	...	3	1	5	...	4	N. 37° E.	N. 2° W.	13	22	20*	45	...	...	Mooltan	
·257	·246	·232	·245	−·056	48	24	16	29‖	−8	2·6	4·6	3·6	+0·6	15	7	3	7	6	10	4	3	7	S. 41° E.	N. 87° E.	6	15	109*	91	...	...	Jacobabad	
·425	·435	·523	·461	−·130	66	41	47	51	−14	1·6	2·2	1·9	−0·8	5	2	3	3	2	2	20	22	3	S. 70° W.	S. 77° W.	52	60	241*	281	...	...	Kurrachee	
·223	·226	·214	·221	−·084	41	20	14	25	−12	2·3	2·9	2·6	−0·4	2	4	4	2	3	4	10	21	12	N. 86° W.	N. 39° W.	48	32	104	113	...	...	Jeypore	
·246	·314	·317	·292	−·050	47	28	23	33	−8	1·8	2·6	2·2	−0·1	5	3	7	3	6	3	7	22	6	W.	S. 79° W.	22	30	100	94	...	...	Ajmere	E. Rajputana, Central India, and Gujarat.
·236	·239	·237	·237	?	43	22	17	27	?	1·6	2·5	2·1	?	19	5	4	6	2	2	2	15	7	N. 54° W.	?	23	?	97	?	...	...	Udaipur	
·198	·184	·164	·181	−·118	32	14	10	19	−10	1·3	1·3	1·3	−1·0	...	10	10	9	2	4	4	10	10	N. 9° W.	N. 66° W.	27	35	220‖	209	...	...	Deesa	
·272	·276	·234	·261	−·074	53	25	16	31	−9	1·3	1·9	1·6	−1·3	4	4	2	3	2	2	5	28	12	N. 73° W.	N. 70° W.	37	41	43*	56	..	...	Nowgong	
·274	·319	·286	·293	−·034	48	30	20	33	−6	2·3	2·8	2·6	+0·4	...	...	3	...	5	...	11	...	43	N. 57° W.	N. 68° W.	63	43	163*	111	...	...	Agra	
·455	·281§	·357¶	·355	−·045	76	23§	25¶	40	−1	0·1	1·4	0·8	−1·1	...	3	6	7	6	6	10	13	5	S. 51° W.	N. 81° W.	19	17	258	272	...	...	Belgaum	Deccan.
·252	·262	·254	·256	−·088	32	18	13	21	−10	0·1	2·5	1·3	−1·1	9	3	12	6	14	3	7	1	7	S. 84° E.	N. 44° E.	22	5	165*	190	...	...	Sholapur	
·327	·228**	·201**	·252	−·060	53	16	12	27	−3	0·5**	1·9**	1·2**	−0·9	1	1	4	7	6	2	14	17	8	S. 70° W.	N. 63° W.	33	43	235*	190	...	...	Poona	
·261	·272	·272	·268	−·033	37	18	14	23	−6	1·7	2·7	2·2	+0·5	7	4	10	4	14	2	5	6	10	N. 58° E.	N. 43° W.	9	42	114	113	...	...	Akola	
·192	·173	·184	·183	−·099	24	13	11	16	−12	0·4	2·4	1·4	−0·8	1	10	10	9	5	5	6	3	13	N. 13° E.	N. 28 W.	22	47	188	176	*Nil*	*Nil*	Buldana	
·212		·235	·225	−·077	33	17	12	21	−10	0·3	2·0	1·2	−0·5	3	4	15	7	7	1	7	6	12	N. 14° E.	N. 45° W.	21	45	115	116	...	...	Khandwa	

* Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S.L., and for gravity 45° Lat.	Temperature of air. Mean maximum.	Temperature of air. Mean minimum.	Temperature of air. Mean daily range.	Temperature of air. Highest maximum.	Temperature of air. Lowest minimum.	Temperature of air. Absolute range.	Temperature of air. Mean 10 hours.	Temperature of air. Mean 16 hours.	Temperature of air. Mean daily.	Temperature of air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Deccan—concld.	Hoshangabad	...	28·943	28·793	·150	28·863	+·005	29·811	97·5	65·0	32·5	106·1	45·8	60·3	86·6	96·2	81·3	+1·0	52·9	63·9	69·0†	61·9
	Nagpur	...	·916	·769	·147	·838	+·016	·800	97·7	67·3	30·4	104·1	46·6	57·5	86·2	96·0	83·0	−0·3	55·4	63·4	66·5	61·8
	Do. (Sanitary Commr.'s Office).	...	·932	·788	·144	·855	?	·808	99·1	66·9	32·2	105·8	47·9	57·9	87·9	97·6	82·6	?	55·5	63·6	67·1	62·1
	Jubbulpore	...	·594P	·456P	·138	·520P	P	·784P	93·4	58·3	35·1	102·0	38·5	63·5	83·0	92·0	75·9	−0·7	52·8	62·5	62·7	59·3
	Saugor	...	·145	·019	·126	·077	+·006	·808	92·8	66·7	26·1	102·1	45·1	57·0	84·2	91·1	79·7	+2·5	52·4	60·4	63·5†	58·8
	Sutna	...	·891	·771	·120	·823	+·006	·816	91·9	61·0	30·9	101·0	45·2	55·8	83·7	90·9	76·4	+0·3	51·2	60·3	61·3	57·6
	Raipur	...	·980	·837	·143	·904	+·015	·797	97·1	68·1	29·0	104·0	47·2	56·8	86·3	95·6	83·1	+1·2	55·6	63·1	65·4	61·4
	Hyderabad (Deccan.)	...	·253	·124	·129	·185	+·005	·776	98·9	69·2	29·7	103·2	61·7	41·5	88·7	96·8	83·5	+1·4	59·8	67·3	68·6	65·2
West Coast.	Bombay	...	29·915	29·798	·117	29·851	−·023	·828	86·5	73·3	13·2	88·9	62·3	26·6	81·2	83·4	79·3	+0·5	67·2	72·4	74·0	71·2
	Ratnagiri	...	·831	·721	·110	·770	−·016	·817	88·8	73·2	15·6	95·0	65·9	29·1	85·0	85·6	80·4	+0·9	67·9	73·5	75·3	72·2
	Karwar	...	·910	·781	·129	·839	−·024	·815	88·7	73·5	15·2	90·8	66·5	24·3	83·9	86·8	80·8	+0·8	71·6	75·6	77·4	74·9
	Cochin	...	·945	·825	·120	·879	−·013	·816	93·0	77·1	15·9	94·7	72·7	22·0	86·9	89·4	84·4	+1·1	73·7	77·4	78·7	76·6
South India.	Salem	...	·043	28·870	·173	28·963	−·019	·822	99·4	67·9	31·5	103·5	60·9	42·6	86·0	96·8	81·7	−0·3	65·0	72·0	72·9	70·0
	Mercara	...	26·272	26·157	·115	26·221	−·015	P	84·8	62·4	22·4	89·3	58·2	31·1	76·5	79·9	72·4	+0·6	57·4	62·3	62·9	60·9
	Chitaldroog	...	27·560	27·428	·132	27·492	+·005	·763	95·4	70·5	24·9	99·6	65·7	33·9	85·7	93·0	82·4	+0·8	57·6	65·6	64·6	62·6
	Bangalore	...	26·987	26·855	·132	26·923	−·015	·778	91·7	63·3	28·4	96·2	53·8	42·4	81·2	89·9	77·0	+0·1	55·5	64·0	62·9	60·8
	Hassan	...	·921	·797	·124	·861	+·005	·775	91·3	60·0	31·3	94·5	49·4	45·1	82·7	90·1	75·4	−0·6	56·5	62·9	62·1	60·5
	Mysore	...	27·470	27·323	·147	27·397	+·004	·779	93·8	65·3	28·5	97·7	59·6	38·1	82·9	92·3	79·2	−0·8	58·5	64·6	63·1	62·1
	Trichinopoly	...	29·713	29·549	·164	29·637	−·017	·820	99·1	70·4	28·7	103·8	64·6	39·2	87·0	97·1	83·0	−0·3	67·5	71·6	71·9	70·3
	Madras	...	·957	·830	·127	·893	−·011	·845	89·9	69·4	20·5	96·5	62·9	33·6	85·2	85·2	78·9	−1·9	?	74·8	75·6	73·9
	Bellary	...	28·467	28·318	·149	28·391	−·011	·772	100·8	70·5	30·3	106·6	63·2	43·4	89·5	98·1	85·0	−0·6	62·2	68·7	70·7	67·2
	Cocanada	...	29·946	29·808	·138	29·870	+·004	·831	93·6	72·4	21·2	101·6	66·5	35·1	85·8	90·8	82·3	−0·2	69·2	73·0	74·2	72·1
	Vizagapatam	...	·928	·804	·124	·859	−·013	·828	91·1	71·7	19·4	100·4	64·0	36·4	87·0	87·4	81·8	−0·7	69·3	74·3	75·5	73·0
Hill Station, Baluchistan.	Quetta	...	24·683	24·611	·072	24·640	+·021	P	63·2	38·6	24·6	80·0	15·9	64·1	54·2	60·8	50·3	−0·8	35·5	45·4	48·0	43·0
Hill Stations, Punjab.	Leh	...	19·672	19·591	·081	19·637	−·023	?	48·6	24·1	24·5	62·6	8·0	54·6	38·3	45·9	36·2	+4·3	21·1	30·2	37·8	29·7
	Srinagar	...	24·939	24·849	·090	24·887	−·012	?	61·1	37·8	23·3	78·1	26·0	52·1	50·4	58·4	48·8	+3·4	36·9	46·3	52·9	45·4
	Murree	...	23·870	23·832	·038	23·844	+·010	P	56·8	44·3	12·5	73·3	20·0	53·3	52·2	53·8	50·0	+0·3	37·0	42·6	44·9	41·5
	Kailang	10,087	20·807	20·724	·083	20·777	−·025	P	46·3	26·1	20·2	59·6	7·0	52·6	37·1	42·0	34·1	+5·0	24·1	31·1	34·2	29·5
	Simla (Ridge)	...	23·146	23·101	·045	23·116	+·019	P	59·7	46·3	13·4	68·8	23·4	45·4	54·1	56·8	52·5	+2·0	37·5	41·3	44·0	41·0
Hill Stations, N.-W.P.	Chakrata	...	·328	·274	·054	·294	+·016	P	64·6	47·4	17·2	74·8	32·9	41·9	58·6	59·0	54·8	+3·5	38·6†	44·9†	45·1†	42·9
	Ranikhet	...	24·141	24·071	·070	24·099	+·016	?	68·8	51·7	17·1	77·6	33·0	44·6	63·6	64·6	59·4	+2·9	43·0	48·5	49·7	47·1
	Muktesar	...	22·887	22·830	·057	22·859	?	P	65·6	46·4	19·2	73·9	28·9	45·0	58·2	60·8	54·8	?	36·8	43·5	45·7	42·0
Hill Station, Nepal.	Katmandu	4,388	25·620	25·548	·072	25·585	−·026	?	79·2	45·8	33·4	88·0	34·2	53·8	68·1	74·7	61·4	+0·9	44·3	56·0	57·8	52·7
Hill Station, Bengal.	Darjeeling	...	23·025	22·957	·068	22·990	+·036	?	58·0	?	P	69·0	P	P	52·5	54·4	P	P	41·0	47·9	48·7	45·9
Hill Stations, Central India.	Mount Abu	...	26·118	26·045	·073	26·075	+·007	?	77·9	62·3	15·6	86·2	43·6	42·6	73·1	76·0	69·6	+0·7	47·1	52·0	53·9	51·0
	Pachmarhi	...	·527	·425	·102	·471	+·009	P	86·0	59·7	26·3	92·9	39·8	53·1	79·8	84·6	74·4	+0·6	49·5	60·0	62·2	57·2
	Chikalda	3,642	·406	·301	·105	·348	+·002	?	87·3	67·9	19·4	94·3	46·9	47·4	79·3	85·7	79·1	+1·9	53·9	57·3	59·7	57·0

† Mean of 30 days.

II—*continued.*

at 87 stations in India, Burma, etc., for March, 1898—continued.

Vapour Tension.					Humidity.					Cloud.				Wind Direction.											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
														Number of winds from																			
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·261	·321	·375†	·319	—·011	42	26	22†	30	— 5	0·5	1·6	1·1	−0·8	30	1	17	5	2	..	2	4	1	N. 48° E.	N. 60° W.	2	12	37	66	...	...	Hoshangabad	Deccan—*contd.*
·303	·310	·290	·301	—·054	44	24	17	28	— 6	1·4	2·9	2·2	−0·3	6	7	14	11	5	8	6	1	4	N. 77° E.	N. 1° E.	27	12	127	133	...	...	Nagpur	
·312	·298	·291	·300	P	47	22	16	28	P	0·8	2·2	1·5	P	1	12	12	13	5	7	3	6	3	N. 56° E.	P	29	P	54*	P	...	...	Do. (Sanitary Commr.'s Office).	
·338	·319	·277	·311	—·023	69	28	18	38	— 1	0·8	1·9	1·4	−0·9	5	7	5	11	7	5	10	6	16	N. 74° W.	N. 70° W.	26	23	57	68	...	...	Jubbulpore	
·228	·247	·253†	·243	—·034	33	20	16†	23	— 9	0·8	1·8	1·3	−0·2	6	15	5	6	7	5	3	7	8	N. 2° W.	N. 59° W.	19	29	111	84	...	...	Saugor	
·266	·242	·183	·230	—·032	49	20	12	27	— 5	0·5	0·7	0·6	−1·3	...	8	2	...	...	4	2	11	35	N. 51° W.	N. 53° W.	74	43	124*	133	...	...	Sutna	
·316	·278	·227	·274	—·085	41	22	14	26	—10	0·2	1·0	0·6	−1·4	21	7	6	4	1	1	5	9	7	N. 38° W.	N. 77° W.	23	25	60	119	...	...	Raipur	
·404	·408	·351	·388	—·077	56	30	20	35	—10	0·2	0·9	0·6	−1·2	27	2	4	13	10	1	1	4	...	S. 79° E.	S. 41° E.	31	23	90*	105	...	...	Hyderabad (Deccan).	
·599	·687	·717	·668	—·044	72	64	63	66	— 6	0·5	0·6	0·6	−1·0	...	5	3	5	4	1	2	14	28	N. 49° W.	N. 31° W.	53	52	243	270	...	...	Bombay	West Coast.
1·622	·686	·743	·684	—·022	75	58	61	65	— 3	0·2	0·3	0·3	−0·4	1	2	...	...	1	1	20	18	19	S. 89° W.	N. 64° W.	72	59	162	227	...	...	Ratnagiri	
·754	·777	·816	·783	+·030	90	67	64	74	0	1·1	1·4	1·3	−0·1	...	...	...	...	...	...	5	38	19	N. 87° W.	N. 75° W.	89	77	103	96	...	...	Karwar	
·790	·816	·838	·815	—·028	85	63	60	69	— 6	1·7	0·6	1·2	−1·5	6	4	1	...	...	...	...	29	22	N. 65° W.	N. 76° W.	77	52	159	169	...	...	Cochin	
·588	·603	·491	·561	—·077	85	48	28	54	— 2	0·5	0·8	0·7	−1·7	2	...	14	18	9	7	5	5	2	S. 77° E.	S. 66° E.	40	38	149	126	...	...	Salem	South India.
·420	·408	·389	·406	—·078	74	45	41	53	—10	1·6	4·5	3·1	−0·9	32	3	6	2	4	...	3	3	8	N. 12° W.	N. 59° W.	13	22	36	83	...	...	Mercara	
·320	·388	·256	321	—·076	43	31	16	30	— 8	0·3	1·2	0·8	−1·5	1	2	10	21	13	1	5	6	3	N. 80° E.	N. 87° E.	42	27	166*	154	...	...	Chitaldroog	
·356	·410	·264	·343	—·112	61	38	19	39	—11	0·3	0·6	0·5	−1·8	...	...	10	28	8	5	8	2	1	S. 75° E.	S. 27° E.	55	46	177*	100	...	...	Bangalore	
·428	·351	·236	·338	—·116	81	31	16	43	—13	1·0	3·5	2·3	−1·6	...	...	18	23	12	3	2	3	1	N. 89° E.	S. 84° E.	63	51	79*	74	...	...	Hassan	
·414	·393	·218	·342	—·113	65	35	15	38	—10	0·4	1·3	0·9	−1·4	2	3	13	16	15	4	6	2	1	S. 78° E.	N. 84° E.	47	37	211*	182	...	...	Mysore	
·639	·570	·441	·551	—·107	86	44	25	52	— 6	1·1	1·1	1·1	−2·0	15	7	27	6	2	3	...	1	1	N. 47° E.	N. 85° E.	53	50	99	91	...	...	Trichinopoly	
P	·727	·762	·774	+·002	P	60	63	78	+ 4	2·0	0·2	1·1	−1·3	...	1	...	14	23	15	8	1	...	S. 33° E.	S. 46° E.	69	81	127	150	...	...	Madras	
·463	·446	·409	·439	+·018	62	32	23	39	+ 3	0·2	2·5	1·4	−0·8	13	...	2	21	10	10	...	5	1	S. 78° E.	S. 35° E.	39	19	75	109	...	...	Bellary	
·671	·644	·622	·646	—·079	84	53	44	60	— 6	0·9	0·3	0·6	−0·4	...	...	3	2	17	15	18	6	1	S. 5° W.	S. 3° W.	60	57	165*	158	...	..	Cocanada	
·691	·682	·717	·697	—·025	89	53	55	66	0	1·6	1·9	1·8	−0·2	19	1	3	...	6	20	6	7	...	S. 11° W.	S. 41 W.	42	61	3	63	...	...	Vizagapatam.	
·186	225	·212	·208	—·006	76	54	42	57	0	4·0	4·8	4·4	+0·3	24	13	1	...	3	6	2	6	7	N. 46° W.	S. 74° W.	21	33	70*	102	...	...	Quetta	Hill Station, Baluchistan.
·093	·104	·167	·121	+·019	70	46	54	57	— 1	6·2	7·6	6·9	+0·6	...	...	...	1	...	5	6	44	6	S. 68° W.	S. 40° W.	33	22	83	45	...	...	Leh.	Hill Stations, Punjab.
·213	·275	·355	·281	+·049	92	74	70	79	+ 2	5·5	7·0	6·3	+0·7	6	15	3	3	3	8	3	8	13	N. 40° W.	N. 7° W.	31	8	161*	83	...	...	Srinagar.	
·152	·187	·215	·185	—·002	55	49	53	52	— 2	5·7	5·8	5·8	−0·1	26	2	...	...	16	16	...	...	2	S. 23° E.	S. 39° E.	42	35	241*	225	...	...	Murree.	
·117	·129	·136	·127	+·010	82	59	52	64	— 6	5·7	7·2	6·5	+0·3	...	2	1	...	...	5	20	29	5	S. 75° W.	S. 70° W.	77	73	67	32	1·17	0·41	Kailang.	
·140	·135	·163	·146	—·039	46	33	35	38	—12	3	5·2	4·6	−0·2	10	14	9	2	...	12	10	1	2	N. 24° W.	S. 33° W	5	24	134	136	...	...	Simla (Ridge).	
·144†	·155†	·157†	·152	—·042	44†	31†	31†	35	—18	2·6	3·9	3·3	−0·6	9	6	...	...	...	45	...	1	1	S. 3° W.	S. 52° W.	61	11	241	150	...	...	Chakrata.	Hill Stations, N.-W.P.
·193	·191	·208	·197	—·035	49	33	35	39	—14	2·2	3·0	2·6	−1·1	8	2	1	3	5	5	12	21	5	S. 67° W.	S. 57° W.	45	27	124*	78	...	...	Ranikhet.	
·125	·140	·154	·140	P	40	30	32	34	P	2·9	4·5	3·7	P	...	3	2	6	9	3	9	4	26	N. 65° W.	P	27	P	33*	P	...	...	Muktesar.	
·280	·316	·290	·295	—·010	89	47	35	57	— 4	1·3	1·9	1·6	−2·0	1	2	...	6	2	1	3	38	9	N. 84° W.	N. 82° W.	63	48	32	32	0·38	0·27	Katmandu.	Hill Station, Nepal.
P	·291	·292	P	P	P	73	69	P	P	(a) 4·5	6·1†	5·3†	+0·1	6	5	7	6	...	...	11	22	5	N. 76° W.	S. 75° W.	37	44	141	187	...	...	Darjeeling.	Hill Station, Bengal.
·158	·155	·169	·160	—·059	27	18	18	21	—11	1·5	1·5	1·5	−1·0	...	6	7	1	8	5	13	9	13	N. 88° W.	N. 81° W.	25	38	177*	164	...	...	Mount Abu.	Hill Stations, Central India.
·247	·299	·309	·285	—·040	48	29	26	34	0	0·8	2·4	1·6	−0·5	26	7	3	2	2	3	3	3	13	N. 36° W.	N. 57° W.	24	32	96*	115	...	...	Pachmarhi.	
·264	·226	·219	·236	—·051	37	22	17	25	— 8	1·2	4·1	2·7	+0·3	22	7	3	...	2	7	13	2	6	S. 70° W.	N. 53° W.	20	30	190*	173	0·07	0·04	Chikalda.	

(a) Mean of 28 days.

* Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S.L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, S. India.	Wellington	...	24·234	24·218	·076	24·256	−·010	?	76·1	49·3	26·8	81·0	41·2	39·8	71·7	71·8	61·6	−0·6	44·0	53·3	55·0	50·8
Extra India.	Muscat	...	30·012	29·932	·080	29·972	+·034	29·940	75·5	70·3	5·2	85·2	62·1	23·1	73·7	75·0	72·8	−1·6	63·3	66·6	67·4	65·8
	Aden	...	29·888	·772	·116	·818	−·028	·844	83·1	75·9	7·2	86·1	70·7	15·4	79·7	81·6	79·4	+0·2	70·9	73·2	72·3	72·1
	Perim	...	·746‡	·625‡	·121	·674‡	−·003	?	85·1‡	75·6†	9·5	86·9	73·8	13·1	81·0‡	82·0‡	79·6†	−0·3	71·5‡	74·8‡	75·1‡	73·8
	Minicoy	...	·927	·809	·118	·858	?	·793	87·9	76·5 (a)	11·4	90·5	72·0	18·5	85·3	85·3	81·8	?	?	76·6	76·8	?
	Zanzibar	...	·889‡	·775	·114	·832	−·014	·831	86·6	79·9	6·7	89·9	77·6	12·3	83·3‡	86·1	83·1	+0·6	76·3	78·7‡	78·8	77·9
	Port Victoria (Seychelles).	15	·935	·848	·087	·892	−·013	·830‡	85·3	77·3	8·0	86·9	74·9	12·0	82·8	84·2	81·0	+1·1	73·8	77·4	77·6	76·3
	Mauritius	181	?	?	?	·752	−·037	·879	?	?	?	88·9	65·9	23·0	?	?	77·8	+0·8	?	?	?	?

† Mean of 27 days. ‡ Mean of 30 days. (a) Uncorrected.

II—*concluded.*

at 87 stations in India, Burma, etc., for March, 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from										Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									°/₀	°/₀						
·239	·221	·263	·241	−·093	67	29	34	43	−17	0·5	1·6	1·1	−1·9	2	8	10	9	29	4	...	...	...	S. 76° E.	S. 49° E.	61	65	70	61	...	...	Wellington.	Hill Stations, S. India.
·497	·566	·578	·547	−·047	66	68	66	67	−2	3·0	2·6	2·8	+0·7	...	4	7	17	6	1	2	2	23	N. 19° E.	N. 13° W.	32	40	?	102	...	...	Muscat.	Extra India.
	·732	·673	·698	−·007	77	72	63	71	0	5·5	2·1	3·8	+0·6	1	1	9	33	12	3	3	...	...	S. 82° E.	N. 86° E.	74	72	461	366	...	...	Aden.	
·716†	·783‡	·779‡	·759	+·023	81†	74‡	71‡	75	+3	4·9‡	3·3‡	4·1‡	+2·1	2	...	4	17	32	...	...	5	...	S. 62° E.	S. 63° E.	68	55	426†	441	...	...	Perim.	
?	·800	·806	?	?	?	65	66	?	?	?	?	?	?	...	16	13	5	1	...	1	11	15	N. 12° W.	?	56	?	104*	?	...	...	Minicoy.	
·861	·920‡	·888	·890	+·001	85	81‡	71	79	+1	6·4	5·7	6·1	+1·2	...	10	5	11	3	15	5	8	4	S. 31° E.	S. 34° E.	8	21	102*	141	...	...	Zanzibar.	
·786	·868	·861	·828	+·024	84	77	73	78	−1	5·0	5·6	5·3	−1·4	17	5	8	10	8	2	1	3	8	N. 57° E.	N. 31° W.	23	56	90	127	...	...	Port Victoria (Seychelles).	
?	?	?	·776	?	?	?	?	83	+4	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	233	240	6·53	1·07	Mauritius.	

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* Corrected.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2	miles per hour	...	one	feather	added to the	wind	arrow		
,,	2 to 5	,,	,,	...	two	feathers	,,	,,	,,	,,
,, ,,	5 to 10	,,	,,	...	three	,,	,,	,,	,,	,,
,, ,,	10 to 20	,,	,,	...	four	,,	,,	,,	,,	,,
	over 20	,,	,,	...	five	,,	,,	,,	,,	,,

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch. 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

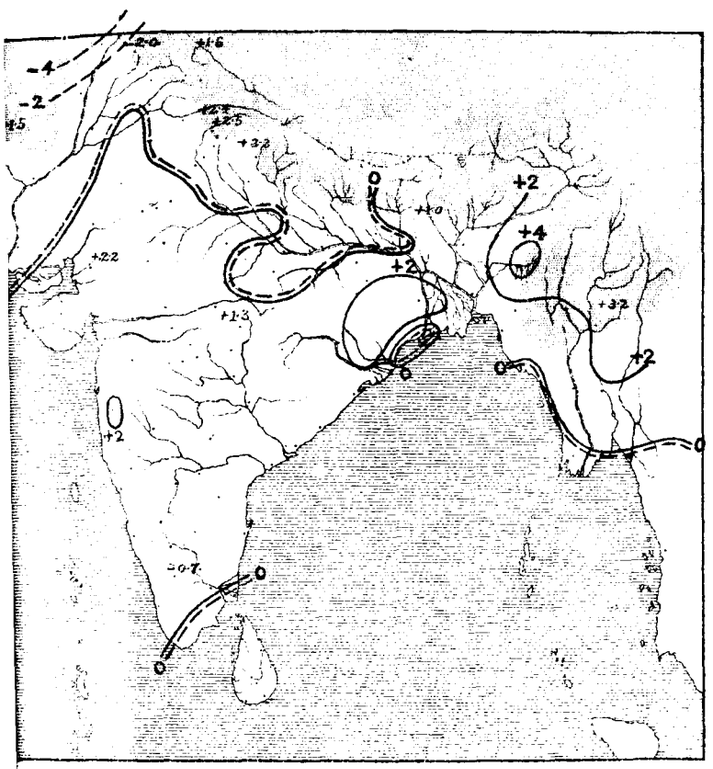
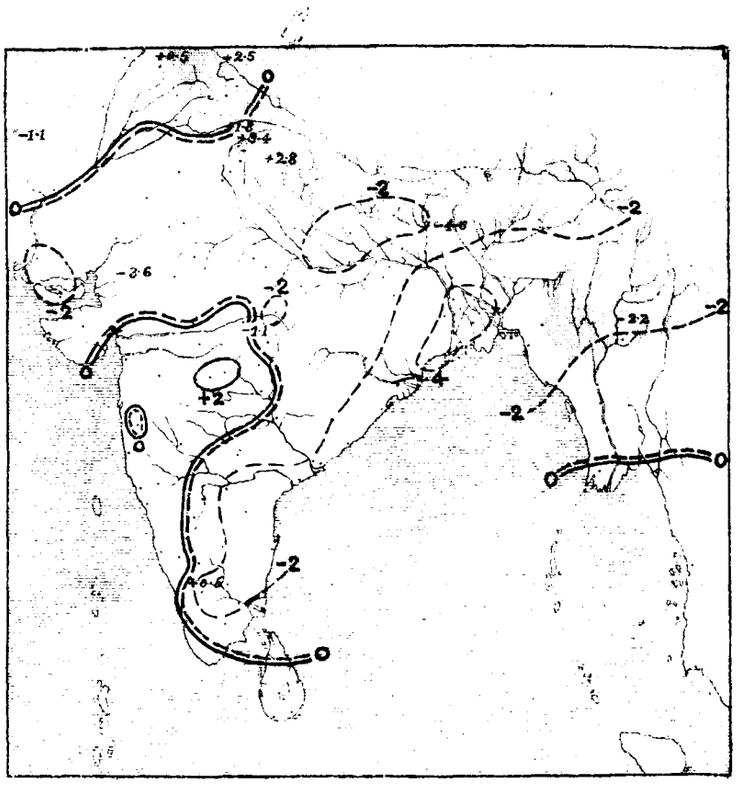


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

ontinuous lines indicate that the mean maximum of month was in ce s by amounts indicated by the attached numbers. Broken or dotted nes that it was in defect by the amounts indicated by the attached umbers. Double lines are the lines of no variation, the broken line facing he area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

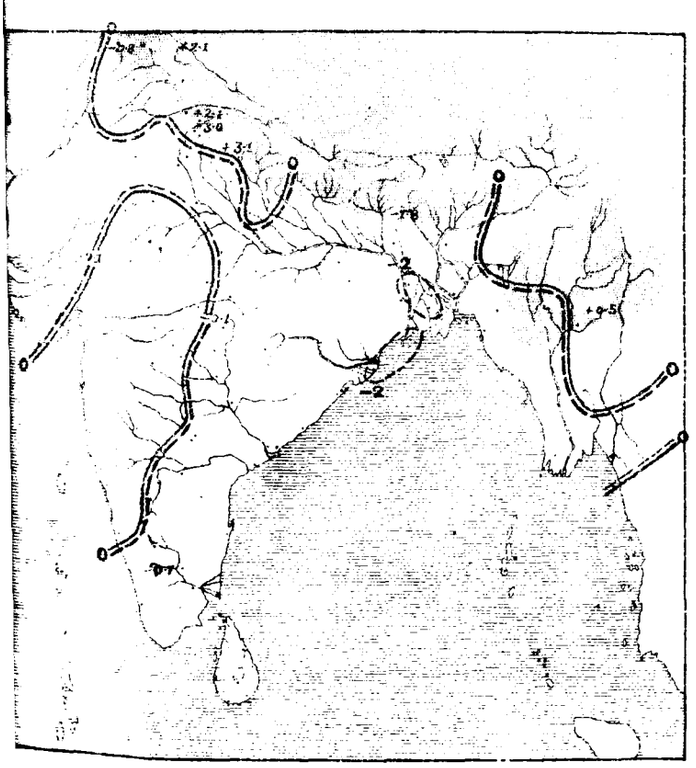
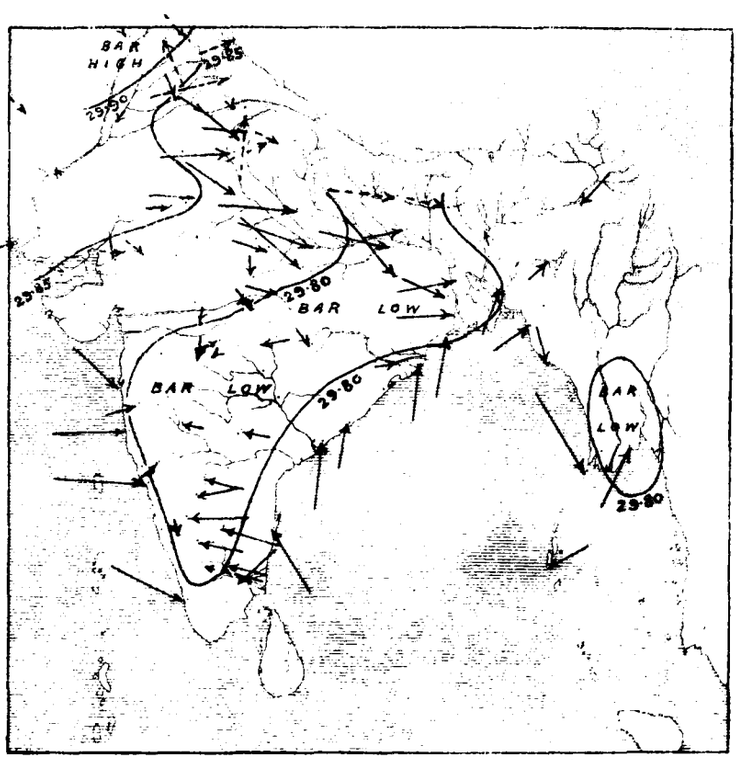


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF MARCH 1898.

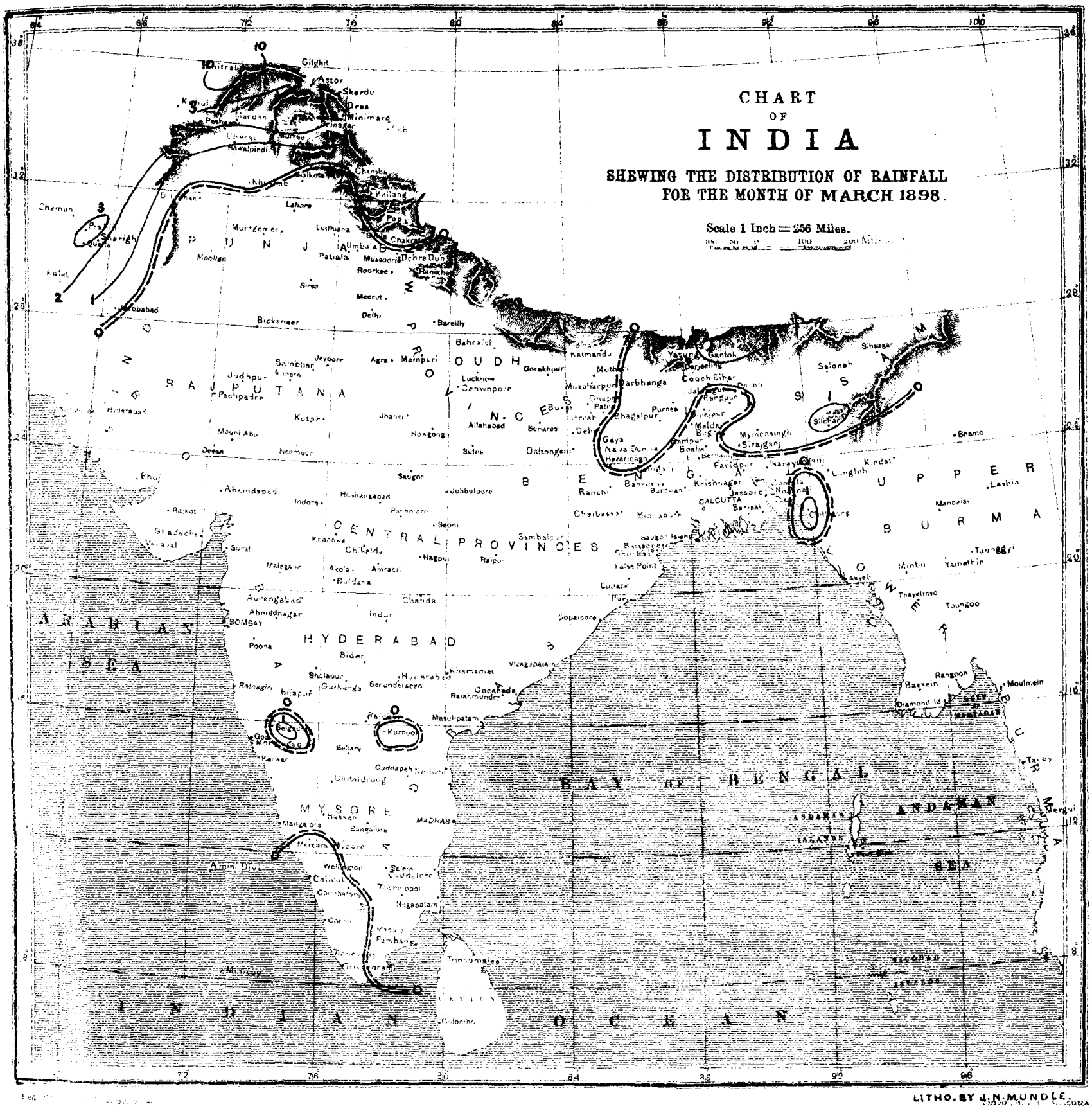


LITHO. BY J. N. MUNDLE.

Explanation.

ntinuous lines indicate that the mean daily temperature of month s in excess by amounts indicated by the attached numbers. Broken dotted lines that it was in defect by the amounts indicated by the ached numbers. Double lines are the lines of no variation, the broken facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value



Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.

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LITHO. BY J. MUNDLE, Calcutta

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North, Punjab
32. West do.
32. Malabar
33a. Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a. Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

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INTRODUCTION.

THIS Review of the weather in India during the month of April 1898 is based on observations taken daily at 8 A.M. at 213 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 87 stations. In the rainfall summary, the rainfall data of the meteorological observatories and the weekly rainfall telegrams received during the month from District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the publication of the review are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of April, 1898.

April is the second month of the hot-weather period or season in Northern and Central India. The most important meteorological feature of the month is the more or less steady increase of temperature which occurs during the month. At the end of March the area of maximum temperature covers the Central and North Deccan. The mean temperature in that area at the time averages 92°. Temperature increases during the month about 10° in Upper India, 5° in Central India, and remains practically unchanged in Ceylon and Southern India. Hence the area of maximum temperature is transferred northwards during the month, and at the end of the month includes the North Deccan, the Central Provinces, and the adjacent districts of South Bihar, the North-Western Provinces and Central India.

The increase of temperature in India during the month produces a corresponding change in the distribution of pressure. Pressure falls rapidly in Northern India, and more especially in Upper and Central India, and the area of minimum pressure is usually transferred northwards to North-Western India during the month. Pressure at the end of the month is highest in the coast districts and adjacent sea areas, but the gradients are small except in the neighbourhood of the coast and at the time of greatest heat during the day when steepish gradients obtain over a narrow belt near the coasts. These afternoon gradients are steepest in the west coast districts and the Bengal and Orissa coast districts.

Local sea winds or land and sea breezes prevail in the coast districts. In the interior of Northern India and Burma the winds blow down the river plains and valleys. The westerly winds in the Gangetic plain are usually of considerable intensity and of high temperature. The air motion over the greater part of the interior occurs chiefly during the day hours, the nights being generally almost calm.

One of the important meteorological features of the month is the hot-weather depression which usually covers the eastern districts of the Central Provinces and Chota Nagpur. It is almost certainly a product, and not the cause, of the system of converging winds which obtain

at this time in North-Eastern India, *viz.*, westerly winds in the Gangetic Plain, easterly winds in Assam and North Bengal, and southerly winds in Bengal and Orissa.

The chief disturbances of themonth belong almost exclusively to the class of hot-weather storms. They are usually accompanied with thunder and rain or hail in the coast districts and near the hills of Northern and Southern India. In the drier districts of North-Western India they usually give no rain and belong to the class known as dust-storms. Thunderstorms are of most frequent occurrence in Assam and Bengal, more especially the eastern and northern districts, and these provinces hence receive a considerable amount of rain during the month. Southern India and Tenasserim also obtain moderate rain during the month, and the rainfall in these areas appears to be, in part at least, due to brief temporary advances of moist south-westerly winds from the equatorial belt.

At the commencement of the month a shallow depression lay over Sind. It was of no importance and filled up during the next twenty-four hours. A shallow depression, which shifted slightly in position from day to day, lay over the submontane districts of the North-Western Provinces and Bihar from the 1st to the 5th. Dry hot westerly winds hence obtained in the Gangetic Plain and temperature was much higher than usual over the whole of Northern and Central India. The following gives temperature variation data from the 1st to the 3rd :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of		
	1st April.	2nd April.	3rd April.
	°	°	°
Baluchistan (Quetta)	+2·7	+4·9	+4·8
Punjab	+5·8	+6·6	+7·4
Sind and Rajputana	+3·7	+4·4	+4·6
North-Western Provinces and Oudh	+3·2	+4·3	+4·2
Central India and Gujarat	+1·0	+1·9	—0·1
Central Provinces and Berar	+3·6	+1·8	+2·2
Bihar	+1·3	+2·8	+3·1
Chota Nagpur	+2·5	+5·1	+5·1
Bengal	+2·4	+2·9	+2·8
Assam	+4·8	+2·4	+1·6

A shallow hot weather depression formed in Sind on the 4th and 5th. It drifted eastwards across Rajputana on the 6th, Chota Nagpur and Bihar on the 7th into North Bengal on the 8th. A shallow secondary depression formed rapidly in the North and Central Punjab on the 6th and filled up equally rapidly during the next twenty-four hours. The disturbance gave showers in Kashmir and the hill districts of Upper India on the 6th and 7th. A cool wave of moderate intensity passed from Baluchistan across North-Western India on the 8th and two following days, as is shown by the following data :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	7th April.	8th April.	9th April.	10th April.	11th April.
	°	°	°	°	°
Baluchistan (Quetta)	—10·3	—3·8	+2·8	+5·9	+8·3
Punjab	+ 3·2	—2·4	—1·3	+3·0	+4·0
Sind and Rajputana	+ 2·0	—2·2	—1·8	+2·1	+3·6
North-Western Provinces and Oudh.	+ 4·1	+1·7	—1·2	—0·8	+0·3
Central India and Gujarat	+ 2·0	+1·4	—0·9	—0·4	+1·3
Central Provinces and Berar	+ 3·8	+2·3	+1·8	+1·5	+0·7
Bihar	+ 3·6	+5·9	+2·3	+0·1	+0·6
Chota Nagpur	+ 5·7	+8·3	+2·9	+1·4	+1·8
Bengal	+ 2·9	+3·5	+4·2	+2·4	+1·6
Assam	+ 3·5	+2·7	+8·6	+5·7	+2·6

The area of lowest pressure which lay over North Bengal and Bihar on the 8th was transferred during the next three days to the submontane districts of the South-East Punjab. Temperature was excessive in North-Eastern India during this period as may be seen from the data of the preceding table.

The period from the 7th to the 12th was one of abnormal dryness over the whole of Northern and Central India—the following gives a few examples :—

Date.	Station.	Hour.	Absolute humidity.	Relative humidity.
			"	%
8th April	Sutna	4 P.M.	·055	3
" "	Deesa	"	·071	4
" "	Berhampore	"	·157	7
" "	Darbhanga	"	·139	8
" "	Burdwan	"	·197	8
9th "	Khandwa	"	·123	5
10th "	Do.	"	·106	4
11th "	Roorkee	"	·070	3
" "	Raipur	"	0	0
" "	Sutna	"	·092	4
" "	Saugor	10 A.M.	·103	6
12th "	Raipur	4 P.M.	·106	5

The period from the 1st to the 8th was marked by very large and rapid changes of the amount of aqueous vapour present in the air at stations near the coast due to the shift of wind from land to sea directions or *vice versa*. The following gives a few examples:—

Date.	Station.	Absolute Humidity at 10 A.M.	Absolute Humidity at 4 P.M.
		"	"
2nd April	Belgaum	·144	·407
3rd "	Berhampore	·890	·203
4th "	Deesa	·438	·124
5th "	Burdwan	·869	·238
8th "	Calcutta	·794	·438

A rapid rise of pressure occurred on the 12th in Assam, Upper Burma and Bengal, which established for a short period steep gradients for easterly winds in Bengal. Conditions were somewhat abnormal and weather disturbed from the 12th to the 19th in Bengal, Assam and Upper Burma. These three areas received rain from thunderstorms on the 12th and 13th, and Bengal and Assam on the 16th and 17th and again on the 19th. The submontane and hill districts of the North-Western Provinces and North Oudh also had light showers on the 16th.

Temperature was more or less below the normal in North-Eastern India during this period, as is shown by the following comparative data:—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of							
	12th April.	13th April.	14th April.	15th April.	16th April.	17th April.	18th April.	19th April.
	°	°	°	°	°	°	°	°
Assam	−2·1	−4·2	+0·1	+3·3	+3·0	−2·7	+0·1	−0·5
Bengal	−3·8	−6·2	−2·4	−0·6	−0·8	−6·6	−3·0	−2·7
Chota Nagpur	+1·7	−1·9	−2·3	−4·0	−0·4	−3·4	−3·7	−5·1
Bihar	+0·1	−2·5	−1·3	+0·2	−3·7	−7·9	−4·4	−3·0
Orissa	+0·9	−2·4	−1·8	−2·4	−1·7	−4·7	−3·4	−5·0

Temperature was, on the other hand, excessive in North-Western and Central India during that period. The following gives data in illustration:—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of							
	12th April.	13th April.	14th April.	15th April.	16th April.	17th April.	18th April.	19th April.
	°	°	°	°	°	°	°	°
Baluchistan (Quetta)	+9·4	+10·6	+5·3	+6·3	−1·0	+0·6	+0·9	+6·2
Punjab	+6·9	+9·1	+9·1	+8·3	+1·1	−2·8	+0·5	+2·2
Sind and Rajputana	+5·7	+5·9	+7·0	+7·2	+5·1	+2·7	+3·3	+2·1
North-Western Provinces and Oudh.	+1·5	+2·7	+3·0	+4·2	+1·8	0	−1·3	−0·4
Central India and Gujarat.	+1·9	+4·5	+5·3	+6·2	+7·1	+3·9	+4·1	+2·9
Central Provinces and Berar.	+1·2	+2·6	+2·4	+4·1	+4·1	+4·1	+1·1	−2·4

The heat was especially trying in the Punjab on the 13th and 14th. The mean temperature of the 14th was 14°·9 above the normal at Rawalpindi, and of the 15th 13°·2 in excess at Lahore. Series of thunderstorms in the East Punjab and adjacent hills on the 16th reduced temperature considerably on that and the following two days.

Weather was feebly unsettled in the southern half of the Peninsula from the 19th to the 22nd, and light to moderate thundershowers fell over the greater part of the area. Temperature hence fell below the normal in that area, but recovered on the 24th and 25th. It was more or less largely in excess throughout the period from the 20th to the 24th in North-Western and Central India, as is shown below:—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	20th April.	A	22nd April.	23rd April.	24th April.
	°	°	°	°	°
Baluchistan (Quetta)	+9·7	+6·8	−2·7	+6·1	−2·8
Punjab	+5·9	+4·6	+4·9	+6·0	+4·7
Sind and Rajputana	+3·5	+4·1	+3·7	+4·9	+4·9
North-Western Provinces and Oudh.	+0·9	+1·4	+1·6	+3·9	+5·3
Central India and Gujarat	+2·4	+2·0	+2·6	+3·7	+5·4
Central Provinces and Berar	−0·5	−0·2	+1·5	+2·9	+5·0

During the remainder of the month the area of lowest pressure lay over the submontane districts of the North-Western Provinces and Bihar, and dry hot westerly winds prevailed in the Gangetic Plain. Temperature was hence more or less largely in excess in Northern India, the excess being on the whole most pronounced in Bihar, Chota Nag-

pur, West and Central Bengal and Cachar. The following gives comparative data in illustration :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	25th April.	26th April.	27th April.	28th April.	29th April.	30th April.
	°	°	°	°	°	°
Baluchistan (Quetta)	—8·2?	—6·7?	—4·9	—2·1	+0·5	+2·5
Punjab	+4·6	+4·0	+3·3	+3·4	+4·2	+4·6
Sind and Rajputana	+2·7	+2·7	+4·2	+2·0	+2·1	+3·7
North-Western Provinces and Oudh.	+5·1	+4·4	+4·4	+4·8	+4·6	+4·0
Central India and Gujarat.	+5·6	+5·4	+5·2	+5·0	+4·2	+5·6
Bihar	+6·4	+6·3	+7·3	+6·8	+5·9	+7·2
Chota Nagpur	+5·5	+6·7	+6·9	+7·2	+7·9	+6·0
Bengal	+4·7	+5·5	+5·4	+5·5	+5·6	+6·3
Cachar	+6·6	+6·3	+7·6	+9·2	+8·2	+8·8

Weather was feebly disturbed in the southern half of the Peninsula (south of Lat. 18°N.) from the 25th to the 28th, and moderate to heavy rain was received over the greater part of that area. The rainfall due to these thundershowers was especially heavy in the Trichinopoly district on the 26th and the Coimbatore district on the 28th.

Fine dry weather prevailed over the whole of India on the 29th and 30th. The highest temperatures of the month were generally registered during the last three days of the month in Northern and Central India and the North Deccan, and higher day temperatures were registered during this period in Berar, parts of the Central Provinces and West Bengal than have been previously registered. The following gives the highest maxima temperatures registered at ten stations :—

STATION.	Highest maximum temperature recorded in April 1898.	Date on which recorded.	Highest maximum temperature recorded in April previous to 1898.	Year in which recorded.
	°		°	
Akola	114·5	30th.	114·0	1896 and 1897.
Amraoti	114·5	30th.	114·5	1896.
Hoshangabad	113·5	28th.	113·0	1875 and 1889.
Jhansi	113·2	25th, 26th, 28th and 29th.	113·7	1876.
Lucknow	113·8	25th and 28th.	114·9	1869.
Allahabad	112·6	25th, 28th and 29th.	114·5	1876.
Gaya	113·1	28th, 29th and 30th.	113·2	1881.
Hazaribagh	107·1	29th.	107.1	1892.
Bankura	114·6	29th.	113·1	1896.
Raniganj	114·5	30th.	113·4	1896.

The air was exceedingly dry in Northern India from the 25th to the 30th and very low humidities were registered. The most noteworthy were :—

STATION.	Date.	Humidity at 4 P.M.
		%
Roorkee	28th April	2
Meerut	" "	4
Hazaribagh	29th "	5
Akola	30th "	3
Satna	" "	5
Hazaribagh	" "	5

Pressure.—The mean pressure of the month of April 1898 for the whole of India was ·017″ below the normal. Pressure was in relative defect in North-Western and Central India and also in Southern India and was in relative excess elsewhere. The anomalies were small, except at stations in the Indus Valley, where they ranged between —·02″ at Peshawar and Kurrachee to —·036″ at Mooltan. The chief feature of the pressure conditions was the large relative excess at the level of the hills. The vertical pressure anomalies were greatest for Leh (+·097″), Quetta (+·083″), Murree (+·070″), Darjeeling (+·076″). This relative excess was almost solely due to the prevailing high temperature in the plains of Northern India.

The following table gives the mean pressure variations and anomalies of the month for the eleven meteorological Provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of April 1898.	Pressure anomaly, April 1898.
	″	″
Burma Coast and Bay Islands	—·012	+·005
Burma Inland	—·003	+·014
Assam	—·006	+·011
Bengal and Orissa	—·006	+·011
Gangetic Plain and Chota Nagpur	—·021	—·004
Upper Sub-Himalayas	—·024	—·007
Indus Valley and North-West Rajputana	—·042	—·025
East Rajputana, Central India and Gujarat	—·025	—·008
Deccan	—·018	—·001
West Coast	—·015	+·002
South India	—·015	+·002

Temperature.—One of the chief features of the month was the high temperature which prevailed over the whole of Northern and Central India, Berar, the Central Provinces and Upper Burma. The mean maximum temperature was in considerable to large excess over by far the greater part of that area. The excess was 5° or upwards at stations for which data are given below :—

STATION.	MEAN MAXIMUM TEMPERATURE.		
	Actual, April 1898.	Normal, April.	Variation of Actual from normal April 1898.
	°	°	°
Rawalpindi	96·5	88·0	+8·5
Sialkot	102·2	94·9	+7·3
nMoolta	105·1	97·8	+7·3
Jacobabad	108·9	102·1	+6·8
Jeypore	105·7	100·5	+5·2
Sambhar	104·3	99·1	+5·2
Deesa	108·0	102·9	+5·1
Quetta	78·6	73·5	+5·1
Silchar	95·1	87·6	+7·5
Ranikhet	79·9	74·5	+5·4
Kailang	63·9	52·2	+11·9

The excess was hence most pronounced locally at Silchar (representative of the district of Cachar) and in the North and South-West Punjab.

The mean minimum temperature was above the normal over nearly the whole of India. The increase was most marked in Berar, East Rajputana and the East and South Punjab in which it ranged between 4° and 6.° It was absolutely greatest at Lahore (+5°·4) and Khandwa (+5°·3). The excess was even greater in amount at the hill stations in Upper India than at the neighbouring plains stations; for example at Murree (+7°·6), Simla (+4°·3), Chakrata (+4°·8), Kailang (+4°·9) and Ranikhet (+4°·4).

The mean temperature of the month was normal in Orissa and Ganjam and practically normal in the Peninsula to the south of Lat. 20°N. It was generally in moderate to considerable excess over the remainder of India. The excess was large and marked in three areas. The first included Cachar and a part of Upper Burma (represented by Kindat) in which it was 5° higher than usual. The second area included the stations of Amraoti, Akola, Khandwa and Indore in which the mean temperature of the month averaged 4°½ above the normal. The third area comprised nearly the whole of the Punjab, Rajputana and Upper Sind in which the mean temperature ranged between 4° and 8°½ higher than usual. The excess was absolutely greatest at Kailang (8°·5), Rawalpindi (6°·6), Murree (6°·3) and Mooltan and Sialkot (each 5°·7).

A remarkable feature of the month was the excessive temperature, abnormal dryness and scanty rainfall of the small area represented by the stations of Silchar and Kindat.

The following table gives variation data of the mean temperature conditions of the month for the eleven meteorological provinces of India :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, April 1898.	Mean minimum temperature, April 1898.	Mean daily temperature, April 1898.
		°	°
Burma Coast and Bay Islands	+0·3	+1·1	+0·8
Burma Inland	+2·3	+2·7	+2·5
Assam	+3·1	+2·0	+2·6
Bengal and Orissa	+0·7	+1·6	+1·2
Gangetic Plain and Chota Nagpur	+2·6	+2·0	+2·3
Upper Sub-Himalayas	+4·2	+2·9	+3·6
Indus Valley and North-West Rajputana.	+5·0	+2·4	+3·7
East Rajputana, Central India and Gujarat.	+3·8	+2·8	+3·3
Deccan	+2·3	+2·5	+2·4
West Coast	+0·9	+1·5	+1·2
South India	+0·2	+0·6	+0·4

Winds—Were stronger than usual in Bengal and the North-Western Provinces and of normal strength in Bihar. They were much more westerly than usual in Bengal. Winds were unusually feeble in the Punjab, Sind and Rajputana, although on the whole slightly steadier than usual. Winds were normal in strength in the Central Provinces and Berar, but were very unsteady in these areas and also in the Deccan. Winds were remarkably steady and much stronger than usual at Perim and Aden.

Humidity and Cloud.—The air was slightly damper than usual in Burma, West Bengal, Bihar, the Bombay and Madras Deccan and the Madras coast districts. The variations from the normal conditions were, however, generally small. The mean humidity of the month was most largely in excess at Belgaum (+8), Vizagapatam (+7), Madras (+5) and Chittagong (+6). The air was drier than usual over the remainder of India, and over a part of that area, including the Punjab, Baluchistan, Berar, Cachar and Central Bengal, the air was abnormally dry. Humidity was more than 10 below the normal at Ludhiana (—17), Mooltan and Kailang (—16), Murree (—14), Chakrata (—13), Silchar (—13), and Quetta (—12).

The driest periods during the month in Northern and Central India were the 7th to the 12th and the 28th to the 30th. Humidities of 5 and less were registered at many stations during these periods.

The area in which the mean humidity of the month was least (ranging between 17 and 24) included Baghelkhand, the western districts of the Central Provinces and South-West Rajputana.

There was somewhat more cloud than usual in Burma, the Assam Valley, East Bengal, and at the west coast stations of the Bay and also in Malabar and the West Deccan. The mean cloud amount of the month was more than 1·0 in excess at Port Blair (+2·0), Perim (+1·5), Bellary (+1·4), and Sibsagar (+1·1).

There was less cloud than usual over the remainder of India and locally in Cachar. The deficiency was more than 1·0 in West Bengal, South Bihar, Chota Nagpur, the North-Western Provinces, Bundelkhand and Baghelkhand, in which it ranged between 1·0 and 1·7.

Skies were most free from cloud in the eastern and central districts of the North-Western Provinces where the mean cloud amount of the month was less than 0·6.

The following table gives variation data of the mean aqueous vapour pressure, mean humidity and mean cloud amount of ten meteorological provinces for the month of April 1898 :—

Meteorological Province.	Variation from normal of		
	Mean aqueous vapour pressure, April 1898.	Mean humidity, April 1898.	Mean cloud amount, April 1898.
	"		
Burma Coast and Bay Islands	+·016	0	+0·3
Assam	+·021	−3	+0·1
Bengal and Orissa	+·025	+1	+0·3
Gangetic Plain and Chota Nagpur	+·055	+1	−1·1
Upper Sub-Himalayas	−·039	−7	−1·0
Indus Valley and North-West Rajputana.	−·006	−7	−0·7
East Rajputana, Central India and Gujarat.	−·031	−6	−0·9
Deccan	+·008	−2	0
West Coast	+·013	−2	0
South India	+·004	0	+0·3

Rainfall.—April 1898 was abnormally dry over the whole of Northern and Central India, even more so than April 1897. No rain fell over the greater part of the Punjab, North-Western Provinces and Central Provinces, and practically none over the whole of Baluchistan, Rajputana, Central India, Berar and North Bombay. Bengal and Assam received rain from thundershowers, chiefly on the 12th and 13th and again from the 17th to the 19th. The rainfall was much below the normal and was exceptionally light in Assam Surma or Cachar, which received an average of only 2·78 inches or less than 21 per cent. of its normal fall (13·06 inches). Burma received occasional moderate rain, chiefly from thunderstorms, but the rainfall of the month was in general slight to moderate defect on the average of all the raingauge stations and about normal on the average of the meteorological stations. Southern India, the greater part of the Deccan and the South Konkan and Malabar districts of the west coast obtained frequent and heavier rain than usual from thunderstorms, chiefly during the last eleven days of the month. The Cuddapah, Bellary, Salem, Kurnool and Anantapur districts had exceptionally heavy thundershowers from the 18th to the 21st, the Trichinopoly district on the 26th, and the Coimbatore district on the 28th. The rainfall of the month was hence in general excess over the Peninsula to the south of Lat. 16° N.

The following table gives rainfall data of the month for the eleven meteorological provinces :—

Meteorological Province.	Rainfall.		
	Average actual for April 1898.	Average normal for April.	Variation of actual, from normal, April 1898.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	2·62	2·46	+0·16
Burma Inland	0·79	1·38	−0·59
Assam	5·70	9·51	−3·81
Bengal and Orissa	1·63	2·55	−0·93*
Gangetic Plain and Chota Nagpur	0·30	0·34	−0·04
Upper Sub-Himalayas	0·23	0·60	−0·35*
Indus Valley and North-West Rajputana.	0·04	0·39	−0·36*
East Rajputana, Central India and Gujarat.	0·01	0·06	−0·06*
Deccan	0·69	0·44	+0·19*
West Coast	1·32	1·57	−0·24*
South India	1·36	1·22	+0·15*

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations that the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian area was ·017″ below the normal. This defect was probably a direct result of the high temperature of the month. Pressure was, relatively to the general condition, in local defect in North-Western and Central India or to the north and west of a line running from Poona through Hoshangabad, Hazaribagh and Darbhanga. It was also in very slight defect in Southern India (south of Lat. 12° N.). The deficiency was moderate in amount in the Indus Valley and was more than ·02″ at the stations for which data are given below :—

STATION.	Variation from normal of mean 8 A.M. pressure of April 1898.	Pressure anomaly, April 1898.
	″	″
Dera Ismail Khan	—·044	—·027
Mooltan	—·053	—·036
Jacobabad	—·047	—·030

Pressure was in relative excess over the north and centre of the Peninsula and in Burma, Assam and Bengal. The excess was small in amount over the whole area. It was absolutely greatest in Upper Burma, East Bengal and Cachar where it averaged about ·015″.

Pressure was in considerable to large excess at the hill stations in Northern India and the vertical pressure anomalies were large and positive. The following gives their values for eight pairs of stations :—

HILL STATION.	Variation of actual from normal pressure, April 1898.	PLAIN STATION.	Variation of actual from normal pressure, April 1898.	Vertical pressure anomaly (Hill—Plain).
	″		″	″
Leh	+·062	Lahore	—·035	+·097
Quetta	+·036	Jacobabad	—·047	+·083
Murree	+·035	Peshawar	—·035	+·070
Simla	+·033	Ludhiana	—·029	+·062
Ranikhet	+·030	Bareilly	—·016	+·046
Chakrata	+·034	Roorkee	—·024	+·058
Darjeeling	+·060	Jalpaiguri	—·016	+·076
Mount Abu	—·019	Deesa	—·026	+·007

The following gives the chief abnormal features of the pressure distribution of the month :—

1st.—Pressure was in slight general defect.

2nd.—Pressure was in local defect in North-Western and Central India, the deficiency being greatest in the Indus Valley, where it was moderate in amount.

3rd.—Pressure was in local excess in the north and and centre of the Peninsula, Assam, Bengal and Burma. The excess was small in amount over that area.

4th.—The vertical pressure anomalies in Northern India were positive and large in amount.

Barometric depressions of the month.

Pressure at the beginning of the month was below the normal over the whole of India, the amount of the depression increasing northwards and westwards from ·05″ in Southern India and East Bengal to ·16″ in the South-West Punjab. Two shallow depressions were affecting the weather in Northern India, one lying over Upper Sind and the South-West Punjab, and the other over the submontane districts of Bihar and the North-Western Provinces. The former depression filled up on the 3rd. The depression in the submontane districts, on the other hand, remained practically unchanged in position on the 2nd, 3rd and 4th, but intensified slightly. It gave moderate westerly winds in the North-Western Provinces. It filled up on the 5th whilst another depression was forming in Sind.

Pressure gave way on the 5th over the whole of India, but more rapidly in Baluchistan and Upper Sind than elsewhere, and a shallow depression lay over that area at 8 A.M. of that date. It advanced eastwards during the next 24 hours, and a shallow secondary depression formed in the Central Punjab. Skies had partially clouded over in the Punjab and adjacent hills on the 5th and a few light showers had fallen in the North Punjab and Kashmir.

Pressure increased very rapidly in Upper India on the 6th and the secondary depression filled up as rapidl yas it had formed, so that there was only a very slight residual depression at 8 A.M. of the 7th in the North Punjab.

Pressure had given way locally in North-Eastern India during the same interval and the primary depression was probably passing through Bihar and Chota Nagpur at 8 A.M. of the 7th. It was, however, very slightly marked and skies were clear over that area at that hour. Pressure, however, gave way briskly to rapidly in Assam and

Summary of Special Storm Reports.

13th.—Severe thunderstorm and hailstorm at Poona from 3-48 P.M. to 4-55 P.M. Pressure increased from 28·094″ at 4-21 P.M. to 28·200″ at 4·38 P.M. The hailstones in the city were stated to be as large as pigeon's eggs.

15th.—Thunderstorm at Simla at 3-25 A.M. and again at 8-10 A.M. and again at 0-38 P.M. A shower of hail of small size occurred during the third thunderstorm.

Thunderstorm at Purnea at 4-25 P.M.

Violent hailstorm at Dehra Dun from 11 A.M. to 11-30 A.M. The storm came from west and inflicted much injury on the fruit and other crops.

Duststorm and thunderstorm at Delhi at 5-15 P.M. and again at 7-30 P.M.

16th.—Thunderstorm at Purnea at 7 A.M.

Severe thunderstorm with hail at Hyderabad (Deccan) lasting from 2-4 P.M. to 3-2 P.M. The storm came from the north-west. It caused great destruction to trees and property.

Thunderstorm at Alipore from 6 P.M. to 7 P.M. Pressure fell from 29·980 at 4-50 P.M. to 29·826″ at 7 P.M. during the storm. The strongest winds blew with a velocity of 42 miles per hour. The storm was of moderate intensity.

17th.—Severe thunderstorm with hail at Nagpur between 2 P.M. and 4 P.M. Pressure increased from 29·772″ at 2-20 P.M. to 29·824″ at 2-30 P.M. and thence fell to 29·752″ at 3-35 P.M. Temperature fell from 101°·0 at 2 P.M. to 76°·2 at 3 P.M. The total rainfall during storm was only 8 inch. The storm is said to have extended over a distance of 35 miles round Nagpur and caused much destruction to fruit trees.

18th.—Severe duststorm at Raipur.

Severe duststorm at Hyderabad (Deccan) at 2 P.M. and severe thunderstorm with rain from 7 P.M. to 8 P.M. The storm came from the north-west and gave 1·15 inches of rain.

Duststorm with thunder and rain at Khandwa at 3-30 P.M.

Severe nor'-wester at Burdwan lasting from 7 P.M. to 7-30 P.M. The rainfall during the storm was 1·63 inches. Much damage was inflicted on the fruit-trees.

Hailstorm at Chikalda from 3-25 P.M. to 3-50 P.M.

23rd.—Severe thunderstorm at Poona from 7 P.M. to 7-30 P.M.

24th.—Violent duststorm at Jacobabad from 3 A.M. to 11 A.M. The storm came down from the north-west.

26th.—Thunderstorm at Belgaum at 4 P.M. Hailstorms occurred in the neighbourhood.

27th.—Thunderstorm at Belgaum at 5 P.M. Half an inch of rain fell in eleven minutes.

Severe thunderstorm with hail at Salem from 5-45 P.M. to 6-30 P.M. The hailstones fell between 6 P.M. and 6-11 P.M. and were of the size of peas. Pressure was very steady during the storm, but temperature fell from 100°·5 at 4 P.M. to 79°·4 at 6 P.M. and 69°·7 at 6-30 P.M. The total rainfall during the storm was 2·4 inches. The storm did much damage to trees and thatched houses.

Thunderstorm at Poona from 4-33 P.M. to 4-43 P.M.

The following gives a brief summary of the more important hailstorms in Assam and Madras during the month, of which reports have been received from the Political Agents or other local authorities:—

10th.—Hailstorm at Gauhati in Assam. The storm was feeble and did no damage to the crops. It occurred at 9 P.M., coming down from the north-west.

14th.—Hailstorm at Rayaghada in the Vizagapatam district. The storm lasted from 5-30 P.M. to 6 P.M. The stones fell within a radius of about 3 miles round the village. Thy varied in size from a strawberry to a lime.

15th.—Hailstorm over an area of 50 square miles in the Khasi and Jaintia hills in Assam. The storm came down from the south-west and was of moderate severity.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Winds were even more unsteady and variable in the west of the Arabian Sea than is ordinarily the case in April. On the other hand, the air movement was somewhat steadier than usual in the centre where the winds ranged between north and east in direction on the great majority of days. Over the south of the sea the air movement was fairly normal, westerly winds obtaining generally. Along the coasts ordinary winds of indraught to the heated land area prevailed steadily throughout the month, but they were somewhat feebler than usual.

The air movement of the month for the whole of the Arabian Sea averaged 2·6 in force or 0·1 below the normal.

Weather was fine and quiet throughout the month except in the neighbourhood of the Malabar coast where passing squalls were experienced on one or two occasions during the closing week of the month.

Bay of Bengal.—Ordinary winds of indraught to the heated land area obtained along the coasts of the Bay throughout the month except for a short period from the 12th to the 18th, when abnormal winds from between east and north were experienced along the Burma coast due to conditions over the adjacent land area. Over the centre and south of the Bay the air movement was of the usual type during nearly the whole of the month. Weather was even finer than usual over the whole of the Bay throughout the month.

The mean daily air movement did not differ from the normal except during the period from the 24th to the 28th, when it was considerably stronger than usual, due to the steepness of the barometric gradients over the north of the Bay and North-Eastern India.

Equatorial Belt.—As usual, the data for this region are very scanty. They, however, suffice to shew that the south-east trades which were confined to the south of Lat. 12°S. in the first week of the month advanced northwards to about Lat. 7°S. during the last week of the month. In ordinary years the south-east trade winds extend as far north as Lat. 2°S. in the last week of April, and hence much further north than was the case during April 1898. The data for the Seychelles indicate that winds, although much steadier and stronger than usual at that station, were very abnormal in direction.

Temperature of the Air.

The month of April 1898 was characterized by finer and drier weather than usual, and hence temperature was more or less above the normal over nearly the whole of India. The mean maximum temperature of the month was slightly below the normal in the South Deccan and the coast districts from Saugor Island to Negapatam. The variations were small in that area, exceeding 1° only at False Point and Saugor Island. The mean maximum temperature of the month was above the normal over the remainder of India. The excess was considerable to large in amount and was above 4° in two areas.

The first area included the Punjab, Upper and Central Sind, Rajputana, and parts of Central India, the Central Provinces and the North-Western Provinces. The following gives data :—

Province.	Station.	Mean maximum temperature.		
		Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
		°	°	°
Baluchistan	Quetta	78·6	73·5	+5·1
Punjab	Rawalpindi	96·5	88·0	+8·5
	Sialkot	102·2	94·9	+7·3
	Mooltan	105·1	97·8	+7·3
	Lahore	100·8	96·6	+4·2
	Ludhiana	101·9	97·6	+4·3
	Sirsa	104·8	100·5	+4·3
Rajputana	Jeypore	105·7	100·5	+5·2
	Deesa	108·0	102·9	+5·1
	Bickaneer	105·4	100·6	+4·8
	Ajmere	103·3	98·6	+4·7
Sind	Jacobabad	108·9	102·1	+6·8
	Hyderabad	106·2	101·9	+4·3
Central India	Neemuch	105·0	100·4	+4·6
	Indore	104·5	100·2	+4·3
Central Provinces.	Khandwa	109·2	104·3	+4·9
North-Western Provinces.	Lucknow	106·9	102·3	+4·6
	Cawnpore	106·2	101·8	+4·4
	Jhansi	108·0	103·8	+4·2

The excess was hence most pronounced in the Punjab and Upper Sind.

The second area included Upper Burma and Cachar. The following gives comparative data :—

Province.	Station.	Mean maximum temperature.		
		Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
		°	°	°
Assam	Silchar	95·1	87·6	+7·5
Upper Burma	Bhamo	97·9	93·0	+4·9
	Kindat	100·5	95·9	+4·6
	Lashio	92·9	88·8	+4·1

The maximum temperature of the month was almost as largely above the normal at the hill stations in Upper India as at the neighbouring plains stations, as is shown by the following data :—

Station.	Mean maximum temperature.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	°	°	°
Leh	62·0	57·2	+4·8
Kailang	63·9	52·2	+11·9
Murree	73·3	68·4	+4·9
Simla	70·7	66·8	+3·9
Chakrata	73·2	70·6	+2·6
Ranikhet	79·9	74·5	+5·4

The highest maximum temperatures of the month were generally registered in Northern and Central India and the Central Provinces in the last week of the month, and in the greater part of the Deccan and Burma in the second week of the month.

The following gives the highest maximum temperatures exceeding 113° registered in India during the month :—

Division.	Station.	Highest maximum temperature recorded in April 1898.	Date on which recorded.
		°	
Bengal	Bankura	114·6	29th.
	Raniganj	114·5	30th.
	Chaibassa	113·9	30th.
	Daltanganj	113·1	28th & 29th.
	Gaya	113·1	28th, 29th and 30th.
North-Western Provinces.	Cawnpore	114·1	28th.
	Lucknow	113·8	th & 28th.
	Jhansi	113·2	25th, 26th, 28th & 29th.
Central Provinces	Khandwa	113·7	25th.
	Hoshangabad	113·5	28th.
Berar	Akola	114·5	30th.
	Amraoti	114·5	30th.
Sind	Jacobabad	115·6	21st.
Gujarat	Ahmedabad	114·3	28th.
Rajputana	Pachpadra	115·7	16th.

Higher day temperatures than have been previously recorded were registered in two areas. The first area included Berar and a part of the Central Provinces.

The following gives data for this area, showing the highest temperatures recorded in April 1898 and also in April of previous years :—

Station.	Highest maximum temperature recorded in April 1898.	Date on which recorded.	Highest maximum temperature recorded in April previous to 1898.	Year in which recorded.
			°	
Akola	114·5	30th	114·0	1896 & 1897
Amraoti	114·5	30th	114·5	1896
Khandwa	113·7	25th	115·2	1896
Hoshangabad	113·5	28th	113·0	1875 & 1889

The second area included South Bihar, Chota Nagpur and West Bengal, for which corresponding data are given below :—

Station.	Highest maximum temperature recorded in April 1898.	Date on which recorded.	Highest maximum temperature recorded in April previous to 1898.	Year in which recorded.
	°		°	
Gaya	113·1	28th, 29th and 30th,	113·2	1881
Hazaribagh	107·1	29th	107·1	1892
Bankura	114·6	29th	113·1	1896
Raniganj	114·5	30th	113·4	1896
Burdwan	110·6	9th	113·0	1897

The mean minimum temperature of the month was above the normal over the whole of India, except perhaps locally at Bellary and Cuddapah, but the variations from the normal at these two places were very small.

The mean minimum temperature of the month was above the normal by more than 2° over nearly the whole of Northern and Central India and the North Deccan. It was more

than 4° above in three areas for which data are given below :—

AREA.	STATION.	MEAN MINIMUM TEMPERATURE. Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
		°	°	°
1ST AREA	Lahore	70·1	64·7	+5·4
	Rawalpindi	64·3	59·6	+4·7
	Ludhiana	71·2	66·7	+4·5
	Sialkot	70·1	66·0	+4·1
	Mooltan	71·5	67·4	+4·1
2ND AREA	Jhansi	80·6	76·0	+4·6
	Jeypore	73·8	69·3	+4·5
3RD AREA	Khandwa	79·6	74·3	+5·3
	Amraoti	80·3	75·5	+4·8
	Akola	78·7	74·0	+4·7

The night temperature was above the normal at the hill stations in Upper India and more especially at the stations on the outer or lower ranges. The following gives data :—

STATION.	MEAN MINIMUM TEMPERATURE. Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	°	°	°
Leh	33·5	31·2	+2·3
Kailang	36·4	31·5	+4·9
Murree	59·6	52·0	+7·6
Simla	56·8	52·5	+4·3
Chakrata	56·7	51·9	+4·8
Ranikhet	61·4	57·0	+4·4

The mean night temperature of the month was, on the other hand, slightly below the normal at Quetta (—1°·3).

The lowest temperatures of the month were recorded in Northern India during the second week of the month, and in Central India during the first week of the month, and were registered during the passage of the cool wave of the 7th to the 9th. They were in no way remarkable, and were not so low as have been previously recorded.

The mean temperature of the month was above the normal over the whole of India except a narrow belt of the coast districts between Saugor Island and Vizagapatam, where it was very slightly below the normal.

Over by far the greater part of Northern and Central India the mean temperature differed from the normal by more than 2°. In the Peninsula to the south of Lat. 20° N. the variations were small, nowhere exceeding 2°. Temperature was in considerable excess over the greater part of the Punjab, Rajputana and Upper Sind. The following gives data for this area of increased temperature in April 1898 :—

PROVINCE.	STATION.	MEAN DAILY TEMPERATURE. Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
		°	°	°
PUNJAB	Rawalpindi	80·4	73·8	+6·6
	Sialkot	86·2	80·5	+5·7
	Mooltan	88·3	82·6	+5·7
	Lahore	85·5	80·7	+4·8
	Ludhiana	86·6	82·2	+4·4
RAJPUTANA	Jeypore	89·7	84·8	+4·9
	Ajmere	88·7	84·4	+4·3
	Bickaneer	9 ·1	87·1	+4·0
UPPER SIND	Jacobabad	90·1	85·5	+4·6

Temperature was also in considerable excess in Berar and the adjacent districts of Central India and the Central Provinces, as is shown by the following data :—

STATION.	MEAN DAILY TEMPERATURE. Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	°	°	°
Khandwa	94·4	89·3	+5·1
Akola	94·1	89·8	+4·3
Amraoti	94·5	90·4	+4·1
Buldana	92·2	88·3	+3·9
Chikalda	86·6	83·2	+3·4
Indore	88·7	84·6	+4·1

It was also in considerable excess in Cachar and a part of Upper Burma, as is shown below :—

PROVINCE.	STATION.	MEAN DAILY TEMPERATURE. Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
		°	°	°
ASSAM	Silchar	83·5	78·2	+5·3
UPPER BURMA	Kindat	85·9	81·2 ?	+4·7 ?

A noteworthy feature of the month was the abnormal dryness, great heat and scanty rainfall of Cachar.

Temperature was in moderate to large excess in the Punjab and Kashmir Himalayas, as is shown by the following data :—

Station.	Mean daily temperature.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	°	°	°
Leh	47·7	44·1	+3·6
Kailang	48·6	40·1	+8·5
Srinagar	59·2	57·3	+1·9
Murree	66·5	60·2	+6·3
Simla	63·8	59·7	+4·1
Chakrata	65·0	61·3	+3·7
Ranikhet	70·7	65·8	+4·9

The following gives a summary of the chief features of the mean temperature conditions of the month in India :—

(1) The mean maximum and minimum temperatures of the month were both more or less in excess over Northern and Central India and Burma, and hence the mean temperature of the month was in general excess, slight to large in amount. The excess was large in three areas. The first included the Punjab, Upper Sind and Rajputana, in which the excess ranged between 4° and 7°, the second Berar, in which it averaged 4½°, and the third Cachar, in which it was nearly 5½°, as indicated by the temperature data of Silchar.

(2) The mean maximum temperature was in slight defect in the eastern half and in slight excess in the western half of the Peninsula and the minimum temperature in slight to moderate excess over the whole of that area. The mean temperature of the month in Tropical India to the south of Lat. 16°N. was hence above the normal by small amounts.

(3) Temperature was as largely in excess at the hill stations in Northern India as at the adjacent plain stations. The excess was absolutely greatest at Kailang (8·5°).

The following table gives comparative data of the mean temperature conditions of the month in 56 meteorological divisions of India :—

Province.	Division.	Actual temperature.					Variation from normal of		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	93·4	75·8	84·7	17·6	26·7	+0·2	+1·1	−0·9
	Lower Burma (Deltaic)	94·6	77·4	86·1	17·2	24·3	+0·4	+1·1	−0·7
	Central do.	102·6	77·8	90·2	24·8	35·8	+0·5	+2·3	−1·8
	Upper do.	101·9	75·5	88·7	26·4	38·2	+2·7	+2·8	−0·1
	Arakan	92·4	77·1	84·8	15·3	22·0	+0·5	+1·4	−0·9
Bengal and Assam	Eastern Bengal	93·1	75·3	84·2	17·8	33·2	+1·5	+2·0	−0·5
	Assam (Surma)	95·1	71·9	83·5	23·2	34·3	+7·5	+3·0	+4·5
	Do. (Brahmaputra)	86·3	70·3	78·2	16·3	31·1	+0·9	+1·5	−0·6
	Deltaic Bengal	97·3	76·8	87·1	20·5	35·4	−0·2	+0·8	−1·0
	Central do.	101·8	75·4	88·6	26·3	43·6	+2·4	+2·0	+0·4
	North do.	91·9	72·1	82·1	19·8	32·4	+1·4	+3·0	−1·6
	Bengal Hills	64·7	45·0	55·0	19·5	34·0	?	?	?
	Orissa	92·9	78·2	85·6	14·8	27·3	−0·7	+0·4	−1·1
	Chota Nagpur	103·1	74·3	88·7	28·8	44·3	+2·1	+2·1	0
	Bihar (South)	104·4	75·6	90·0	28·8	41·9	+2·2	+2·2	0
	Do. (North)	99·3	73·0	86·1	26·3	41·1	+0·5	+2·4	−1·9
North-Western Provinces and Oudh.	North-Western Provinces (East)	106·1	74·0	90·1	32·1	46·2	+2·1	+1·9	+0·2
	Oudh (South)	106·9	73·5	90·2	33·4	47·6	+4·6	+2·5	+2·1
	Do. (North)	103·4	71·5	87·5	31·9	48·6	?	?	?
	North-Western Provinces (Central)	106·7	75·6	91·2	31·0	45·7	+4·3	+3·2	+1·1
	Do. do. (West)	103·2	72·6	88·0	30·6	44·4	+2·6	+1·9	+0·7
	Do. do. (Submontane, East)	102·2	73·1	87·7	29·1	43·4	+1·4	+0·7	+0·7
	Do. do. (do. West)	98·8	67·9	83·3	30·9	47·7	+2·8	+1·4	+1·4
	Do. do. (Hills)	76·1	58·4	67·3	17·7	36·5	+4·0	+4·6	−0·6
Punjab	Punjab (South-East)	102·8	75·5	89·2	27·3	44·3	+2·4	+2·3	+0·1
	Do. (South)	103·2	69·8	86·5	33·4	47·6	?	?	?
	Do. (Central)	100·8	70·1	85·5	30·7	46·4	+4·2	+5·4	−1·2
	Do. (Submontane)	102·0	69·9	86·0	32·2	48·1	+5·8	+4·3	+1·5
	Do. (Hills)	69·9	48·6	59·3	21·4	43·8	+4·3	+4·7	−0·2
	Do. (North)	94·3	63·5	78·9	30·8	49·0	+7·0	+3·4	+3·6
	Do. (West)	103·9	70·7	87·4	33·2	50·0	+7·3	+4·1	+3·2

Province.	Division.	Actual Temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Bombay and Malabar Coast Districts (Madras).	Malabar	91·2	79·3	85·3	11·9	19·5	+1·0	+1·2	−0·2
	Madras (South Central)	99·6	75·0	87·3	24·6	35·3	0	+0·4	−0·4
	Coorg	85·0	65·8	75·4	19·2	28·3	+0·5	+1·7	−1·2
	Mysore	95·2	69·9	82·6	25·4	33·9	+1·2	+0·5	+0·7
	Konkan	89·8	79·4	84·6	10·4	17·8	+0·8	+1·7	−0·9
	Bombay Deccan	102·2	72·8	87·5	29·4	39·0	+1·1	+1·6	−0·5
	Hyderabad (North)	103·4	75·7	89·6	27·7	41·8	?	?	?
	Khandesh	104·5	73·6	89·1	30·9	42·2	+3·1	+3·6	−0·5
Central Provinces and Berar.	Berar	109·1	79·5	94·3	29·6	45·2	+3·6	+4·8	−1·2
	Central Provinces (West)	108·1	78·1	93·1	29·9	45·5	+4·3	+4·4	−0·1
	Do. (Central)	105·4	73·7	89·6	31·8	45·3	+2·8	+1·0	+1·8
	Do. (East)	106·4	77·5	91·9	28·9	42·6	+1·8	+1·2	+0·6
Bombay (North)	Gujarat	103·9	75·6	89·8	28·3	42·4	+0·3	+3·2	+2·9
	Kathiawar & Cutch	100·1	72·5	86·3	27·7	42·3	+3·3	+1·0	+2·3
	Sind	102·4	72·2	87·3	30·2	47·9	+3·8	+1·4	+2·4
	Baluchistan Hills	82·8	48·1	65·5	34·7	57·6	+5·1	−1·3	+6·4
Rajputana and Central India.	Central India (East)	105·2	73·8	89·5	31·3	45·6	+3·7	+3·4	+0·3
	Rajputana (East), Central India (West)	105·3	74·6	90·0	30·8	46·8	+5·1	+3·1	+2·0
	Do. (West)	106·7	74·3	90·5	32·4	48·2	+4·8	+3·2	+1·6
Madras	East Coast (North)	91·3	78·3	84·8	13·1	23·2	+0·5	+0·7	−0·2
	Hyderabad (South)	103·0	77·1	90·1	25·9	38·8	+0·4	+1·1	−0·7
	Madras (Central)	104·6	78·6	91·6	26·0	37·9	+0·1	0	+0·1
	East Coast (Central)	97·7	77·8	87·8	19·9	31·2	−0·5	+0·9	−1·4
	Do. (South)	95·2	78·4	86·8	16·9	28·3	+0·2	+1·0	−0·8
	Madras (South)	97·1	78·3	87·7	18·9	27·2	?	?	?

At the commencement of the month temperature was above the normal except locally in Lower Sind, Cutch and Kathiawar, where strong sea winds were blowing and reducing temperature below the normal to a slight extent. Temperature was in large excess in North-Western and Central India, the excess being on the whole most marked in the day temperature. Similar conditions obtained throughout the first week of the month. The following gives variation data of the mean temperature for the larger provinces of India from the 1st to the 7th :—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 1st April.	2nd April.	3rd April.	4th April.	5th April.	6th April.	7th April.
	°	°	°	°	°	°	°
Baluchistan (Quetta)	+2·7	+4·9	+4·2	+5·9	+5·8	+0·6	−10·3
Punjab	+5·8	+6·6	+7·4	+5·5	+5·5	+6·2	+3·2
Sind and Rajputana	+3·7	+4·4	+4·6	+3·4	+1·8	+5·1	+2·0
North-Western Provinces and Oudh.	+3·2	+4·3	+4·2	+3·8	+2·9	+2·1	+4·1
Central India and Gujarat	+1·0	+1·9	−0·1	+0·7	+1·4	+1·6	+2·0
Central Provinces and Berar	+3·6	+1·8	+2·2	+2·4	+3·2	+3·4	+3·8
Bihar	+1·3	+2·8	+3·1	+2·9	+1·6	+2·1	+3·6
Chota Nagpur	+2·5	+5·1	+5·1	+5·6	+3·9	+2·6	+5·7
Bengal	+2·4	+2·9	+2·8	+2·6	+2·9	+2·6	+2·9
West Coast	+1·3	+0·3	+0·3	+2·3	+1·7	+1·1	+2·2
Deccan	+2·8	+1·6	+2·3	+2·5	+2·8	+2·5	+2·0
Madras Coast	−0·1	−0·3	0	−0·5	+0·2	+0·2	+0·2

A cool wave of slight intensity, apparently due to slight disturbance and rain in Kashmir and Afghanistan, reduced temperature to a moderate extent in North-Western India during the next two days, *i.e.*, on the 8th and 9th.

The following gives data showing the progress and character of the wave :—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 8th April.	9th April.	10th April.	11th April.
	°	°	°	°
Baluchistan (Quetta)	−3·8	+2·8	+5·9	+8·3
Punjab	−2·4	−1·3	+3·0	+4·0
Sind and Rajputana	−2·2	−1·8	+2·1	+3·6
North-Western Provinces and Oudh.	+1·7	−1·2	−0·8	+0·3
Central India and Gujarat	+1·4	−0·9	−0·4	+1·3
Bihar	+5·9	+2·3	+0·1	+0·6
Chota Nagpur	+8·3	+2·9	+1·4	+1·8

The effect of this wave passed away on the 11th. The lowest night temperatures of the month were generally recorded in North-Western and Central India during the progress of the cool wave. They were not remarkable, and much lower night temperatures have frequently been registered in April.

The following variation data for the 11th illustrate fully the temperature conditions prevailing at that time :—

Province.	Variation from normal of		
	Mean maximum temperature, 11th April.	Mean minimum temperature, 11th April.	Mean temperature, 11th April.
	°	°	°
Burma	+1·9	+0·6	+1·3
Bengal and Assam	+1·4	+1·2	+1·3
N.-W. Provinces and Oudh	+3·0	—2·4	+0·3
Punjab	+7·4	+0·5	+4·0
Sind and Rajputana	+6·6	+0·5	+3·6
Central India and Gujarat	+4·2	—1·7	+1·3
Central Provinces and Berar	+3·2	—1·9	+0·7
Bombay	+2·5	—0·1	+1·2
Madras	+1·4	+1·9	+1·7

Weather was disturbed with frequent thundershowers from the 12th to the 15th in North-Eastern India and temperature was hence reduced considerably to largely below the normal in that area. It increased, on the other hand, in North-Western and Central India and was in large excess. The following data illustrate this contrast of conditions :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of			
	12th April.	13th April.	14th April.	15th April.
	°	°	°	°
Baluchistan (Quetta)	+9·4	+10·6	+5·3	+6·3
Punjab	+6·9	+9·1	+9·1	+8·3
Sind and Rajputana	+5·7	+5·9	+7·0	+7·2
Central India and Gujarat	+1·9	+4·5	+5·3	+6·2
North-Western Provinces and Oudh.	+1·5	+2·7	+3·0	+4·2
Bihar	+0·1	—2·5	—1·3	+0·2
Chota Nagpur	+1·7	—1·9	—2·3	—4·0
Bengal	—3·8	—6·2	—2·4	—0·6
Assam	—2·1	—4·2	+0·1	+3·3

A noteworthy feature of this period was the abnormally high temperature in the Punjab. The following gives variation data for the stations at which the excess was greatest on each day from the 12th to the 15th :—

Date.	Station.	Variation from normal of		
		Mean maximum temperature.	Mean minimum temperature.	Mean temperature.
		°	°	°
12th April	Murree	+15·4	+16·7	+16·1
13th "	Rawalpindi	+18·8	+11·1	+15·0
14th "	"	+13·3	+16·4	+14·9
15th "	Lahore	+ 8·8	+17·6	+13·2

The highest day temperatures of the month were registered at several stations in the Punjab and Kashmir during this period. The following gives examples :—

Station.	Highest maximum temperature recorded in April 1898.	Date on which recorded.	Highest maximum temperature recorded in April previous to 1898.	Year in which recorded.
	°		°	
Rawalpindi	104·6	13th and 30th	106·0	1880
Montgomery	112·1	13th and 14th	113·9	1892
Srinagar	84·3	13th	84·8	1892

Weather was disturbed from the 16th to the 19th over a large area including the greater part of the Gangetic Plain, Bengal and the Deccan. Temperature hence fell over the greater part of India and was reduced considerably to largely below the normal in the areas of rainfall. The following gives variation data in illustration :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	16th April.	17th April.	18th April.	19th April.	20th April.
	°	°	°	°	°
Baluchistan (Quetta)	—1·0	+0·6	+0·9	+6·2	+9·7
Punjab	+1·1	—2·8	+0·5	+2·2	+5·9
Sind and Rajputana	+5·1	+2·7	+3·3	+2·1	+3·5
North-Western Provinces and Oudh.	+1·8	0	—1·3	—0·4	+0·9
Central India and Gujarat	+7·1	+3·9	+4·1	+2·9	+2·4
Central Provinces and Berar	+4·1	+4·1	+1·1	—2·4	—0·5
Bihar	—3·7	—7·9	—4·4	—3·0	—2·3
Chota Nagpur	—0·4	—3·4	—3·7	—5·1	—5·5
Bengal	—0·8	—6·6	—3·0	—2·7	—1·3
West Coast	+2·2	+0·9	+1·0	+1·9	+0·5
Deccan	+1·5	+1·9	+0·5	—2·7	—2·5
Madras Coast	—0·9	0	—0·9	+0·1	—1·5

Temperature increased generally during the next five days from the 21st to the 25th and was at the end of the

period above the normal over the whole of India. The chief feature of this period was the excessive temperature in North-Western and Central India. The following gives data for this period :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	21st April.	22nd April.	23rd April.	24th April.
	°	°	°	°
Baluchistan (Quetta)	+6·8	—2·7	+0·1	—2·8
Punjab	+4·6	+4·9	+6·0	+4·7
North-Western Provinces and Oudh	+1·4	+1·6	+3·9	+5·3
Sind and Rajputana	+4·1	+3·7	+4·9	+4·9
Central India and Gujarat	+2·0	+2·6	+3·7	+5·4
Bengal and Assam	—0·1	+2·0	+3·0	+3·9
Central Provinces and Berar	—0·2	+1·5	+2·9	+5·0
Bombay	+0·2	—0·5	+0·6	+2·0
Madras	—2·7	—2·2	—0·4	+0·2
Burma	+3·8	+2·9	+3·4	+4·2

During the remainder of the month the weather was fine and settled in Northern and Central India, and hot westerly winds obtained in the Gangetic Plain. Weather was, on the other hand, feebly disturbed from the 25th to the 28th in South Madras, where thunderstorms gave light to heavy local sporadic showers. Temperature was hence above the normal during the period over the whole of Northern and Central India and the Deccan, and the excess was large and pronounced over North-Eastern and Central India, Berar and the Central Provinces. The following gives variation data for this period :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	25th April.	26th April.	27th April.	28th April.	29th April.	30th April.
	°	°	°	°	°	°
Baluchistan (Quetta)	—8·2?	—6·7?	—4·9	—2·1	+0·5	+2·5
Burma	+2·2	+1·9	+2·8	+2·4	+3·3	+3·3
Bengal and Assam	+4·8	+5·4	+5·3	+5·3	+5·2	+5·4
North-Western Provinces and Oudh	+5·1	+4·4	+4·4	+4·8	+4·6	+4·0
Punjab	+4·6	+4·0	+3·3	+3·4	+4·2	+4·6
Sind and Rajputana	+2·7	+2·7	+4·2	+2·0	+2·1	+3·7
Central India and Gujarat	+5·6	+5·4	+5·2	+5·0	+4·2	+5·6
Central Provinces and Berar	+5·5	+5·3	+6·5	+6·1	+5·0	+5·4
Bombay	+2·0	+1·0	+1·2	+0·3	+1·5	+3·9
Madras	—0·2	+0·2	—0·1	—0·8	+0·4	+1·1

Temperature was hence throughout this period most largely in excess in North-Eastern India and Upper Burma. The following gives examples of the large local excess of temperature during this period from the 28th to the 30th, the hottest period of the month :—

DATE.	Station.	VARIATION FROM NORMAL OF		
		Mean maximum temperature.	Mean minimum temperature.	Mean temperature.
		°	°	°
28th April	Silchar	+10·9	+ 7·5	+ 9·2
	Kindat	+11·3	+ 8·4	+ 9·9
	Bogra	+ 9·0	+ 8·7	+ 8·9
29th April	Kindat	+12·0	+ 10·0	+11·0
	Bogra	+11·6	+ 9·8	+10·7
	Silchar	+11·1	+ 5·3	+ 8·2
30th April	Bogra	+13·6	+ 9·5	+11·6
	Dinajpur	+11·8	+ 9·4	+10·6
	Kindat	+12·8	+ 9·8	+11·3
	Silchar	+12·0	+ 5·5	+ 8·8

The highest day temperatures were generally registered in Northern and Central India and the North Deccan during this period. In some cases they were higher than have been previously recorded.

The following gives data for selected stations in these areas :—

STATION.	Highest maximum temperature recorded in April 1898.	Date on which recorded.	Highest maximum temperature recorded in April previous to 1898.	Year in which recorded.
	°		°	
Akola	114·5	30th	114·0	1896 and 1897
Amraoti	114·5	30th	114·5	1896
Hoshangabad	113·5	28th	113·0	1875 and 1889
Khandwa	113·7	25th	115·2	1896
Pachpadra	113·7	16th	116·0	1894
Jacobabad	115·6	21st	117·1	1893
Jhansi	113·2	25th, 26th, 28th and 29th.	113·7	1876
Lucknow	113·8	25th and 28th	114·9	1869
Allahabad	112·6	25th, 28th and 29th.	114·5	1876
Gaya	113·1	28th, 29th and 30th.	113·2	1881
Burdwan	110·6	9th	113·0	1897
Hazaribagh	107·1	29th	107·1	1892
Bankura	114·6	29th	113·1	1896
Raniganj	114·5	30th	113·4	1896

In the following table are given variation data for the 30th, illustrating the temperature conditions obtaining at the end of the month:—

Province.	Variation from normal of		
	Mean maximum temperature, April 1898.	Mean minimum temperature, April 1898.	Mean temperature April 1898.
	°	°	°
Burma	+2·4	+4·1	+3·3
Bengal and Assam	+5·4	+5·4	+5·4
N.-W. Provinces and Oudh	+5·7	+2·2	+4·0
Punjab	+6·8	+2·4	+4·6
Sind and Rajputana	+4·4	+2·9	+3·7
Central India and Gujarat	+5·3	+5·8	+5·6
Central Provinces and Berar	+4·8	+6·0	+5·4
Bombay	+2·6	+5·1	+3·9
Madras	—0·1	+2·3	+1·1

The following table gives variation data of the mean temperature week by week during the month, and of the whole month. The data are taken from the weekly weather summary published in the Gazette of India:—

Province.	Variation from normal of mean temperature for week ending				
	9th April.	16th April.	23rd April.	30th April.	For whole month.
	°	°	°	°	°
Burma	+1·6	+0·4	+2·1	+2·9	+1·6
Bengal and Assam	+2·9	—0·8	—1·2	+5·0	+1·6
North-Western Provinces and Oudh.	+2·5	+1·8	+0·9	+4·7	+2·5
Punjab	+3·4	+5·9	+3·0	+4·1	+4·8
Sind and Rajputana	+1·8	+5·2	+3·5	+3·2	+3·7
Central India and Gujarat	+0·9	+3·7	+3·1	+5·2	+3·1
Central Provinces and Berar	+2·7	+2·4	+0·9	+5·5	+3·0
Bombay	+2·1	+2·1	+0·4	+1·7	+1·5
Madras	+0·9	+0·8	—1·0	+0·1	+0·4

Winds.

Winds were on the mean of the month of normal strength and steadiness at Rangoon and Port Blair. Winds were much more westerly than usual in Bengal except at Berhampore, False Point and Saugor Island, where they were less westerly than usual. The following gives data in illustration:—

	Station.	Mean Wind Direction.		
		Actual, April 1898.	Normal, April.	Westerly deflection.
Coast Stations.	False Point	S 14° W	S 31° W	—17
	Saugor Island	S 5° E	S 14° W	—19
Interior	Calcutta	S 20° W	S 7° W	+13
	Chittagong	S 46° W	S 9° W	+37
	Berhampore	S 19° W	S 30° W	—11
	Burdwan	S 60° W	S 38° W	+22

Winds were steadier and somewhat stronger than usual in Bengal.

The following gives data for five representative stations:—

Station.	Mean steadiness.			Mean wind velocity in miles per diem.		
	Actual percentage, April 1898.	Normal percentage, April.	Variation from normal.	Actual, April 1898.	Normal, April.	Variation from normal.
False Point	87	79	+ 8	297	341	—44
Saugor Island	89	78	+11	492	419	+73
Chittagong	68	44	+24	210	165	+45
Calcutta	77	71	+ 6	161	169	— 8
Berhampore	50	35	+15	136	122	+14

Winds were generally slightly stronger than usual in the North-Western Provinces and Chota Nagpur, and were normal in Bihar and the South-East Punjab. Westerly element of the air movement was somewhat more strongly marked than usual in the South-East Punjab and the easterly winds prevailed to a greater extent in Central Bihar than in ordinary years, and the mean wind direction at

Patna was from N. 24° E, the normal being N. 32° W. The following gives comparative data for five stations :—

STATION.	MEAN WIND DIRECTION.			MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, April 1898.	Normal, April.	Increased westerly deflection.	Actual, April 1898.	Normal, April.	Variation from normal.
Hazaribagh . . .	N 42° W	N 74° W	—32	228	216	+12
Patna	N 24° E	N 32° W	—56	127	116	+11
Allahabad . . .	N 48° W	N 54° W	— 6	166	117	+49
Meerut . . .	N 83° W	N 60° W	+23	66	60	+ 6
Lahore . . .	N 70° W	N 23° W	+47	77	77	0

Winds were somewhat steadier in Rajputana, but slightly to considerably weaker than usual in Rajputana and Central India. The mean actual direction of the air movement varied from the normal irregularly from station to station, but on the mean of the whole area was more southerly and westerly than usual.

The following gives comparative data of the mean air movement over Northern India during the month :—

PROVINCE OR AREA.	MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.		
	Average actual percentage, April 1898.	Average normal percentage, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
Bengal . . .	69	56	+13	216	194	+22
Chota Nagpur . .	40	46	— 6	228	216	+12
Bihar	37	21	+16	128	129	— 1
North-Western Provinces and Oudh.	38	37	+ 1	98	89	+ 9
Punjab . . .	25	24	+ 1	57	73	—16
Sind	54	47	+ 7	166	215	—49
Rajputana . . .	63	55	+ 8	147	164	—17
Central India . .	49	58	— 9	89	117	—28

The air movement was much more irregular than usual in the Central Provinces and Berar. It differed little in strength from the normal, but winds were variable, and the mean wind direction departed very considerably from the normal. The following gives three examples :—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, April 1898.	Normal, April.	Actual percentage, April 1898.	Normal percentage, April.	Variation of actual from normal, April 1898.	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
Jubbulpore . .	S 70° W	N 71° W	33	34	— 1	80	79	+ 1
Nagpur . .	S 1° E	N 65° W	22	22	0	155	161	— 6
Hoshangabad .	S 9° E	S 89° W	8	30	—22	37	73	—36

The chief feature was that winds were generally less northerly or more southerly than usual.

Winds were weaker than usual on the Konkan Coast and were more westerly and less northerly than usual, *e.g.*:—

STATION.	MEAN WIND DIRECTION.			MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, April 1898.	Normal, April.	Northerly deflection.	Percentage, April 1898.	Normal percentage, April.	Variation of actual from normal, April 1898.	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
Bombay . .	N 85° W	N 57° W	—28°	65	55	+10	221	264	—43
Ratnagiri . .	S 89° W	N 76° W	—15°	80	62	+18	170	220	—50

Winds were very unsteady in the Deccan and Madras, and were generally above the normal strength. They varied very irregularly in direction from the normal.

The following gives comparative data of the mean daily air movement in different parts of the Peninsula in April :—

AREA.	MEAN WIND VELOCITY IN MILES PER DIEM.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
Central Provinces	119	119	0
Berar	194	176	+18
West Coast	173	184	—11
Bombay Deccan	264	256	+ 8
Madras Deccan	131	127	+ 4
Mysore	146	141	+ 5
Madras Coast	185	186	— 1

Winds were slightly more variable and contained a stronger northerly element than usual at the hill stations in Northern India. The following gives comparative data for the stations at which these features were most pronounced :—

Station.	Mean wind direction.		Mean wind velocity in miles per diem.		
	Actual, April 1898.	Normal April.	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	°	°			
Simla . . .	N 39 W	S 67 W	135	138	— 3
Darjeeling .	N 84 W	S 71 W	166	206	—40
Mount Abu .	N 86 W	S 87 W	210	193	+17

Winds were remarkably steady and much stronger than usual at Aden and Perim, as is shown below :—

Station.	Mean steadiness.			Mean wind velocity in miles per diem.		
	Actual percentage, April 1898.	Normal percentage, April	Variation of actual from normal, April 1898.	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898,
Aden . . .	80	62	+18	405	363	+ 42
Perim	94	55	+39	527	417	+110

The chief features of the mean air movement of the month were—

(1) Winds were on the mean of the month stronger, steadier and more westerly than usual in Bengal.

(2) They were slightly stronger than usual in Chota Nagpur and the North-Western Provinces.

(3) Winds were unusually light, although of normal steadiness, in the Punjab, Sind and Rajputana.

(4) Winds were very unsteady in the Central Provinces, Berar and the Deccan and varied very irregularly from their normal directions.

(5) Winds were weaker and more westerly than usual on the Konkan coast.

Humidity and Cloud.

The air was slightly damper than usual at Port Blair and Rangoon and drier at Diamond Island and Cocos Island, but the variations were too small to be of any significance.

The air was remarkably dry in Cachar and to a less extent in Central and South-East Bengal and probably in Upper Burma. The great dryness was almost solely a temperature effect, as the mean aqueous vapour pressure of the month differed very slightly from the normal. The following gives data :—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	"	"	"	%	%	
Silchar . . .	·692	·716	—·024	63	76	—13
Berhampore . .	·614	·634	—·020	50	58	— 8
Narayanganj . .	·819	·799	+·020	70	73	— 3

The air was of normal humidity in Orissa and Bihar and slightly damper than usual in Chota Nagpur and West Bengal (as represented by Burdwan).

The air was very dry over the whole of North-Western and Central India and the North Deccan. The air contained less vapour than usual over a large part of those areas; the deficiency at some stations in the Punjab and Rajputana exceeding 20 per cent. in amount. As temperature was much higher than usual over nearly the whole of that area the mean relative humidity of the month was in large defect over the greater part of the area.

It was 8 or more in defect at stations for which comparative data are given below :—

Station.	Mean relative humidity.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	%	%	
Peshawar	42	52	—10
Ludhiana	26	43	—17
Mooltan	28	44	—16
Jeypore	20	28	— 8
Khandwa	17	26	— 9

The mean humidity of the month was as largely below the normal in Baluchistan and at the lower Hima-

layan hill stations, but it was, on the other hand, in slight excess at Leh and Srinagar. The following gives data :—

Station.	Mean relative humidity.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	%	%	
Quetta	38	50	—12
Kailang	45	61	—16
Murree	33	47	—14
Simla	37	44	— 7
Chakrata	30	43	—13
Ranikhet	36	44	— 8

The following gives comparative mean data for the whole area of decreased humidity, including North-Western and Central India :—

Province or area.	Mean absolute humidity.			Mean relative humidity.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
	"	"	"	%	%	
Punjab	·352	·422	—·070	32	44	—12
Sind	·614	·547	+·067	50	52	— 2
Rajputana	·316	·376	—·060	24	30	— 6
Central India	·298	·308	—·010	22	27	— 5
North-Western Provinces and Oudh.	·363	·362	+·001	30	33	— 3
Central Provinces	·365	·352	+·013	25	28	— 3
Berar	·277	·301	—·024	19	24	— 5

The air was generally damper in the Bombay and Madras Deccan and also on the Coromandel and Circars coasts. The following gives data of five representative stations :—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	"	"	"	%	%	
Poona	·389	·374	+·015	34	31	+3
Belgaum	·571	·520	+·051	59	51	+8
Bellary	·521	·522	—·001	42	39	+3
Madras	·928	·870	+·058	79	74	+5
Vizagapatam	·877	·810	+·067	73	66	+7

The air was generally somewhat drier on the mean of the month in Mysore, Coorg, South Madras and Malabar. The following gives comparative data for this area :—

Division.	Mean absolute humidity.			Mean relative humidity.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
	"	"	"	%	%	
Malabar	·903	·886	+·017	74	76	—2
Mysore	·522	·536	—·014	52	54	—2
Coorg	·589	·587	+·002	72	74	—2
Seuth Madras	·677	·714	—·037	51	55	—4

The mean humidity of the month was in very slight defect in the Konkan, as is shown by the following data :—

Division.	Mean absolute humidity.			Mean relative humidity.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average Actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
	"	"	"	%	%	
Konkan	·828	·817	+·011	71	73	—2

The month of April 1898 was considerably drier than usual and was almost as dry as April 1896, probably the driest April on record in Northern and Central India. The mean 4 P.M. relative humidity of the month was 12 per cent. or less at the observing stations for which data are given below :—

Station.	Relative humidity.	
	Mean actual, 4 P.M.	Lowest during the month.
	%	%
Sutna	10	3
Deesa	9	4
Jeypore	12	8
Khandwa	10	4
Buldana	11	5
Akola	11	3

The mean daily humidity was less than 25 per cent. at the following stations:—

Station.	Mean relative humidity.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	%	%	
Raipur	24	31	— 7
Nowgong	24	31	— 7
Buldana	17	24	— 7
Akola	21	23	— 2
Khandwa	17	26	— 9
Sutna	20	23	— 3
Deesa	23	28	— 5
Mount Abu	21	28	— 7
Chikalda	23	26	— 3

The driest districts of the month hence included Berar, the western districts of the Central Provinces, South-West Rajputana and Central India.

It is also noteworthy that the air was much drier in Arabia and Asia Minor, so that the conditions obtaining in North-Western India and Baluchistan probably extended far to the west over these two countries. The following gives data for stations in Arabia and Asia Minor:—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
	"	"	"	%	%	
Aden	·654	·752	—·098	62	68	—6
Muscat	·594	·619	—·025	49	56	—7
Bushire	·509	·503	+·006	63	60	+3
Baghdad	·388	·403	—·015	58	62	—4

The following is a brief summary of the mean humidity conditions of the month of April 1898:—

(1) The air was slightly damper than usual at Port Blair and in Lower Burma and Arakan.

(2) Humidity was largely in defect in East, North and Central Bengal and Cachar and probably Upper Burma where it was chiefly due to the abnormally high temperature prevailing during the month. The deficiency was most marked in Cachar.

(3) It was somewhat drier than usual in Mysore, Coorg and South Madras.

(4) Humidity was practically normal on the Konkan and Sind coasts and somewhat greater than usual in the Madras coast districts and the Bombay Deccan.

(5) The chief feature of the month was the increased dryness of the air in Baluchistan, North-Western and Central India, Berar and the Central Provinces. The mean humidity of the month was most largely below the normal in Baluchistan, the Punjab and the Himalayan hill districts where the deficiency ranged between 9 and 17.

Cloud was in slight excess in Burma, East Bengal and the Assam valley and in large excess at Port Blair. The following gives comparative data:—

Division.	Mean cloud amount.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
Assam Valley	5·7	5·0	+0·7
Bengal (East)	4·4	4·1	+0·3
Arakan	1·7	3·2	—1·5
Burma	4·1	3·4	+0·7
Port Blair	6·3	4·3	+2·0

There was a large local deficiency of cloud at Silchar (representative of the Cachar district) where the mean cloud amount was 1·0 below the normal.

There was less cloud than usual over nearly the whole of Northern and Central India and the northern half of the Peninsula. The following gives comparative data:—

Division.	Mean cloud amount.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
Bengal (West)	1·7	2·8	—1·1
Chota Nagpur	1·4	2·8	—1·4
Bihar	0·8	1·5	—0·7
North-Western Provinces and Oudh	0·6	1·9	—1·3
Punjab	2·2	2·8	—0·6
Sind	1·5	2·2	—0·7
Baluchistan (Quetta)	3·0	3·2	—0·2
Rajputana	1·2	1·9	—0·7
Central India	0·6	2·0	—1·4
Berar	1·4	2·2	—0·8
Central Provinces	1·7	2·3	—0·6

The cloud amount was hence most largely below the normal in West Bengal, Central Bihar, Chota Nagpur, Bundelkhand, Baghelkhand and the North-Western Provinces, in which it ranged between 1·0 and 1·7 in defect.

Cloud was as largely in defect at the hill stations in Upper India as in the neighbouring plains. The following table gives comparative data for six stations in illustration :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, April 1898.	Normal, April.	Variation of actual from normal, April 1898.
Leh	5·6	6·2	—0·6
Kailang	5·3	5·7	—0·4
Murree	4·0	5·2	—1·2
Simla	2·9	4·1	—1·2
Chakrata	1·6	3·5	—1·9
Ranikhet	1·0	3·2	—2·2

The mean amount of cloud during the month was in excess over a part of the Peninsula, including Malabar, Coorg, Mysore and the Bombay and Madras Deccan, as is shown by the following data :—

DIVISION.	MEAN CLOUD AMOUNT.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
Malabar	4·7	3·9	+0·8
Mysore	4·3	4·1	+0·2
Madras Deccan	4·8	3·4	+1·4
Bombay Deccan	3·2	2·9	+0·3
Coorg	5·8	5·5	+0·3
South India Hills (Wellington)	4·4	4·7	—0·3

There was less cloud than usual at Aden and also at Zanzibar and the Seychelles. The mean cloud amount of the month was, on the other hand, in excess at Muscat and Perim.

Skies were most serene in India during the month at Lucknow (where the mean cloud amount was 0·3) and at Allahabad (for which the mean amount of cloud was 0·4).

Rainfall.

Rainfall in the month of April occurs generally under the same conditions as in March over the greater part of the interior of India including North-Western and Central India and the Deccan. Hot weather disturbances, more especially duststorms and thunderstorms, are usually more frequent in April than in March in these areas, and the rainfall, although generally small in amount and very irregularly distributed, is larger than in March.

Bengal, Assam and Burma receive occasional rain, chiefly during thunderstorms. The total rainfall of the month is usually moderate to large in amount in Assam, Sikkim and North and East Bengal where heavy local downpours frequently accompany these storms. Malabar, Tenasserim and Coorg and to a less extent Southern India also receive occasional rain from thunderstorms, and the rainfall in these areas is similar in amount and character to that in Bengal.

April 1898 was unusually dry over the Indian area, and the rainfall was more or less below the normal over the whole of Extra-Tropical India. It was in large and serious defect in North-Eastern India, affecting the tea and other crops very prejudicially.

The rainfall of the month was, on the other hand, above the normal over the south and west of the Peninsula.

The following gives the chief periods of rainfall during the month :—

1st.—The 5th to the 7th, when light local showers were received in Kashmir, the Punjab hills and North Punjab.

2nd.—The 12th and 13th, when fairly general rain, due to series of thunderstorms, fell in Bengal, Assam and Burma.

3rd.—The 17th to the 19th, when thundershowers gave moderate to heavy rain in Bengal, Assam and Burma, and light to moderate rain in Southern India.

4th.—The 25th to the 28th, when the greater part of the peninsula including Southern India, the South Deccan and West Coast districts obtained frequent showers which gave moderate rain over the whole area.

The following table gives mean actual, mean normal and variation rainfall data of the month for the 58 meteorological districts into which India is divided —

Province.	Division.	Rainy days. Average actual, April 1898.	Rainy days. Average normal, April.	Rainfall. Average actual, April 1898.	Rainfall. Average normal, April.	Rainfall. Variation of actual, from normal, April 1898.
				Inches.	Inches.	Inches.
Burma	Tenasserim*	?	?	1·10	2·97	− 1·87
	Lower Burma (Deltaic)*	?	?	0·69	1·54	− 0·85
	Central do.*	?	?	0·69	0·87	− 0·18
	Upper do.*	?	?	1·11	1·35	− 0·24
	Arakan*	?	?	0·06	1·32	− 1·26
Bengal and Assam	Eastern Bengal	1·9	5·3	1·37	4·35	− 2·98
	Assam (Surma)*	?	?	2·78	13·06	−10·28
	Do. (Hills)*	?	?	4·09	9·03	− 4·94
	Do. (Brahmaputra)*	?	?	5·38	6·93	− 1·55
	Deltaic Bengal	2·2	3·5	1·25	2·36	− 1·11
	Central do.	1·7	2·6	1·14	1·50	− 0·36
	North do.	3·6	4·9	3·40	3·77	− 0·37
	Bengal Hills	8·5	8·1	6·72	5·17	+ 1·55
	Orissa	1·6	1·8	1·41	1·10	+ 0·31
	Chota Nagpur	0·8	1·2	0·61	0·60	+ 0·01
	Bihar (South)	0·3	0·5	0·11	0·22	− 0·11
	Do. (North)	1·4	1·3	0·90	0·76	+ 0·14
North-Western Provinces and Oudh.	North-Western Provinces (East)	0	0·4	0	0·14	− 0·14
	Oudh (South)	0·2	0·3	0·05	0·12	− 0·07
	Do. (North)	0·5	0·4	0·30	0·17	+ 0·13
	North-Western Provinces (Central)	0	0·3	0	0·09	− 0·09
	Do. do. (West)	0·2	0·4	0·05	0·14	− 0·09
	Do. do. (Submontane, East)	0·4	0·5	0·27	0·27	0
	Do. do. (do. West)	0·6	0·7	0·31	0·27	+ 0·04
	Do. do. (Hills)	1·4	2·4	0·52	0·82	− 0·30
Punjab	Punjab (South-East)	0·1	0·6	0·07	0·25	− 0·18
	Do. (South)	0	0·7	0	0·35	− 0·35
	Do. (Central)	0	1·5	0	0·64	− 0·64
	Do. (Submontane)	0·2	1·3	0·04	0·69	− 0·65
	Do. (Hills)	1·0	3·5	0·37	2·32	− 1·95
	Do. (North)	0·7	2·6	0·25	1·48	− 1·23
	Do. (West)	0	0·9	0·01	0·41	− 0·40
Bombay and Malabar Coast Districts, Madras.	Malabar	4·0	3·4	2·96	2·27	+ 0·69
	Travancore	4·5	?	2·60	?	?
	Madras (South Central)	3·5	2·2	2·61	1·49	+ 1·12
	Coorg	4·1	?	2·74	?	?
	Mysore	3·7	2·3	2·01	1·21	+ 0·80
	Konkan	1·3	0·6	0·68	0·29	+ 0·39
	Bombay Deccan	3·6	1·8	2·02	0·80	+ 1·22
	Hyderabad North	1·4	?	0·72	0·45	+ 0·27
	Khandesh	0·2	0·3	0·07	0·13	− 0·06
Central Provinces and Berar.	Berar*	?	?	0·25	0·26	− 0·01
	Central Provinces (West)	0·6	0·5	0·30	0·19	+ 0·11
	Do. do. (Central)	0·5	0·7	0·23	0·28	− 0·05
	Do. do. (East)	0·2	1·0	0·05	0·56	− 0·51
Bombay (North)	Gujarat	0	0	0·01	0·01	0
	Kathiawar	0	01	0	0·08	− 0·08
	Sind	0	?	0	0·21	− 0·21
	Baluchistan Hills	0·1	?	0·01	0·45	− 0·44
Rajputana and Central India.	Central India (East)	0	?	0	0·11	− 0·11
	Rajputana (East) and Central India (West)	0	?	0	0·06	− 0·06
	Rajputana (West)	0	?	0	0·05	− 0·05
Madras	East Coast (North)	1·2	1·0	0·67	0·49	+ 0·18
	Do. (do.) (a)	2·0	2·4	0·59	0·89	− 0·30
	Hyderabad (South)	2·6	?	1·19	0·56	+ 0·63
	Madras (Central)	2·0	0·9	1·51	0·45	+ 1·06
	East Coast (Central)	0·5	0·4	0·28	0·19	+ 0·09
	Do. (South)	1·4	0·9	0·90	0·61	+ 0·29
	Madras (South)	3·0	2·6	2·22	1·96	+ 0·26

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

The rainfall of the month was less than a tenth of an inch in nineteen out of the 58 rainfall divisions, between a tenth and half an inch in ten divisions, and between half an inch and an inch in nine divisions. It exceeded two inches in twelve divisions only, for which data are given below :—

DIVISION.	RAINFALL.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
	Inches.	Inches.	Inches.
Assam (Surma)	2·78	13·06	—10·28
„ (Hills)	4·09	9·03	— 4·94
„ (Brahmaputra)	5·38	6·93	— 1·55
North (Bengal)	3·40	3·77	— 0·37
Bengal (Hills)	6·72	5·17	+ 1·55
Malabar	2·96	2·27	+ 0·69
Travancore	2·60	?	?
Madras (South Central)	2·61	1·49	+ 1·12
Coorg	2·74	?	?
Mysore	2·01	1·21	+ 0·80
Bombay (Deccan)	2·02	0·80	+ 1·22
Madras (South)	2·22	1·96	+ 0·26

Practically no rain fell in Arakan. Occasional showers were received in Burma, but the total fall of the month was small in amount over the whole area. The normal rainfall of the month ranges from an average of 3 inches in the Tenasserim division to 0·87 inch in the Central division. The deficiency in the rainfall of the month was greatest absolutely as well as relatively to the normal in Tenasserim (for which it was 63 per cent) and least in Upper Burma, where it was only 18 per cent.

One of the more remarkable features of the month was the very scanty rainfall in Assam, more especially in the Surma division. Showers were received chiefly during the periods from the 8th to the 12th, the 17th and 18th and the 27th to the 29th, but the falls were light and sporadic. The rainfall of the month in the Surma division averaged only 2·78 inches or barely 21 per cent of the normal average, which is 13·06 inches. It averaged 5·38 inches in the Brahmaputra division or 1·55 inches or 22 per cent. in defect of the normal. The following table gives comparative data of the rainfall of the eight plains districts of the province and shows fully the distribution of the rainfall of the month in that area :—

DISTRICT.	RAINFALL.			
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal.	Percentage variation.
Sylhet	4·28	11·78	— 7·50	—64
Cachar	2·22	12·53	—10·31	—82
Goalpara	5·63	5·46	+ 0·17	+ 3
Kamrup	4·86	5·32	— 0·46	— 9
Darrang	7·90	5·73	+ 2·17	+38
Nowgong	2·32	4·71	— 2·39	—51
Sibsagar	5·08	8·01	— 2·93	—37
Lakhimpur	5·91	9·84	— 3·93	—40

There were three periods of feebly disturbed weather and of series of thunderstorms in Bengal. The first period was the 12th and 13th when South, North and East Bengal received fairly general rain. The rainfall was light in South-West and North Bengal and moderate in East Bengal. The second period included the 16th and 17th. The rainfall during this period was general in North Bihar on the 16th and over the whole province on the 17th. The following falls exceeding 3 inches were recorded on that day :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
RANGPUR	Ulipur	16th April	3·55
DARJEELING	Siliguri	„ „	3·35
JALPAIGURI	Debiganj	„ „	3·21
SINGHBHUM	Kalikapur	17th „	3·68
„	Baharagura	„ „	3·45

General rain again fell on the 19th in South-West and North Bengal and the northern districts of East Bengal. The Jalpaiguri district of North Bengal and Darjeeling had frequent showers during the first ten days and the last week of the month. At Buxa 11·02 inches fell between the 24th and 26th.

The following is a comparative statement of the rainfall of the month for the nine divisions of the province.

Division.	Number of rainy days.			Rainfall.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
				Inches.	Inches.	Inches.
Eastern Bengal . .	1·9	5·3	—3·4	1·37	4·35	—2·98
Deltaic " . .	2·2	3·5	—1·3	1·25	2·36	—1·11
Central " . .	1·7	2·6	—0·9	1·14	1·50	—0·36
North " . .	3·6	4·9	—1·3	3·40	3·77	—0·37
Bengal Hills . .	8·5	8·1	+0·4	6·72	5·17	+1·55
Orissa . . .	1·6	1·8	—0·2	1·41	1·10	+0·31
Chota Nagpur . .	0·8	1·2	—0·4	0·61	0·60	+0·01
Bihar (South) . .	0·3	0·5	—0·2	0·11	0·22	—0·11
" (North) . .	1·4	1·3	+0·1	0·90	0·76	+0·14

The greater part of the North-Western Provinces was rainless during the month. Rain, due to thunderstorms, was received on the 16th in North Oudh, the submontane districts of Bareilly, Moradabad, Bijnor, and Gorakhpur, and also in the Meerut and hill districts of Dehra, Almora, Garhwal and Naini Tal. The falls were nowhere large, and the average total rainfall of the month was below the normal in all divisions excepting Oudh North and the North-Western Provinces Submontane West. as is shown below :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
				Inch.	Inch.	Inch.
North-Western Provinces (East).	0	0·4	—0·4	0	0·14	—0·14
Oudh (South) . .	0·2	0·3	—0·1	0·05	0·12	—0·07
" (North) . .	0·5	0·4	+0·1	0·30	0·17	+0·13
North-Western Provinces, (Central).	0	0·3	—0·3	0	0·09	—0·09
North Western Provinces (West).	0·2	0·4	—0·2	0·05	0·14	—0·09
North-Western Provinces (Submontane East).	0·4	0·5	—0·1	0·27	0·27	0
North-Western Provinces, (Submontane West).	0·6	0·7	—0·1	0·31	0·27	+0·04
North-Western Provinces (Hills).	1·4	2·4	—1·0	0·52	0·82	—0·30

No rain fell in Baluchistan, Rajputana and Central India during the month.

Kashmir received occasional rain, the chief periods being the 1st to the 3rd, the 6th and 7th, the 14th, 15th and 16th, and the 20th to the 24th. The total precipitation of the month was probably below the normal to a moderate extent.

The month was practically rainless over the greater part of the Punjab. The hill districts of Kangra and Simla had moderate showers on the 15th and 16th. The districts of Peshawar and Hazara obtained sporadic rain from the 5th to the 7th and again on the 14th, but the total rainfall of the month was small in these districts. It was hence below the normal in all the rainfall divisions of the province, as is shown below :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual, from normal, April 1898.
				Inch.	Inches.	Inches.
Punjab (South-East) .	0·1	0·6	—0·5	0·07	0·25	—0·18
" (South) .	0	0·7	—0·7	0	0·35	—0·35
" (Central) .	0	1·5	—1·5	0	0·64	—0·64
" (Submontane) .	0·2	1·3	—1·1	0·04	0·69	—0·65
" (Hill Districts) .	1·0	3·5	—2·5	0·37	2·32	—1·95
" (North) .	0·7	2·6	—1·9	0·25	1·48	—1·23
" (West) .	0	0·9	—0·9	0·01	0·41	—0·40

No rain fell in Sind, Cutch, Kathiawar and Gujarat during the month, and the districts of Khandesh, Nasik, Colaba and Thana. The South Konkan districts received light showers from the 20th to the 28th.

The Bombay Deccan districts received general rain from thunderstorms during the periods from the 13th to the 16th and the 20th to the 30th. These thunderstorms were more severe than usual, and gave in some cases heavy rain, exceeding three inches in single showers. The following gives a comparative statement of the rainfall of the month in these districts :—

District.	Rainfall.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
	Inches.	Inches.	Inches.
North Kanara	2·05	0·87	+1·18
Dharwar	2·91	1·24	+1·67
Bijapur	1·95	0·78	+1·17
Belgaum	3·93	1·23	+2·70
Satara	1·83	0·71	+1·12
Kolhapur and Southern Maratha States.	2·73	0·94	+1·79

Weather was feebly unsettled in Berar and the Central Provinces on the 18th and 19th, and thundershowers were received, chiefly in the Nagpur, Chanda and Bhandara districts. The month was rainless in the eastern division of the Central Provinces. The following gives comparative rainfall data of the month for these two provinces :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual, from normal, April 1898.
				Inches.	Inches.	Inches.
Central Provinces (West).	0·6	0·5	+0·1	0·30	0·19	+0·11
„ „ (Central)	0·5	0·7	—0·2	0·23	0·28	—0·05
„ „ (East)	0·2	1·0	—0·8	0·05	0·56	—0·51
Berar	?	?	?	0·25	0·26	—0·01

The Madras Presidency, more especially the southern districts, received more frequent rain than usual. The northern coast districts had occasional showers, chiefly between the 16th and 20th, and the rainfall of that division was in slight excess. The Chingleput district received practically no rain during the month. The districts in the East Coast South division obtained light to moderate showers, chiefly on the 19th, 20th and 21st, and again on the 26th, 27th and 28th. Falls exceeding 3 inches in 24 hours were registered in the Trichinopoly district on the 26th at Musiri, (3·63 inches) and Trichinopoly (3·27 inches). Madras South, including the districts of Madura, Tinnevelly, Coimbatore and the Nilgiris had frequent rain during the month—heaviest on the 20th and 21st. The following large falls in 24 hours were registered on these two days :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
PUDUKKOTTAH STATE	Odayalipatti	20th April	4·22
VIZAGAPATAM	Srungavarapukota	„ „	2·20
TRAVANCORE STATE	Kunnattur	„ „	2·10
TINNEVELLY	Tenkasi	„ „	2·04
MADURA	Melur	21st „	3·75
MALABAR	Angadipuram	„ „	3·50
„	Palghat	„ „	3·50
MADURA	Paramagudi	„ „	2·92
SOUTH ARCOT	Villupuram	21st April.	2·64
MADURA	Muthukulathur	„ „	2·30
TRAVANCORE STATE	Chirayinkil	„ „	2·26
GODAVARI	Palavaram	„ „	2·10
TANJORE	Vallam	„ „	2·03

Travancore and Malabar had frequent moderate showers, giving considerably heavier rain than usual.

The rainfall in South Central Madras, including the districts of Salem, Kurnool, Bellary, Cuddapah and Anantapur, was unusually heavy. Series of thunderstorms occurred during the period from the 18th to the 28th in these districts. Heavy falls were occasionally experienced, more especially on the 19th, 21st and 26th. The following falls exceeding three inches were registered in the Cuddapah and Salem districts :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
CUDDAPAH	Kamalapur	18th	3·09
„	Cuddapah	19th	4·49
„	Sidhout	„	3·72
SALEM	Rayakota	„	3·10

The following gives a comparative statement of the rainfall of the month in the eight divisions of the Presidency :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.	Average actual, April 1898.	Average normal, April.	Variation of actual from normal April, 1898.
				Inches.	Inches.	Inches.
Malabar	4·0	3·4	+0·6	2·96	2·27	+0·69
Madras (South-Central)	3·5	2·2	+1·3	2·61	1·49	+1·12
„ East Coast (North).	1·2	1·0	+0·2	0·67	0·49	+ 0·18
„ „ „ (a)	2·0	2·4	—0·4	0·59	0·89	—0·30
„ (Central)	2·0	0·9	+1·1	1·51	0·45	+1·06
„ East Coast (Central.)	0·5	0·4	+0·1	0·28	0·19	+0·09
„ East Coast (South.)	1·4	0·9	+0·5	0·90	0·61	+0·29
„ (South)	3·0	2·6	+0·4	2·22	1·96	+0·26

The rainfall of the month was hence in general excess. The excess relatively to the normal was greatest in the interior districts. This is shown more fully by the following table which gives corresponding data for the 22 collectorates of the Presidency:—

District.	Number of rainy days.		Rainfall.		
	Average actual, April 1898.	Average normal, April.	Average actual, April 1898.	Average normal, April.	Variation of actual from normal, April 1898.
			Inches.	Inches.	Inches.
Ganjam	2·1	1·6	0·89	0·75	+0·14
Vizagapatam	1·5	1·4	1·08	0·68	+0·40
Godavari	0·5	0·4	0·25	0·25	0
Kistna	0·6	0·4	0·34	0·21	+0·13
Nellore	0·5	0·4	0·28	0·19	+0·09
Chingleput	0·3	0·5	0·07	0·26	—0·19
Madras	0	0·7	0	0·63	—0·63
North Arcot	1·5	0·7	0·81	0·37	+0·44
South Arcot	1·1	0·7	0·74	0·42	+0·32
Tanjore	1·6	1·2	1·16	0·91	+0·25
Trichinopoly	3·1	1·5	2·06	1·18	+0·88
Madura	3·1	2·6	2·32	2·25	+0·07
Tinnevelly	2·9	2·5	2·08	1·58	+0·50
Malabar	0·5	4·4	3·31	3·04	+0·27
South Canara	3·8	2·0	2·32	1·16	+1·16
Salem	4·0	2·0	2·76	1·17	+1·59
Coimbatore	3·2	2·5	2·40	1·87	+0·53
Nilgiris	6·4	5·5	3·45	3·58	—0·13
Cuddapah	1·7	0·7	1·83	0·34	+1·49
Anantapur	1·8	0·9	1·04	0·45	+0·59
Bellary	2·7	1·3	1·85	0·54	+1·31
Kurnool	1·9	0·9	1·27	0·51	+0·76

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·012	...	...	...	...	...	...	...	94·5	+0·3	77·0	+1·1	85·7	+0·8	17·2	...	...	...	...	25·3
1	Tenasserim and Bay Islands.	Port Blair	61	29·852	?	29·844	29·935	14th	29·777	22nd	·158	82·7	90·0	?	78·2	?	84·1	?	11·8	93·4	10th	75·3	15th	18·1
		Mergui	96	29·825	?	29·853	29·932	12th	29·744	22nd	·188	82·1	92·1	?	75·5	?	83·8	?	16·6	97·6	28th	71·4	16th	26·2
		Tavoy	26	29·887	−·026	29·844	29·971	14th	29·796	22nd	·175	80·6	93·6	0	75·5	+1·5	84·6	+0·8	18·1	97·7	14th	72·0	10th	25·7
		Moulmein	94	29·813	−·024	29·845	29·926	14th	29·728	22nd	·198	81·8	94·6	+0·3	76·5	+0·7	85·6	+0·5	18·1	99·4	2 days	71·3	11th	28·1
2	Lower Burma	Rangoon	41	29·866	−·010	29·844	29·986	13th	29·792	22nd	·194	81·3	99·2	+1·2	76·3	+0·4	87·8	+0·8	22·9	102·7	24th	71·4	2nd	31·3
		Bassein	27	29·877	+·003	29·839	30·015	13th	29·803	26th	·212	82·3	96·3	+0·4	76·6	+1·5	86·5	+1·0	19·7	99·2	2 days	72·7	3 days	26·5
		Diamond Island	41	29·874	−·003	29·850	29·992	13th	29·804	22nd	·188	83·6	88·3	−0·5	79·4	+1·3	83·9	+0·4	8·9	91·6	2 days	76·4	2 days	15·2
5	Arakan	Akyab	20	29·873	−·007	29·836	30·018	13th	29·799	22nd	·219	83·7	92·4	+0·5	77·1	+1·4	84·8	+1·0	15·3	94·9	20th	72·9	6th	22·0
3	Central Burma	Toungoo	183	29·693	−·016	29·818	29·857	13th	29·616	22nd	·241	83·9	101·7	+1·6	77·9	?	89·8	?	23·8	105·7	24th	71·2	13th	34·5
	II.—Burma Inland		...	...	−·003	...	...	...	...	...	...	...	102·2	+2·3	75·9	+2·7	89·0	+2·5	26·3	...	...	...	...	38·0
3	Central Burma	Thayetmyo	134	29·734	−·007	29·810	29·924	13th	29·657	26th	·267	84·4	103·5	+0·5	77·7	+2·3	90·6	+1·4	25·8	107·1	2 days	70·1	11th	37·0
4	Upper Burma	Minbu	?	29·690	0	?	29·910	13th	29·605	22nd	·305	83·6	104·2	+1·5	78·4	+2·8	91·3	+2·2	25·8	108·1	11th	74·1	2 days	34·0
		Yamethin	657	29·207	?	29·809	29·352	13th	29·124	22nd	·228	83·8	103·0	+1·9	77·6	+2·9	90·3	+2·4	25·4	106·5	2 days	69·2	13th	37·3
		Mandalay	250	29·584?	−·009	29·780?	29·811	13th	29·462	21st	·349	86·8	104·0	+2·5	80·4	+3·1	92·2	+2·8	23·6	108·1	2 days	72·1	25th	36·0
		Kindat	?	29·474?	+·008	?	29·732	13th	29·338	8th	·394	79·4	100·5	+4·6	71·2	?	85·9	?	29·3	106·3	9th	64·0	1st	42·3
		Bhamo	?	29·461	−·007	?	29·706	13th	29·319	8th	·387	76·7	97·9	+4·9	69·9	+2·5	83·9	+3·7	28·0	104·1	25th	62·8	1st	41·3
4(a)	Burma Hill Stations.	Taunggyi	?			Not	recorde	d.				72·5	85·4	?	61·0	?	73·2	?	24·4	94·1	6th	53·0	14th	41·1
		Lashio	?	27·114	+·016	?	27·215	15th	27·014	8th	·201	68·9	92·9	+4·1	63·7	+1·4	78·3	+2·8	29·2	98·5	5th	58·0	2 days	40·5
	III.—Assam		...	...	−·006	...	...	...	...	...	...	...	89·2	+3·1	70·6	+2·0	79·9	+2·6	18·6	...	...	...	...	32·3
7	Surma	Silchar	104	29·779	0	29·836	29·970	13th	29·669	8th	·301	79·0	95·1	+7·5	71·9	+3·0	83·5	+5·3	23·2	99·1	21st	64·3	13th	34·8
8	Brahmaputra	Sibsagar	333	29·541	−·011	29·838	29·746	13th	29·367	8th	·379	71·5	82·1	−0·5	67·4	+1·0	74·8	+0·3	14·7	92·2	22nd	63·0	3 days	29·2
		Dhubri	115			Not	recorde	d.				77·0	90·4	+2·3	72·5	+1·9	81·5	+2·1	17·9	98·7	9th	65·7	17th	33·0
	IV.—Bengal and Orissa		...	...	−·006	...	...	...	...	...	...	...	95·9	+0·8	75·6	+1·6	85·8	+1·2	20·4	...	...	...	...	35·1
6	East Bengal	Chittagong	87	29·790	−·005	29·824	29·952	13th	29·710	22nd	·242	81·5	89·6	+1·0	74·4	+0·9	82·0	+1·0	15·2	95·2	20th	65·1	12th	30·1
		Noakhali	43	29·817	?	29·807	29·994	14th	29·729	26th	·265	81·8	89·5	?	75·1	?	82·3	?	14·4	94·5	22nd	63·9	12th	30·6
		Comilla	36	29·818	?	29·803	29·995	14th	29·707	8th	·288	81·9	95·4	?	75·0	?	85·2	?	20·4	101·3	27th	64·9	12th & 17th	36·4
		Sirajganj	49	29·758	?	29·757	29·934	18th	29·612	28th	·372	79·9	97·4	?	74·7	?	86·1	?	22·7	104·9	9th	66·3	17th	38·6
		Narayanganj	26	29·815	−·002	29·789	30·013	13th	29·694	28th	·319	81·7	94·2	+1·0	76·4	+2·1	85·3	+1·6	17·8	97·6	2 days	65·7	12th	31·9
		Barisal	13	29·831	+·003	29·789	30·024	14th	29·734	26th	·290	83·1	92·3	+1·1	76·4	+1·5	84·4	+1·3	15·9	95·3	2 days	67·6	12th	27·7
		Mymensingh	59	29·781	−·006	29·792	29·984	13th	29·655	8th	·329	80·4	93·8	+3·4	75·2	+3·4	84·5	+3·4	18·6	100·9	9th	63·5	12th	37·4
10	Deltaic Bengal	Faridpur	46	29·783	?	29·777	29·979	14th	29·655	8th	·324	79·4	96·2	?	74·9	?	85·6	?	21·3	101·8	9th	66·4	17th	35·4
		Jessore	33	29·791	−·005	29·770	30·000	14th	29·672	26th	·328	82·6	98·8	+1·5	76·7	+1·6	87·8	+1·6	22·1	105·0	9th	68·2	17th	36·8
		Calcutta	21	29·802	+·001	29·769	30·003	14th	29·678	26th	·325	81·9	94·5	−0·9	76·4	+0·7	85·4	−0·1	18·1	103·4	9th	67·7	13th	35·7
		Saugor Island	25	29·794	−·010	29·763	29·982	14th	29·692	26th	·290	83·1	89·7	−1·1	80·0	+0·2	84·8	−0·5	9·7	91·4	3 days	70·6	17th	20·8
		Krishnagar	47	29·765	?	29·760	29·985	13th	29·623	26th	·362	82·7	100·8	?	75·9	?	88·4	?	24·9	106·9	26th	66·6	13th	40·3
		Midnapore	149	29·656	?	29·752	29·845	13th	29·525	26th	·320	82·8	103·8	?	76·8	?	90·3	?	27·0	111·4	9th	68·2	17th	43·2

I.

in India, Burma, etc., in April 1898.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 30th April 1898.	Normal rainfall for period, 1st March to 30th April.	Variation from normal of period, 1st March to 30th April.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·62	2·46	+0·16	...	...	...	...	I.—Burma Coast and Bay Islands.		
4	2	1	1	5	2	1	5	9	5·2	4·9	+ 6	84	·939	6·4	7	?	?	5·16	2·18	+ 2·98	5·16	2·65	+ 2·51	1·42	Port Blair .	Tenasserim and Bay Islands.	1
24	1	...	1	1	...	...	1	2	1·9	2·1	− 10	82	·895	3·7	6	?	?	7·26	5·46	+ 1·80	7·34	7·94	− 0·60	2·94	Mergui.		
27	...	1	...	...	...	...	...	2	1·6	?	?	85	·881	1·9	5	?	?	3·35	3·91	− 0·56	3·35	5·28	− 1·93	1·78	Tavoy.		
...	2	1	7	5	12	3	...	...	3·6	3·2	+ 13	80	·866	5·3	5	4·00	+1·00	1·08	2·95	− 1·87	1·08	3·36	− 2·28	0·31	Moulmein.		
...	...	...	1	...	5	14	19	...	5·2	4·0	+ 30	81	·869	4·0	2	2·82	−0·82	3·63	1·83	+ 1·80	3·63	2·11	+ 1·52	3·29	Rangoon .	Lower Burma.	2
3	4	1	...	...	...	2	2	18	6·1	5·7	+ 7	79	·876	2·6	0	2·18	−2·18	0·04	1·48	− 1·44	0·04	1·50	− 1·46	0·04	Bassein.		
3	4	3	...	...	...	2	6	12	10·0	5·1	+ 96	72	·840	5·6	1	2·09	−1·09	0·27	1·16	− 0·89	0·27	1·17	− 0·90	0·18	Diamond Island.		
...	8	7	7	5	2	3	2	1	3·9	7·2	− 46	78	·899	4·0	0	1·09	−1·09	0·09	1·08	− 0·99	0·09	1·50	− 1·41	0·09	Akyab .	Arakan.	5
1	1	...	...	15	12	...	...	1	5·8	4·0	+ 45	73	·848	2·5	3	1·00	+2·00	2·70	2·09	+ 0·61	2·70	2·14	+ 0·56	1·83	Toungoo .	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·79	1·38	+0·59	...	...	...	...	II.—Burma Inland.		
...	...	...	1	2	22	2	2	1	3·4	7·0	− 51	64	·760	0	1	1·09	−0·09	0·20	0·80	− 0·60	0·20	0·85	− 0·65	0·20	Thayetmyo.	Central Burma.	3
...	1	...	2	23	3	...	...	1	9·5	?	?	61	·704	1·2	1	?	?	0·22	0·69	− 0·47	0·22	1·13	− 0·91	0·20	Minbu .	Upper Burma.	4
...	...	1	...	15	14	...	...	...	8·6	?	?	70	·814	0·8	4	?	?	2·98	1·75	+ 1·23	2·98	1·16	+ 1·82	1·94	Yamethin.		
...	...	...	...	8	15	6	1	...	9·1	?	?	65	·817	1·7	1	?	?	0·52	1·37	− 0·85	0·52	1·55	− 1·03	0·52	Mandalay.		
3	7	4	4	2	3	2	2	3	3·2	?	?	93	·942	1·6	1	?	?	0·25	1·82	− 1·57	0·25	3·09	− 2·84	0·19	Kindat.		
3	7	4	1	...	...	4	2	4	5·9	?	?	69	·633	3·0	3	?	?	0·54	1·83	− 1·29	0·54	2·70	− 2·16	0·16	Bhamo.		
3	...	...	...	5	9	10	1	2	?	?	?	67	·532	3·4	7	?	?	2·73	1·60	+ 1·13	2·73	1·64	+ 1·09	0·75	Taunggyi.	Burma Hill Stations.	4(a)
				No	t recor	ded.			?	?	?	74	·531	3·4	4	?	?	2·41	3·30	− 0·89	2·46	4·07	− 1·61	0·91	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·70	9·51	−3·82	...	...	...	...	III.—Assam.		
22	...	1	2	1	...	...	3	1	3·2	3·4	− 6	75	·757	5·7	4	14·29	−10·29	1·78	14·34	−12·56	2·80	23·05	−20·25	0·82	Silchar .	Surma.	7
14	3	8	...	...	3	1	...	1	4·4	2·9	+ 52	93	·713	8·5	17	14·04	+2·96	10·34	9·37	+ 0·97	10·76	14·44	−3·68	1·84	Sibsagar .	Brahmaputra.	9
1	...	9	15	2	1	1	1	...	3·7	3·0	+ 9	78	·732	5·8	6	7·67	−1·67	4·97	4·83	+ 0·14	4·97	6·76	−1·79	1·75	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·69	2·60	−0·92	...	...	...	...	IV.—Bengal and Orissa.		
1	1	2	2	13	8	2	...	1	3·7	7·1	+ 23	84	·900	3·9	1	4·65	−3·65	1·04	3·85	− 2·81	3·17	6·37	−3·20	1·04	Chittagong	East Bengal.	6
...	...	1	3	3	7	12	3	1	5·8	?	?	81	·879	4·3	2	4·62	−2·62	2·50	4·92	− 2·42	2·50	3·32	− 5·82	1·34	Noakhali.		
3	...	2	3	5	15	1	...	1	3·2	?	?	75	·821	4·2	2	6·70	−4·70	0·61	5·61	− 5·00	0·79	3·77	− 7·98	0·49	Comilla.		
1	...	1	2	12	11	3	...	...	4·7	?	?	83	·844	6·0	3	4·56	−1·56	3·07	3·05	+0·02	3·19	4·43	− 1·24	1·50	Sirajganj.		
1	...	2	3	1	16	3	...	1	3·7	6·7	+ 30	79	·854	5·9	3	7·08	−4·08	1·45	5·17	− 3·72	1·45	7·84	− 6·39	0·65	Narayanganj.		
7	...	1	...	4	11	7	...	...	5·1	?	?	78	·889	6·2	3	4·50	−1·50	1·76	3·23	− 1·47	1·76	5·75	− 3·99	0·80	Barisal.		
4	...	...	5	20	1	...	...	...	1·6	?	?	78	·813	5·8	3	6·23	−3·23	2·84	4·44	− 1·60	3·24	6·46	− 3·22	1·99	Mymensingh.		
9	...	...	2	...	19	...	...	...	3·1	?	?	87	·879	2·7	3	6·23	−3·23	1·74	4·20	− 2·46	1·75	6·80	− 5·05	0·76	Faridpur .	Delta of Bengal.	10
7	...	...	...	8	8	6	...	1	4·2	4·5	− 7	79	·881	5·1	2	4·73	−2·73	0·81	3·71	− 2·90	0·81	5·86	− 5·05	0·62	Jessore.		
3	1	...	...	1	11	13	1	...	6·7	7·5	− 11	81	·880	4·0	4	2·92	+1·08	1·04	1·74	−0·70	1·04	3·31	−2·27	0·58	Calcutta.		
...	1	...	...	3	20	6	...	...	2·5	16·7	+ 23	82	·929	6·7	1	2·00	−1·00	0·72	1·13	− 0·41	0·72	2·37	− 1·65	0·72	Saugor Island.		
...	...	...	2	2	20	4	1	1	7·4	?	?	75	·839	2·0	2	3·35	−1·35	0·64	2·38	− 1·74	0·64	3·71	− 3·07	0·53	Krishnagar.		
4	1	1	...	2	22	...	...	...	7·2	?	?	74	·831	0·9	3	2·85	+0·15	1·53	1·50	+ 0·03	1·53	3·02	−1·49	1·00	Midnapore.		

* Mean of 22 days.

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura	238	29·672	?	29·719	29·685	13th	29·334	26th	·351	83·7	104·9	?	76·8	?	90·9	?	28·1	114·6	29th	68·6	17th	46·0
		Raniganj	324	29·453	?	29·735	29·675	13th	29·304	26th	·371	83·1	105·4	?	76·1	?	90·8	?	29·3	114·5	30th	68·7	17th	45·8
		Burdwan	99	29·705	−·008	29·752	29·935	13th	29·561	26th	·374	81·9	102·2	+1·6	76·6	+1·0	89·4	+1·3	25·6	110·6	9th	67·9	19th	42·7
		Naya Dumka	439	29·294	?	29·737	29·521	13th	29·138	26th	·383	85·7	102·4	?	75·4	?	88·9	?	27·0	112·0	30th	65·9	17th	46·1
		Berhampore	67	29·732	−·010	29·748	29·971	13th	29·582	26th	·389	81·2	?	?	75·9	+1·5	?	?	?	?	?	68·2	17th	?
		Rampur Baolia.	70	29·731	?	29·751	29·966	13th	29·587	26th	·379	82·0	99·4	?	75·3	?	87·4	?	24·1	108·8	30th	66·1	17th	42·7
		Malda	72	29·711?	?	29·735?	29·973	13th	29·555	26th	·418	81·4	99·3	?	72·9	?	86·1	?	26·4	107·1	30th	64·7	7th	42·4
		Bogra	61	29·752	?	29·766	29·990	13th	29·599	26th	·391	80·4	98·7	+3·1	74·8	+2·9	86·8	+3·0	22·9	105·6	30th	66·2	12th	39·4
12	North Bengal	Dinajpur	123	29·680	−·007	29·761	29·933	13th	29·522	8th	·411	79·9	96·4	+1·8	72·4	+2·0	84·5	+1·9	24·0	102·3	9th	65·3	2 days	37·0
		Rangpur	123	29·699	?	29·778	29·937	13th	29·520	8th	·417	79·1	92·5	?	72·7	?	82·6	?	19·8	97·4	30th	64·6	17th	32·8
		Jalpaiguri	284	29·524	−·016	29·769	29·779	13th	29·357	8th	·422	76·9	89·9	+0·9	71·6	+4·0	80·8	+2·5	18·3	94·4	3 days	64·1	17th	30·3
		Cooch Behar	156	29·659	?	29·773	29·889	13th	29·491	8th	·398	76·9	88·8	?	71·7	?	80·3	?	17·1	93·6	22nd	64·0	17th	29·6
17	North Bihar	Purnea	125	29·670	−·004	29·750	29·919	13th	29·496	26th	·423	80·1	97·8	+0·6	72·6	+3·0	85·2	+1·8	25·2	103·1	9th	66·1	17th	37·0
14	Orissa	Balasore	46	29·768	?	29·761	29·952	14th	29·655	26th	·297	83·1	98·4	+1·0	76·6	+0·5	87·5	+0·8	21·8	106·5	8th	67·3	17th	39·2
		False Point	21	29·817	−·004	29·790	29·993	13th	29·722	2 days	·271	82·4	88·1	−2·5	78·1	+0·4	83·1	−1·1	10·0	90·0	29th	70·6	17th	19·4
		Cuttack	30	29·749	−·005	29·771	29·917	14th	29·651	26th	·266	82·5	101·6	−0·7	78·3	+0·3	90·0	−0·2	23·3	110·5	9th	72·2	17th	38·3
		Short's Island	?	29·807	?	?	29·981	13th	29·686	8th	·295	83·1	88·5	?	79·2	?	83·9	?	9·3	92·6	1st	73·4	18th	19·2
		Puri	20	29·820	?	29·783	29·995	13th	29·736	26th	·259	81·8	88·1	?	78·6	?	83·4	?	9·5	91·2	24th	70·6	17th	20·6
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·021	...	...	...	...	...	...	...	103·5	+2·6	74·0	+2·0	88·8	+2·3	29·5	...	...	...	...	44·4
15	Chota Nagpur	Hazaribagh	2,007	27·791	−·019	29·714	27·943	14th	27·670	26th	·273	85·7	100·0	+1·8	75·5	+3·3	87·8	+2·6	24·5	107·1	29th	66·3	19th	40·8
		Ranchi	2,128	27·701	?	29·743	27·864	14th	27·599	26th	·265	83·9	99·5	+2·0	73·7	+2·1	86·6	+2·1	25·8	107·5	30th	65·2	19th	42·3
		Daltonganj	730?	29·065	?	29·741	29·215	14th	28·922	26th	·293	87·7	106·1	?	71·3	?	88·7	?	34·8	113·1	28th & 29th	62·0	10th	51·1
		Chaibassa	760	29·046	?	29·752	29·207	14th	28·905	26th	·302	84·8	106·7	+2·6	76·8	+1·0	91·8	+1·8	29·9	113·9	30th	71·0	17th & 19th	42·9
16	South Bihar	Gaya	375	29·391	−·025	29·716	29·564	14th	29·240	26th	·324	87·9	106·1	+2·5	77·2	+2·8	91·7	+2·7	28·9	113·1	3 days	71·8	1st	41·3
		Dehri	351	29·409	?	29·712	29·584	14th	29·264	26th	·320	87·1	105·6	?	77·9	?	91·7	?	27·7	113·0	28th	72·0	1st & 12th	41·9
		Patna	183	29·587	−·021	29·722	29·794	13th	29·419	26th	·375	83·4	102·8	+1·9	74·9	+1·6	88·9	+1·8	27·9	110·0	3 days	68·5	17th	41·5
		Arrah	190	29·559?	?	29·701?	29·752	14th	29·407	26th	·345	83·4	103·9	?	73·1	?	88·5	?	30·8	111·0	29th	67·2	10th	43·8
		Buxar	239	29·518	?	29·712	29·704	14th	29·368	26th	·336	85·4	103·8	?	75·0	?	89·4	?	28·8	110·8	24th	69·1	9th & 10th	41·7
17	North Bihar	Bhagalpur	160	29·615	?	29·728	29·861	13th	29·440	26th	·421	83·3	101·1	?	73·8	?	87·5	?	27·3	110·1	30th	65·1	1st	45·0
		Darbhanga	166	29·610	−·017	29·731	29·838	13th	29·431	26th	·407	81·3	?	?	73·5	+1·7	?	?	?	?	?	66·9	16th	?
		Muzaffarpur	178	29·585	?	29·717	29·813	13th	29·415	26th	·398	81·4	98·6	?	72·4	?	85·5	?	29·2	106·2	30th	63·8	1st	42·4
		Motihari	224	29·543	?	29·726	29·770	13th	29·375	26th	·395	78·9	98·2	?	71·4	?	84·8	?	26·9	105·0	25th	60·8	6th	44·2
		Chapra	181	29·589	?	29·723	29·801	13th	29·422	26th	·379	83·1	103·1	?	74·3	?	88·7	?	28·8	109·7	25th	67·6	9th	42·1
18	N.-W. Provinces East.	Benares	267	29·504	?	29·726	29·675	14th	29·367	26th	·308	83·3	105·4	?	72·3?	+0·7?	89·1	?	32·6	112·3	28th	63·4	10th	49·9
		Allahabad	309	29·455	−·022	29·717	29·636	14th	29·317	26th	·319	86·4	106·1	+2·1	74·0	+1·9	90·1	+2·0	32·1	112·6	3 days	66·4	10th	46·2
2	N.-W. Provinces (East Sub-montane).	Gorakhpur	256	29·493	−·020	29·708	29·703	14th	29·339	26th	·364	82·0	102·2	+1·4	73·1	+0·7	87·7	+1·1	29·1	109·6	29th	66·2	10th	43·4
19	South Oudh	Lucknow	368	29·385	−·024	29·709	29·602	14th	29·235	26th	·367	85·8	106·9	+4·6	73·5	+2·5	90·2	+3·6	33·4	113·8	25th & 28th	66·2	12th	47·6
20	North Oudh	Bahraich	403	29·341	?	29·703	29·568	14th	29·164	26th	·404	84·4	102·4	?	71·5	?	87·5	?	31·9	111·6	29th	63·0	12th	48·6
21	N.-W. Provinces (Central).	Cawnpore	416	29·339	?	29·706	29·537	14th	29·205	26th	·332	86·6	106·2	+4·4	73·9	+1·7	90·1	+3·1	32·3	114·1	28th	63·5	1st	50·6
		Mainpuri	516	29·230	?	29·703	29·416	14th	29·104	26th	·312	83·8	105·8	?	72·4	?	89·1	?	33·4	112·2	25th	65·5	6th	46·7

I.—*continued.*

in India, Burma, etc., in April 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 30th April 1898.	Normal rainfall for period, 1st March to 30th April.	Variation from normal of period, 1st March to 30th April.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
10	...	...	2	4	10	1	3	...	5·4	?	?	65	·729	1·1†	2	2·73	− 0·73	0·25	1·34	− 1·09	0·28	2·52	− 2·24	0·15	Bankura	Central Bengal	11
12	...	...	3	3	7	3	1	1	3·0	?	?	64	·721	0·8	1	2·27	− 1·27	0·29	1·27	− 0·98	0·29	2·09	− 1·80	0·20	Raniganj.		
4	...	1	1	2	6	15	1	...	3·3	4·8	−21	79	·861	1·7	1	3·54	− 2·54	1·63	2·06	− 0·43	1·64	3·64	− 2·00	1·63	Burdwan.		
...	2	...	1	8	7	3	3	6	2·1	?	?	51	·622	0·4	1	2·46	− 1·46	1·13	0·96	+ 0·17	1·33	1·81	− 0·48	1·08	Naya Dumka		
2	...	...	4	1	14	8	1	...	6·4	5·2	+23	78	·840	1·7	2	2·64	− 0·64	2·14	1·50	+ 0·64	2·16	2·55	− 0·39	1·48	Berhampore.		
1	...	...	3	5	10	10	1	...	6·6	?	?	81	·892	1·4	2	2·88	− 0·88	1·78	1·69	+ 0·09	1·85	2·62	− 0·77	1·12	Rampur Boalia.		
...	3	1	4	7	7	5	3	...	3·1	?	?	71	·770	1·9	1	1·81	− 0·81	1·45	1·12	+ 0·33	1·52	1·92	− 0·40	1·45	Malda.		
		Not	reco	rded.					?	?	?	77	·805	3·9	2	3·88	− 1·88	1·37	2·45	− 1·08	1·50	3·51	− 2·01	1·10	Bogra.		
...	...	4	10	11	3	2	...	...	6·6	?	?	71	·736	4·5	1	3·12	− 2·12	1·12	2·08	− 0·96	1·12	2·95	− 1·83	1·09	Dinajpur	North Bengal.	12
4	...	7	11	4	3	1	...	...	4·2	?	?	80	·800	4·2	2	4·69	− 2·69	1·78	3·37	− 1·59	1·79	4·61	− 2·82	1·20	Rangpur.		
...	3	5	12	8	...	...	...	2	3·4	?	?	76	·704	2·5	4	5·92	− 1·92	3·41	4·11	− 0·70	3·45	5·61	− 2·16	?	Jalpaiguri.		
11	1	2	5	8	3	...	...	...	1·7	?	?	83	·772	7·3	7	?	?	6·84	5·35	+ 1·49	6·95	6·98	− 0·03	2·12	Cooch Behar		
2	...	5	20	1	...	1	...	1	5·5	3·6	+53	68	·707	2·3	2	2·04	− 0·04	0·89	1·43	− 0·44	1·27	1·83	− 0·56	0·56	Purnea	North Bihar.	17
2	...	...	...	...	5	22	1	...	9·0	?	?	81	·920	2·4	1	3·62	− 2·62	1·98	2·27	− 0·29	1·98	3·72	− 1·74	1·95	Balasore	Orissa.	14
...	1	...	...	...	4	20	4	1	12·3	13·3	− 8	86	·949	6·2	2	1·73	+ 0·27	2·12	1·77	+ 0·35	2·12	2·70	− 0·58	2·00	False Point.		
5	...	...	...	...	6	14	5	...	5·2	5·1	+ 2	77	·859	3·7	1	1·77	− 0·77	1·98	1·15	+ 0·83	1·98	2·56	− 0·58	1·91	Cuttack.		
...	...	...	...	...	15	14	...	1	25·3	?	?	81	·918	1·9*	2	?	?	1·40	1·41	− 0·01	1·40	2·21	− 0·81	1·15	Shortt's Island.		
2	1	...	...	1	...	24	2	...	14·8	?	?	87	·951	4·4	2	0·81	+ 1·19	0·83	0·45	+ 0·38	0·83	1·06	− 0·23	0·58	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·30	0·34	−0·04	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
...	3	...	...	...	5	7	10	5	9·5	8·4	+13	36	·428	0·1	2	1·15	+ 0·85	0·54	0·41	+ 0·13	0·72	1·16	− 0·44	0·37	Hazaribagh.	Chota Nagpur.	15
3	...	...	1	1	6	12	2	5	7·3	?	?	39	·435	0·5	1	1·81	− 0·81	0·60	0·64	− 0·04	0·60	2·02	− 1·42	0·55	Ranchi.		
...	2	1	5	3	7	7	4	1	3·3	?	?	35	·462	0·4	0	0·64	− 0·64	0	0·24	− 0·24	0·02	0·94	− 0·92	0	Daltonganj.		
12	...	...	...	...	1	7	9	1	7·0	?	?	58	·682	0·3	2	1·69	+ 0·31	0·52	0·87	− 0·35	0·52	2·14	− 1·62	0·39	Chaibassa.		
8	...	4	2	3	3	6	4	...	6·7	3·8	+76	40	·516	0·6	0	0·54	− 0·54	0	0·26	− 0·26	0·64	0·69	− 0·05	0	Gaya	South Bihar.	16
1	...	...	6	1	6	13	3	...	8·3	?	?	33	·410	0·7	0	0·25	− 0·25	0	0·08	− 0·08	0·03	0·77	− 0·74	0	Dehri.		
3	...	3	12	2	3	2	5	...	5·3	4·4	+20	54	·614	1·0	0	0·62	− 0·62	0	0·26	− 0·26	0·08	0·64	− 0·56	0	Patna.		
...	...	2	7	5	3	3	7	3	5·7	?	?	47	·544	0·3	0	0·46	− 0·46	0	0·23	− 0·23	0·03	0·63	− 0·60	0	Arrah.		
1	1	...	8	2	1	4	12	1	7·7	?	?	38	·456	0·2	0	0·35	− 0·35	0	0·16	− 0·16	0	0·48	− 0·48	0	Buxar.		
8	2	1	10	3	3	2	1	...	4·0	?	?	56	·632	0·6	2	1·42	+ 0·58	0·68	0·90	− 0·24	1·34	1·20	+ 0·04	0·46	Bhagalpur.	North Bihar.	17
...	1	1	13	12	1	1	1	...	5·3	5·1	+ 4	63	·679	0·9	3	1·44	+ 1·56	1·26	0·61	+ 0·65	1·45	0·93	+ 0·52	0·59	Darbhanga.		
7	...	2	10	9	...	...	1	1	8·1	?	?	67	·720	0·5	1	0·96	+ 0·04	0·67	0·48	+ 0·19	0·72	0·88	− 0·16	0·58	Muzaffarpur		
...	...	1	26	1	...	1	1	...	6·3	?	?	73	·731	0·4	1	1·17	− 0·17	0·91	0·70	+ 0·21	0·93	1·11	− 0·18	0·39	Motihari.		
6	...	2	11	4	1	3	2	1	4·9	?	?	56	·641	0·4	0	0·54	− 0·54	0	0·22	− 0·22	0·03	0·59	− 0·56	0	Chapra.		
3	...	1	8	1	1	5	11	...	6·2	5·0	+24	45	·517	0·3	0	0·27	− 0·27	0	0·08	− 0·08	0·03	0·36	− 0·33	0	Benares	N.-W. Provinces East.	18
1	...	3	5	2	...	2	15	2	6·8	4·9	+39	35	·432	0·6	0	0·55	− 0·55	0	0·11	− 0·11	0	0·43	− 0·43	0	Allahabad.		
2	4	12	5	...	1	...	1	5	3·3	4·4	−25	57	·627	0·5	1	0·73	+ 0·27	0·78	0·43	+ 0·35	0·83	0·85	− 0·02	0·78	Gorakhpur	N.-W. Provinces (East Sub-montane).	23
9	...	...	7	2	...	1	9	2	2·8	4·4	−36	40	·486	0·1	0	0·27	− 0·27	0·05	0·02	+ 0·03	0·06	0·39	− 0·33	0·05	Lucknow	South Oudh.	19
5	1	...	9	7	...	...	2	6	3·9	?	?	48	·570	0·1	1	?	?	0·40	0·34	+ 0·06	0·46	0·81	− 0·35	0·40	Bahraich	North Oudh.	20
5	...	1	5	4	...	5	6	4	3·5	?	?	32	·413	0	0	0·50	− 0·50	0	0·13	− 0·13	0·05	0·40	− 0·35	0	Cawnpore	N.-W. Provinces (Central)	21
5	...	...	4	1	3	1	14	2	4·1	?	?	33	·379	1·3	0	?	?	0	0·12	− 0·12	0·04	0·36	− 0·32	0	Mainpuri.		

* Mean of 26 days. † Mean of 29 days.

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas.		...	...	—·024	...	...	...	...	...	...	...	100·8	+4·2	69·3	+2·9	85·1	+3·6	31·5	...	...	...	...	47·3
24	N.-W. Provinces, West (Sub-montane).	Bareilly	568	29·178	—·016	29·710	29·391	13th	29·009	26th	·382	81·8	101·1	+1·6	70·1	+1·4	85·6	+1·5	31·0	111·5	16th	62·7	6th	48·8
		Dehra Dun	2,233	27·553	—·026	29·732	27·759	13th	27·416	26th	·343	75·3	94·7	+4·5	66·2	+1·9	80·5	+3·2	28·5	102·0	30th	58·5	8th	43·5
		Roorkee	887	28·857	—·024	29·715	29·072	13th	28·709	26th	·363	78·9	100·5	+2·4	67·3	+0·8	83·9	+1·6	33·2	107·2	4 days	56·4	8th	50·8
22	N.-W. P., West.	Meerut	738	29·012	—·018	29·715	29·208	14th	28·883	26th	·325	82·2	101·2	+2·7	69·3	+1·4	85·3	+2·1	31·9	107·7	28th	62·5	11th	45·2
26	South-East Punjab.	Delhi	718	29·032	—·027	29·713	29·198	14th	28·908	26th	·290	82·6	102·8	+2·4	75·5	+2·3	9·2	+2·4	27·3	108·7	3 days	64·4	9th	44·3
28	Central Punjab.	Lahore	702	29·033	—·035	29·709	29·146	13th	28·908	6th	·238	79·1	100·8	+4·2	70·1	+5·4	85·5	+4·8	30·7	107·6	29th	61·2	9th	46·4
27	South Punjab	Sirsa	662	29·091	—·024	29·720	29·201	8th	28·981	26th	·220	81·5	104·8	+4·3?	69·4	+1·3?	87·1	+2·3?	35·4	110·8	30th	60·3	8th	50·5
		Patiala	818	28·929	?	29·712	29·100	13th	28·799	26th	·301	82·9	101·5	?	70·2	?	85·9	?	31·3	107·5	30th	62·9	3 days	44·6
29	Punjab (Sub-montane).	Ludhiana	812	28·929	—·029	29·712	29·072	14th	28·806	26th	·266	81·3	101·9	+4·3	71·2	+4·5	86·6	+4·4	30·7	108·9	24th	62·6	9th	46·3
		Sialkot	830	28·914	—·020	29·716	29·069	14th	28·797	26th	·272	81·5	102·2	+7·3	70·1	+4·1	86·2	+5·7	32·1	108·8	29th & 30th.	58·7	8th & 9th.	50·1
		Umballa	892	28·854	?	29·714	29·034	13th	28·735	26th	·299	77·5	102·0	?	68·3	?	85·2	?	33·7	108·9	24th	61·0	3 days	47·9
21	North Punjab	Rawalpindi	1,643	28·098	—·017	29·721	28·257	14th	27·982	6th	·275	76·5	96·5	+8·5	64·3	+4·7	80·4	+6·6	32·2	104·6	13th & 30th	55·1	9th	49·5
	VII.—Indus Valley and North-West Rajputana.		...	...	—·042	...	...	...	...	...	...	...	103·1	+5·0	71·4	+2·4	87·3	+3·8	31·7	...	...	...	...	48·7
31	North Punjab	Peshawar	1,110	28·693	—·035	29·748	28·856	14th	28·581	30th	·275	75·5	92·0	+5·5	62·6	+2·1	77·3	+3·8	29·4	102·5	30th	54·0	8th & 16th	48·5
32	West Punjab	Khushab	612	29·130	?	29·712	29·269	8th	29·018	6th	·251	83·2	101·6	?	70·7	?	86·2	?	30·9	109·9	30th	64·0	8th & 9th.	45·9
		Montgomery	558	29·181	?	29·704	29·291	14th	29·059	6th	·232	85·6	105·1	+4·7	70·0	?	87·6	?	35·1	112·1	13th & 14th.	60·0	8th	52·1
		D. I. Khan	594	29·193	—·044	29·740	29·341	8th	29·085	27th	·256	78·0	93·0?	?	72·7?	?	82·9?	?	20·3?	99·2?	30th	63·0?	8th	36·2?
		Mooltan	420	29·327	—·053	29·717	29·477	8th	29·213	30th	·264	82·5	105·2	+7·4	71·5	+4·1	88·4	+5·8	33·7	110·9	13th & 29th.	58·9	8th	52·0
47	Sind	Jacobabad	186	29·557	—·047	29·705	29·709	8th	29·474	22nd & 26th.	·235	83·7	108·9	+6·8	71·2	+2·3	90·1	+4·6	37·7	115·6	21st	58·0	8th	57·6
		Hyderabad	96	29·692	—·043	29·741	29·820	8th	29·603	17th	·217	81·6	106·2	+4·3	71·7	?	89·0	?	34·5	111·2	16th & 19th.	64·5	8th	46·7
		Kurrachee	30	29·788	—·037	29·769	29·905	8th	29·683	17th	·222	81·0	92·0	+0·7	73·6	+0·5	82·8	+0·6	18·4	102·4	17th	63·0	8th	39·4
51	West Rajputana	Bickaneer	771	29·001	?	29·732	29·126	8th	28·903	27th	·223	86·7	105·4	+4·8	76·8	+3·2	91·1	+4·0	28·6	109·5	13th & 30th.	67·0	8th	42·5
		Pachpadra	380	29·415	?	29·753	29·522	8th	29·302	26th	·220	82·4	108·4	?	70·6	?	89·5	?	37·8	113·7	16th	59·2	9th	54·5
		Jodhpur	782	29·005	?	29·743	29·108	8th	28·894	17th	·214	85·4	106·4	?	75·5	?	91·0	?	30·9	110·2	7 days	62·7	9th	47·5
	VIII.—East Rajputana, Central India and Gujarat.		...	...	—·025	...	...	...	...	...	...	...	104·1	+3·8	74·4	+2·8	89·3	+3·3	29·7	...	...	...	...	44·5
50	East Rajputana	Jeypore	1,431	28·380	—·015	29·755	28·496	14th	28·272	26th	·224	86·7	105·7	+5·2	73·8	+4·5	89·7	+4·9	31·9	111·5	29th	64·0	8th	47·5
		Kotah	?	28·956	?	?	29·051	8th	28·840	17th	·211	91·0	107·7	?	79·7	?	93·7	?	28·0	112·1	5 days	71·1	9th	41·0
		Sambhar	1,254	28·542	—·013	29·748	28·646	14th	28·440	17th & 26th.	·206	85·1	104·3	+5·2	72·6	+2·3	88·5	+3·3	31·7	109·5	14th	59·7	9th	49·8
		Ajmere	1,611	28·207	—·023	29·766	28·314	14th	28·098	17th	·216	85·1	103·3	+4·7	74·1	+3·8	88·7	+4·3	29·2	107·9	29th	58·7	9th	49·2
		Oodeypore	1,925	27·915	?	29·762	28·018	14th	27·814	17th	·204	87·5	103·0	?	74·6	?	88·8	?	28·4	107·6	26th	63·5	5th	44·1
		Deesa	466	29·365	—·026	29·785	29·464	14th	29·258	17th	·206	84·8	108·0	+5·1	72·7	+1·8	90·4	+3·5	35·3	113·0	30th	64·0	3rd & 9th.	49·0
46	Kathiawar and Cutch.	Bhuj	395	29·443	?	29·791	29·534	8th	29·336	17th	·198	83·9	104·3	+4·1	72·3	+1·3	88·3	+2·7	32·0	111·3	15th	65·9	5th	45·4
		Rajkot	429	29·414?	—·034?	29·798?	29·512	13th	29·322	17th	·190	80·6	104·7	+2·5	69·7	+0·7	87·3	+1·6	35·0	109·9	16th	60·4	1st	49·5
		Veraval	?	29·838	?	29·798	29·928	14th	29·761	17th	·167	78·7	85·8	?	72·9	?	79·3	?	12·9	95·1	4th	66·3	9th	28·8
		Bhavnagar Para	35	29·809	?	29·789	29·903	14th	29·718	17th	·185	85·2	105·7	?	75·0	?	90·4	?	30·7	110·2	26th & 30th.	64·8	2nd	45·4
49	Central India	Nowgong	757	29·025	—·028	29·732	29·169	14th	28·912	26th	·257	85·7	106·2	+2·4	73·9	+2·8	90·1	+2·6	32·3	111·5	29th	66·0	3rd & 4th.	45·5
		Indore	1,823	28·018	?	29·762	28·121	14th	27·929	26th	·192	86·9	104·5	+4·3	72·9	+3·8	88·7	+4·1	31·6	109·0	26th	62·6	9th	46·4
		Neemuch	1,630	28·212	?	29·771	28·323	14th	28·105	17th	·218	88·5	105·0	+4·6	73·5	+2·8	89·3	+3·7	31·5	109·1	26th & 25th	63·2	3rd	45·9
45	Gujarat	Surat	39	29·828	—·030	29·809	29·919	14th	29·751	17th	·168	83·7	100·5	+0·3	75·0	+3·2	87·8	+1·8	25·5	107·6	30th	68·5	3 days	39·1
		Ahmedabad	164	29·674	?	29·784	29·781	3rd	29·584	17th	·197	84·6	107·2	?	76·1	?	91·7	?	31·1	114·3	28th	68·6	1st & 2nd.	45·7
22	N.-W. P., West	Agra	555	29·204	—·034	29·715	29·375	14th	29·085	26th	·290	85·9	105·2	+2·4	75·9	+2·4	90·6	+2·4	29·3	110·5	25th	66·9	8th	43·6
21	N.-W.P., Central	Jhansi	858	28·932	—·029	29·733	29·091	14th	28·833	26th	·258	90·1	108·0	+4·2	80·6	+4·6	94·3	+4·4	27·4	113·2	4 days.	73·4	9th	39·8

I—*continued.*

in India, Burma, etc., in April 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 30th April 1898.	Normal rainfall for period, 1st March to 30th April.	Variation from normal of period 1st March to 30th April.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·23	0·60	−0·35	...	...	...	...	VI.—Upper Sub-Himalayas.		
10	...	2	2	4	...	...	5	7	3·4	4·5	−24	42*	·429*	0·4	1	0·45	+0·55	0·57	0·17	+0·40	0·57	1·11	−0·54	0·57	Bareilly	N.-W. Provinces, West (Sub-montane).	24
22	3	...	...	1	...	1	1	2	2·3	2·6	−12	42	·373	1·1	1	1·45	−0·45	1·54	0·53	+1·01	1·54	1·60	−0·06	1·54	Dehra Dun		
20	1	...	2	5	1	...	...	1	2·2	3·2	−31	40	·401	0·4	1	1·18	−0·18	0·34	0·42	−0·08	0·34	1·14	−0·80	0·34	Roorkee.		
15	...	...	3	2	...	4	5	1	2·4	2·4	0	36	·391	0·3	1	0·73	+0·27	0·10	0·24	−0·14	0·10	1·01	−0·91	0·10	Meerut	N.-W. Provinces, West.	22
5	...	...	...	6	1	1	12	6	5·4	3·9	+38	30	·329	0·6	0	0·64	−0·64	0·03	0·24	−0·21	0·03	0·80	−0·77	0·03	Delhi	South-East Punjab.	26
8	4	2	6	1	3	1	1	4	3·3	3·3	0	43	·327	1·4	0	1·45	−1·45	0	0·46	−0·46	0	1·19	−1·19	0	Lahore	Central Punjab	28
...	2	2	1	4	7	3	9	2	7·4	4·0	+85	27	·292	0·8	0	0·64	−0·64	0	0·31	−0·31	0	0·68	−0·68	0	Sirsa	South Punjab.	27
12	1	...	...	...	2	14	1	...	5·5	?	?	45*	·496*	0·9	0	?	?	0	?	?	0	?	?	0	Patiala.		
17	...	1	...	5	1	1	1	4	2·1	2·1	0	33	·355	2·3	0	1·55	−1·55	0	0·85	−0·85	0	1·84	−1·84	0	Ludhiana	Punjab (Sub-montane).	29
15	4	3	5	1	...	...	1	1	1·9	2·3	−17	34	·356	2·0	0	2·09	−2·09	0·03	0·91	−0·88	0·03	2·09	−2·06	0·03	Sialkot.		
9	...	...	2	7	...	...	4	8	2·9	?	?	47	·439	0·7	1	?	?	0·15	0·53	−0·38	0·17	1·26	−1·09	0·15	Umballa.		
19	5	2	...	...	...	1	2	1	4·0	2·8	+43	42	·386	3·5	0	3·27	−3·27	0·02	1·95	−1·93	0·70	3·71	−3·01	0·02	Rawalpindi	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·04	0·39	−0·36	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
18	...	1	1	3	2	3	1	1	3·2	4·2	−24	55	·357	2·9	1	3·36	−2·36	0·42	1·84	−1·42	2·77	3·54	−0·77	0·30	Peshawar	North Punjab.	31
8	5	9	4	...	1	1	2	...	6·7	?	?	32	·357	1·6	0	1·30	−1·30	0	0·62	−0·62	0·16	1·16	−1·00	0	Khushab	West Punjab.	32
7	2	3	1	6	5	1	2	3	5·9	?	?	24	·289	1·8	0	0·70	−0·70	0	0·24	−0·24	0	0·75	−0·75	0	Montgomery		
9	5	7	...	...	...	...	2	7	3·2	2·4	+33	49	·476	2·5	0	1·64	−1·64	0	0·77	−0·77	0·09	1·40	−1·31	0	D. I. Khan		
13	2	2	...	4	3	5	...	1	1·3	2·5	−48	37	·398	0·8	0	0·36	−0·36	0	0·07	−0·07	0	0·45	−0·45	0	Mooltan.		
9	2	2	4	5	3	...	...	5	4·6	3·9	+18	39	·453	2·0	0	0·27	−0·27	0	0·20	−0·20	0	0·34	−0·34	0	Jacobabad	Sind.	47
3	1	2	...	...	8	16	...	...	12·4	10·2	+22	52	·545	1·2	0	0	0	0	0·04	−0·04	0	0·18	−0·18	0	Hyderabad.		
...	...	...	1	...	2	9	15	...	9·3	14·0	−34	74	·779	1·7	0	0·45	−0·45	0	0·33	−0·33	0	0·56	−0·56	0	Kurrachee.		
1	1	...	2	2	2	10	8	4	6·4	4·7	+36	25	·334	1·2	0	?	?	0	0·17	−0·17	0	0·37	−0·37	0	Bickaneer	West Rajputana	51
...	3	4	1	4	2	9	5	2	7·8	4·5	+73	31	·350	0·8	0	?	?	0	0·01	−0·01	0	0·08	−0·08	0	Pachpadra.		
7	...	3	1	4	1	10	4	...	3·2	?	?	21	·254	1·0	0	?	?	0	0·05	−0·05	0	0·08	−0·08	0	Jodhpur.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·01	0·06	−0·06	...	...	...	...	VIII.—East Rajputana, Central India and Gujarat		
1	5	6	2	...	...	...	4	12	4·7	5·7	−18	26	·339	1·2	0	0·30	−0·30	0	0·09	−0·09	0	0·48	−0·48	0	Jeypore	East Rajputana	50
6	2	3	1	3	...	...	2	13	4·4	?	?	19	·278	0·5	0	?	?	0	0·02	−0·02	0·04	0·09	−0·05	0	Kotah.		
5	3	1	3	1	1	1	13	2	5·6	7·0	−20	31	·381	1·2	0	0·30	−0·30	0	0·08	−0·08	0	0·44	−0·44	0	Sambhar.		
13	1	5	...	4	1	4	9	3	5·2	5·0	+ 4	32	·422	1·2	0	0·18	−0·18	0	0·06	−0·06	0	0·23	−0·23	0	Ajmere.		
12	4	...	...	...	1	1	4	8	4·8	?	?	32	·424	0·6	0	?	?	0	?	?	0	?	?	0	Oodeypore.		
...	10	3	1	...	1	5	6	4	8·2	9·4	−13	35	·415	0·8	0	0	0	0	0·01	−0·01	0	0·06	−0·06	0	Deesa.		
...	...	...	...	...	...	2	17	11	11·5	10·9	+ 6	52	·579	1·2	0	?	?	0	0·18	−0·18	0	0·27	−0·27	0	Bhuj	Kathiawar and Cutch.	46
1	7	...	...	...	...	...	15	7	8·9	11·1	−20	59	·561	0·9	0	0·10	−0·10	0	0·02	−0·02	0	0·03	−0·03	0	Rajkot		
2	5	...	1	1	2	2	5	12	7·0	?	?	77	·754	2·5	0	?	?	0	0	0	0	0	0	0	Veraval.		
...	1	1	1	1	4	12	5	5	8·8	?	?	37	·437	1·1	0	?	?	0	?	?	0	?	?	0	Bhavnagar Para.		
8	...	1	4	1	2	8	4	1	2·3	2·8	−18	33	·404	0·4	0	0	0	0	0·06	−0·06	0	0·33	−0·33	0	Nowgong	Central India.	49
8	6	4	...	...	...	1	5	6	1·8	4·4	−59	44	·579	0·3	0	0	0	0·01	0·06	−0·05	0·07	0·08	−0·01	0·01	Indore.		
1	7	12	1	...	1	2	5	1	5·8	10·3	−44	35	·471	0·6	0	0·09	−0·09	0	0·09	−0·09	0	0·17	−0·17	0	Neemuch.		
7	2	2	...	4	9	6	...	...	4·9	8·0	−39	64	·754	1·0	0	0	0	0	0·01	−0·01	0	0·01	−0·01	0	Surat	Gujarat.	45
3	7	1	...	...	...	3	4	12	4·1	?	?	45	·521	1·2	0	?	?	0	0·02	−0·02	0	0·03	−0·03	0	Ahmedabad		
3	...	1	...	6	...	6	...	14	6·2	4·7	+32	31	·382	0·2	0	0·55	−0·55	0	0·14	−0·14	0·02	0·45	−0·43	0	Agra	N.-W. P., West	22
4	1	2	...	3	...	11	5	4	3·6	4·2	−14	33	·478	0·3	0	0·55	−0·55	0·08	0·13	−0·05	0·08	0·48	−0·40	0·08	Jhansi	N.-W. P., Central	21

* Mean of 29 days.

Table

Abstract of Observations taken at 8 A.M. at 213 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan		...	...	−·018	...	...	...	...	...	...	...	104·8	+2·3	75·8	+2·5	90·3	+2·4	29·0	...	...	...	...	42·1
38	Bombay, Deccan	Belgaum	2,556	27·354	−·004	29·815	29·436	14th	27·281	22nd	·155	76·1	95·9	−0·5	68·2	+0·9	82·1	+0·2	27·7	101·7	12th	63·4	22nd	38·3
		Sholapur	1,590	28·268	P	29·782	28·385	14th	28·210	17th	·175	86·7	105·9	+0·7	77·8	+2·8	91·9	+1·8	28·1	108·7	12th & 17th.	72·0	28th	36·7
		Poona	1,840	28·040	−·019	29·814	28·124	14th	27·972	17th	·162	80·9	104·3	+3·2	70·8	+1·0	87·6	+2·1	33·5	108·0	13th	63·9	2nd	44·1
		Bijapur	1,946	27·920	P	29·786	28·030	14th	27·859	26th	·171	82·8	102·6	P	74·4	P	88·5	P	28·2	106·7	11th	70·0	14th	36·7
40	Khandesh	Malegaon	1,430	28·409	−·032	29·777	28·518	14th	28·331	17th	·187	85·2	105·9	+3·1	74·6	+3·6	90·2	+3·4	31·3	109·3	25th	66·2	2nd	43·0
		Ahmednagar	2,152	27·734	P	29·790	27·838	14th	27·668	17th	·170	85·7	103·0	P	72·6	P	87·8	P	30·4	105·8	18th	64·5	12th	41·3
41	Berar	Akola	930	28·397	−·010	29·758	29·010	14th	28·811	26th & 30th.	·199	91·2	109·5	+3·8	78·7	+4·7	94·1	+4·3	30·8	114·5	30th	68·8	19th.	45·7
		Amraoti	1,215	28·609	−·008	29·762	28·714	14th	28·518	26th	·196	88·2	108·6	+3·3	80·3	+4·8	94·5	+4·1	28·3	114·5	30th	69·8	19th	44·7
42	Central Provinces, West.	Khandwa	1,044	28·777	−·027	29·762	28·880	3rd	28·695	26th	·185	89·2	109·2	+4·9	79·6	+5·3	94·4	+5·1	29·6	113·7	25th	69·6	9th	44·1
		Hoshangabad	1,006	28·794	P	29·747	28·893	3rd	28·684	26th	·209	87·5	108·5	+3·6	76·7	+3·5	92·6	+3·6	31·8	113·5	28th	68·2	12th	45·3
		Nagpur	1,025	28·784?	P	29·752?	28·913	14th	28·687	26th	·226	87·4	106·6	P	78·1	P	92·4	P	28·5	112·2	29th	65·1	18th	47·1
43	Central Provinces, Central.	Chanda	634	29·210	P	29·781	29·347	14th	29·127	30th	·220	88·4	107·6	+0·5	76·8	P	92·3	P	30·8	112·2	29th & 30th.	69·2	11th & 19th.	43·0
		Seoni	2,033	27·805	−·011	29·748	27·928	14th	27·710	26th	·218	85·4	103·5	+2·2	72·9	+1·2	88·2	+1·7	30·6	108·6	30th	64·9	11th	43·7
		Jubbulpore	1,327	28·457?	P	29·723?	28·576	14th	28·344	26th	·232	88·3	105·2	+3·4	71·3	+0·7	88·3	+2·1	33·9	110·0	3 days	60·8	11th	49·2
		Saugor	1,807	28·009?	P	29·733?	28·127	14th	27·919	26th	·208	88·7	104·4	+2·9	77·4?	P	90·9?	P	27·0	110·9	28th	72·6	2nd & 13th.	38·3
49	Central India	Sutna	1,040	28·742	−·018?	29·729	28·894	14th	28·616	26th	·278	87·4	104·9	+3·3	75·0	+4·0	90·0	+3·7	29·9	111·1	28th	66·6	12th	44·5
44	Central Provinces, East.	Raipur	970	28·853	P	29·762	29·978	14th	28·750	26th	·228	87·6	106·6	+2·3	78·9	+2·1	92·7	+2·2	27·7	110·5	30th	69·2	18th	41·3
		Sambalpur	486	29·327	−·011	29·758	29·472	14th	29·216	26th	·256	86·0	106·1	+1·2	76·0	+0·3	91·1	+0·8	30·1	111·1	29th	67·2	11th	43·9
39	Hyderabad (North).	Aurangabad	1,865	28·012	?	29·784	28·095	14th	27·956	22nd	·139	89·2	106·9	P	76·8	P	91·9	P	30·1	110·4	30th	69·0	2nd	41·4
		Indur	P	...		Not	recorded					88·9	104·3	P	78·5	P	91·4	P	25·8	106·6	30th	58·3	19th	50·3
		Bidar	2,165?	27·704	P	29·772	27·800	13th	27·622	17th	·178	85·0	99·0	P	71·9	P	85·5	P	27·1	100·0	15th	66·4	27th	33·6
53	Hyderabad (South).	Gulbarga	1,502	28·376	P	29·807	28·511	14th	28·291	17th	·220	86·1	105·2	P	76·8	P	91·0	P	28·4	108·9	11th	70·6	22nd	38·2
		Raichur	1,309	28·535	P	29·775	28·659	14th	28·467	17th	·192	85·8	103·3	P	79·7	P	91·5	P	23·6	106·5	3 days	69·1	18th	37·4
		Hyderabad (Deccan).	1,690	28·170	−·033	29·789	28·301	14th	28·086	17th	·215	83·6	102·0	−0·2	76·2	+1·1	89·1	+0·5	25·8	106·9	10th	73·7	15th	33·2
		Secunderabad.	1,787	28·078	−·025	29·795 (a)	28·201	14th	27·996	17th	·205	82·2	103·1	+0·9	76·1	+1·0	89·6	+1·0	27·0	109·3	10th	64·6	19th	44·7
		Hanamconda	P	28·970	P	28·906	29·115	14th	28·887	17th	·228	82·2	101·5	P	76·6	P	89·1	P	24·9	108·7	10th	68·3	20th	40·4
	X.—West Coast		...	...	−·015	...	...	...	...	...	...	...	90·4	+0·9	79·3	+1·5	84·9	+1·2	11·1	...	...	...	...	18·5
37	Konkan	Bombay	37	29·848	−·019	29·825	29·928	14th	29·789	26th	·139	82·7	89·1	+0·9	78·7	+1·4	83·9	+1·2	10·4	92·0	4th	75·0	2nd & 9th.	17·0
		Ratnagiri	110	29·768	−·008	29·817	29·852	15th	29·711	17th	·141	83·7	90·7	+0·8	79·3	+2·5	85·0	+1·7	11·4	93·9	4th	73·9	28th	20·0
		Mormugao	60	29·833	P	29·827	29·924	15th	29·770	22nd	·154	84·9	90·9	P	80·5	P	85·7	P	10·4	93·0	14th & 25th.	75·4	11th	17·6
		Goa	199	29·688	−·007	29·822	29·768	14th	29·628	22nd	·140	84·0	88·1	P	79·6	P	83·9	P	8·5	90·0	14th	75·0	2nd	15·0
		Karwar	44	29·839	−·017	29·815	29·929	14th	29·783	22nd	·146	82·8	90·4	+0·6	78·9	+1·1	84·7	+0·9	11·5	91·8	14th	72·5	2nd	19·3
38	Malabar	Cochin	10	29·884	−·019	29·822	29·971	14th	29·825	22nd	·146	84·0	93·2	P	79·7	+1·6	86·5	P	13·5	96·5	14th	74·3	26th	22·2
		Calicut	27	29·863	−·021	29·819	29·951	14th	29·807	22nd	·144	84·2	92·1	+0·8	79·2	+1·4	85·7	+1·1	12·9	93·9	15th & 16th.	74·0	21st	19·9
		Mangalore	65	29·830	−·012	29·827	29·907	14th	29·784	26th	·123	84·1	92·0	+1·2	79·7	+0·9	85·9	+1·1	12·3	93·8	14th	74·4	23rd	19·4
		Trivandrum	198	29·674?	P	29·803?	29·773	14th	29·609	22nd	·164	82·2	87·3	P	78·5	P	82·9	P	8·8	90·0	14th	73·5	8th	16·5
	XI.—South India		...	...	−·015	...	...	...	...	...	...	...	96·2	+0·2	76·0	+0·6	86·1	+0·4	20·2	...	...	...	...	30·3
57	Madras (South).	Pamban	37	29·847	P	29·811	29·945	14th	29·779	23rd	·166	85·9	91·8	P	77·9	P	84·9	P	13·9	94·3	21st	74·2	1st	20·1
		Tinnevelly	168	29·710	P	29·807	29·806	15th	29·634	22nd	·172	85·4	100·2	P	79·8	P	90·0	P	20·4	103·4	10th & 12th.	74·9	14th & 21st.	28·5
		Madura	447	29·425	−·024	29·806	29·546	14th	29·350	22nd	·196	84·4	99·4	P	77·1	+0·9	88·3	P	22·3	103·0	19th	70·0	27th	33·0

(a) Not reduced to sea-level

I—*continued.*

in India, Burma, etc., in April 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 30th April 1898.	Normal rainfall for period, 1st March to 30th April.	Variation from normal of period, 1st March to 30th April.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·69	0·44	+0·19	...	...	...	...	**IX.—Deccan.**		
8	1	2	2	...	1	6	9	1	13·0	13·1	− 1	70	·618	1·7	7	3·36	+3·64	3·52	1·72	+ 1·80	5·26	2·07	+3·19	0·90	Belgaum	Bombay Deccan.	38
4	2	2	...	4	2	3	2	11	9·8	8·2	+20	33	·411	1·5	0	1·20	−1·20	0·19	0·57	− 0·38	0·19	0·91	− 0·72	0·07	Sholapur.		
...	...	2	...	...	2	10	11	5	12·0	9·9	+21	43	·458	2·0	3	1·09	+1·91	1·28	0·54	+ 0·74	1·28	0·59	+ 0·69	0·61	Poona.		
...	...	...	...	1	...	6	15	8	6·5	P	P	67	·748	1·1	5	1·80	+3·20	1·70	0·58	+ 1·12	1·76	0·88	+0·88	0·57	Bijapur.		
2	1	1	...	...	1	5	11	9	17·0	7·7	+121	44	·541	2·7	0	0·18	−0·18	0	0·10	− 0·10	0	0·13	− 0·13	0	Malegaon	Khandesh.	40
...	11	6	2	...	1	2	1	7	8·5	P	P	48	·576	2·2	0	P	P	0·02	0·40	− 0·38	0·03	0·56	− 0·53	0·01	Ahmednagar.		
1	...	...	...	3	...	2	16	8	6·2	5·4	+15	25	·361	0·8	1	0·36	+0·64	0·16	0·16	0	0·18	0·71	− 0·53	0·16	Akola	Berar.	41
1	1	1	2	2	3	10	7	3	9·8	4·4	+123	40	·548	1·2	0	0·45	−0·45	0·06	0·25	− 0·19	0·10	0·65	− 0·55	0·06	Amraoti.		
...	1	1	...	...	...	2	13	13	6·1	5·6	+ 9	23	·322	0·8	0	0·18	−0·18	0	0·17	− 0·17	0	0·30	− 0·30	0	Khandwa	Central Provinces, West.	42
18	1	3	1	...	1	5	1	...	1·6	2·9	−45	30	·395	0·7	0	0·09	−0·09	0·03	0·16	− 0·13	0·03	0·39	− 0·36	0·03	Hoshangabad.		
10	2	...	3	2	5	4	1	3	6·4	6·7	− 4	33	·430	1·9	1	0·82	+0·18	1·36	0·34	+ 1·02	1·36	0·95	+ 0·41	1·31	Nagpur.		
2	2	4	8	5	4	1	3	1	2·9	3·8	−24	42*	·559*	1·4	0	P	P	0·16	0·38	− 0·22	0·16	1·87	− 1·71	0·08	Chanda	Central Provinces, Central.	43
...	2	8	...	1	2	10	3	4	3·4	3·8	−11	33	·399	1·1	2	0·45	+1·55	0·40	0·35	+ 0·05	0·45	1·05	− 0·60	0·24	Seoni.		
1	...	2	...	10	10	3	3	1	3·3	3·5	− 6	33	·416	0·8	0	0·27	−0·27	0·10	0·18	− 0·08	0·10	0·69	− 0·59	0·05	Jubbulpore.		
...	1	1	4	5	4	6	7	2	5·4	3·7	+46	33	·437	0·6	0	0·09	−0·09	0·05	0·10	− 0·05	0·09	0·36	− 0·27	0·05	Saugor.		
...	2	2	...	2	4	1	10	9	5·2	6·8	− 9	23	·294	0·3	0	0·27	−0·27	0	0·12	− 0·12	0	0·62	− 0·62	0	Sutna	Central India.	46
7	...	1	1	...	3	16	2	...	6·7	5·9	+14	31	·402	2·1	0	1·00	−1·00	0	0·47	− 0·47	0	1·28	− 1·28	0	Raipur	Central Provinces, East.	44
...	3	5	4	10	...	6	1	1	4·9	2·6	+88	51*	·641*	1·2	1	P	P	0·25	0·51	− 0·26	0·25	1·71	− 1·46	0·25	Sambalpur.		
11	1	1	1	1	...	9	3	3	4·1	P	P	24	·329	1·4	0	P	P	0	0·18	− 0·18	0·07	0·24	− 0·17	0	Aurangabad	Hyderabad (North).	39
4	1	1	1	5	4	3	10	1	6·5	P	P	55	·742	1·4	1	P	P	0·77	0·31	+ 0·46	0·77	0·58	+ 0·19	0·76	Indur.		
...	3	1	...	...	3	12	8	3	7·4	P	P	63	·754	0·7	4	P	P	1·39	0·83	+ 0·56	1·39	1·17	+ 0·22	0·59	Bidar.		
12	2	3	1	...	3	5	...	4	7·0	P	P	46	·562	0·7	3	P	P	0·43	0·71	− 0·28	0·83	0·92	− 0·09	0·15	Gulbarga	Hyderabad (South).	53
...	1	...	4	1	...	1	21	2	7·4	P	P	53	·649	1·4	1	P	P	0·47	0·53	− 0·06	0·52	0·94	− 0·42	0·47	Raichur.		
18	...	...	1	4	2	...	5	...	3·9	P	P	59	·664	1·2	4	P	P	2·12	0·67	+ 1·45	2·12	1·42	+ 0·70	1·15	Hyderabad (Deccan).		
4	...	2	6	5	...	3	5	5	5·6	5·3	+ 6	52	·567	1·8	2	P	P	1·20	0·67	+ 0·53	1·20	1·42	− 0·22	0·79	Secunderabad.		
6	...	...	...	14	8	1	1	...	10·9	P	P	66	·728	2·9	4	P	P	2·31	P	P	2·31	P	P	1·33	Hanamconda.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·32	1·57	−0·24	...	...	...	...	**X.—West Coast.**		
...	6	4	1	2	9	3	1	4	9·3	11·3	−18	77	·865	3·5	0	0	0	0	0·01	− 0·01	0	0·04	− 0·04	0	Bombay.	Konkan.	37
6	4	...	1	4	5	4	1	5	5·6	11·1	−50	71	·827	3·2	1	0·09	−0·09	0·43	0·07	+ 0·36	0·43	0·08	+ 0·35	0·36	Ratnagiri.		
3	6	1	3	6	2	2	3	4	8·0	P	P	72	·880	4·5	1	P	P	0·30	0·29	+ 0·01	0·30	0·29	+ 0·01	0·18	Mormugao.		
3	4	3	7	2	2	3	5	1	P	P	P	74	·872	4·4	1	P	P	0·40	0·07	+ 0·33	0·40	0·07	+ 0·33	0·34	Goa.		
14	8	...	1	...	1	4	2	...	5·1	P	P	74	·829	2·5	2	0·36	+1·64	0·34	0·41	− 0·07	0·34	0·41	− 0·07	0·24	Karwar.		
9	13	5	1	...	1	1	...	...	7·3	P	P	77	·891	5·3	6	5·55	+0·45	3·94	4·37	− 0·43	4·06	6·81	− 2·75	1·68	Cochin	Malabar.	33
3	3	3	1	5	...	1	...	14	10·7	P	P	75	·875	5·1	4	3·13	+0·87	1·52	3·17	− 1·65	2·40	3·69	− 1·29	0·72	Calicut.		
8	1	1	9	7	2	1	...	1	2·9	3·7	−22	73	·854	4·4	2	1·00	+1·00	0·34	1·13	− 0·79	0·34	1·19	− 0·85	0·15	Mangalore.		
7	6	2	1	...	...	...	1	13	5·4	P	P	78	·871	5·5	9	P	P	4·63	4·58	+ 0·05	5·10	6·15	− 1·05	0·97	Trivandrum.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·36	1·22	+0·15	...	...	...	...	**XI.—South India.**		
1	1	4	3	10	1	8	...	2	9·4	P	P	79	·976	2·9	3	1·30	+1·70	0·37	4·13	− 3·76	0·37	4·92	− 4·55	4·55	Pamban	Madras (South).	57
...	6	2	1	1	...	5	5	10	4·2	P	P	68	·824	2·5	4	3·40	+0·60	2·84	1·89	+ 0·95	2·84	3·30	− 0·46	1·30	Tinnevelly.		
1	5	5	3	8	5	...	...	3	4·6	3·6	+28	72	·864	2·4	3	1·82	+1·18	2·24	1·88	+ 0·36	2·28	2·49	− 0·23	1·04	Madura.		

* Mean of 29 days.

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras, South Central.	Salem	940	28·969	−·019	29·844	29·066	14th	28·888	22nd	·198	83·2	100·9	−0·2	75·9	+0·3	88·4	+0·1	25·0	104·4	8th	69·0	28th	35·4
		Coimbatore	1,348	28·531	−·025	29·821	28·648	14th	28·463	22nd	·185	80·0	98·2	+0·1	74·0	+0·4	86·1	+0·3	24·2	101·9	7th & 9th	66·8	21st	35·1
35	Coorg	Mercara	3,781	26·224	−·003	?	26·305	14th	26·162	26th	·143	71·6	85·0	+0·5	65·8	+1·7	75·4	+1·1	19·2	91·0	4th	62·7	5th & 9th,	28·3
36	Mysore	Chitaldroog	2,405	27·500	?	29·805	27·605	14th	27·443	17th	·162	79·6	97·9	?	72·5	?	85·2	?	25·4	101·2	3 days	66·4	21st	34·8
		Bangalore	3,021	26·927	−·016	29·823	27·025	14th	26·858	22nd	·167	76·1	94·4	+1·2	69·7	+0·5	82·1	+0·9	24·7	97·8	10th & 18th.	65·8	19th	32·0
		Hassan	3,091	26·866	?	29·840	26·960	14th	26·809	22nd	·151	76·2	93·2	?	66·8	?	80·0	?	26·4	97·4	12th	63·1	21st	34·3
		Mysore	2,518	27·415	?	29·836	27·505	14th	27·341	22nd	·164	77·2	95·4	?	70·5	?	83·0	?	24·9	98·9	4th & 18th	64·5	19th	34·4
56	Madras, East Coast, South.	Negapatam	31	29·848	−·022	29·808	29·957	14th	29·770	22nd	·187	86·1	91·9	−0·7	80·1	+1·3	86·0	+0·3	11·8	100·0	26th.	75·9	4th	24·1
		Cuddalore	12	29·865	?	29·806	30·001	14th	29·774	26th	·227	85·5	93·5	?	77·0	?	85·3	?	16·5	99·3	26th	70·7	4th	28·6
		Trichinopoly	255	29·621	−·026	29·807	29·738	14th	29·538	22nd	·200	84·8	102·7	+1·6	78·5	+1·2	90·6	+1·4	24·2	106·2	19th	71·4	26th	34·8
		Madras	22	29·859	−·021	29·811	29·987	14th	29·751	26th	·236	84·9	92·7	−0·2	77·8	+0·6	85·3	+0·2	14·9	98·0	27th	72·5	4th	25·5
55	Madras, East Coast, Central.	Nellore	71	29·781	?	29·786	29·935	14th	29·692	26th	·243	84·7	100·9	?	77·4	?	89·2	?	23·5	107·2	9th	72·1	4th	35·2
		Masulipatam	15	29·856	−·008	29·806	30·001	14th	29·767	26th	·234	85·1	94·4	−0·5	78·2	+0·9	86·3	+0·2	16·2	100·2	9th	73·1	2nd	27·1
54	Madras, Central	Cuddapah	433	29·419	−·014	29·786	29·540	14th	29·355	26th	·185	88·3	105·4	+0·3	80·3	−0·3	92·9	0	25·1	109·8	10th	68·5	19th	41·3
		Kurnool	923	28·919	−·024	29·775	29·038	14th	28·856	17th	·182	85·9	104·6	0	78·6	+0·3	91·6	+0·2	26·0	108·3	10th	72·4	19th	35·9
		Bellary	1,475	28·384	−·015	29·790	28·500	14th	28·319	17th	·181	84·3	103·8	−0·1	76·9	−0·1	90·4	−0·1	26·9	108·2	12th	71·7	25th	36·5
52	Madras, East Coast, North.	Rajahmundry	112	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Cocanada	26	29·853	+·007	29·814	29·996	14th	29·769	26th	·227	84·3	96·1	+0·5	79·0	+0·7	87·6	+0·6	17·1	102·6	29th & 30th,	75·5	2nd	27·1
		Vizagapatam	31	29·839	+·001	29·808	29·997	14th	29·751	26th	·246	84·5	92·6	−0·6	78·8	?	85·7	?	13·8	96·2	29th	72·4	15th	23·8
		Waltair	?			Not recorded.						82·6	88·7	?	78·1	?	83·4	?	10·6	92·2	29th	70·9	15th	21·3
		Gopalpur	21	29·813	?	29·774	29·992	14th	29·718	26th	·274	80·8	87·8	?	77·1	?	82·5	?	10·7	91·3	25th & 26th.	70·6	1st	20·7
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·791	?	?	25·910	14th	25·710	22nd &23rd	·200	74·9	90·7	?	59·2	?	75·0	?	31·5	98·8	30th	48·0	7th	50·8
		Pishin	?			Not recorded.						?	81·9	?	40·2	?	61·1	?	41·7	93·0	20th	23·9	8th	69·1
		Quetta	5,502	24·657	+·036	?	24·771	14th	24·576	6th	·195	61·4	78·6	+5·1	45·1	−1·3	61·9	+1·9	33·5	86·7	20th	34·3	7th	52·4
		Kalat	?			Not recorded.						60·2	79·0	?	38·3	?	58·7	?	40·7	90·4	19th	26·0	7th	64·4
		Chaman	4,311	25·718	?	?	25·797	15th & 21st	25·620	19th	·177	71·0	83·8	?	57·5	?	70·7	?	26·3	94·2	30th	43·1	7th	51·1
30	Punjab	Leh	11,503	19·776	+·062	?	19·906	13th	19·582	7th	·324	43·1	62·0	+4·8	33·5	+2·3	47·7	+3·6	28·5	71·6	30th	27·5	5th & 8th	44·1
		Srinagar	5,204	24·917	?	?	25·060	14th	24·764	6th	·296	54·6	73·9	?	45·4	?	59·7	?	28·5	84·3	13th	38·8	8th	45·5
		Skardu	?	22·947	?	?	23·069	8th	22·749	6th	·320	50·9	64·3	?	43·8	?	54·1	?	20·5	78·0	13th	19·7	2nd	58·3
		Dras	?	20·861	?	?	20·968	13th	20·679	7th	·289	39·1	55·0	?	28·1	?	41·6	?	26·9	67·4	30th	15·1	8th	52·3
		Gilgit	?	25·205	?	?	25·384	8th	24·991	6th	·393	60·1	69·5	?	54·7	?	62·1	?	14·8	81·5	30th	44·1	8th	37·4
		Chitral	?	24·877	?	?	25·000	8 days	24·500	17th	·500	51·3	71·1	?	49·5	?	60·3	?	21·6	84·1	30th	40·0	7th	44·1
		Killa Drosh	?			Not recorded.						66·3	74·8	?	52·2	?	63·5	?	22·6	88·6	20th	41·4	6th	47·2
		Para Chinar	6,000	24·452	?	?	24·563	14th	24·281	6th	·282	62·4	75·4	?	51·2	?	63·4	?	24·2	84·8	30th	39·3	8th	45·5
		Cherat	?	25·760	?	?	25·786	14th	25·544	6th	·242	68·2	80·4	?	62·3	?	71·4	?	18·1	93·4	30th	50·0	6th	43·4
		Murree	6,333	23·853	+·035	?	23·994	14th	23·700	6th	·294	65·1	73·3	+4·9	59·6	+7·6	66·5	+6·3	13·7	84·3	30th	45·9	7th	38·4
		Poo	?			Not recorded.						?	68·9	?	45·8	?	57·4	?	23·1	76·3	12th	38·8	16th	37·5
25	N.-W. Provinces	Simla	7,224	23·134	+·033	?	23·284	14th	23·062	26th	·222	62·4	70·7	+3·9	56·8	+4·3	63·8	+4·1	13·9	77·6	30th	46·3	16th	31·3
		Chakrata	7,022	23·309	+·034	?	23·470	14th	23·224	26th	·246	63·8	73·2	+2·6	56·7	+4·8	65·0	+3·7	16·5	81·3	30th	48·2	17th	33·1
		Mussoorie	6,705	23·544	?	?	23·707	14th	23·444	29th	·263	65·3	75·4	?	59·5	?	67·5	?	15·9	83·8	30th	49·0	16th	34·8
		Ranikhet	6,069	24·113	+·030	?	24·275	14th	24·010	26th	·265	68·1	79·9	+5·4	61·4	+4·4	70·7	+4·9	18·5	88·1	30th	49·5	16th	38·6
		Muktesar	?	22·878	?	?	23·032	14th	22·802	26th	·230	63·5	75·9	?	55·9	?	65·9	?	20·0	84·1	30th	44·8	16th	39·3

I—*continued.*

in India, Burma, etc., in April 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 30th April 1898.	Normal rainfall for period, 1st March to 30th April.	Variation from normal of period, 1st March to 30th April.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
4	...	7	6	...	2	7	3	1	5·4	5·0	+ 8	71	·818	2·3	4	2·27	+1·73	4·96	1·58	+ 3·38	4·96	2·46	+ 2·50	2·40	Salem	Madras, South Central.	34
...	...	4	13	5	2	5	1	...	1·7	3·5	−51	79	·817	4·1	2	2·18	−0·18	0·86	1·71	− 0·85	1·01	2·30	− 1·29	0·56	Coimbatore.		
27	...	1	...	...	...	...	1	1	1·5	3·8	−61	78	·604	5·2	3	4·70	−1·70	2·44	2·72	− 0·28	2·70	3·59	− 0·89	1·22	Mercara	Coorg.	35
1	1	1	...	1	...	10	14	2	7·5	?	?	64	·652	3·1	3	?	?	0·77	1·20	− 0·43	0·77	1·42	− 0·65	0·29	Chitaldroog.	Mysore.	36
1	1	...	2	2	4	13	6	1	6·0	3·5	+71	74	·677	3·3	2	1·18	+0·82	0·57	1·15	− 0·58	0·57	1·69	− 1·12	0·28	Bangalore.		
...	1	3	1	2	2	9	8	4	3·3	?	?	71	·636	4·9	6	?	?	1·82	1·65	+ 0·17	1·82	2·16	− 0·34	0·54	Hassan.		
1	...	1	1	1	2	12	10	2	8·4	?	?	73	·671	4·3	3	?	?	1·05	2·26	− 1·21	1·05	2·93	− 1·88	0·53	Mysore.		
4	...	4	...	8	...	11	3	...	11·4	5·2	+119	74	·917	3·7	0	0·55	−0·55	0	0·35	− 0·35	0	0·89	− 0·89	0	Negapatam	Madras, East Coast, South.	56
...	2	...	1	6	9	9	2	1	2·0	?	?	81	·995	2·8	0	0·60	−0·60	0·08	0·82	− 0·74	0·08	1·19	− 1·11	0·08	Cuddalore.		
9	1	4	1	1	5	2	6	1	4·7	4·0	+17	68	·813	3·5	2	1·27	+0·73	3·51	1·53	+ 1·98	3·51	2·08	+ 1·43	3·27	Trichinopoly.		
...	1	1	1	3	17	7	...	...	7·4	7·9	− 6	76	·916	5·5	0	0·27	−0·27	0	0·62	− 0·62	0	1·01	− 1·01	0	Madras.		
7	...	...	...	11	12	...	...	...	7·9	?	?	76	·895	3·2	0	0·30	−0·30	0·01	0·12	− 0·11	0·01	0·33	− 0·32	0·01	Nellore	Madras, East Coast, Central.	55
...	...	...	...	9	14	6	1	...	8·6	8·8	− 2	78	·949	4·7	0	0·27	−0·27	0	0·15	− 0·15	0	0·27	− 0·27	0	Masulipatam.		
...	...	7	6	10	1	5	1	...	?	?	?	55	·733	2·4	1	0·70	+0·30	4·65	0·38	+ 4·27	4·65	0·44	+ 4·21	4·59	Cuddapah.	Madras, Central.	54
13	1	...	5	1	6	...	4	...	?	?	?	56	·698	2·0	3	1·33	+1·67	0·96	0·65	+ 0·31	2·03	1·19	+ 0·84	0·58	Kurnool.		
11	2	...	1	2	6	1	4	3	5·2	5·2	0	47	·551	3·7	4	1·27	+2·73	1·73	0·58	+ 1·15	1·73	0·80	+ 0·93	1·08	Bellary.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Rajahmundry.	Madras, East Coast, North.	52
...	1	1	2	2	4	12	6	2	7·8	?	?	74	·875	3·4	0	0·50	−0·50	0·08	0·21	− 0·13	0·08	0·74	− 0·66	0·08	Cocanada.		
19	...	...	...	...	...	8	3	...	?	3·9	?	73	·877	4·7	1	0·36	+0·64	0·78	0·49	+ 0·29	0·78	0·88	− 0·10	0·78	Vizagapatam.		
...	...	1	1	2	3	16	7	...	1·6*	?	?	78	·875	4·9	...			No	rain g	auge					Waltair.		
3	1	...	...	1	6	19	...	...	19·4	14·5	+34	89		0·5	2	0·78	+1·22	0·30	0·67	− 0·37	0·30	1·45	− 1·15	0·19	Gopalpur.		
																									XII.—Hill Stations.		
5	21	...	1	...	...	...	1	2	8·5	?	?	23	·201	1·6	0	?	?	0	0·23	− 0·23	1·93	1·38	+ 0·55	0	Sharigh.	Baluchistan	48
					Not	recorded.			?	?	?	?	?	?	...	?	?	...	0·94	...	(a)3·18	2·55	+ 0·63	...	Pishin.		
28	...	...	...	...	1	...	...	1	2·4	4·8	−50	49	·270	2·7	0	3·55	−3·55	0	1·20	− 1·20	3·56	2·90	+ 0·66	0	Quetta.		
...	1	...	6	...	16	4	3	...	?	?	?	38	·201	1·0	0	?	?	0	0·51	− 0·51	2·27	2·06	+ 0·21	0	Kalat.		
1	2	2	4	5	5	4	3	4	9·9	?	?	32	·247	0·8	0	?	?	0	0·42	− 0·42	2·03	1·81	+ 0·22	0	Chaman.		
...	...	...	...	...	1	1	25	3	4·5	?	?	42	·110	4·5	0	?	?	0·14	0·20	− 0·06	0·14	0·44	−0·30	0·08	Leh	Punjab.	30
3	1	1	4	9	4	1	3	4	7·7	?	?	81	·315	3·0	4	?	?	1·28	1·15	+ 0·13	2·04	3·65	−1·61	0·28	Srinagar.		
20	...	3	...	...	...	1	6	...	4·8	?	?	77	·383	5·4	5	?	?	2·35	3·33	− 1·53	2·58	5·40	−2·82	0·96	Skardu.		
26	2	...	...	...	...	...	1	1	3·1	?	?	86	·221	3·7	10	?	?	4·20	?	?	6·43	?	?	1·00	Dras.		
8	2	...	...	1	1	4	13	1	4·1	?	?	52	·260	5·6	6	?	?	1·68	1·18	+ 0·50	3·18	1·47	+ 1·71	0·46	Gilgit.		
25	2	2	...	...	...	...	...	1	4·9	?	?	81	·302	3·0	12	?	?	6·28	?	?	21·53	?	?	1·70	Chitral.		
4	3	5	7	2	...	4	5	...	?	?	?	45	·239	5·9	8	?	?	5·34	?	?	17·46	?	?	1·75	Killa Drosh.		
...	1	4	2	1	2	9	7	4	6·3	?	?	40	·217	2·6	3	?	?	0·99	?	?	7·26	?	?	0·50	Para Chinar.		
1	13	10	...	...	1	...	...	5	17·8	?	?	40	·260	2·5	0	?	?	0·23	2·30	− 2·07	2·00	7·23	− 5·23	0·06	Cherat.		
18	1	...	...	8	2	...	...	1	9·4	8·7	+ 8	33	·200	3·4	2	6·64	−4·64	0·64	3·40	− 2·76	3·76	7·05	− 3·29	0·37	Murree.		
5	1	...	3	5	1	2	11	1	?	?	?	?	?	1·8	1	?	?	0·36	1·72	− 1·36	0·70	5·83	− 5·13	0·36	Poo.*		
4	11	5	1	2	4	3	...	...	5·6	2·9	+93	33	·189	2·2	1	4·09	−3·09	0·89	1·90	− 1·01	1·00	4·14	− 3·14	0·88	Simla.		
8	11	2	...	3	3	1	...	2	12·1	6·1	+98	31	·179	0·8	0	?	?	0·11	1·48	− 1·37	0·28	3·87	− 3·59	0·09	Chakrata	N.-W. Provinces.	25
...	5	2	8	...	...	...	4	11	?	?	?	34	·213	0·5	2	1·10	+0·90	0·24	1·42	− 1·18	0·33	4·00	−3·67	0·12	Mussooree.		
8	2	2	2	1	2	3	3	7	4·3	3·0	+43	42	·277	0·6	2	2·55	−0·55	0·49	1·11	− 0·62	0·53	3·35	− 2·82	0·32	Ranikhet.		
...	1	1	3	2	4	2	4	13	1·6	?	?	36	·199		1	?		0·35	?	?	0·42	?	?	0·35	Muktesar.		

* Mean of 29 days.

(a) For March only.

Table

Abstract of Observations taken at 8 A.M. at 213 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of barometer cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
13	Bengal	Yatung	10,480?			Not recorded.						?	57·7	?	46·0	?	51·9	?	11·7	65·0	27th & 28th.	39·9	13 days	25·1
		Darjeeling	7,409	23·015	+·060	?	23·189	14th	22·869	8th	·320	55·8	63·2	+1·8	?	?	?	?	?	68·2	30th	?	?	?
		Gantok	5,660	24·521	?	?	24·678	14th	24·413	26th	·265	60·9	71·7	?	44·5	?	58·1	?	27·2	81·6	26th	38·8	8th	42·8
	Central India	Mount Abu	3,945	26·035	−·019	?	26·140	14th	25·956	17th	·184	79·6	88·4	+2·8	73·3	+5·0	80·9	+3·9	15·1	92·2	3 days	64·8	3rd	27·4
		Pachmarhi	3,528	26·434	−·009	?	26·533	14th	26·352	26th	·181	84·1	95·9	+3·6	72·6	+3·3	84·3	+3·5	23·3	100·2	28th & 30th.	62·2	11th	38·0
	South India	Wellington	6,200	24·249	−·029	?	24·332	14th	24·178	22nd	·154	67·5	77·9	+2·0	55·7	−0·3	66·8	+0·9	22·2	82·2	3 days	51·2	9th	31·0
	XIII.—Extra India.																							
	Ceylon	Trincomalee	12	29·859?	?	29·797?	29·950	14th	29·799	26th	·151	82·9	91·3	?	78·0	?	84·9	?	13·8	95·0	12th & 19th.	72·0	21st	23·0
		Colombo	40	29·866	−·019	29·832	29·936	14th	29·808	22nd	·128	81·6	89·7	?	76·2	?	83·0	?	13·5	94·0	2nd	73·5	12th	20·5
	Persia	Meshed	3,104			Not recorded.						54·3	Not recorded	?	44·8	?	?	?	?	?	?	35·0	6th	?
		Resht	?	(b) 30·131	?	?	30·554	20th	29·824	7th	·730	54·0	61·3	?	45·1	?	53·2	?	16·2	82·0	14th	36·8	18th	45·2
		Teheran	**	(f) 26·506 25·357	? ?	? ?	26·255 25·560	20th & 21st, 20th & 21st	25·850 25·220	28th & 30th. 30th	·405 ·340	(f) 58·8	(f) 70·5	?	(f) 48·7	?	59·6	?	21·8	82·3	27th	32·8	20th	49·5
		Ispahan	**	24·423 24·797	? ?	? ?	24·640 24·900	15th 14th	24·260 24·560	30th 30th	·380 ·340	57·6	73·1	?	44·8	?	59·0	?	28·3	81·4	27th	34·9	21st	46·5
		Bushire	14	29·905	+·020	29·878	30·045	19th	29·756	27th	·289	73·2	78·9	−2·7	66·3	+0·2	72·6	−1·3	12·6	93·1	10th	51·8	12th	41·3
		Jask	?	29·897	?	29·849	30·016	8th & 24th.	29·804	18th	·212	79·9	88·2	?	73·8	?	81·0	?	14·4	95·8	16th	66·7	7th	29·1
	Arabia	Muscat	20	29·864	?	29·832	29·974	3rd	29·771	18th	·203	84·5	87·4	?	82·3	?	84·9	?	5·1	95·9	19th	78·7	3 days	17·2
		Baghdad	220	29·809	−·039	30·010	30·057	19th	29·461	29th	·596	66·7	85·6	+4·7	57·9	+3·5	71·8	+4·1	27·7	96·1	26th	47·7	19th	48·4
		Aden	94	29·837	−·008	29·864	29·929	15th	29·757	27th	·172	79·9	88·7	−1·9	75·4	−2·2	82·1	−2·1	13·3	96·3	22nd	72·4	3 days	23·9
		Perim	?	29·701	?	?	29·784	15th	29·611	27th	·173	81·3	87·7	?	77·9†	?	82·8†	?	9·8	91·7	21st	75·2	1st & 2nd.	16·5
	Afghanistan	Kabul	?			Not recorded.						55·7	76·0	?	48·0	?	62·0	?	28·0	86·1	30th	36·4	7th	49·7
	Central Asia	Kashgar	?	(a) 25·630	?	?	25·960	10th	25·420	17th	·540	56·1	70·3	?	40·4	?	58·9	?	20·9	90·9	28th	43·3	1st	47·6
	Arabian Sea Islands.	Amini Devi	15																					
		Minicoy	10	29·861	?	29·796	29·940	14th	29·801	27th	·139	85·4	90·1*	?	80·0b	?	85·1	?	10·1	92·6	10th	74·2	7th & 12th.	18·4
	Africa	Zanzibar	73	29·911	?	29·911	29·973	15th	29·850	12th	·123	81·8	88·0	?	79·8	?	83·9	?	8·2	91·0	12th	78·0	30th	13·0

** Aneroid uncorrected.
† Mean of 22 days.
(a) Aneroid.
‡ Mean of 27 days.
(f) " " 28 "
(b) " uncorrected.

NOTE.—When a query is inserted against any reading or in the variation returns for any station, the

1—*concluded.*

in India, Burma, etc., in April 1898—concluded.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 30th April 1898.	Normal rainfall for period, 1st March to 30th April 1898.	Variation from normal of period, 1st March to 30th April 1898.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
Not recorded.									?	?	?	?	?	?	8	?	?	2·77	?	?	3·43	?	?	0·55	Yatung	Bengal.	13
5	2	5	4	3	...	3	6	2	6·8	8·4	−19	88	·397	5·2	9	8·46	+0·54	3·28	4·61	−1·33	3·73	6·26	−2·53	1·42	Darjeeling.		
27	1	...	1	...	1	...	...	...	3·2	?	?	83	·451	?	20	?	?	20·64	10·33	+10·31	23·69	15·38	+8·31	3·04	Gantok.		
1	4	2	1	...	...	4	9	9	9·0	7·7	+17	22	·224	0·7	0	0·09	−0·09	0	0·06	−0·06	0	0·18	−0·18	0	Mount Abu	Central India.	
13	1	...	...	1	3	6	3	3	5·8	5·3	+ 9	35	·410	0·7	1	0·45	+0·55	0·95	0·23	+0·72	0·95	0·55	+0·40	0·38	Pachmarhi.		
13	7	6	1	2	1	...	...	...	3·3	2·9	+14	56	·373	2·6	6	4·50	+1·50	4·02	2·78	+1·24	4·05	5·59	−1·54	1·12	Wellington.	South India.	
																									XIII.—Extra India.		
9	...	1	...	...	1	19	...	...	2·5	?	?	85	·953	2·7	5	?	?	5·45	1·93	+3·52	5·45	3·33	+2·12	2·32	Trincomalee	Ceylon.	
1	...	...	4	16	4	1	3	1	6·6	5·6	+18	85	·908	5·8	17	?	?	21·55	12·32	+9·23	25·78	16·97	+8·81	5·07	Colombo.		
Not recorded.									Not recorded	?	?	65	·278	4·2	4	?	?	1·29	1·93	−0·64	2·75	4·13	−1·38	0·90	Meshed.	Persia.	
Not recorded.									?	?	?	78	·322	?	10	?	?	3·51	?	?	8·92	?	?	0·67	Resht.		
19	...	1	...	...	1	3	2	2	2·91	?	?	?	?	(?) 3·0	4	?	?	1·36	0·76	+0·60	5·38	3·79	+1·59	0·52	Teheran,†		
11	...	...	...	...	...	7	6	6	5·2	?	?	56	·274	1·8	1	...	...	0·10	1·15	−1·05	1·44	2·36	−0·92	0·10	Ispahan.		
...	8	6	1	6	...	...	1	8	10·1	9·1	+11	62	·509	3·4		?	?	0	0·58	−0·58	4·69	1·45	+3·24	0	Bushire.		
...	3	...	4	4	...	...	9	10	10·7	?	?	62	·635	0·8	0	?	?	0	0·06	−0·06	2·23	1·24	+1·09	0	Jask.		
2	3	1	2	2	...	...	7	13	5·6*	?	?	55	·637	0·9	0	?	?	0	0·05	−0·05	1·43	1·14	+0·29	0	Muscat	Arabia.	
2	5	1	...	2	2	...	1	11	5·0	?	?	58	·388	2·2	2	?	?	0·31	1·19	−0·88	1·49	3·12	−1·63	0·21	Baghdad.		
...	...	9	13	...	...	1	...	2	12·6*	14·8	−15	75	·770	2·4	0	?	?	0	0·66	−0·66	0	1·82	−1·82	0	Aden.		
1	...	...	10	18	1	...	...	...	22·0	?	?	76	·814	5·1	0	?	?	0	0·03	−0·03	1·54	0·16	+1·38	0	Perim.		
2	1	2	1	...	...	8	9	...	?	?	?	55	·244	0·7	3	?	?	0·55	2·21	−1·66	4·60	8·15	−3·55	0·15	Kabul		
7	3	3	4	...	...	1	11	1	?	?	?	61	·260	8·1	1	?	?	0·35	0·12	+0·23	0·80	0·37	+0·43	0·35	Kashgar		
2	3	...	1	...	...	...	11	13	6·1	?	?	71	·370	?	2	?	?	0·32	?	?	0·32	?	?	0·20	Amini Devi Minicoy.	Arabian Sea Islands.	
...	1	...	2	...	16	8	3	...	6·4	?	?	80	·366	5·2	3	?	?	1·78	11·84	−10·06	7·88	6·99	−9·11	1·27	Zanzibar	Africa	

data for that station are not utilized in calculating the provincial variations.

* Mean of 29 days. † Wind observations of 26 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Division.	Station.	Elevation of barometer cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·805	29·706	·106	29·806	+·007	29·797	89·9	78·2	11·7	93·4	75·3	18·1	87·2	86·9	82·5	−1·3	76·2	80·4	79·9	78·8
	Rangoon	...	·808	·703	·165	·799	−·007	·767	99·3	76·3	23·0	102·7	71·5	31·2	89·2	93·2	85·2	+0·5	78·4	79·4	80·7	77·8
	Diamond Island	...	·867	·793	·121	·818	−·004	·794	88·6	79·4	9·2	91·8	76·5	15·3	83·1	86·5	82·6	+0·7	75·1	77·6	77·8	76·8
	Cocos Island	111	·801†	·786	·086	·745	P	·788‡	91·9‡	78·5†	13·4	95·0	76·7	19·3	87·9†	88·0‡	83·5‡	+1·2	74·1†	78·8†	78·9‡	77·3
	Akyab	...	·886	·759	·127	·820	−·010	·782	92·4	76·6	15·8	94·9	72·3	22·6	88·8	88·6	83·7	+0·9	78·7	80·0	79·9	77·9
Assam.	Silchar	...	·784	·811	·178	·689	−·031	·762	95·2	71·9	23·3	99·1	64·3	34·8	85·6	93·2	82·9	+5·3	68·7	75·3	76·0	72·3
	Sibsagar	...	·566	·492	·147	·464	−·008	·772	82·0	67·3	14·7	92·3	62·8	29·5	75·1	80·8	73·8	+0·7	67·2	72·0	73·8	71·0
	Dibrubri	...	P	P	P	P	P	P	90·1	72·6	17·5	98·4	65·8	33·0	82·1	88·7	80·2	+2·1	69·4	73·8	74·8	72·7
Bengal and Orissa.	Chittagong	...	·804	·676	·128	·734	−·011	·768	89·8	74·4	15·4	95·2	65·1	30·1	86·7	86·3	81·4	+0·9	78·4	79·1	79·9	77·5
	Narayanganj	...	·822	·687	·135	·754	−·001	·728	94·2	76·4	17·8	97·6	65·5	32·1	86·5	91·2	84·2	+1·9	78·7	77·8	78·7	76·7
	Calcutta (Alipore)	...	·810	·679	·131	·743	−·005	·709	94·4	76·2	18·2	103·4	67·8	35·6	87·5	92·2	84·8	−0·2	73·5	78·2	77·7	76·5
	Saugor Island	...	·812	·689	·123	·745	−·007	·715	89·7	80·0	9·7	91·5	70·7	20·8	86·4	88·8	83·3	−0·2	76·8	80·0	80·4	79·1
	Burdwan	...	·712	·563	·149	·636	−·011	·681	102·3	76·3	26·0	110·7	67·9	42·8	90·0	100·1	87·9	+0·9	78·3	77·6	75·6	75·5
	Berhampore	...	·739	·587	·152	·661	−·013	·675	P	75·8	P	?	68·2	P	89·6	100·3	P	P	68·6	77·0	73·5	73·0
	False Point	...	·828	·708	·120	·766	−·012	·728	83·4	78·1	10·3	86·5	70·6	25·9	86·1	85·5	81·7	−0·2	76·6	80·4	80·3	79·1
	Cuttack	...	·753	·603	·150	·683	−·008	·704	101·4	78·3	23·1	110·7	72·0	38·7	89·0	97·0	87·1	+0·5	75·1	78·4	79·2	77·6
Chota Nagpur.	Hazaribagh	...	27·804	27·691	·113	27·750	−·020	·636	100·3	75·5	24·8	107·1	66·3	40·8	92·9	95·0	87·2	+3·0	68·7	68·4	68·5	65·9
	Patna	...	29·592	29·451	·141	29·520	−·030	·650	103·0	74·9	28·1	110·0	68·5	41·5	92·3	101·6	88·4	+1·9	64·6	72·2	75·0	71·3
	Darbhanga	...	·625	·480	·145	·551	−·018	·666	?	73·5	P	?	66·9	P	88·0	96·9	P	P	69·0	75·1	72·3	72·8
	Allahabad	...	·466	·331	·135	·393	−·026	·645	106·1	74·5	32·0	112·6	66·5	46·1	97·3	105·4	90·5	+2·8	61·5	71·6	73·0	68·7
	Lucknow	...	·405	·277	·128	·339	−·023	·652	107·2	73·6	33·6	113·7	66·3	47·4	97·0	103·9	90·9	+3·6	63·4	72·5	74·6	70·2
Upper Gangetic Plain and Himalayas.	Dehra Dun	...	27·581	27·479	·102	27·518	−·019	·652	95·0	66·2	28·8	102·6	58·5	44·1	85·7	91·7	80·4	+3·3	55·4	63·8	64·7	61·3
	Roorkee	...	28·881	28·762	·119	28·813	−·018	·640	101·0	67·3	33·7	108·7	56·4	52·3	91·4	99·3	84·3	+2·9	57·1	66·6	66·9	63·5
	Meerut	...	29·033	·915	·118	·967	−·024	·648	101·3	69·6	31·7	107·6	62·5	45·1	93·2	100·4	85·7	+3·2	60·6	68·3	68·9	65·9
	Lahore	...	·052	·954	·098	·998	−·040	·650	101·2	70·1	31·1	106·7	61·3	47·4	90·5	100·8	85·9	+6·3	59·3	68·5	71·2	66·3
	Ludhiana	...	28·952	·852	·100	·896	−·022	·652	102·5	71·2	31·3	110·7	62·5	48·2	92·7	100·0	86·7	+5·8	59·1	66·4	67·6	64·4
Indus Valley and N.-W. Rajputana.	Peshawar	...	·702	·604	·098	·648	−·040	·728	92·5	62·6	29·9	105·0	54·2	50·8	84·6	89·8	77·3	+4·2	55·2	65·9	67·0	62·7
	Mooltan	...	29·349	29·240	·109	29·290	−·038	·666	105·6	71·6	34·0	113·4	58·9	54·5	92·5	103·1	88·4	+6·1	58·4	68·4	71·8	66·2
	Jacobabad	...	·579	·455	·124	·512	−·037	·649	109·3	70·8	38·5	115·6	57·9	57·7	97·2	107·4	90·0	+4·0	57·5	73·2	78·0	69·6
	Kurrachee	...	·802	·709	·093	·754	−·038	·734	92·1	73·6	18·5	102·5	63·2	39·3	87·5	88·1	81·0	+1·3	70·2	77·0	77·7	75·0
E. Rajputana, C. India and Gujarat.	Jeypore	...	28·395	28·287	·108	28·336	−·010	·674	105·9	73·8	32·1	111·5	63·8	47·7	96·8	103·9	89·9	+4·8	57·1	67·3	69·0	62·2
	Ajmere	...	·220	·109	·111	·158	−·023	·676	103·5	74·0	29·5	108·0	58·7	49·3	94·5	101·7	89·5	+4·9	59·9	69·5	71·5	67·0
	Oodeypore	...	27·927	27·813	·114	27·870	P	·674	103·2	74·5	28·7	107·8	63·5	44·3	95·9	101·3	88·4	P	59·5§	70·0	70·9	66·8
	Deesa	...	29·340	29·250	·130	29·310	−·013	·713	108·4	73·1	35·3	112·8	64·0	48·8	95·9	106·3	91·0	+3·0	59·2	68·0	68·9	65·4
	Nowgong	...	·033	28·911	·122	28·967	−·024	·648	106·5	73·8	32·7	111·7	66·0	45·7	98·5	106·1	90·4	+3·0	59·4	70·4	71·7	67·2
	Agra	...	·218	29·094	·124	29·147	−·040	·643	105·7	75·7	30·0	110·7	66·9	43·8	96·0	102·5	90·3	+3·4	60·5	70·0	71·0	67·2
Deccan.	Belgaum	...	27·358	27·232	·126	27·298	−·025	·704	95·7	68·2	27·5	101·8	63·5	38·3	85·6	87·5	79·4	+0·2	64·4	69·6	72·6	68·8
	Sholapur	...	28·263	28·105	·158	28·183	−·020	·657	106·0	77·7	28·3	110·2	71·8	38·4	95·5	102·1	90·6	+1·7	64·2	69·6	70·9	68·2
	Poona	...	·036	27·894	·142	27·971	−·018	·690	104·4	70·8	33·6	108·1	64·1	44·0	92·0†	99·3†	86·9†	+2·0	62·0	67·2†	69·2†	66·2
	Akola	...	·899	28·739	·160	28·814	−·019	·658	109·8	78·7	31·1	116·3	68·9	47·4	100·2	108·1	94·6	+4·1	62·9	69·3	70·8	67·7
	Buldana	2,132	27·731	27·597	·134	27·659	−·020	·646	103·7	80·2	23·5	110·6	73·0	37·6	93·9	101·5	92·2	+3·9	59·9	64·8	66·4	63·7

† Mean of 29 days. ‡ Mean of 28 days.

II.

at 87 Stations in India, Burma, etc., in April 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Division.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·879	·950	·928	·919	−·010	91	73	73	79	+ 2	5·9	6·6	6·3	+2·0	...	1	8	13	20	5	2	6	5	S 64° E	N 89° E	40	41	125	116	...	...	Port Blair	Burma Coast and Andaman Islands
·789	·875	·883	·849	+·065	87	64	57	69	+ 3	3·3	4·6	4·0	+0·6	...	1	1	...	10	18	18	11	1	S 25° W	S 25° W	65	58	125	136	...	...	Rangoon	
·817	·835	·837	·830	−·021	81	67	66	71	− 5	4·2	4·2	4·2	+0·8	3	6	1	2	1	1	8	13	25	N 63° W	N 60° W	62	73	249*	187	...	...	Diamond Island	
·789†	·873†	·868‡	·843	−·004	81†	67†	66‡	71	− 3	2·3†	3·0†	2·7	−0·4	...	4	9	8	3	3	8	10	13	N 43° W	N 39° W	21	39		?	Nil	Nil	Cocos Island.	
·797	·911	·905	·871	+·049	87	67	67	74	+ 1	2·8	0·5	1·7	−1·5	...	...	1	3	7	7	15	18	9	S 60° W	S 65° W	52	37	93	96	...	...	Akyab	
·664	·740	·671	·692	−·024	84	61	44	63	−13	5·0	4·0	4·5	−1·0	23	3	...	6	...	2	5	8	13	N 65° W	S 89° E	27	19	127*	80	...	...	Silchar	Assam.
·670	·748	·743	·720	+·046	99	86	71	85	+ 4	3·3	7·1	7·7	+1·1	19	6	18	2	1	5	5	...	3	N 40° E	N 58° E	25	54	136*	70	...	...	Sibsagar	
·682	·727	·681	·697	+·042	85	67	52	68	− 1	4·6	2·8	3·7	+0·2	3	...	13	25	4	7	5	3	...	S 82° E	N 72° E	52	33	212*	209	...	...	Dhubri	
·814	·891	·936	·861	+·065	95	70	75	80	+ 6	5·6	2·8	4·2	+0·1	...	...	3	...	2	11	31	8	5	S 46° W	S 8° W	68	44	216*	365	...	...	Chittagong	Bengal and Orissa.
·802	·888	·816	·819	+·020	88	66	56	70	− 3	5·5	3·6	4·6	+0·4	...	...	1	2	13	35	4	3	2	S 6° E	S 2° E	75	62	212	171	...	...	Narayanganj	
·796	·845	·758	·801	+·010	88	65	51	68	0	2·6	1·6	2·1	−0·6	...	...	1	3	4	22	27	9	...	S 20° W	S 7° W	77	71	161	369	...	...	Calcutta (Alipore).	
·882	·942	·950	·925	−·010	86	75	75	79	0	6·7	4·4	5·6	+0·8	...	...	...	...	15	36	8	1	...	S 5° E	S 14° W	89	78	492	419	...	...	Saugor Island.	
·786	·785	·560	·710	+·058	93	56	31	60	+ 6	0·8	1·9	1·4	−1·2	8	1	2	2	4	13	23	6	1	S 60° W	S 38° W	55	48	85	120	...	...	Burdwan	
·610	·763	·470	·614	−·020	68	55	26	50	− 8	1·0	2·0	1·5	−1·6	3	...	...	7	5	20	11	9	5	S 19° W	S 30° W	50	35	136*	122	...	...	Berhampore	
·899	·961	·964	·941	+·036	93	77	79	83	0	4·4	3·3	3·9	+0·5	...	...	...	...	5	33	20	2	...	S 14° W	S 31° W	87	79	297*	341	...	...	False Point	
·834	·832	·762	·809	+·043	86	61	44	64	+ 3	1·9	2·4	2·2	−0·5	2	1	1	...	5	25	22	4	...	S 20° W	S 19° W	75	55	127	124	...	...	Cuttack	
·257	·397	·359	·371	+·068	41	27	24	31	+ 3	0·2	2·5	1·4	−1·4	2	19	...	3	3	5	7	5	16	N 42° W	N 74° W	40	46	228	216	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·480	·612	·519	·537	+·065	55	41	26	41	0	0·9	0·6	0·8	−1·0	1	1	8	20	2	2	1	16	9	N 24° E	N 32° W	17	26	127*	116	...	...	Patna	
·861	·709	·553	·641	+·069	79	54	33	55	+ 3	0·9	0·5	0·7	−0·3	...	...	1	23	22	2	3	6	3	S 60° E	S 46° E	57	15	129	142	...	...	Darbhanga	
·386	·434	·380	·400	+·016	45	25	17	29	− 2	0·4	0·3	0·4	−1·0	2	4	6	8	2	...	5	15	18	N 48° W	N 54° W	40	35	165*	117	...	...	Allahabad	
·452	·459	·464	·462	+·056	55	27	22	35	+ 1	0·2	0·4	0·3	−1·7	6	6	1	8	5	2	3	24	5	N 82° W	N 52° W	30	40	74*	104	...	...	Lucknow	
·307	·322	·279	·303	−·019	48	26	20	31	− 6	0·8	1·8	1·3	−1·5	4	9	3	1	4	4	7	21	6	N 82° W	N 82° W	42	23	51	54	...	...	Dehra Dun	
·338	·324	·231	·298	−·028	50	23	13	29	− 5	0·2	1·0	0·6	−1·4	13	2	1	2	11	1	3	3	24	N 53° W	N 72° W	23	20	51	78	...	...	Roorkee	Upper Sub-Himalaya.
·415	·362	·291	·356	−·030	58	24	15	32	− 5	0·3	0·6	0·5	−1·5	13	...	...	6	5	1	5	15	15	N 83° W	N 60° W	33	45	66*	60	...	...	Meerut	
·367	·402	·370	·380	−·004	50	29	19	33	− 4	2·0	1·8	1·9	−0·5	3	11	3	3	10	7	4	10	9	N 70° W	N 23° W	13	27	77	77	...	...	Lahore	Indus Valley.
·343	·298	·242	·294	−·118	45	20	13	26	−17	2·4	3·0	2·7	−0·3	15	4	3	...	10	2	7	1	18	N 64° W	N 54° W	18	28	51	54	...	...	Ludhiana	
·349	·407	·381	·379	−·031	62	36	29	42	−10	2·4	4·4	3·4	−1·0	19	11	10	4	1	1	3	2	9	N 4° E	N 8° E	35	25	76*	104	...	...	Peshawar	
·320	·377	·364	·354	−·125	41	25	17	28	−16	0·9	0·9	0·9	−0·7	19	...	4	...	18	3	13	...	3	S 11° E	N 11° W	33	16	25*	55	...	...	Mooltan	
·304	·505	·574	·461	+·098	40	28	24	30	− 2	1·7	2·6	2·2	−0·3	11	2	2	5	10	11	6	3	10	S 4° W	S 65° E	20	13	111*	100	...	...	Jacobabad	
·698	·791	·813	·767	+·035	84	61	62	69	− 1	0·9	0·6	0·8	−0·9	...	...	...	...	...	4	30	25	1	S 62° W	S 69° W	88	81	230*	329	...	...	Karrachee	
·286	·305	·273	·281	−·045	31	17	12	20	− 8	1·1	1·7	1·4	−0·9	...	2	5	2	1	2	16	22	10	S 88° W	N 52° W	57	52	116	124	...	...	Jeypore	
·346	·419	·396	·384	−·020	43	25	29	29	− 6	1·1	1·2	1·2	−0·7	3	2	3	...	4	1	3	29	10	N 87° W	S 86° W	62	55	130	140	...	...	Ajmere	Rajputana, Central India and Gwalior.
·385	·461	·399	·390	‡	39‡	25	20	28	‡	0·6	1·8	1·2	?	8	4	4	5	1	1	6	17	14	N 65° W	?	42	?	118	‡	...	...	Oodeypore	
·386	·417	·407	·383	−·076	40	19	9	23	− 5	0·7	1·4	1·1	−0·6	...	9	1	...	...	2	9	24	15	N 73° W	S 85° W	70	59	195	293	...	...	Deesa	
·320	·323	·319	·337	−·018	39	20	14	24	− 7	0·3	1·2	0·7	−1·5	2	5	2	6	1	1	9	27	7	N 84° W	E 75° W	52	53	51*	79	...	...	Nowgong	
·331	·389	·339	·353	+·005	36	23	16	25	− 3	0·1	1·0	0·6	−0·8	...	...	3	...	6	...	11	...	40	N 58° W	N 78° W	59	52	177*	118	...	...	Agra	
·563	·581	·518	·571	+·051	82	45	50	59	+ 8	1·3	4·9	3·1	+0·3	...	4	4	4	2	8	13	23	7	S 89° W	N 27° W	48	35	313	390	...	...	Belgaum	Deccan.
·437	·404	·369	·404	+·005	46	24	19	29	− 1	0·5	6·3	3·5	0	9	6	8	...	10	3	5	3	16	N 29° W	N 5° E	18	13	184*	213	...	...	Sholapur	
·445	·384†	·341†	·399	+·015	59	24†	19†	34	+ 3	2·0†	4·4†	3·2	+0·7	...	2	2	...	1	...	14	30	9	S 88° W	N 62° W	76	56	328*	224	...	...	Poona	
·403	·385	·356	·379	+·009	38	16	11	21	− 2	0·7	2·7	1·7	−0·3	...	8	8	1	2	3	7	16	18	N 62° W	N 48° W	50	58	151*	199	Nil	Nil	Akola	
·346	·364	·318	·344	−·057	38	16	11	17	− 7	0·5	1·6	1·1	−1·2	1	16	7	1	...	2	...	8	25	N 22° W	N 32° W	59	58	227*	282	...	...	Buldana.	

* Corrected.

‡ Mean of 27 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 87 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—*concluded.*	Khandwa	...	29·779	28·690	·149	28·700	−·028	29·656	109·5	79·6	29·9	114·9	69·6	45·3	99·0	107·8	95·1	+5·2	59·5	68·1	69·5	65·7
	Hoshangabad	...	·798	·647	·151	·718	−·039	·640	108·7	76·7	32·0	113·4	68·2	45·2	98·6	107·0	93·3	+3·7	60·8	70·1	72·3	67·7
	Nagpur	...	·790	·635	·155	·708	−·013	·650	107·0	77·9	29·1	112·2	65·2	47·0	96·1	104·3	92·6	+2·1	62·1	70·1	71·2	67·8
	Do. (Sanitary Commr.'s Office)	...	·802	·654	·148	·722	?	·652	108·8	78·1	30·7	113·9	65·3	48·6	98·3	106·3	92·8	?	64·4	71·1	72·9	69·5
	Jubbulpore	...	·457?	·317?	·140	·382?	?	·612?	105·5	71·3	34·2	110·1	60·8	49·3	96·0	103·7	89·0	+2·7	60·5	69·9	72·9	67·8
	Saugor	...	·019	27·894	·125	27·952	−·017	·632	104·7	77·8	26·9	110·8	72·7	38·1	97·3	102·6	89·7	+2·8	61·3	71·3	73·2	68·6
	Sutna	...	·742	28·611	·132	28·672	−·027	·632	105·1	75·0	30·1	111·1	66·6	44·5	98·4	103·9	90·5	+3·9	58·9	66·6	67·3	64·3
	Raipur	...	·858	·700	·158	·774	−·004	·646	106·8	78·6	28·2	111·0	69·0	42·0	96·1	104·9	93·0	+2·9	62·8	69·9	70·2	67·6
	Hyderabad (Deccan).	...	·171	·024	·127	·100	−·006	·684§	103·2§	76·6§	26·6	106·9	73·6	33·3	93·3§	98·2§	88·7§	+0·6	67·9§	73·4¶	?	?
West Coast.	Bombay	...	29·855	29·732	·123	29·792	−·018	·767	89·2	78·7	10·5	92·2	75·0	17·2	85·3	86·6	83·2	+0·6	74·0	77·7	77·7	76·5
	Ratnagiri	...	·773	·660	·113	·714	−·012	·760	90·7	79·1	11·6	93·8	73·9	19·9	87·4	87·6	84·0	+1·2	74·3	78·2	78·2	76·9
	Karwar	...	·850	·732	·118	·789	−·021	·764	90·5	78·8	11·7	91·8	72·4	19·4	87·1	88·7	84·1	+1·1	74·8	78·1	79·0	77·3
	Cochin	...	·895	·794	·101	·842	−·009	·779	93·2	79·7	13·5	96·6	74·0	22·6	88·3	89·4	85·4	+1·2	76·5	80·0	80·5	79·0
South India.	Salem	...	28·962	28·799	·163	28·889	−·028	·744	100·8	76·0	24·8	104·3	69·1	25·2	89·1	96·8	86·2	+0·1	?	77·7	77·3	?
	Mercara	...	26·232	26·127	·105	26·189	−·012	?	84·9	65·9	19·0	91·0	62·7	28·3	77·6	77·8	73·6	+0·9	63·4	68·5	69·0	67·0
	Chitaldroog	...	27·500	27·359	·141	27·429	−·010	·686	97·9	72·5	25·4	101·3	66·4	34·9	86·8	96·0	84·7	+1·5	64·7	71·7	70·1	68·8
	Bangalore	...	26·930	26·795	·135	26·867	−·012	·704	94·5	69·6	24·9	97·7	65·7	32·0	83·5	91·8	81·4	+1·3	64·0	71·0	68·6	67·9
	Hassan	...	·868	·747	·121	·812	−·007	·719	93·2	66·8	26·4	97·4	63·1	34·3	84·2	89·0	78·9	+1·3	64·3	68·9	68·2	67·1
	Mysore	...	27·414	27·272	·142	27·343	−·010	·718	95·4	70·5	24·9	99·0	64·7	34·3	84·5	91·5	82·0	+1·2	65·9	71·4	68·1	68·5
	Trichinopoly	...	29·626	29·460	·166	29·552	−·027	·732	102·7	78·5	24·2	106·2	71·4	34·8	93·7	100·3	88·8	+1·6	73·7	76·6	76·1	75·5
	Madras	...	·860	·736	·124	·805	−·017	·756	92·9	77·9	15·0	97·8	72·3	25·5	90·0	87·9	84·3	−0·4	?	79·8	80·8	79·1
	Bellary	...	28·391	28·236	·155	28·313	−·022	·685	103·7	76·9	26·8	108·2	71·6	36·6	91·6	99·8	89·1	−0·1	68·5	71·3	72·3	70·7
	Cocanada	...	29·858	29·711	·147	29·782	+·005	·743	96·3	78·9	17·4	102·6	75·5	27·1	89·2	92·9	86·7	+0·4	76·0	78·4	78·7	77·7
	Vizagapatam	...	·843	·719	·124	·778	−·008	·748	92·7	78·9	13·8	96·2	72·2	24·0	89·6	87·9	85·0	−1·0	76·1	79·2	79·7	78·3
Hill Station, Baluchistan.	Quetta	...	24·665	24·585	·080	24·617	+·025	?	79·0	45·1	33·9	86·5	34·1	52·4	70·0	76·6	61·5	+2·0	39·3	52·8	55·5	49·2
Hill Stations, Punjab.	Leh	...	19·778	19·683	·095	19·736	+·049	?	62·2	33·5	28·7	71·6	27·5	44·1	51·3	58·5	48·2	+5·2	30·5	38·8	41·9	37·1
	Srinagar	...	24·926	24·820	·106	24·865	+·011	?	74·3	45·3	29·0	85·3	38·8	46·5	62·9	71·8	59·2	+1·9	44·4	56·2	63·8	54·8
	Murree	...	23·877	23·834	·043	23·847	+·033	?	73·8	59·7	14·1	85·2	45·9	39·3	68·9	70·9	66·0	+7·1	46·3	51·7	53·7	50·6
	Kailang	10,067	20·829	20·745	·084	20·799	?	?	63·9	36·4	27·5	74·3	31·5	42·8	52·8	58·5‡	48·6‡	+8·5	31·9	40·3	42·7	38·3
	Simla (Ridge)	...	23·158	23·109	·049	23·126	+·038	?	71·0	56·8	14·2	78·4	46·3	32·1	65·3	66·9	63·4	+3·6	46·0†	50·2	52·1	49·6
Hill Stations, N.-W.P.	Chakrata	...	·333	·273	·060	·295	+·024	?	73·5	56·9	16·6	81·2	48·4	32·8	70·2	69·6	64·2	+4·5	45·3	50·8	49·8	48·6
	Ranikhet	...	24·134	24·054	·080	24·083	+·020	?	80·2	61·4	18·8	88·2	49·6	38·7	74·2	76·1	69·8	+4·9	50·4	55·9	56·5	54·3
	Muktesar	...	22·903	22·834	·069	22·869	?	?	76·3	55·9	20·4	84·2	44·8	39·4	68·5	71·7	65·0	?	44·5	51·0	53·2	49·6
Hill Station, Nepal.	Katmandu	4,388	25·569	25·487	·082	25·526	?	?	85·6	57·5	28·1	91·8	51·0	40·8	75·7	80·2	70·2	+3·7	55·6	63·0	64·2	60·9
Hill Station, Bengal.	Darjeeling	...	23·032	22·953†	·080	22·992†	+·045	?	63·6	?	?	68·7	?	?	58·1	60·7†	?	?	49·9	55·8	57·1†	54·3
Hill Stations, Central India.	Mount Abu	...	26·058	25·979	·079	26·013	−·015	?	86·7	73·3	15·4	92·4	64·7	27·7	83·3	86·7	80·5	+4·0	54·3	58·8	60·5	57·9
	Pachmarhi	...	·445	26·342	·104	·389	−·008	?	98·1	72·6	23·5	100·5	62·2	38·3	89·4	93·9	85·3	+3·6	58·1	68·0	69·9	66·3
	Chikalda	3,642	·326	·234	·102	·270	−·014	?	95·6	75·5	20·1	100·0	67·1	32·9	87·3	93·5	86·6	+3·4	59·2	61·1	63·5	61·3

† Mean of 28 days. ‡ Mean of 29 days. § Mean of 23 days. ¶ Mean of 21 days.

II—*continued.*

in India, Burma, etc., in April 1898—continued.

Vapour Tension. From minimum.	Vapour Tension. Mean 10 hours.	Vapour Tension. Mean 16 hours.	Vapour Tension. Mean daily.	Vapour Tension. Variation from normal.	Humidity. From minimum.	Humidity. Mean 10 hours.	Humidity. Mean 16 hours.	Humidity. Mean daily.	Humidity. Variation from normal.	Cloud. Mean 10 hours.	Cloud. Mean 16 hours.	Cloud. Mean daily.	Cloud. Variation from normal.	Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Wind Steadiness. Average percentage.	Wind Steadiness. Normal percentage.	Wind Velocity. Mean velocity in miles per diem.	Wind Velocity. Normal.	Rainfall. Total rainfall for the month.	Rainfall. Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%							
·265	·305	·245	·272	−·067	26	16	10	17	− 9	0·1	2·1	1·1	−0·8	2	7	11	...	3	1	2	11	22	N 35° W	N 49° W	53	62	147	148	...	...	Khandwa.	Deccan—*concluded.*
·339	·386	·360	·362	+·005	37	21	15	24	− 4	0·6	2·6	1·6	−0·7	30	1	6	3	5	2	8	3	2	S 9° E	S 89° W	8	30	27	73	...	...	Hoshangabad.	
·370	·417	·352	·380	−·005	39	25	17	27	− 1	1·1	3·9	2·5	−0·5	2	4	5	9	7	11	11	6	5	S 1° E	N 65° W	22	22	155	161	...	...	Nagpur.	
·441	·427	·390	·419	?	46	24	18	29	?	0·8	3·1	2·0	?	2	6	5	9	9	10	13	3	3	S 18° E	?	25	?	58*	?	...	...	Do. (Sanitary Commr.'s Office)	
·401	·411	·425	·412	+·073	51	24	20	32	+ 2	0·5	2·3	1·4	−0·7	3	3	2	...	10	7	11	9	15	S 70° W	N 71° W	33	34	80	79	...	...	Jubbulpore.	
·342	·451	·461	·418	+·128	36	26	22	28	+ 3	0·3	2·2	1·3	−0·1	3	8	7	6	1	3	1	18	13	N 42° W	N 80° W	40	46	133	94	...	...	Saugor.	
·303	·258	·215	·259	−·001	35	14	10	20	− 3	0·2	0·7	0·5	−1·2	3	5	1	3	2	9	3	17	17	N 79° W	N 61° W	45	56	127*	163	...	...	Sutna.	
·371	·385	·281	·346	−·055	38	22	13	24	− 7	1·3	2·6	2·0	−0·5	14	3	4	2	1	3	20	10	3	S 64° W	N 89° W	38	42	160*	158	...	...	Raipur.	
·576§	·575¶	?	?	?	63§	37¶	?	?	?	0·3	3·1	2·0	−0·3	36	...	1	3	5	3	...	12	...	S 40° W	N 58° W	13	2	94*	113	...	...	Hyderabad (Deccan).	
·780	·852	·832	·821	+·005	79	70	66	72	− 2	2·0	0·9	1·5	−0·7	...	4	...	...	2	6	8	22	18	N 85° W	N 57° W	65	55	221	264	...	...	Bombay.	West Coast.
·789	·844	·840	·824	+·021	79	65	64	69	− 1	1·2	1·6	1·4	0	...	2	...	...	...	...	19	23	16	S 89° W	N 76° W	80	62	170	220	...	...	Ratnagiri.	
·811	·845	·863	·839	+·008	82	66	64	71	− 2	2·0	2·7	2·4	−0·1	...	...	...	...	...	...	5	39	16	N 82° W	N 84° W	91	76	123	98	...	...	Karwar.	
·874	·911	·923	·903	+·017	86	68	67	74	− 2	4·2	5·1	4·7	+0·8	5	1	...	...	...	...	1	20	23	N 71° W	N 77° W	84	58	179	152	...	...	Cochin.	
?	·797	·676	?	?	?	59	40	?	?	2·6	4·4	3·5	−0·2	4	...	13	9	6	5	16	6	1	S 24° E	S	18	30	129	110	...	...	Salem.	South India.
·558	·594	·614	·589	+·002	88	63	66	72	− 2	3·8	7·7	5·8	+0·3	38	...	4	1	1	...	2	6	8	N 53° W	N 64° W	18	49	37	96	...	...	Mercara.	
·517	·589	·414	·507	+·027	65	47	25	46	+1	2·6	4·6	3·6	+0·1	...	5	6	11	5	2	5	14	12	N 40° W	N 32° W	18	16	156*	178	...	...	Chitaldroog.	
·534	·618	·433	·528	−·008	74	54	30	53	0	2·3	4·0	3·2	−0·1	1	2	7	16	8	6	11	5	4	S 49° E	S 33° W	25	40	145*	101	...	...	Bangalore.	
·576	·532	·453	·520	−·039	87	46	36	56	− 5	3·8	7·5	5·7	+0·5	...	3	11	8	5	3	10	9	11	N 45° W	N 21° E	12	12	80*	95	...	...	Hassan.	
·584	·607	·401	·531	−·037	78	52	29	53	− 5	4·0	5·5	4·8	+0·3	4	3	7	12	9	6	8	8	3	S 44° E	S 79° E	18	2	202*	189	...	...	Mysore.	
·770	·687	·574	·677	−·037	79	44	30	51	− 4	2·9	3·7	3·3	−0·9	12	4	17	4	3	4	6	10	...	N 34° E	S 57° E	12	18	114	96	...	...	Trichinopoly.	
?	·884	·917	·928	+·058	?	63	70	79	+ 5	4·3	2·7	3·5	+0·5	...	...	...	6	29	16	8	1	...	S 25° E	S 37° E	78	83	179	185	...	...	Madras.	
·595	·513	·456	·521	−·001	65	35	25	42	+ 3	3·0	6·5	4·8	+1·4	5	2	3	13	6	12	...	9	10	S 33° E	S 63° W	10	8	131*	127	...	...	Bellary.	
·864	·826	·792	·827	+·007	87	60	52	66	− 1	1·9	0·8	1·4	−0·3	...	...	2	6	13	16	17	5	1	S 2° W	S 10° W	59	52	190*	186	...		Cocanada.	
·867	·857	·907	·877	+·067	88	61	69	73	+ 7	3·3	4·1	4·0	+1·2	5	...	1	2	1	17	28	6	...	S 31° W	S 45° W	72	68	?	97	...	...	Vizagapatam.	
·186	·224	·223	·211	−·047	61	30	24	38	−12	2·6	3·3	3·0	−0·2	28	3	...	...	1	1	4	6	17	N 63° W	N 81° W	38	34	40*	92	...	...	Quetta.	Hill Station, Baluchistan.
·146	·129	·126	·134	+·024	77	36	27	47	+ 3	4·7	6·4	5·6	−0·6	...	...	...	...	...	1	8	45	6	S 87° W	S 62° W	92	25	107	70	...	...	Leh.	Hill Stations, Punjab.
·281	·381	·516	·393	+·065	96	67	65	76	+ 5	3·0	4·3	3·7	−0·6	11	13	12	2	1	1	1	8	11	N 1° W	N 5° W	45	12	140*	96	...	...	Srinagar.	
·178	·208	·238	·208	−·019	36	30	33	33	−14	3·2	4·7	4·0	−1·2	30	3	...	...	8	13	1	...	4	S 9° E	S 29° E	23	21	225*	223	...	...	Murree.	
·145	·146	·138‡	·142	−·011	67	37	30‡	45	−16	4·0	6·5	5·3	−0·4	...	...	1	...	11	6	22	17	3	S 45° W	S 63° W	62	73	70	50	1·22	0·58	Kailang.	
·201†	·208	·218	·211	−·017	44†	34	31	37	− 7	2·6	3·1	2·9	−1·2	4	17	8	2	1	8	11	5	4	N 39° W	S 67° W	20	28	135	138	...	...	Simla (Ridge).	
·196	·172	·159	·172	−·048	41	25	23	30	−13	0·9	2·3	1·6	−1·9	3	2	1	...	7	45	2	...	...	S 5° E	S 64° W	82	24	297	156	...	...	Chakrata.	Hill Stations, N.-W. P.
·258	·261	·248	·256	−·009	48	32	29	36	− 8	0·6	1·4	1·0	−2·2	3	3	3	1	3	8	12	23	4	S 70° W	S 85° W	52	43	119*	89	...	...	Ranikhet.	
·175	·195	·216	·195	?	41	29	29	33	?	1·6	2·6	2·1	?	...	1	6	5	6	6	6	4	26	N 55° W	?	27	?	39*	?	...	...	Muktesar.	
·428	·436	·420	·428	+·055	89	50	42	60	0	2·1	3·6	2·9	−1·4	...	...	1	18	3	2	3	28	7	S 87° W	N 86° W	20	44	28	36	3·06	1·16	Katmandu.	Hill Station, Nepal.
?	·429†	·425†	?	?	?	87	81†	?	?	?	8·2‖	?	?	4	1	5	6	3	...	9	21	9	N 84° W	S 71° W	38	44	166	206	...	...	Darjeeling.	Hill Station, Bengal.
·205	·218	·226	·216	−·038	25	19	18	21	− 7	0·7	1·9	1·3	−0·6	...	2	5	...	1	...	17	21	14	N 86° W	S 87° W	64	56	218*	193	...	...	Mount Abu.	Hill Stations, Central India.
·324	·443	·458	·408	+·160	40	32	29	34	+ 8	0·7	3·3	2·0	−0·2	26	12	...	1	...	3	5	12	1	N 67° W	N 82° W	27	43	109*	138	...	...	Pachmarhi.	
·319	·238	·241	·266	−·012	36	19	16	23	− 3	0·7	2·8	1·8	−0·8	23	11	1	...	2	4	3	1	15	N 38° W	N 47° W	31	40	226*	194	0·45	0·40	Chikalda.	

* Corrected. ‖ Mean of 24 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 87 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Hill Station, South India.	Wellington	...	24·261	24·181	·080	24·221	−·018	?	77·7	55·7	22·0	82·4	51·8	31·1	73·5	72·4	65·4	+0·6	[illegible]	59·6	60·5	57·1
Extra India.	Muscat	...	29·873	29·789‡	·084	29·831	−·003	29·799	89·6	82·3	5·3	96·1	76·7	17·4	86·3	86·7‡	84·6‡	+1·9	69·6‡	72·1	74·5‡	71·4
	Aden	...	·857	·740	·117	·799	+·006	·815	88·9	75·4	13·5	96·3	72·3	24·0	83·0	86·3	81·7	−1·1	68·8	72·3	72·2	71·8
	Perim	...	·712	·589	·123	·641	+·011	?	87·8	77·98	9·9	91·7	75·2	16·5	84·5	84·9	82·25	−0·9	72·5	76·7	76·5	75·2
	Minicoy	...	·871	·772	·099	·815	?	·750	90·0	80·0†	10·0	92·7	74·2	18·5	87·8	87·8	84·5	?	?	72·8	73·3	?
	Zanzibar	...	·923	·804	·119	·864	−·021	·862	83·0	79·8	3·2	91·0	78·0	13·0	83·7	87·2	83·7	+3·2	75·3	77·5	77·7	76·3
	Port Victoria (Seychelles).	15	·931	·848	·083	·890	−·016	·828	86·4	79·2	7·2	88·1	70·2	11·9	84·8	86·0	82·7	+2·0	74·4	77·8	76·0	76·7
	Mauritius	181	?	?	?	·801	−·035	·929	?	?	?	89·4	65·2	24·2	?	?	77·4	+1·4	?	?	?	?

† Uncorrected. ‡ Mean of 29 days. § Mean of 22 days.

II—*concluded.*

in India, Burma, etc., in April 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from										Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·362	·345	·406	·371	−·024	81	43	53	59	−5	3·5	5·3	4·4	−0·3	2	7	13	8	24	5	1	...	...	S 79° E	S 58° E	57	61	70	64	...	...	Wellington	Hill Station, South India.
·445‡	·642	·694‡	·594	−·025	41‡	52	55‡	49	−7	1·8	1·4	1·6	+0·5	...	2	1	8	10	...	...	4	34	N 32° W	N 8° W	39	47	130	103	...	...	Muscat	Extra India.
·620	·735	·607	·654	−·098	71	66	50	62	−6	1·6	1·1	1·4	−0·9	...	1	10	37	8	2	2	...	...	S 89° E	N 86° E	80	62	405	363	...	...	Aden	
·726§	·816	·801	·781	−·016	76§	69	67	71	+1	3·8	2·6	3·2	+1·5	1	...	...	11	47	1	...	...	...	S 52° E	S 62° E	94	55	527	417	...	...	Perim	
?	·863	·843	?	?	?	66	64	?	?	?	?	?	?	...	8	...	2	1	...	...	17	32	N 51° W	?	80	?	146*	?	...	...	Minicoy	
·818	·864	·822	·835	−·012	80	74	64	73	−8	5·0	4·8	4·9	−0·8	...	2	2	2	12	31	8	3	...	S 4° E	S 5° E	70	81	173*	174	...	...	Zanzibar	
·790	·861	·851	·834	+·013	79	72	68	73	−4	4·3	4·5	4·4	−0·7	7	6	5	4	2	3	2	9	22	N 42° W	S 69° E	43	10	115	?	2·04	0·83	Port Victoria (Seychelles).	
?	?	?	·722	?	?	?	?	78	0	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	336	257	4·82	1·68	Mauritius	

G. I. C. P. O.—No. 22 Meteo.—6-8-98.—385.

* Corrected.

LITHO. BY J.H.MUNDLE.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2	miles per hour	...	one	feather	added	to	the	wind	arrow
,, ,,	2 to 5	,, ,, ,,	...	two	feathers	,,	,,	,,	,,
,, ,,	5 to 10	,, ,, ,,	...	three	,,	,,	,,	,,	,,
,, ,,	10 to 20	,, ,, ,,	...	four	,,	,,	,,	,,	,,
	over 20	,, ,, ,,	...	five	,,	,,	,,	,,	,,

LITHO. BY J.N. MUNDLE.

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

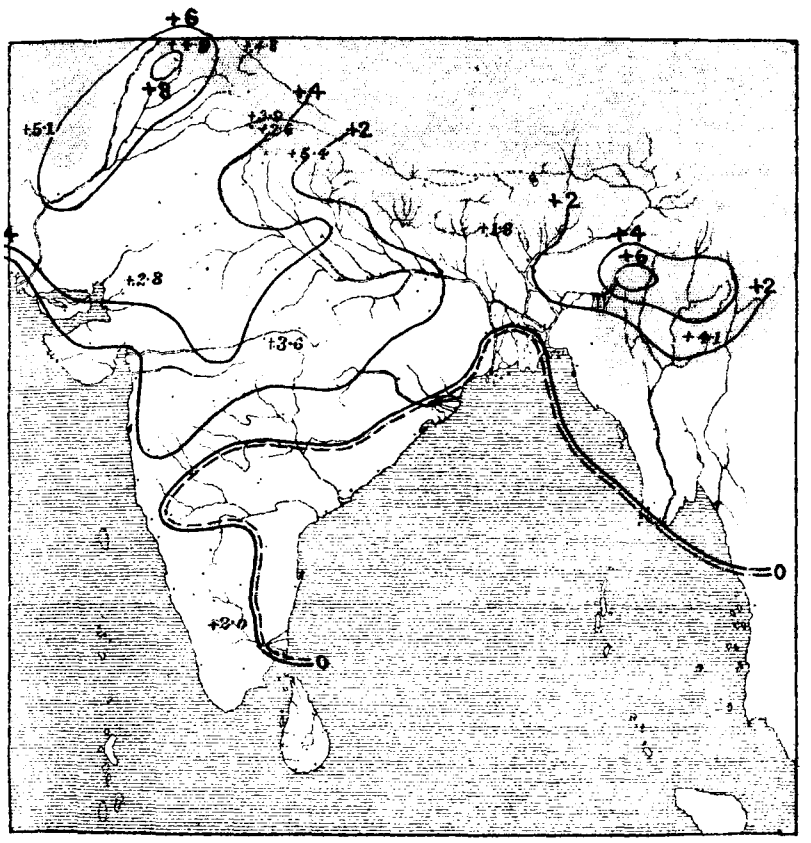
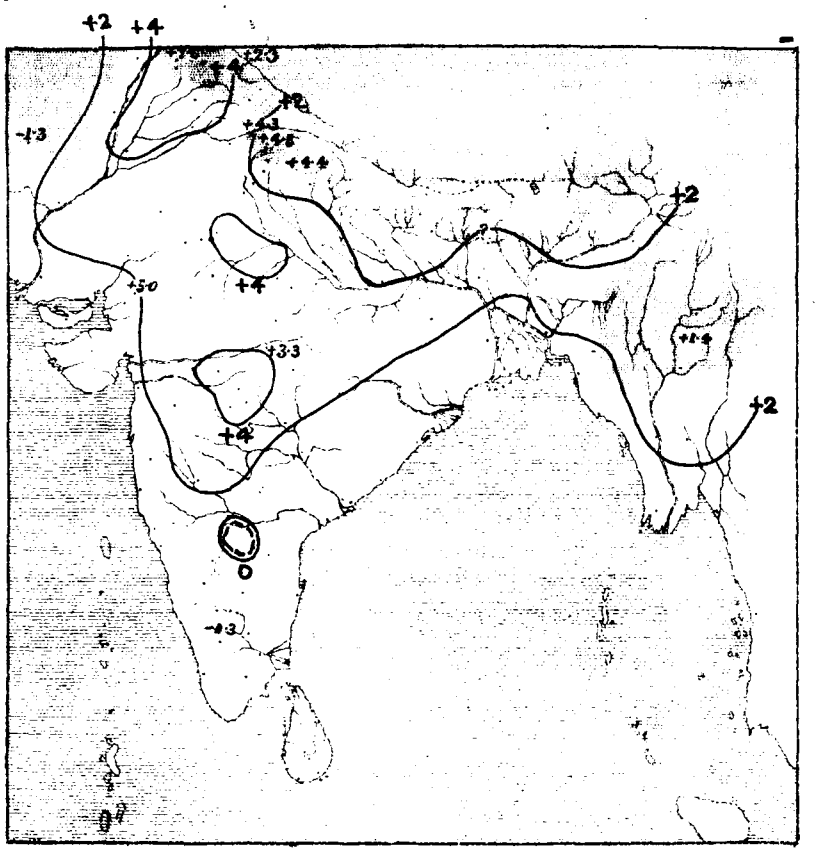


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

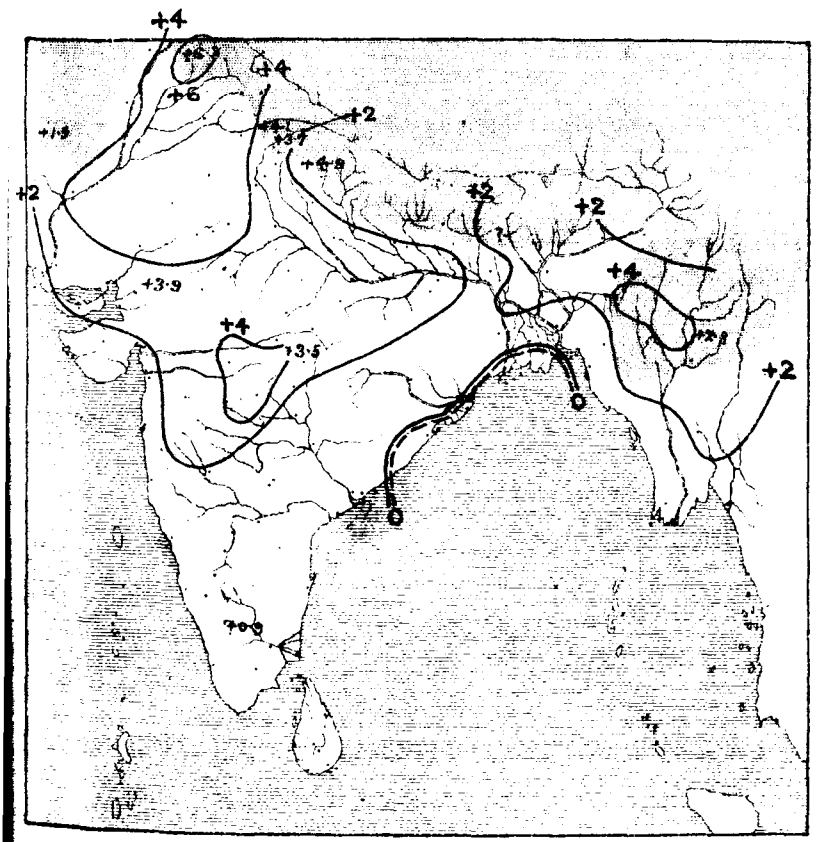
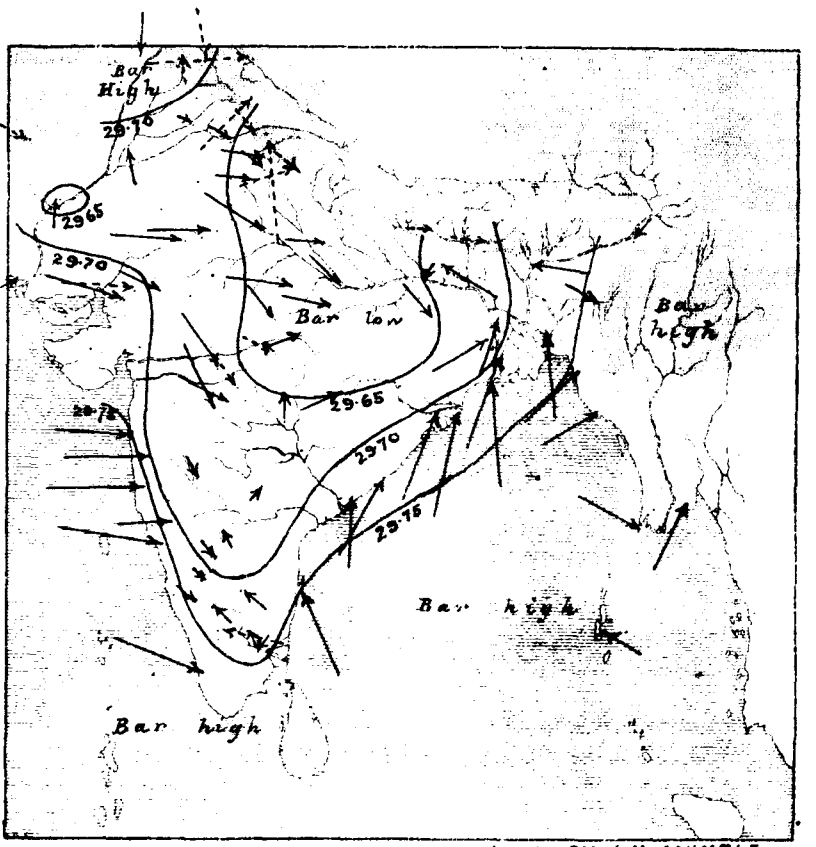


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF APRIL 1898.



LITHO. BY J. N. MUNDLE

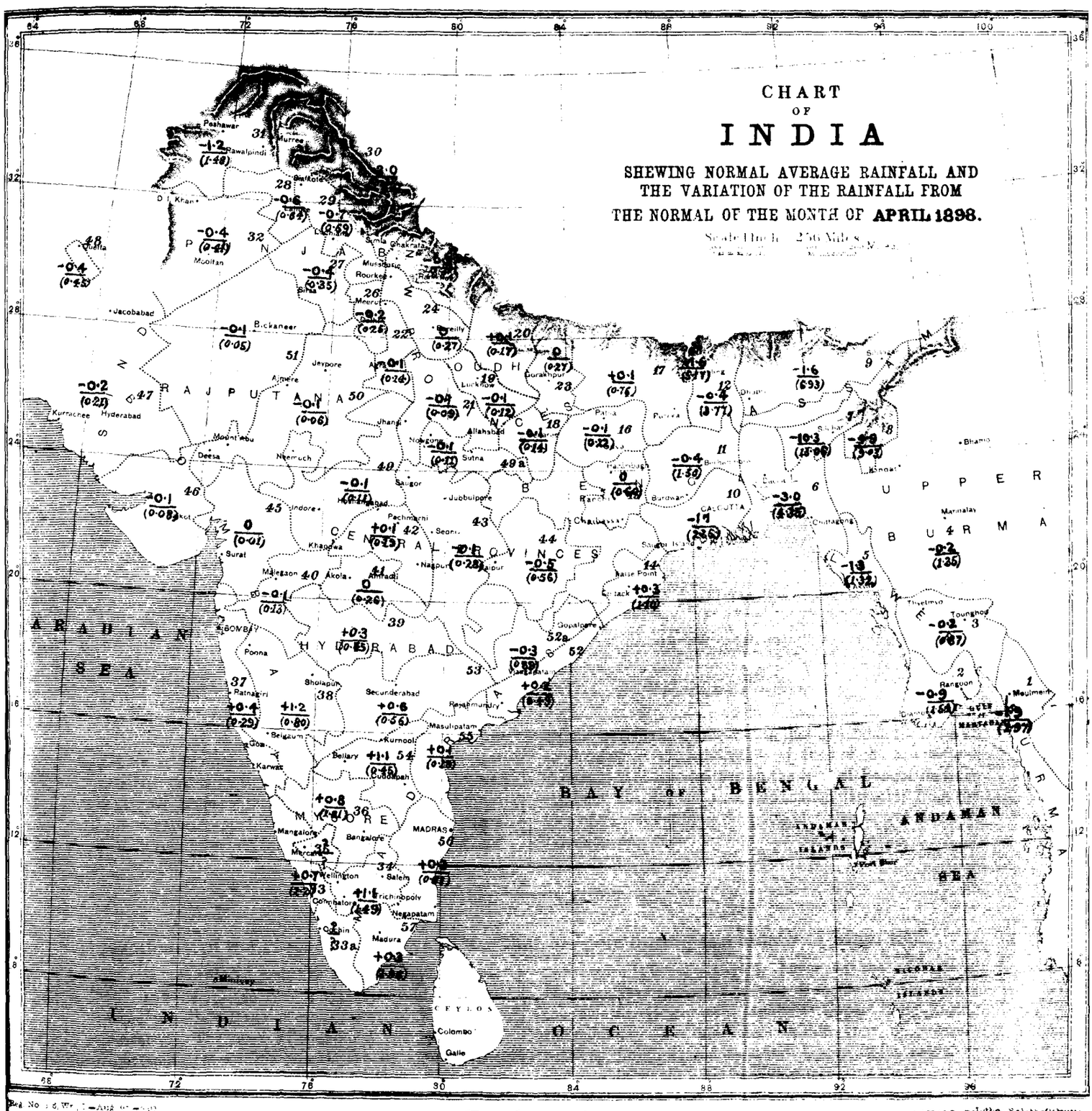
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of ⅕th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North, Punjab
32. West do.
33. Malabar
33a. Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a. Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do. do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

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GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, MAY, 1898.

INTRODUCTION.

THIS review of the weather in India during the month of May 1898 is based on observations taken daily at 8 A.M. at 213 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 86 stations. In the rainfall summary the rainfall data of the meteorological observatories and the weekly rainfall telegrams received during the month from District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the publication of the review, are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of May, 1898.

May is usually the last month of the hot weather season in India, and completes the temperature and pressure conditions essential to the establishment of the south-west monsoon. The area of maximum temperature at the commencement of the month usually includes the Central Provinces, Berar and the southern districts of the North-Western Provinces. As temperature in May generally increases more rapidly in North-Western India than elsewhere, the area of maximum temperature (or the thermal focus as it has been termed) is usually transferred to Sind, the South-West Punjab and West Rajputana before the third week of the month. That area generally continues to be the area of maximum temperature in India during the rains (*i.e.*, until the third or fourth week of September). The maximum temperature of the year in India is usually observed in that area in the last week of May, or the first week of June.

Pressure is usually slightly lower on the average in Northern than in Southern India at the commencement of the month. It decreases rapidly in Upper India during the month, and the total range or difference of pressure between the Equatorial Belt and Upper India increases and establishes the baric gradients necessary for the extension of the south-east trade winds across the Equator and their continuance northwards into India as south-west monsoon winds.

This change takes place, it should be remembered, not by the concentration and intensification of the indraught to the hot area in Upper India, but by the advance of a vast mass of humid air impelled northwards by its own momentum and energy, and by pressure "*a tergo*".

Usually one or more advances of strongish humid winds, probably from the Equatorial Belt, occur in May, and give moderate to heavy rain to Ceylon, Malabar and

Tenasserim, but the great permanent advance, which forms the setting in of the south-west monsoon proper, does not generally commence until the end of May or beginning of June.

Over the whole of North-Western, Central and Northern India (with the exception of Bengal and Assam), the air in May is very dry, the temperature excessive, and the skies clouded with dust raised by the strong hot land winds which usually prevail during the day hours at this period. The heat is occasionally mitigated for brief intervals by thunderstorms or duststorms. These hot weather storms occur during periods of slight barometric disturbance, and occasionally give very heavy rain, chiefly in Bengal and Assam, and in and near the hills in Bihar, the North-Western Provinces and the Punjab. Hence Assam and Bengal (more especially the northern and eastern districts) usually receive a large amount of rain, the average fall of the month in Bengal and Assam ranging from 3 inches in West Bengal to 51 inches at Cherra Poonjee in the Khasia Hills, and averaging 7 inches for the whole area.

At the commencement of the month pressure was in general defect by moderate amounts and temperature was more or less considerably above the normal in Northern and Central India and the Deccan. A hot weather depression lay over Upper Sind and the South-West Punjab on the 1st. It passed eastwards through the South and Central Punjab on the 3rd, and disappeared during the next 24 hours. Weather was showery in Lower Burma, Travancore, Malabar, Mysore and South Madras from the 1st to the 5th. The following gives the variation data of the mean daily temperature from the normal in India from the 1st to the 5th :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	1st May.	2nd May.	3rd May.	4th May.	5th May.
	°	°	°	°	°
Baluchistan (Quetta)	+4·3	+6·0	+0·7	−0·6	+2·4
Punjab	+6·5	+7·1	+8·8	+4·4	+3·9
Sind	+2·0	+2·8	+5·1	+0·9	+2·0
Rajputana	+7·3	+5·3	+7·4	+4·8	+2·6
North-Western Provinces and Oudh.	+6·5	+5·5	+6·2	+6·3	+4·8
Central India and Gujarat	+5·3	+5·2	+5·2	+4·0	+3·6
Bihar	+5·4	+4·7	+5·7	+5·5	+4·4
Chota Nagpur	+3·7	+3·1	+6·5	+7·0	+6·9
Bengal	+4·6	+4·8	+4·7	+4·8	+3·5
Assam	+6·3	+5·4	+2·7	+3·2	+2·8
Central Provinces	+4·0	+6·5	+6·2	+3·9	+3·0
Berar	+8·5	+9·8	+6·8	+6·2	+3·4
Bombay Deccan	+4·0	+1·6	+1·3	+2·9	+0·2
Madras Deccan	+1·9	−0·9	+0·6	+0·9	−1·6
Bombay Coast	+1·9	+1·0	+1·1	+1·3	−0·6
Madras Coast	+1·0	+0·5	+2·3	+1·4	+2·2
Burma	+2·8	+3·2	+2·8	+2·4	+2·0

A striking feature of the period was the persistent high and excessive temperature in Cachar.

At this time moderate to strong west south-westerly winds were blowing in the south of the Bay and were accompanied with frequent squalls and much rain.

Winds were light and unsteady in the centre of the Bay. These conditions were strongly marked on the 3rd and 4th. The squally weather extended north-eastwards up the Andaman Sea as far as Lat. 12° or 13° N. on the morning of the 5th, and a shallow depression, the centre of which was to the east-north-east of Port Blair, lay over that sea at 8 A.M.

It concentrated and intensified considerably during the next 48 hours and marched north-westwards. The centre was in about Lat. 16° N. and Long. 92° E. at 8 A.M. of the 6th, and in about Lat. 18½° N. and Long. 91° E. at noon of the 7th. The S.S. *Kohinur* passed through the storm area on that day. The data show that the storm was of small extent, probably not more than 100 to 150 miles in diameter. The barometer on board the *Kohinur* fell to 29·10" (corrected), and that vessel experienced for two and a half hours winds of hurricane force. The observations are not sufficient to give the track of the storm on the evening of the 7th and on the 8th. So far as can be judged the centre recurved rapidly and the storm filled up as it approached the Arakan Coast (probably north of Akyab) and passed across the Arakan hills as a diffused depression into Upper Burma.

The storm was hence short-lived and of small extent throughout, and was of considerable intensity on the 7th. It gave a general and moderate to heavy burst of rain from the 6th to the 10th or 11th to Burma which reduced temperature largely below the normal. The following

data show the effect of the storm in reducing temperature in that area :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	5th May.	6th May.	7th May.	8th May.	9th May.
	°	°	°	°	°
Lower Burma	−0·6	−0·9	−5·1	−4·5	−2·2
Central Burma	+4·6	+1·2	−10·6	−6·7	−5·4
Upper Burma	+3·4	−0·7	−5·0	−8·1	−8·0

Temperature was excessive during the period from the 5th to the 9th over the whole of Northern and Central India and parts of the Deccan. The excess was, on the whole, greatest and most pronounced in Upper India, as is shown by the following data :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	5th May.	6th May.	7th May.	8th May.	9th May.
	°	°	°	°	°
Baluchistan (Quetta)	+2·3	+2·2	+3·7	+3·7	−1·0
Punjab	+3·9	+6·7	+5·4	+9·0	+7·6
Sind and Rajputana	+2·3	+4·7	+5·0	+4·6	+2·9
North-Western Provinces and Oudh	+4·8	+4·3	+4·3	+2·9	+3·8
Bengal	+3·5	+2·3	+3·1	+1·3	+0·7
Bihar	+4·4	+2·6	−1·0	−2·7	−0·9
Chota Nagpur	+6·9	+5·6	+1·1	−3·1	+1·9
Madras Deccan	−1·6	−0·9	+0·4	−1·1	−1·1
Central Provinces and Berar	+2·9	+5·1	+3·6	+3·7	+2·7
Bombay Deccan	+0·2	+0·7	+1·0	−2·3	−2·1

The highest day temperatures of the month were recorded during this period at the majority of stations in the Punjab, and a noteworthy feature of the period was the great dryness of the air in the interior of India. The following gives the lowest humidities recorded during this period :—

Station.	Date.	Humidity at 4 P.M.
		%
Akola	5th	5
Meerut	"	8
Raipur	6th	4
Akola	"	4
Jubbulpore	"	6
Jeypore	"	6
Nowgong	6th	6
Raipur	7th	2
Satna	"	4
Akola	"	5
Nowgong	"	6
Jubbulpore	"	6

An interesting feature of the period was the high temperature at the Madras coast stations, due to the prevalence of dry land (north-westerly) winds of indraught to the depression in the Bay. The following gives data in illustration :—

Station.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	5th May.	6th May.	7th May.	8th May.	9th May.	10th May.
	°	°	°	°	°	°
Cocanada	+2·7	+1·7	+5·3	+3·8	+0·7	+5·8
Masulipatam	+1·6	+2·6	+4·3	+6·6	+9·8	+10·2
Madras	−0·8	+3·1	+5·2	+8·0	+7·2	+8·7
Negapatam	+5·1	+5·9	−0·8	+5·2	+5·9	+7·3

Very high day temperatures were registered at these stations,—the highest of the month. The following gives the absolute maximum temperatures of the month at these stations and the dates of their occurrence :—

Station.	Date.	Highest maximum temperature recorded in May 1898.
		°
Cocanada	10th	111·1
Masulipatam	"	115·7
Madras	"	110·0
Negapatam	15th	108·5

Showery weather extended into North-Eastern India on the 6th, and continued until the 11th or 12th. Temperature was hence largely reduced and varied irregularly from the normal during the period from the 6th to the 10th, but rose rapidly on the 11th and 12th in that area.

Weather was disturbed in Baluchistan and Upper India (including the Punjab, Kashmir, Rajputana and the western districts of the North-Western Provinces) from the 10th to the 16th. Two hot weather depressions formed in Upper Sind and the South-West Punjab during the period and passed eastwards to the foot of the hills in the South-East Punjab.

Series of thunderstorms and duststorms occurred daily in Upper India and gave unusually frequent and moderately heavy rain during this period. The weather was very disturbed and showery in the hills from the 12th to the 16th, and several feet of snow fell on the higher ranges of Chitral and of the Kashmir and Punjab Himalayas. The precipitation was followed by a large fall of temperature in North-Western India, and temperature was largely below the normal in that area from the 12th to the 16th, as is shown by the following data :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	12th May.	13th May.	14th May.	15th May.	16th May.
	°	°	°	°	°
Baluchistan (Quetta)	—1·7	—9·0	+2·5	—4·8	—7·0
Punjab	—0·3	—9·7	—9·5	—6·9	—9·3
Sind and Rajputana	—2·6	—5·7	—6·5	—5·0	—4·7
North-Western Provinces and Oudh.	—0·1	—5·0	—3·7	—3·0	—0·9
Central India and Gujarat	—1·4	—3·4	—3·8	—3·3	—1·7
Central Provinces and Berar	+0·2	—1·1	—2·9	—3·5	—1·8

Temperature was throughout the period in defect in Burma, and in moderate to considerable excess in Assam, Bengal, Bihar, Chota Nagpur and Madras, as is shown below :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	12th May.	13th May.	14th May.	15th May.	16th May.
	°	°	°	°	°
Burma	—1·0	—0·2	—2·4	—2·7	—3·2
Assam	+0·4	+0·4	+3·1	+5·7	+4·6
Bengal	+0·1	+1·7	+0·7	+3·6	+4·3
Bihar	+2·1	+2·5	+1·5	+1·6	+2·2
Chota Nagpur	+1·1	+4·8	+1·0	+1·2	+2·1
Madras	+2·9	+2·5	+3·1	+2·4	+0·8

Pressure was unusually low and in large local defect in the submontane districts of Bihar and North Bengal on the 16th, 17th and 18th, and strong dry hot westerly winds prevailed in the Gangetic Plain on these days.

The following gives data showing the greatest excess of temperature due to these conditions in North-Eastern India :—

Date.	Station.	Variation from normal of actual temperature of 24 hours preceding 8 A.M. of date.		
		Maximum.	Minimum.	Mean.
		°	°	°
16th	Dhubri	+8·4	+3·9	+6·2
	Mymensingh	+8·8	+3·2	+6·0
17th	Bogra	+9·0	+4·1	+6·6
	Balasore	+9·4	+2·4	+5·9
18th	Dhubri	+12·0	+1·6	+6·8
	Barisal	+8·6	+4·7	+6·7
	Jessore	+8·8	+2·9	+5·9
	Mymensingh	+8·4	+3·4	+5·9

A hot weather depression formed in Upper Sind on the 19th, passed eastwards through Rajputana on the 21st and filled up on the 22nd. Thunderstorms gave light showers in the North Punjab and the Punjab hills on the 20th. The temperature conditions established in Upper India during the second and third weeks of the month held steadily until the 22nd or 23rd when temperature increased rapidly, and was again in general excess on the 24th and 25th. The following gives variation data for North-Western and Central India from the 17th to the 23rd :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	17th May.	18th May.	19th May.	20th May.	21st May.	22nd May.	23rd May.
	°	°	°	°	°	°	°
Baluchistan (Quetta)	—3·8	—5·5	—4·2	—6·0	—5·5	—0·7	+1·9
Punjab	—9·0	—6·2	—6·6	—5·7	—8·9	—5·0	—2·4
Sind and Rajputana	—4·6	—4·3	—5·6	—3·1	—3·6	+1·0	+3·0
North-Western Provinces and Oudh.	—2·0	—1·3	—2·3	—3·7	—4·2	—3·6	—1·3
Central India and Gujarat.	—2·1	—2·6	—3·8	—3·0	—1·7	—0·2	+2·5

Temperature was steadily in excess during this period in North-Eastern India, as is shown below :—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	17th May.	18th May.	19th May.	20th May.	21st May.	22nd May.	23rd May.
	°	°	°	°	°	°	°
Assam Surma	—5·7	+3·8	+4·0	+6·1	+6·6	+2·0	+1·7
Bengal	+4·3	+4·3	+5·4	+5·0	+4·3	+2·6	+2·6
Bihar	+2·7	+0·2	+2·7	+2·9	+2·0	+1·7	+2·4
Chota Nagpur	+2·4	+1·4	+2·2	+3·2	+1·5	+0·7	+3·3
Orissa	+4·0	+4·4	+2·5	+2·7	+3·1	+1·1	+1·7

The pressure changes of the 19th and 20th gave rise on the 21st to a low pressure area in the submontane districts of Bihar which filled up on the 23rd. Very dry hot westerly winds set in over the Gangetic Plain. The following gives the lowest humidities recorded at this time in West Bengal, Bihar and Chota Nagpur :—

Date.	Station.	Humidity at 4 P.M.
		%
21st	Hazaribagh	12
	Patna	15
22nd	Burdwan	13
	Berhampore	14
	Hazaribagh	14
	Darbhanga	16
23rd	Hazaribagh	13
	Berhampore	15

Weather was more or less showery in South India and Burma during the period from the 19th to the 24th.

The pressure changes were large in North-Eastern India on the 23rd and 24th, and steepish gradients for south-easterly and easterly winds were established in Bengal for some days. Strong winds blew across the Bengal Coast and series of thunderstorms gave daily rain over Bengal from the 25th to the 30th. The showery weather extended into Bihar and the North-Western Provinces on the 29th. Weather was also disturbed during this period in Southern India and Lower Burma, and moderate rain was received from thunderstorms.

The variations of the temperature conditions from the normal during this period were less marked than in the preceding three weeks. Temperature was, as a rule, in moderate to considerable excess in North-Western and Central India and the Deccan, and below it in North-Eastern India and the Madras coast districts. The following gives comparative data for this period :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	23rd May.	25th May.	27th May.	29th May.	31st May.
	°	°	°	°	°
Baluchistan (Quetta)	+1·9	—0·5	+7·1	+1·8	+1·8
Punjab	—2·4	+0·9	+3·9	+0·1	+3·5
Sind	+1·2	+0·6	+0·3	—0·8	+2·9
Rajputana	+2·6	+5·9	+4·1	+4·4	+6·0
North-Western Provinces and Oudh.	—1·3	+1·9	+3·1	—0·5	—2·5
Central India and Gujarat	+2·5	+2·3	+1·9	+2·4	+2·7
Bihar	+2·4	+1·9	—1·7	—4·4	—9·4
Chota Nagpur	+3·3	+7·3	+0·5	—1·0	—2·3
Bengal	+2·6	—0·4	—3·1	—1·8	—3·3
Assam	+0·6	—4·8	—4·0	—0·6	—2·5
Central Provinces	+2·6	+1·7	+2·5	+1·4	+4·9
Berar	+4·6	+4·3	+3·8	+5·6	+5·5
Bombay Deccan	+4·7	+1·7	+1·5	+3·6	+1·6
Madras Deccan	+2·3	+1·9	+0·9	+1·7	+0·1
Bombay Coast	+1·0	+1·3	+1·4	+1·9	+1·3
Madras Coast	—2·1	—3·1	—3·8	—3·9	—4·8
Burma	—1·8	—0·5	+0·3	+0·8	+2·0

Pressure.—The mean pressure of the Indian land area was ·009 inch below the normal. Pressure was, relatively to the general condition, in defect in North-Eastern India and Burma and also in the Carnatic. The deficiency was small in amount except in Lower Burma, Tenasserim and the Andaman Sea where it ranged between ·02″ and ·038″. Pressure was in excess over the remainder of India, the excess, relatively to the general condition, being slightly greater than ·02″ in Lower Sind, Kathiawar, South-West Rajputana, Berar, the western districts of the Central Provinces and the South Konkan. These pressure anomalies are such as usually accompany excessive temperature in India in May, and resemble the anomalies of May 1897. The vertical pressure anomalies in Northern India were generally small and of little significance.

The following table gives the mean pressure variations and anomalies of the month for eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of May 1898.	Pressure anomaly, May 1898.
	″	″
Burma Coast and Bay Islands	—·032	—·023
Burma Inland	—·032	—·023
Assam	—·025	—·016
Bengal and Orissa	—·016	—·007
Gangetic Plain and Chota Nagpur	—·020	—·011
Upper Sub-Himalayas	—·009	0
Indus Valley and North-West Rajputana	+·002	+·011
East Rajputana, Central India and Gujarat	+·005	+·014
Deccan	+·003	+·012
West Coast	+·007	+·016
South India	—·008	+·001

Temperature.—May 1898 was characterised by higher temperature than usual over the whole area, excepting Lower and Central Burma, the West Punjab, Lower Sind, Upper Assam and the western districts of the North-Western Provinces. The excess was, as usual in the hot weather, more marked in the day than the night temperature.

The mean maximum temperature of the month was below the normal in Lower and Central Burma and Tenasserim by amounts averaging 2° and in very light defect in the North and Central Punjab and Lower Sind. It was in excess in the remainder of India. The excess was more than 2° in three areas. The first area included Cachar, Bengal, South Bihar, Chota Nagpur and the eastern districts of the North-Western Provinces. The excess in that area was absolutely greatest at Silchar (+5°·6), Burdwan (+4°·8) and Balasore and Hazaribagh (each +4°·1). The second was Berar and the northern districts of the Bombay Deccan, in which the excess averaged 2°·4 and the third included the Madras Coast districts from Masulipatam to Negapatam, in which it averaged 3°·4.

The mean minimum temperature of the month was very slightly below the normal in the Upper Indus Valley, the submontane districts of the Gangetic Plain and Upper Assam. The variations were less than 2° except in two areas. The first included the South Punjab, Upper Sind and North and Central Rajputana in which it averaged 2°·5, and the second Chota Nagpur, part of the Central Provinces, Berar and part of the Deccan. The excess in that area was more than 3° at Hoshangabad (+3°·4), Saugor (+3°·2) and Hyderabad (+3°·5).

The mean temperature of the month was normal or in excess over the whole area, except Lower and Central Burma (in which it averaged 1°·1 below the normal), Upper Assam, the West Punjab, Lower Sind and the western districts of the North-Western Provinces. The variations were less than 2° over by far the greater part of the country and exceeded 3° at only two stations, *viz.*, Silchar (+3°·6) and Hazaribagh (+3°·4), representative of Cachar and Chota Nagpur.

The following table gives comparative temperature variation data of the month for the eleven meteorological provinces :—

Meteorological Province.	Variation from normal of		
	Mean maximum temperature, May 1898.	Mean minimum temperature, May 1898.	Mean daily temperature, May 1898.
	°	°	°
Burma Coast and Bay Islands	−1·4	+0·5	−0·5
Burma Inland	+0·1	+0·3	+0·2
Assam	+2·1	+0·5	+1·3
Bengal and Orissa	+2·3	+0·6	+1·5
Gangetic Plain and Chota Nagpur	+2·8	+0·9	+1·9
Upper Sub-Himalayas	+0·1	+0·2	+0·1
Indus Valley and North-West Rajputana.	+0·2	+0·9	+0·6
East Rajputana, Central India and Gujarat.	+0·9	+1·1	+1·0
Deccan	+1·7	+2·0	+1·9
West Coast	+1·1	+0·8	+0·9
South India	+1·7	+0·6	+1·1

Winds.—Winds were slightly stronger and much more westerly than usual in Lower Burma, and at Port Blair. Winds were also more westerly than usual in the interior of Bengal and Orissa, but were less westerly at Saugor Island and False Point. The deviation of the air movement from the normal in North-Eastern India and Burma was directly related to the deficient pressure in that area—a feature which has been remarkably persistent since November 1897.

Winds were slightly stronger and steadier than usual during the month in the Gangetic Plain and Rajputana. They were on the mean of the month normal in direction, but steadier than usual in the Central Provinces and the Deccan. They were not quite so strong as usual at the West Coast stations. At the hill stations in Northern India the northerly element was abnormally strong. Winds were normal at Zanzibar, but were weak at the Seychelles. The mean wind direction at Port Victoria (Seychelles) for the month was N. 66° E., the normal being S. 44° E.

Humidity and Cloud.—The mean humidity of the month was slightly above the normal in the Bay Islands, Burma and Upper Assam, and also locally in the Indus Valley and the Circars. The amount of aqueous vapour pressure present in the air was generally in slight excess in the coast districts and in defect in the interior, the deficiency being most marked in Cachar and South Bengal.

In consequence of the prevailing high and excessive temperature of the month, humidity was more or less in defect over the whole area excepting Upper Assam, Burma, the Circars and the Indus Valley. The deficiency was most pronounced in the southern half of the Punjab, Cachar, Bengal, Chota Nagpur, Bundelkhand and the Central Provinces. It was absolutely greatest at Ludhiana (−11) and Mooltan and Silchar (each −12).

The air was also much drier than usual at the lower hill stations in Upper India, but was damper at Srinagar and Leh.

There was more cloud than usual at Port Blair and in

Lower Burma and also in the Punjab, Rajputana (excepting the south-western districts), the Central Provinces, Mysore and the Punjab and Baluchistan hills. Cloud was, on the other hand, in defect over the remainder of India. The deficiency was large and marked in South Madras and parts of Bengal where skies were unusually free from cloud. The following stations registered the smallest amount of cloud during the month :—Deesa (0·9) and Mount Abu (0·6)

The following table gives variation data of the mean aqueous vapour pressure, mean humidity and mean cloud amount of ten meteorological provinces for the month of May 1898 :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean aqueous vapour pressure.	Mean humidity.	Mean cloud amount.
Burma Coast and Bay Islands	+·014	+4	+1·0
Assam	—·015	—5	—0·7
Bengal and Orissa	—·021	—5	—0·5
Gangetic Plain and Chota Nagpur	—·002	—2	—0·5
Upper Sub-Himalayas	—·066	—5	+0·6
Indus Valley and North-West Rajputana.	—·020	—2	+0·5
East Rajputana, Central India and Gujarat.	+·016	+1	0
Deccan	—·038	—4	+0·1
West Coast	—·005	—3	—0·4
South India	—·601	—1	0

Rainfall.—The rainfall of the month was below the normal over by far the greater part of India. During the first week of the month thunder showers gave light to moderate rain in Southern India. The cyclonic storm, which formed in the Bay on the 4th and 5th and advanced to the Arakan Coast on the 7th, was accompanied by heavy general rain in Burma on the 8th and 9th, and followed by light to moderate daily rain in Burma and Bengal from the 10th to the 12th. Weather was feebly unsettled in Baluchistan, Upper India, Kashmir and the Punjab hills from the 12th to the 20th. Series of light to moderate thunder showers occurred in these areas, chiefly from the 12th to the 15th, and moderately heavy snow fell on the higher elevations of the Kashmir and Punjab Himalayas (above 12,000 feet). Southern India, Burma and Bengal obtained light to moderate rain during the last eight days of the month from thunderstorms.

The rainfall of the month was in large excess in Tenasserim (65 per cent.), and Lower Burma (28 per cent.). It was in large defect in Assam, more especially in Cachar, which obtained barely a third of its normal fall. There was a slight excess in Baluchistan and parts of Upper and Central India. Elsewhere the rainfall was below the normal of the month, especially in the west coast districts, due to the delay in the establishment of the monsoon. The following table gives data for the eleven meterological provinces of the Empire :—

METEOROLOGICAL PROVINCE.	RAINFALL.		
	Mean actual for May 1898.	Mean normal for May.	Variation from normal.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	20·08	12·55	+7·54*
Burma Inland	5·18	4·89	+0·29
Assam	10·10	14·52	—4·42
Bengal and Orissa	5·93	7·13	—1·20
Gangetic Plain and Chota Nagpur.	1·43	1·66	—0·23
Upper Sub-Himalayas	0·70	1·07	—0·36*
Indus Valley and North-West Rajputana.	0·68	0·47	+0·21
East Rajputana, Central India and Gujarat.	0·36	0·49	—0·14*
Deccan	0·41	1·01	—0·58*
West Coast	3·76	5·59	—1·83
South India	1·90	2·57	—0·68*

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3, therefore, will not agree with that of the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian land area for the month of May was ·009″ below the normal. Pressure was, relatively to the general condition, in defect to the north and east of a curved line passing through Ludhiana, Bareilly, Allahabad and Balasore and also in the Carnatic. The negative variations over the greater part of that area were small in amount and less than ·02″, but over a part of Burma and locally at Darbhanga they were moderate in amount, ranging between ·02″ and ·038″.

The following gives data for stations in this area of moderate negative pressure anomalies:—

STATION.	Variation from normal of mean 8. A.M. pressure of May 1898.	Pressure anomaly, May 1898.
	"	"
Tavoy	—·047	—·038
Kindat	—·045?	—.036?
Moulmein	—·038	—·029
Rangoon	—·038	—·029
Thayetmyo	—·030	—·021
Darbhanga	—·037	—·028

Pressure was in relative excess to the west of the line defined above. The positive anomalies exceeded ·02" in Lower and Central Sind Kathiawar, the Konkan and the western districts of Central India and of the Central Provinces, as is shown by the following data:—

STATION.	Variation from normal of mean 8 A.M. pressure of May 1898.	Pressure anomaly, May 1898.
	"	"
Hyderabad (Sind)	+·019	+·028
Kurrachee	+·015	+·024
Deesa	+·018	+·027
Rajkot	+·016	+·025
Indore	+·016	+·025
Khandwa	+·014	+·023
Amraoti	+·013	+·022
Ratnagiri	+·018	+·027
Goa	+·025	+·034
Belgaum	+·023	+·032

The abnormal features of the pressure distribution were such as accompany strongly pronounced hot weather conditions in Northern India in April and May and were chiefly related to the large excess of temperature of the period. They resembled the anomalies in the corresponding months of the years 1897, 1896, 1895, 1894, and 1892, but were less pronounced than in May 1896 and May 1897.

Pressure was generally in slight excess at the Himalayan stations, and hence the vertical anomalies were positive and slight to moderate in amount. The following gives data for seven pairs of stations:—

HILL STATION.	Variation from normal pressure, May 1898.	PLAIN STATION.	Variation from normal pressure, May 1898.	Vertical pressure anomaly (Hill—Plain)
	"		"	"
Leh	—·005	Lahore	—·008	+·003
Quetta	+·002	Jacobabad	—·010	+·012
Murree	0	Peshawar	—·011	+·011
Simla	—·009	Ludhiana	—·018	+·009
Chakrata	+·012	Roorkee	—·013	+·025
Ranikhet	+·004	Bareilly	—·001	+·005
Darjeeling	0	Dhubri	—·026	+·026

The following is a summary of the abnormal features of the pressure conditions of the month:—

(1) Pressure was in very slight general defect in the Indian area.

(2) Pressure was, relatively to the general condition, in slight to moderate defect in North-Eastern India, Burma and the Carnatic, the deficiency being most marked in Tenasserim and the Andamans, where it slightly exceeded ·02".

(3) Pressure was in local excess in the remainder of India, the excess being greatest in Lower and Central Sind, Kathiawar and the Konkan (in which it ranged between ·02" and ·034").

(4) Pressure was in slight to moderate excess at the hill stations in Northern India relatively to the adjacent plains. The relative excess of pressure was greatest in Sikkim.

Barometric depressions and cyclonic storm of the month.

At the commencement of the month, pressure was decreasing over the whole of India and was in general defect. The only important feature in the distribution of pressure was a low pressure area in Upper Sind and the South-West Punjab, which had formed in that area during the previous 48 hours. The depression developed slightly during the next 24 hours and shifted northwards and lay over the South-West and Central Punjab at 8 A.M. of the 2nd. Weather was as yet fine with clear skies in the depression.

It advanced eastwards during the next 24 hours and was in the South-East Punjab and central to the west of Ludhiana at 8 A.M. of the 3rd. Skies had partially clouded in the Upper India hill districts, and very light showers had fallen at Srinagar, Skardu and Dras. Weather continued fine in the Punjab. Temperature was abormally high in North-West and Central India.

Pressure increased briskly to rapidly in North-Western and Central India on the 4th, and the shallow depression in the South-East Punjab filled up at the foot of the Simla hills. Weather was at this time feebly unsettled in Southern India and series of thunderstorms gave light to moderate showers in Malabar, Mysore and South Madras on the 3rd, 4th and 5th.

Meanwhile, a storm had begun to form in the Andaman Sea which formed the chief feature of the meteorology of India during the next five days. The following gives a short account of this storm :—

Cyclonic storm of the 5th to the 9th in the Bay of Bengal.—This storm apparently formed in the Andaman Sea during the 24 hours preceding 8 A.M. of the 5th. Light to moderate local south-west winds with fine weather prevailed from the 1st to the 5th in the north of the Bay. In the north of the Andaman Sea winds were light and variable. Weather was, on the other hand, showery and squally in the south of the Bay and of the Andaman Sea, and moderate to strong west-south-west winds were established in the south and south-east of the Bay. The following data for 8 A.M. of the 4th show the weather in that area :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Leitrim* .	5 23	99 09	...	NW	4	Midnight, heavy squalls.
S.S. *Gisela* .	5 41	81 48	...	WSW	7	Passing showers.
S.S. *Darius* .	6 00	99 1	29·760	NW	4	Fine. Midnight, squally.
S.S. *Masagon* .	6 00	94 14	·746	W by S	4 to 5	Frequent hard squalls of wind and rain.

Weather was showery at Penang and Mergui, but was fine with light airs and calms at Tavoy and in Lower Burma.

Pressure fell briskly in the Andaman Sea during the day, and at 8 A.M. of the 5th, a shallow low pressure area lay over the Andaman Sea, the centre of which was in about Lat. 12° 30′ N. and Long. 94°45′ E.

The following gives data for the coast stations affected by the depression :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	″	″	″				Inches	
Mergui .	29·725	—·048	...	ESE	1	8	0·38	
Tavoy .	·704	—·057	—·151	Calm	1	8	0·79	Distant lightning.
Rangoon .	·717	—·061	—·104	NE	3	8	...	
Diamond Island.	·681	—·086	—·137	NE	11	9	...	
Cocos Island.*	·698	—·093	...	NNE	...	10	1·40	
Port Blair .	·655	—·079	...	WNW	8	10	0·19	Thunder and lightning.

* 10 A.M. observations.

The depression was of considerable extent, but was as yet very shallow. The following gives data taken from the logs of vessels in the Andaman Sea on this day :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Masagon* .	6 02	91 26	29·715	SW	5	4 P.M. hard squalls.
S.S. *Leitrim* .	8 12	97 22	...	SSW	4	Heavy squalls.
S.S. *Darius* .	8 27	97 20	·700	SW	5	Squally.
S.S. *Virawa* .	9 15	86 02	·718	SW	6	Noon, heavy rain squalls.
S.S. *Shahjehan* .	13 23	94 16	·601	NE	...	Heavy squalls and continuous rain.
S.S. *Ethiopia* .	16 20	97 15	·704	SW	2	Passing clouds.
S.S. *M. Meanatchy.*	16 36	90 41	·704	Calm	0	Fine.

The data indicate that fresh to strong south-west winds with squally weather and much rain continued in the south of the Andaman Sea and were extending northwards. Winds were very light and unsteady to the north-west of the depression. The S. S. *Shahjehan* was nearest to the centre, but was proceeding north-eastwards from Port Blair to Rangoon. She hence increased her distance from the centre during the day. The follow-

ing gives the weather experienced by that vessel during the day :—

Hour.	Position.		Barometer corrected.	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
5th 4 A. M. .	...	...	29·58	N	...	Passing rain squalls.
„ 8 „ .	13 23	94 16	·60	NE	6	Heavy squalls and continuous rain.
„ Noon .	13 57	94 36	·56	NE	5	Cloudy with heavy rain squalls.
„ 4 P. M. .	...	...	·52	ESE	...	Overcast and rain squalls.
„ 8 „ .	...	...	·58	SE by E	...	Weather slightly clearing up.
Midnight .	...	...	·56	SE by E	5	Passing rain squalls. Occasional lightning. Weather clearing up.
6th 4 A. M. .	...	...	·58	SE	...	Overcast Heavy squalls with rain. Lightning to north-east.

The shift of wind experienced by the S. S. *Shahjehan* was evidently due to the northward movement of the depression, this being confirmed by the observations of the 6th.

Skies had clouded over in Tenasserim and Lower Burma and light showers had fallen.

The following account of the weather during the day at Diamond Island was received from the observer :—

3 P.M.—Sudden change in weather, which was previously fine from 8 A.M. to 3 P.M., with slight increase of wind. Wind then suddenly increased rapidly in violent gusts and nimbus and strato-cumulus clouds from east-north-east came up rapidly moving and spreading over the station. Slight drizzle, and sea getting very rough.

3·30 P.M.—Sea very rough and drizzling rain. Sky overcast and strong winds. The anemometer registered 1·6 miles in three minutes. The wind vane was swinging at this time rapidly between E.S.E. and E.N.E.

4 P.M.—Drizzling rain. Sea very rough. Wind from east and strong. Sky overcast. Lower clouds moving rapidly from E.N.E.

6 P.M.—Wind increasing. Drizzling rain with heavier rain at intervals. Sea very rough. Sky overcast.

7 P.M.—Drizzling rain. Sea very rough. Wind ranged between E.N.E. and E.S.E. Sky overcast over station. Lower clouds moving rapidly from E.N.E.

6th May.—Pressure had increased over the Andaman Sea and had fallen briskly to rapidly in the north and centre of the Bay of Bengal. The depression had advanced north-westwards during the previous 24 hours and now lay to the north of the Andamans and was central in about Lat. 16° N. and Long. 92° E. Skies were now overcast over the whole of Burma, and moderate to heavy rain had fallen over that area. The following gives 8 A.M. observations at the Burma coast stations :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	″	″	″				Inches	
Port Blair .	29·672	+·017	...	WSW	1	10	2·02	Thunder and lightning.
Cocos Island.*	·640	—·058	...	S	...	10	2·79	
Diamond Island.	·613	—·068	—·207	SE	30	10	0·25	Sea very rough.
Bassein .	·658	—·034	—·149	E	12	9	0·20	
Rangoon .	·690	—·027	—·131	ESE	8	10	1·49	Drizzling.
Akyab .	·658	—·045	—·147	E	6	10	...	

* 10 A. M. observations.

The following gives data of the storm area taken from the logs of vessels :—

Name of Vessel.	8 A. M. Position.		Barometer corrected.	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Mazagon* .	5 55	88 49	29·765	SW	6	High sea and squally.
S.S. *Virawa* .	7 48	83 56	·737	SW	6	Rough sea.
S.S. *Claverley* .	8 51	97 28	·773	SW	4	Fine.
S.S. *Leitrim* .	10 58	95 25	...	SW	4	Strong beam sea and squally.
S.S. *Darius* .	11 03	95 14	·750	SW	5	Frequent hard squalls and SW swell.
S.S. *Madura* .	16 10	95 52	·645	ESE	5	High sea and squally.
S.S. *Shahjehan* .	16 16	96 10	·681	...	...	Rainy and squally.
S.S. *Kohinur* .	19 45	89 18	·620	S	...	Fine and clear, 4 P.M. squally with continual showers of rain.
S.S. *Commilla* .	20 05	92 37	·645	SE	4	Light rain, and sea smooth.

The S.S. *Madura* passed through the north-east quadrant of the storm during the previous night and experienced fresh to strong winds with frequent squalls.

Winds were very weak at Port Blair, but were strong at Cocos Island and Diamond Island. The weather at Diamond Island is thus described by the observer :—

The weather throughout the day was much the same as yesterday with frequent drizzling showers, heavy sea and strong winds. The wind velocity was 40 miles an hour at 5·20 P.M. Lower clouds were moving rapidly from south-west to north-east, in which quarter heavy rain appeared to be falling. There was a heavy swell during the day from north-west. The weather began to clear up a little at

9 P.M., otherwise much the same, 10 P.M. weather steadily clearing up. Wind decreasing, but heavy swell still on.

The data indicate that the storm had intensified to some extent, and that it was of comparatively small extent, as winds at a distance of 300 miles to the south (at Port Blair) and to the north-west were very light and practically unaffected by the storm.

7th May.—Pressure had fallen briskly to rapidly in the north-east of the Bay and risen in the south and centre. The storm, as shown by the observations, had continued to advance in a north-west-by-north direction, and the position of the centre is given by the observations recorded on board the S.S. *Kohinur* which passed through the storm area during the day. The following gives the whole of the observations relating to the storm in the log of that vessel :—

HOUR.	POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
6th, 4 A.M.	...	...	29·620	S	...	Fine and clear.
8 A.M.	19 45	89 18	29·620	S	...	Ditto.
Noon	19 31	89 32	·670	S	...	Dull and overcast.
4 P.M.	...	...	·570	E by S	...	Squally with continual showers of rain.
8 P.M.	...	...	·570	E to ENE	7	Moderate gale and rough sea, with occasional squalls of rain and wind.
Midnight	...	...	·570	E to ENE	8	Fresh gale and rough sea with heavy squalls of rain and wind.
7th, 4 A.M.	...	...	...	N by W	...	Blowing a gale with rain throughout; 5 A.M. severe storm, high turbulent sea and terrific squalls.
8 A.M.	18 36	90 52	·240	W	...	No change in the weather.
Noon	18 25	91 06	·100	W	12	Blowing a hurricane with heavy blinding rain and tremendous sea.
2·30 P.M.	...	...	...	...	...	Weather started to moderate. Barometer rising steadily.
4 P.M.	...	...	·430	W	...	Weather still moderating.
6·30 P.M.	...	...	...	...	...	Wind and sea still moderating.
8 P.M.	...	...	·520	SW	...	Improved appearance of the weather, but sea still rough.
Midnight	...	...	·620	W	...	Fine and clear. Sea and wind moderating.

The S.S. *Kohinur* experienced the usual succession of weather in passing through the storm. She passed from fine clear weather into cloudy weather at noon of the 6th.

Squalls came up in the afternoon and winds increased in intensity until noon of the 7th, when she was very near the centre, experiencing winds of hurricane force with heavy blinding rain and a tremendous sea. This continued until 2·30 P.M., when weather began to improve. She passed into fine clear weather again at midnight. The information indicates that the diameter of the storm area was not more than 100 to 150 miles and that its centre at noon of the 7th was in about Lat. 18½° and Long. 91°E.

The following gives 8 A.M. data of vessels in the storm area :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Onda* . .	8 29	97 03	29·732	WSW	2	Fine and SW swell.
S.S. *Clewerley* .	11 39	95 24	·743	SW	2	Occasional heavy rain squalls.
S.S. *Darius* .	14 00	93 35	·650	SW	5	Fine and moderate sea. 4 P.M., occasional squalls.
S.S. *Leitrim* .	14 03	93 27	...	SSW	2	Strong beam sea and cloudy.
S.S. *Kasara* .	16 00	95 47	·663	SSW	4	.....
S.S. *Maharani* .	16 16	96 20	·669	SSE	...	Squally with rain.
S.S. *Commilla* .	Near	Sandoway.	·605	S by E	6	Heavy sea, 4 P.M., hard rain squalls.
S.S. *Kohinur* .	18 36	90 52	·240	W	...	Severe storm, high turbulent sea and terrific squalls.

The observations are in harmony with the position assigned above to the centre. The S.S. *Commilla* was proceeding southwards along the West Pegu Coast. She had strong winds, chiefly from south-east to south-west, during the day with hard rain squalls and a high sea.

The wind observations recorded at Akyab at this time were misleading. The following gives the observations recorded by the observer at that station during the day :—

TIME.	PRESSURE.	WIND.		Clouds moving from	Rainfall.	WEATHER.
	Reduced to sea level and constant gravity at Lat. 45°.	Direction.	Velocity in miles during interval.			
					Inches.	
2 A.M.	29·579	NNW	176·2	SE	0·09	Drizzling, wind slackened after 2·30 A.M.
8 ,,	·549	NNW	19·9	NE	...	Drizzling, calm for a while.
10 ,,	·565	NNW	13·0	NE	...	Drizzling rain with occasional heavy showers.
4 P.M.	·428	NNE	53·9	NE	1·91	Ditto ditto.
5 ,,	·415	NE	...	NE	...	Drizzling, clouds travelling in low scuds and very rapidly from NE. Wind getting violent and coming in puffs. Wind abated at about 1·30 A.M.
6 to 9 ,,	·419	NE	...	NE	...	.....

The wind directions at 8 A.M. and 10 A.M. appear to indicate that the depression had passed inland. The later observations are not only opposed to this, but in fair

accordance with the position assigned to the storm at noon. They do not, however, enable the path of the storm during the evening to be deduced.

General and moderate to heavy rain had fallen during the previous 24 hours in Burma, and temperature was from 2° to 13° lower than on the previous day in that area.

8th May.—Pressure had increased in the Bay, but had fallen briskly in Bengal and rapidly in Upper Assam and Upper Burma. Pressure was nearly a quarter of an inch below the normal in these areas. The depression which was in the north-east of the Bay had filled up during the previous 24 hours. It had, so far as can be inferred from the data, recurved rapidly during the previous evening from north-north-west to north-east and passed across the Arakan Coast and broken up as a well defined cyclonic storm against the Arakan hills, and had passed as a diffused irregular disturbance into Upper Burma. Moderate to heavy rain had again fallen over the whole of Burma, and temperature was, as on the previous day, largely below the normal.

A brisk to rapid increase of pressure occurred in Upper Burma and Assam during the next 24 hours. Rain continued to fall during the next two days in Burma, but diminished in amount.

The storm was similar in its origin and character to the storms of April 1894, and May 1897, which formed in the Andaman Sea before the great burst of the monsoon current in the Bay.

The following gives data of the position and rate of advance of the storm centre from the 5th to the 7th:—

Date.	Hour.	Position of centre.		Distance travelled during interval.	Average hourly rate of motion during interval.
		Lat. N.	Long. E.		
		° ′		Miles.	Miles.
5th	8 A.M.	12 30	94 45	...	...
6th	8 A.M.	16 10	92 5	315	13
7th	Noon	18 30	91 0	190	7

The following gives rainfall data for the period of the storm in the five divisions of Burma:—

Division.	Average actual rainfall during 24 hours preceding 8 A.M. of					Total rainfall of period, 5th to 9th May 1898.
	5th May.	6th May.	7th May.	8th May.	9th May.	
	Inch.	Inches.	Inches.	Inches.	Inch.	Inches.
Tenasserim . .	0·58	1·06	0·99	1·46	0·47	4·56
Lower Burma . .	0·23	1·18	1·19	0·81	0·51	3·92
Central ,, . .	0·16	0·74	1·18	0·49	0·03	2·60
Upper ,, . .	0·25	0·54	0·58	0·81	0·16	2·34
Arakan . . .	0·25	0·31	0·59	1·51	0·23	2·89

Whilst the preceding cyclonic storm was in progress, weather was disturbed in Upper India. A hot weather depression formed in Upper Sind on the 5th and 6th. It marched north-eastwards through the South-West Punjab on the 7th, into the South-East Punjab on the 8th. It filled up in that area on the 9th. Showers fell on the 8th and 9th in the East Punjab and Kashmir and the Punjab hills.

A second hot weather depression appeared in Upper Sind and the South-West Punjab on the 10th. Numerous duststorms occurred during the afternoon and evening of the 9th in the south-eastern districts of the Punjab and in the North-Western Provinces. The depression was practically unchanged in position and character on the 11th. Weather was disturbed with series of duststorms in East Rajputana, the South-East Punjab and the western districts of the North-Western Provinces during the evening of the 10th, and light showers of rain fell in these areas. These showers were immediately followed by a considerable to large temporary increase of pressure in the South-East Punjab and the western districts of the North-Western Provinces, and the depression covered the Indus Valley on the morning of the 12th. Thunderstorms and duststorms occurred on the afternoon of that day over a somewhat larger area than on the previous day, including the North and East Punjab, Kashmir, Rajputana and the western districts of the North-Western Provinces. The rainfall was considerably heavier and more general than on the 12th, the largest amount registered by the meteorological stations on the morning of the 13th being 2 inches at Khushab. Pressure had increased largely but very irregularly during the 24 hours preceding 8 A.M. of the 13th, and was in considerable to large excess in Upper and Central India, and in considerable to large defect in Lower Burma.

Pressure increased very irregularly during the next 24 hours, the rise being greatest in Sind. Duststorms had given some local rain showers on the evening of the 13th in Rajputana, the South-East Punjab and the Central Provinces.

Pressure began to give way again in Northern India on the 15th. The fall was very irregular and weather continued more or less unsettled in Upper India. Showers were received in Baluchistan, Upper Sind, and the North and Central Punjab on the 15th, and in the North Punjab and Kashmir on the 16th. Weather was very disturbed and stormy in Chitral and Kashmir during the whole period, and snow fell on the higher elevations.

The chief feature of the pressure distribution on the 16th and 17th was the position of the area of minimum pressure. It lay over the submontane districts of Bihar on the 16th, North Bengal and North Bihar on the 17th, and North Bihar on the 18th. Strong dry hot westerly winds hence prevailed in the Gangetic Plain on these

days, and weather was generally fine over the whole of Northern India. A rapid local rise of pressure occurred in the submontane districts of Bengal and Bihar on the 18th and filled up the depression in that area. A hot weather depression began to form on the 19th in Upper Sind. It intensified considerably on the 20th and drifted eastwards during the next 48 hours, filling up at the same time. Some light showers were received in the Kashmir and Punjab hills on the 21st.

Weather was showery in Burma during the greater part of the second and third weeks of the month. The pressure conditions in Bengal changed considerably on the 23rd and 24th and became favourable for thunderstorms and nor'-westers, the chief feature being moderate gradients from east to west across the province. Strong sea winds blew across the Bengal Coast and strong to moderate south-east or east winds prevailed generally. Series of thunderstorms gave light to moderate rain in North and East Bengal on the 25th and 26th, and light local showers in the same area on the 27th.

Series of thunderstorms occurred over the whole of Bengal and in parts of the Assam Valley, Chota Nagpur and Orissa on the 28th. The general disturbance extended westwards into Bihar and the North-Western Provinces during the next 24 hours, and light thundershowers fell in Bengal and the Gangetic Plain on the 29th.

Weather was somewhat less disturbed on the 30th and 31st, and thunderstorms in North-Eastern India were chiefly confined to Bengal.

During this period from the 24th to the 31st, weather was showery in Burma and in Southern India, more especially in Travancore, Malabar, Coorg and Mysore.

The variations of the pressure conditions from the normal at the end of the month were not very marked. Pressure was in moderate defect in Upper India, and the extreme south of the Bay and in Ceylon, and in moderate to considerable excess in North-Eastern India. An advance of monsoon winds was in progress in the Arabian Sea at the end of the month. This will be described in the June review.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-west of India.

I.—AFGHAN MOUNTAIN DISTRICTS.

The following is a statement of the information relating to the snowfall of the month of May 1898, in the Himalayan and Afghan mountain areas, received up to date:—

(1) *Kurram.*—The following is a summary of the reports which have been received from the Political and Medical Officers, Kurram :—

Snow fell as follows during the month on the adjacent hills :—

13th.—Snow on the highest ranges above 12,000-13,000 feet.

14th and 15th.—Snow fell down to about 10,000 feet.

20th.—Snow fell down to about 16,000 feet.

27th and 28th.—Snow fell down to about 10,000 feet.

When snow fell there were showers of hail in the valley. There was also lightning and thunder on the 20th May. The lightning struck a house in the bazar, killing four donkeys. The fields were damaged by the hail over a radius of about 5 miles. The weather in the intervals was mild and the snow soon melted on the lowest peaks and lasted on the higher peaks for three or four days.

The highest peaks of the Sufed Koh had snow lying to a depth of at least one or two feet. At Piwar Kotal there was no snow.

The snowfall of the month was slight, as compared with that of last year on the plain, but on the Sufed Koh (above 9,000 feet) the fall was one of the heaviest known for many years, and there is consequently an abundant water-supply.

(2) *Chitral.*—The weather was extraordinarily cold in the early part of May. Very heavy snow fell on the Lowarai Pass on the 12th, 13th and 14th.

II.—THE KASHMIR AND PUNJAB HIMALAYAS.

(1) *Murree.*—No snow fell at Murree or the hills adjacent to Kahuta during the month.

(2) *Srinagar.*—The following interesting account of the snowfall in Kashmir during the past winter is taken from a telegram sent by Dr. Mitra, Meteorological Reporter to the Kashmir Darbar, on the 3rd June 1898 :—

"The past winter has been milder than any since 1891-92, and the snowfall much less. The melted snow between the 3rd January and 18th February amounted to 3·59 inches only. Snow remained for a few days in the valley. Snow on the higher passes was much less than usual, and the Jhelum Valley road was open for cart traffic throughout the whole winter, and postal and telegraphic communication between here and Gilgit and Leh remained uninterrupted. I never remember the Jhelum river to be so low at this time of the year, thus showing there is not much snow to melt on the higher passes. Spring rains have also been extraordinarily light. The chief features of the weather in Kashmir during the past five months are mild winter, small snowfall, strong winds in spring, no spring rains and low and scanty water in the river Jhelum. During the rains in the middle of May some snow fell on the higher ranges of hills."

(3) *Lahoul.*—The Revd. A. W. Heyde, Superintendent of the Observatory at Kailang, writing on the 22nd of May says :—

"From the 9th to the 22nd of May snow fell on six occasions at Kailang (in all about 2 feet), but is melting quickly away.

"At present snow lies thickly in the Lahoul Valley from 12,000 to 13,000 feet upwards, which is very unusual at this time of the year."

(4) *Kulu.*—The following report has been received from the Assistant Commissioner, Kulu :—

"There were rainfalls on the 8th, 9th, 10th, 13th, 15th, 18th, 19th and 20th in the Kulu Tahsil and slight falls on the 9th, 10th, 13th, 14th, 16th, 17th, 19th, 20th and 21st May in the Plach Tahsil. During these rainfalls there were slight falls of snow only on the high passes and peaks. There was much hot sunshine before the rainfall of the 8th May, but since then it has not been very hot, and was unusually cold on rainy days. The Rotang Passis open for laden animals."

The following table shows the reported depth of snow

on the higher passes and peaks of the sub-division at the end of the month under report :—

Name of Tahsil.	Name of Pass.	Elevation.	Depth of snow at the end of May 1898.
		Feet.	Feet.
	Rotang	13,000	3
	Hamta	14,500	1
Kulu	Bara	?	2
	Chandarkhani	14,300	3
	Bujadhar	?	1
	Sirikhand	15,000	5
Rioch	Gargarasan	13,000	3
	Tirath	?	1

It was warm only before the first rainfall on the 8th May, and during the remainder of the month it was cold on rainy days.

III.—THE NORTH-WEST PROVINCES HIMALAYAS.

Garhwal.—A report received from the Deputy Commissioner gives a brief account of the snowfall in May :—

"There was a snow-storm on the 8th May and snow continued to fall intermittently till the 20th May. The depth of snow on the higher ranges was about 2 feet, and the snow line descended to about 11,000 feet. The snow at this height melted immediately.

The weather preceding the storm was unusually hot. Strong winds accompanied the snow storms which extended over the whole snowy range. The first snow storm caused an immediate reduction of the temperature which continued for some days over the whole district.

The snow storms in May did not seriously affect the accumulation of snow. Passes below 12,000 feet were all open at the end of May. On the higher passes the accumulation is about normal.

The rain which fell during this period greatly benefitted the germination of the early kharif corps, but the rabi crops generally suffered from drought.

The snowfall during this month was comparatively heavy. During the preceding four months it had been lighter than usual.

Summary of the Snowfall data of the cold weather of 1897-98.—The chief features of the snowfall of the cold weather were :—

(1) The winter commenced somewhat earlier than usual in Afghanistan, Chitral and Upper India. Weather was somewhat more disturbed than usual in these areas in December, February and March, but was unusually dry and fine over the whole of India and the Himalayan area in January, March and April.

(2) The number of cold weather disturbances from November to February was less than usual. Most of the storms in this period originated either in Baluchistan or in Upper India and not in Persia, and were of slight intensity. One storm, that of the 9th to the 11th February, was severe and gave unusually heavy and general snowfall in the Western Himalayas. The snowfall up to the end of February was probably considerably below the normal on the whole, and was nowhere excessive.

(3) The number of depressions in March and April was larger than usual, but the snowfall was small in amount, and was generally restricted to Baluchistan, Afghanistan, Chitral and North Kashmir. A disturbance of moderate intensity, extending from the 15th to the 19th March, gave moderate to heavy snow in Chitral and Kashmir and also to the Punjab Himalayas. The snowfall of the whole season to the end of April was hence in considerable to large defect on all the higher elevations of the Western Himalayas, but was probably in moderate defect in Afghanistan. The winter was locally somewhat more severe than usual in Chitral and was prolonged considerably beyond its normal date of closure.

(4) The chief feature of the season was the heavy fall between the 9th and 16th of May over the whole of the Western Himalayas west of Kumaon. The fall was heavy in the Simla hill districts, Lahoul and also in Chitral. Snow fell down to about 11,000 feet and caused a large temporary extension of snow-clad surface, which affected to a moderate extent the meteorological conditions in Upper India to nearly the end of the month. The snow melted very rapidly during the hot weather of the last week of the month, and the snow line on the 31st of May was at a mean elevation of 13,500 feet to 14,000 feet, and hence slightly higher than usual.

(5) The snowfall of the past season up to the end of May was, so far as can be judged from the data, heavier than usual in Chitral, normal in Baluchistan and in moderate to considerable defect in Afghanistan, as represented by Kabul and the neighbouring mountain ranges. The fall in Chitral was above the normal to a moderate extent during the whole period from December to May, and heavy snow fell during the first three weeks of May, so that the winter has been prolonged at least a month beyond its normal date. The fall of the past winter has hence been above the normal in that area, but to a less extent than in the preceding two winters.

(6) The total fall of the period up to the end of May was probably in moderate defect on the higher ranges of the Western Himalayas and was small in amount on the lower ranges. The fall in Kashmir is stated to have been abnormally small. The fall in the Punjab Himalayas was much lighter than usual. There were only two heavy falls during the season, *viz.*, on the 16th to the 18th February and the 14th to the 20th of May. So far as can be judged from the actual data received, the accumulation on the higher elevations in Chamba, Kulu and the Simla hill districts at the end of May was slightly to considerably below the normal.

(7) The data for Gurhwal and Kumaon show that the snowfall in these areas up to the end of February was considerably below the normal.

(8) No information has been received for Sikkim and Nepal.

(9) The information relative to the snowfall in the Assam Himalayas is as usual very scanty, but appears to indicate that the fall was less than usual, except, perhaps, to the north of Dibrugarh and Sadiya.

The data hence establish that there has been much less snow than usual during the past six months over nearly the whole of the Western Himalayas and less than usual in Afghanistan. The winter commenced somewhat earlier than usual in December, and was characterized throughout by the absence of very heavy falls. The snowfall in January and March was remarkably light. In February it was normal or somewhat heavier than usual. April was an unusually dry and hot month, and the snow accumulation melted with great rapidity during that month.

The accumulation at the beginning of May was hence abnormally small, and such as, in fact, usually obtains at the end of May or beginning of June. Moderate to heavy snow fell down to about 11,000 feet in Chitral, Kashmir and the Punjab Himalayas between the 14th and 20th of May, which gave a large extension of snow-clad surface for a short period. No further snow fell during May, and the snowfall of the third week of the month melted very rapidly

so that at the end of the month the snow accumulation was less than usual, but not to so marked an extent as at the beginning of the month. It is hence almost certain that the extent of the snow-clad surface and the depth of the accumulation are less than usual on the Western Himalayas. In Chitral there has probably been more snow than usual, but this is too local to affect the general meteorological conditions, except in the northern districts of the Punjab. The snowfall conditions are hence, as a whole, favourable and the only factor that required to be taken into account in estimating the probable strength of the monsoon was the late and somewhat untimely fall in the third week of May.

Summary of special Storm Reports.

The following gives the chief local storms and earthquakes of which reports were received during the month. These storms were all of the ordinary hot weather type, *viz.*, thunderstorms or hailstorms in Bengal, the North-Western Provinces, the Deccan and Madras, and duststorms in the hottest and driest districts of Northern and Central India, more especially the Punjab and Rajputana. They were apparently of slight to moderate intensity, and except in one case, do not appear to have caused much damage to property.

The following is a brief statement of the local storms, of which reports have been received from observers :—

1st May.—Thunderstorm at Salem from 2-30 P.M. to 3-30 P.M.

3rd May.—Duststorm at Raipur during the evening.

Duststorm at Salem at 5 P.M.

8th May.—Violent duststorm at Jacobabad from 2 P.M. to 4 P.M. The storm came down from the north-west.

9th May.—Duststorm and nor'-wester at Burdwan from 4-30 P.M. to 5 P.M.

Duststorm at Delhi at 4 P.M.

Duststorm at Lahore from 5-15 P.M. to 5-40 P.M.

10th May.—Duststorm at Delhi at 5-30 P.M. The storm is said to have come up from the west-south-west.

Violent duststorm at Jacobabad from 3 P.M. to 4 P.M.

Violent thunderstorm at Drosh. The storm came from the south and began at 6-30 P.M.

11th May.—Duststorm at Dera Ismail Khan. The storm came from the north-west and continued from 5-30 P.M. to 7-30 P.M.

Severe duststorm at Lahore. The storm came from the west and continued from 5-20 P.M. to 6 P.M.

Duststorm at Raipur at midday.

12th May.—Hailstorm at Jeypore at 2-23 P.M.

Thunderstorm at Lahore from 7 P.M. to 11 P.M.

13th May.—Violent duststorm at Jacobabad from the east. It began at 2 A.M. and continued throughout the morning.

Violent duststorm and nor'-wester at Burdwan at 6 P.M.

Duststorm at Jeypore at 9 P.M. The velocity of the strongest winds (from 9-10 P.M. to 9-15 P.M.) was 43 miles per hour.

Duststorm at Jubbulpore, which came down from the north-west.

Duststorm at Saugor, lasting from 3-25 P.M. to 4-25 P.M.

14th May.—Thunderstorm with violent winds at Agra in the early morning (midnight to 4 A.M.)

Violent duststorm at Jacobabad. The storm come down from the north-west and lasted from 6-30 P.M. to 7 P.M.

Thunderstorm at Jodhpur at 4-33 P.M.

Severe thunderstorm with hail at Mussoorie. The storm came from the north-west, beginning at 2 P.M. and continuing until 3 P.M.

15th May.—Severe duststorm at Delhi at 4-30 P.M. The storm came from the west.

Duststorm at Salem. The storm came down from the hills to the north-north-east and passed over the station at 5-40 P.M.

18th May.—Thunderstorm at Oodeypore. The storm continued from 5-30 P.M., to 6-15 P.M. and came down from the north.

Severe thunderstorm at Salem from 6 P.M. to 6-40 P.M. The strongest winds (from south-west) blew with a velocity of 31 miles per hour. 1·75 inches of rain fell during the storm.

19th May.—Severe thunderstorm at Amritsar.

Severe thunderstorm with hail at Mussoorie from 3 P.M. to 4 P.M.

Duststorm at Salem from north-north-east. The barometer fell from 29·004" to 28·974" during the approach of the storm from 5 P.M. to 5-10 P.M. and increased from 28·974" to 29·010" during the next ten minutes.

20th May.—Thunderstorm at Jodhpur at 2-30 P.M.

Thunderstorm at Salem from 4 P.M. to 4-30 P.M., during which 1·08 inches of rain fell.

23rd May.—Thunderstorm with strong winds at Belgaum, commencing at 9 P.M.

Duststorm at Raipur, lasting from 4-35 P.M. to 5-10 P.M. The strongest winds blew with a velocity of 36 miles per hour.

24th May.—Duststorm at Khandwa, lasting from 3-45 P.M. to 4-35 P.M.

Duststorm with thunder at Poona from 3-48 P.M. to 4-7 P.M.

Thunderstorm at Purnea at 7-5 P.M.

Duststorm with thunder at Raipur lasting from 3-10 P.M. to 4-20 P.M.

Duststorm from the north-west at Sutna, lasting from 4-45 P.M. to 4-55 P.M.

25th May.—Hailstorm at Purnea at 8-20 P.M. and again at 9-30 P.M. Pressure increased from 29·710″ at 7-50 P.M. to 29·780″ at 8-10 P.M. and fell to 29·698″ at 8-25 P.M. Winds were of moderate strength throughout the storm.

Duststorm at Sutna at 3-45 P.M.

26th May.—Violent nor'-wester at Rampur Bolia during the early morning.

Nor'-wester at Burdwan at 7-30 P.M. and again at 9-30 P.M.

Duststorm at Saugor at 4-10 P.M.

29th May.—Violent storm from the north-east at Bhagalpur, lasting from 5 A.M. to 6 A.M.

Duststorm at Raipur during the evening.

30th May.—Thunderstorm from west at Bhagalpur, lasting from 8-15 A.M. to 8-55 A.M. Some damage was done to property and the crops by the strong winds accompanying the storm.

Thunderstorm at Purnea, lasting from 8 A.M to 8-45 A.M. The rainfall during the storm amounted to 1·54 inches.

Severe thunderstorm with hail at Chitaldroog, lasting from 4-10 P.M. to 4-40 P.M. Wind shifted from east-south-east to west-north-west during the storm. 1·70 inches of rain fell in half an hour. Hail fell between 4-30 P.M. and 4-32 P.M. The stones were of small size. The violent winds accompanying the storm caused much destruction of property. The storm is said by the inhabitants to have been the most severe and destructive experienced during the past thirty years.

The following hailstorms were reported by district officers.

3rd May.—Hailstorm in the Namtidal tahsil of the Sibsagar district. The storm came from the west and was not severe.

4th May.—Hailstorm at Goalpara. The storm was of considerable violence and came down from the north-west. The heaviest stones weighed two chhitaks. The winds accompanying the storm blew down many trees and most of the houses in the Bhatipara Tahsil, and also interrupted telegraphic communication.

13th May.—Hailstorm at Jhunjhunu in the Jeypore State at 5 P.M. The stones were of the size of grapes.

15th May.—Hailstorm at Chirawa in the Jeypore State at 4 P.M.

18th May.—Hailstorm in the Gangapur pargana of the Neemuch district of Gwalior.

22nd May.—Hailstorm in the Dibrugarh tahsil of the Lakhimpur district. The storm came from the north-west and did no injury to the crops.

30th May.—Hailstorm in the Afzalgarh pargana of the Bijnor district. Hail fell over the whole pargana, but the storm was most severe in the town of Afzalgarh. The largest stones weighed about 2 ounces. The storm inflicted slight injury on the melon crop.

The following reports of earthquakes during the month have been received.

4th May.—Earthquake at Drosh at 7-17 A.M.

11th May.—Earthquake at Drosh at 9-30 A.M. The wave came from the north-west and lasted fifteen seconds.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Ordinary north-westerly winds of indraught to the land area obtained along the Indian coast during the first three weeks of the month and unsteady variable winds, more especially along the Bombay and Malabar coasts, during the last week. Over the remainder of the sea the air movement was very irregular and unsteady during the greater part of the month. This was especially the case in the centre and west. The data for the 30th and 31st however show that an advance of humid south-west winds was in progress on these days in the south-west and centre. Weather was fine throughout the month except to the west of Ceylon and Malabar, where it was more or less disturbed with showers and occasional squalls during two periods, *viz.*, from the 12th to the 16th and the 22nd to the 29th. The principal feature of the meteorology of the month was the prevalence of light irregular winds in the south of the Arabian Sea during the greater part of the month where in most years humid monsoon winds obtain during the second half of the month.

The mean daily air movement ranged between 2·1 and 3·3 in force, and averaged 2·7 for the whole of the month as compared with 3·4, the normal mean of the period.

Bay of Bengal.—At the beginning of the month light to moderate winds from between west and south obtained generally over the Bay. Weather was fine with passing clouds over the whole area, except in the south where it was more or less squally with rain. The mean intensity of the air movement, as determined from the data of 18 vessels, was 2·7 or 0·3 below the normal of the month at 8 A.M. of the 1st. During the next three days the only

changes of importance occurred in the centre and south. In the former region, winds took off in strength and became unsteady and variable. In the latter area, on the other hand, the air movement intensified considerably and weather became more unsettled than on the 1st. The air movement for the whole of the Bay averaged 3·3 on the 2nd and 3rd, and 3·4 on the 4th. The strongest winds at 8 A.M. of the 4th were of force 7. Significant changes occurred during the day. The humid south-west winds and squally weather in the south of the Bay extended rapidly north-eastwards into the South Andaman Sea, and a storm began to form in that area. It intensified rapidly on the 5th, and marching north-westwards passed out into the Bay. It was central to the west of Diamond Island in Long. 92°E. at 8 A.M. of the 6th and in about Lat. 18½°N. and Long. 91°E. at noon of the 7th. It apparently recurved to north-east during the afternoon and evening, and broke up as a distinct cyclonic circulation against the Arakan hills. It was a concentrated disturbance, and its influence on the winds and weather was hence limited in its extension, and was in fact not felt beyond more than 200 or 250 miles from the centre. This is shown strikingly by the wind data of Port Blair, where the average hourly velocity during the 24 hours preceding 8 A.M. of the 6th was only one mile per hour. The only vessel which passed through the storm area was the S.S. *Kohinur*. She was nearest to the centre at noon of the 7th and experienced winds of hurricane force with heavy blinding rain and a tremendous sea. The mean intensity of the air movement during this period, from the 5th to the 7th, ranged between 3·2 and 3·7.

Increasing south-west winds obtained generally in the Bay during the next three days. The mean strength of the winds at 8 A.M. of the 10th, as derived from the data of 18 vessels, was 4·1. Weather during this period was more or less showery and squally in the neighbourhood of the Burma Coast, but was fine generally over the remainder of the Bay. No important change took place during the next two days, except that the winds decreased rapidly in strength and averaged only 3·3 at 8 A.M. of the 12th. Conditions remained unchanged during the next three days, save in the extreme north where winds were somewhat unsteady and weather feebly unsettled. Winds increased very rapidly in force over the greater part of the Bay during the 15th and averaged 4·3 at 8 A.M. of the 16th. This increase in the intensity of the air movement was, however, only temporary, as winds began to fall off again, and the decrease was very considerable and rapid on the 17th and 18th and slight during the succeeding six days. The average strength of the winds at 8 A.M. of the 24th was only 3·0. A further and rapid decrease occurred on the 25th and 26th so that the mean intensity of the winds at 8 A.M. of the 27th was only 1·8. Winds, however, increased again during the remainder of the month and averaged 2·9 at the end of the month or only 0·1 below the normal strength in May. Weather was generally fine during the second fortnight of the month, except in the south and south-east, where it was feebly disturbed between the 21st and 26th.

The mean air movement for the whole month was 3·3, or 0·3 above the normal.

Equatorial Belt.—The information for this region is, as usual, very meagre. It, however, shows that winds were not so steady and strong as usual in May and that they were also abnormal in direction, more especially in the northern half of the belt. This is fully borne out by the data for the Seychelles where the mean wind direction of the month was N.66°E., the normal for the month being S.44°E. The mean daily air movement at that station was 133 miles instead of 173 miles, the normal for the month, and the percentage of steadiness 18 below the normal. There was, however, much more rainfall than during the corresponding periods of 1896 and 1897.

Temperature of the Air.

May 1898 was characterized by higher temperature than usual over the whole of India, with the exception of Upper Assam, Lower and Central Burma, the West Punjab, Lower Sind and the western districts of the North-Western Provinces. The hot weather conditions were, in fact, strongly marked in India during the greater part of the month, and, as usually happens under these conditions, the night temperature was almost as largely above the normal as the day temperature.

The mean maximum or day temperature of the month was above the normal over the whole of India, with the exception of Upper Assam, Lower and Central Burma, Lower Sind and the greater part of the Punjab, which generally received more frequent rain than usual during the month, thus depressing temperature below the normal. The excess was more than 2° in amount in three areas. The first included Cachar, the greater part of Bengal, Chota Nagpur, South Bihar and the eastern districts of

the North-Western Provinces. The excess was more than 3° at the following stations in that area for which data are given below :—

Station.	Mean maximum temperature. Actual, May 1898.	Normal, May.	Variation of actual from normal, May 1898.
	°	°	°
Silchar	93·6	88·0	+5·6
Burdwan	102·0	97·2	+4·8
Balasore	99·7	95·6	+4·1
Hazaribagh	102·4	98·3	+4·1
Gaya	107·9	104·1	+3·8
Chittagong	91·4	88·0	+3·4
Chaibassa	106·8	103·4	+3·4
Ranchi	101·2	98·0	+3·2

The second area included Berar and the Poona district in which the excess ranged between 2°·8 at Poona and 2°·1 at Amraoti.

The third area included the coast districts of South and Central Madras. Comparative data for stations in that area are given below :—

Station.	Mean maximum temperature. Actual, May 1898.	Normal, May.	Variation of actual from normal, May 1898.
	°	°	°
Negapatam	100·8	96·1	+4·7
Masulipatam	102·5	99·2	+3·3
Madras	100·0	97·8	+2·2

Cachar, Chota Nagpur, North Orissa and West Bengal were the areas in which the day temperature was most largely in excess of the normal.

The mean maximum temperature was more than 2° below the normal in Lower and Central Burma at the stations for which comparative data are given below :—

Station.	Mean maximum temperature. Actual, May 1898.	Normal, May.	Variation of actual from normal, May 1898.
	°	°	°
Rangoon	88·5	92·5	−4·0
Thayetmyo	96·5	99·4	−2·9
Moulmein	87·5	90·0	−2·5
Toungoo	93·9	96·2	−2·3
Bassein	89·8	92·0	−2·2

The highest day temperatures of the month were generally recorded in North-Western India during the hot period in the first and second weeks of the month. The following gives the highest day temperatures for all stations at which the maximum exceeded 115° :—

Province.	Station.	Highest maximum temperature recorded in May 1898.	Date on which recorded.	Highest maximum temperature recorded in May previous to 1898.	Year in which recorded.
		°		°	
Punjab	Mooltan	117·8	8th	120·5	1895
	Montgomery	117·1	8th	121·9	1895
	Sirsa	115·3	8th	121·1	1895
Rajputana	Pachpadra	115·9	6th	123·1	1886
	Bickaneer	115·8	31st	118·3	1895
Sind	Jacobabad	123·9	31st	123·9	1888
Berar	Akola	116·0	1st	115·5	1891
	Amraoti	115·0	1st	115·5	1897
Central Provinces.	Chanda	115·2	8th	119·2	1897
Hyderabad (Deccan).	Indur	115·5	3rd	111·5	1896, 1897
Madras	Masulipatam	115·7	10th	115·2	1896

These maximum temperatures were not so high as have previously been recorded in Rajputana, the Central Provinces and the Punjab. They were, on the other hand, excessive in parts of Berar, Hyderabad (Deccan) and the Circars—higher in some cases than have been recorded during the past 25 years in these areas.

The mean minimum temperature of the month was in excess over the whole of India, except Upper Assam, the Punjab, and the greater part of the North-Western Provinces, Bihar and North Bengal, where it was in very slight defect. The excess was generally small in amount, but exceeded 2° in two areas, for which data are given below :—

Area.	Station.	Mean minimum temperature. Actual, May 1898.	Normal, May.	Variation of actual from normal, May 1898.
		°	°	°
First area	Bickaneer	81·7	78·8	+2·9
	Ajmere	80·3	77·7	+2·6
	Lahore	74·6	72·1	+2·5
	Jacobabad	79·2	76·9	+2·3
	Mooltan	78·3	76·0	+2·3

Area.	Station.	Mean minimum temperature. Actual, May 1898.	Normal, May.	Variation of actual from normal, May 1898.
		°	°	°
Second area	Hazaribagh	79·0	74·3	+2·7
	Ranchi	76·6	73·9	+2·7
	Hyderabad (Deccan)	81·4	77·9	+3·5
	Hoshangabad	83·1	79·7	+3·4
	Saugor	80·8	77·6	+3·2
	Amraoti	82·1	79·2	+2·9
	Khandwa	83·0	80·2	+2·8
	Malegaon	77·1	74·7	+2·4
	Sholapur	78·3	76·0	+2·3

The mean temperature of the month was in very slight defect in Lower and Central Burma, Upper Assam, the West Punjab, Lower Sind and the western districts of the North-Western Provinces, and was above the normal over the remainder of India. The mean temperature of the month was 2° or upwards in excess in four small areas, for which data are given below :—

Area.	Station.	Mean daily temperature. Actual, May 1898.	Normal, May.	Variation of actual from normal, May 1898.
		°	°	°
First area	Mooltan	92·8	90·4	+2·4
	Bickaneer	94·6	92·6	+2·0
	Jacobabad	95·6	93·6	+2·0
Second area	Amraoti	95·7	93·2	+2·5
	Hyderabad (Deccan)	92·9	90·4	+2·5
	Hoshangabad	96·0	93·6	+2·4
	Khandwa	95·5	93·1	+2·4
	Akola	95·9	93·9	+2·0
Third "	Hazaribagh	89·7	86·3	+3·4
	Gaya	94·2	91·2	+3·0
	Ranchi	88·9	85·9	+3·0
	Burdwan	90·2	87·3	+2·9
	Balasore	89·3	86·8	+2·5
Fourth "	Silchar	83·7	80·1	+3·6
	Chittagong	84·0	81·6	+2·4

Temperature was normal or in slight excess at the Himalayan hill stations in North-Western India, as is shown by the following data :—

Station.	Mean daily temperature. Actual, May 1898.	Normal, May.	Variation of actual from normal, May 1898.
	°	°	°
Ranikhet	70·1	68·2	+1·9
Darjeeling	58·2	56·7	+1·5
Mussoorie	67·5	66·4	+1·1
Simla	65·3	64·5	+0·8
Quetta	67·5	67·6	—0·1
Chakrata	64·2	64·9	—0·7
Murree	66·6	67·3	—0·7

The following gives temperature data for 56 meteorological divisions of the Empire :—

Province.	Division.	Actual Temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of Maximum temperature.	Minimum temperature.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	87·4	75·2	81·3	12·3	20·7	—2·0	0	—2·0
	Lower Burma (Deltaic)	88·6	77·7	83·2	10·9	22·7	—1·9	+0·6	—2·5
	Central do.	95·2	77·3	86·3	17·9	31·3	—2·6	+0·4	—3·0
	Upper do.	97·3	76·0	86·7	21·3	35·1	+1·1	+0·3	+0·8
	Arakan	92·1	77·2	84·7	14·9	31·3	+1·6	+1·6	0

Province.	Division.	Actual temperature.					Variation from normal of		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum temperature.	Minimum temperature.	Daily range.
		°	°	°	°	°	°	°	°
Bengal and Assam	Eastern Bengal	92·5	75·7	84·1	16·8	30·7	+2·6	+1·0	+1·6
	Assam (Surma)	93·6	73·7	83·7	19·9	31·3	+5·6	+1·6	+4·0
	Do. Hills	?	?	?	?	?	?	?	?
	Do. (Brahmaputra)	86·7	72·0	79·4	14·7	29·6	+0·6	—0·2	+0·8
	Deltaic Bengal	97·3	77·9	87·6	19·4	34·0	+2·1	+1·0	+1·0
	Central do.	100·0	76·5	88·3	23·5	40·2	+3·4	+0·3	+3·1
	North do.	90·0	72·6	81·3	17·4	32·4	+1·7	+0·2	+1·5
	Bengal Hills	65·3	48·5	56·9	16·8	29·7	+2·0	+0·9	+1·1
	Orissa	95·1	80·1	87·7	15·0	29·5	+1·7	+0·7	+1·0
	Chota Nagpur	104·7	77·7	91·2	27·0	41·0	+3·6	+1·9	+1·7
	South Bihar	104·6	78·6	91·7	26·0	40·6	+2·8	+1·0	+1·8
	North do.	98·4	74·3	86·3	24·0	39·8	+1·4	—0·2	+1·6
North-Western Provinces and Oudh.	North-Western Provinces (East)	107·3	78·5	92·9	28·8	39·8	+1·5	+0·3	+1·2
	Oudh (South)	106·9	77·9	92·5	29·0	45·0	+2·8	+1·3	+1·5
	Do. (North)	103·5	76·5	90·0	27·0	41·1	?	?	?
	North-Western Provinces (Central)	107·6	80·1	93·9	27·5	42·7	+1·8	+0·5	+1·3
	Do. do. (West)	104·1	77·4	90·8	26·8	41·9	+0·2	—0·9	+1·1
	Do. do. (East Submontane)	103·5	76·7	90·1	26·8	39·4	+2·9	0	+2·9
	Do. do. (West do.)	100·2	72·3	86·3	27·9	43·9	+0·8	—0·8	+1·6
	Do. do. (Hills)	76·0	57·4	66·7	18·6	36·1	+0·7	+0·8	—0·1
Punjab	Punjab (South-East)	103·4	79·8	91·6	23·6	41·3	—0·9	+0·6	—1·5
	Do. (South)	104·0	75·8	89·9	28·2	46·4	—0·6	+0·3	—0·9
	Do. (Central)	101·9	74·6	88·3	27·3	48·5	—0·9	+2·5	—3·4
	Do. (Submontane)	103·6	74·5	89·1	29·2	45·6	0	+0·9	—0·9
	Do. (Hills)	72·4	50·3	61·4	22·1	42·9	—0·9	+0·2	—1·1
	Do. (North)	97·2	68·1	82·7	29·2	52·5	—0·3	—0·5	+0·2
	Do. (West)	104·0	75·2	89·6	28·8	50·0	+0·5	+0·9	—0·4
Bombay and Malabar Coast Districts (Madras).	Malabar	89·8	78·2	84·0	11·6	19·2	+1·2	+0·6	+0·6
	Madras (South Central)	97·7	75·0	86·3	22·7	33·3	+0·9	+0·5	+1·4
	Coorg	79·9	65·6	72·8	14·3	21·8	—1·0	+1·1	—2·1
	Mysore	91·9	69·1	80·5	22·8	33·2	+1·8	+0·3	+1·5
	Konkan	90·4	81·0	85·7	9·4	16·9	+0·9	+1·0	—0·1
	Bombay Deccan	100·1	73·1	86·7	27·1	37·6	+1·8	+1·5	+0·3
	Hyderabad (North)	103·8	77·7	90·8	26·1	36·8	?	?	?
	Khandesh	103·2	75·4	89·3	27·8	39·7	+1·0	+2·4	—1·4
Central Provinces and Berar.	Berar	109·3	82·3	95·8	27·1	39·5	+2·2	+2·4	—0·2
	Central Provinces (West)	108·8	82·8	95·8	26·0	39·0	+1·7	+3·1	—1·4
	Do. (Central)	106·9	80·0	93·5	26·9	39·0	+1·4	+1·4	0
	Do. (East)	108·0	82·1	95·1	26·0	37·7	+1·6	+1·1	+0·5
Bombay (North)	Gujarat	103·7	80·0	91·9	23·8	35·2	?	?	?
	Kathiawar and Cutch	100·2	77·4	88·8	22·8	33·7	+0·4	+0·1	+0·3
	Sind	103·7	79·0	91·4	24·7	37·3	0	+1·0	—1·0
	Baluchistan Hills	87·6	55·3	71·5	32·4	51·8	0	—0·1	+0·1
Rajputana and Central India.	Central India (East)	106·0	78·8	92·4	27·1	38·9	+1·4	+1·6	—0·2
	Rajputana (East), Central India (West)	105·4	79·4	92·4	26·0	44·6	+0·6	+1·1	—0·5
	Do. (West)	107·4	79·9	93·7	27·5	46·1	+1·0	+2·9	—1·9
Madras	East Coast (North)	94·4	81·8	88·1	12·7	28·4	?	?	?
	Do. do. (a)	?	?	?	?	?	?	?	?
	Hyderabad (South)	104·9	80·7	92·8	24·1	35·7	+2·3	+3·3	—1·0
	Madras (Central)	105·0	80·6	92·8	24·4	34·4	+1·0	+0·3	+0·7
	East Coast (Central)	104·7	82·6	93·7	22·1	40·7	+3·3?	+1·9?	+1·4?
	Do. (South)	100·9	79·7	90·4	21·2	36·0	+2·0	+0·8	+1·2
	Madras (South)	97·9	79·9	89·0	17·9	28·9	—0·2	+1·1	—1·3

The month may be divided into four periods, in each of which the temperature conditions were similar throughout the period. These were from the 1st to the 5th, the 6th to the 11th, the 12th to the 22nd, and the 23rd to the end of the month.

The chief feature of the first period, extending from the

1st to the 5th was the persistent high temperature and large excess of temperature over the whole of Northern and Central India. The following variation data for the 24 hours preceding 8 A.M. of the 1st indicate the conditions obtaining at the commencement of the period :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF AVERAGE ACTUAL TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF 1ST MAY 1898.		
	Maximum.	Minimum.	Mean.
	°	°	°
Burma	+2·6	+2·9	+2·8
Bengal and Assam	+4·2	+4·7	+4·5
North-Western Provinces and Oudh	+6·0	+1·0	+3·5
Punjab	+8·9	+4·1	+6·5
Sind and Rajputana	+4·7	+5·3	+5·0
Central India and Gujarat	+5·0	+5·5	+5·3
Central Provinces and Berar	+5·4	+4·3	+4·9
Bombay	+2·8	+3·9	+3·4
Madras	+1·4	+1·2	+1·3

The data hence show that both the day and night temperatures were in excess over the Indian area and that the excess was considerably greater in the day than the night temperature in the Punjab and North-Western Provinces, but was practically identical in amount in the day and night temperatures over the remainder of India.

The following gives the average variations of the mean daily temperature from the 1st to the 5th in seventeen political divisions :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	1st May.	2nd May.	3rd May.	4th May.	5th May.
	°	°	°	°	°
Baluchistan (Quetta)	+4·3	+6·0	+0·7	—0·6	+2·3
Punjab	+6·5	+7·1	+8·8	+4·4	+3·9
Sind	+2·0	+2·8	+5·1	+0·9	+2·0
Rajputana	+7·3	+5·5	+7·4	+4·8	+2·6
North-Western Provinces and Oudh.	+3·5	+5·5	+6·2	+6·3	+4·8
Central India and Gujarat	+5·3	+5·2	+5·2	+4·0	+3·6
Bihar	+5·4	+4·7	+5·7	+5·5	+4·4
Chota Nagpur	+3·7	+3·1	+6·5	+7·0	+6·9
Bengal	+4·6	+4·8	+4·7	+4·8	+3·5
Assam	+6·3	+5·4	+2·7	+3·2	+2·8
Central Provinces	+4·0	+6·5	+6·2	+3·9	+3·0
Berar	+8·5	+9·8	+6·8	+6·2	+3·4
Bombay Deccan	+4·0	+1·6	+1·3	+2·9	+0·2
Madras Deccan	+1·9	—0·9	+0·6	+0·9	—1·6
Bombay Coast	+1·9	+1·0	+1·1	+1·3	—0·6
Madras Coast	+1·0	+0·5	+2·3	+1·4	+1·2
Burma	+2·8	+3·2	+2·8	+2·4	+2·0

The chief features of the period were (1), great excess in Cachar ; (2), large excess in the East Punjab and the Punjab hills from the 1st to the 3rd, and (3), the transfer of the area of greatest excess of temperature from the Punjab on the 3rd to North-Eastern India on the 5th.

The following gives data for stations at which the excess was more than 10° on each day of the period :—

DATE.	STATION.	VARIATION FROM NORMAL OF ACTUAL TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF DATE.		
		Maximum.	Minimum.	Mean.
		°	°	°
1st	Murree	+12·7	+13·3	+13·0
	Ranikhet	+10·7	+10·8	+10·8
	Silchar	+12·1	+ 8·1	+10·1
2nd	Murree	+10·8	+13·3	+12·1
	Rawalpindi	+15·2	+ 7·1	+11·2
	Simla	+10·2	+ 9·9	+10·1
	Silchar	+12·8	+ 7·4	+10.1
	Hoshangabad	+ 5·7	+17·7	+11·7
3rd	Rawalpindi	+ 9·1	+17·3	+13·2
	Lahore	+ 9·4	+13·3	+11·4
	Ludhiana	+ 8·9	+14·6	+11·8
	Ranikhet	+10·9	+ 9·2	+10·1
	Darjeeling	+16·1	+ 6·7	+11·4
	Silchar	+11·1	+ 9·5	+10·3
4th	Silchar	+14·3	+10·4	+12·4
5th	Hazaribagh	+10·0	+11·0	+10·5

The highest maximum temperatures of the month were registered during this period in Burma and at several stations in Bihar, Chota Nagpur, the North-Western Prov-

inces and Berar. The following gives the more noteworthy :—

Province.	Station.	Date.	Highest maximum temperature recorded in May 1898.
			°
Berar	Akola	1st	116·0
	Amraoti	1st	115·0
Central Provinces	Khandwa	1st	114·7
Hyderabad (Deccan)	Indur	3rd	115·3
Burma	Minbu	2nd	106·6
	Mandalay	5th	106·1
	Yamethin	1st	105·5
	Thayetmyo	1st	105·1
Chota Nagpur	Chaibassa	4th	113·7
	Daltonganj	4th	113·6
	Hazaribagh	4th	108·6
Bihar	Gaya	4th	113·5
	Dehri	3rd	113·5
North-Western Provinces.	Lucknow	3rd	113·8
	Allahabad	4th	113·7
	Benares	3rd	112·8

During the second period extending from the 6th to the 11th, temperature was reduced more or less below the normal over North-Eastern India and Burma by the rainfall accompanying and following the cyclonic storm which formed in the Bay during the first week of the month. The following gives the variations of the mean daily temperature from the mormal during this period in the areas affected by this rainfall :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	6th May.	7th May.	8th May.	9th May.	10th May.	11th May.
	°	°	°	°	°	°
Burma	—0·1	—5·6	—6·3	—4·8	—1·3	—0·6
Assam	—0·5	+3·1	+2·0	+2·2	—0·1	+1·1
Bengal	+2·3	+3·1	+1·3	+0·7	—2·8	—0·8
Orissa	+2·3	0	—2·9	+2·1	+3·6	—1·3
Chota Nagpur	+5·6	+1·1	—3·1	+1·9	+4·7	+2·2
Bihar	+2·6	—1·0	—2·7	—0·9	—3·3	—1·3

The reduction of temperature was much greater in Burma than elsewhere and was most marked on the 7th and 8th. The following gives comparative data for stations at which temperature was reduced more than 10° below the normal :—

Date.	Station.	Variaton from normal of actual temperature of 24 hours preceding 8 A.M. of date.		
		Maximum.	Minimum.	Mean.
		°	°	°
7th	Thayetmyo	—22·6	—2·1	—12·4
	Yamethin	—20·7	—4·0	—12·4
	Minbu	—18·7	—3·5	—11·1
8th	Minbu	—18·1	—4·7	—11·4
	Kindat	—16·2	—3·9	—10·1

Temperature was more or less in excess during the period over the whole of North-Western and Central India and part of the Deccan, as shown below :—

Province.	Variation from normal of average mean temperature of 24 hours preceding 8 A.M. of					
	6th May.	7th May.	8th May.	9th May.	10th May.	11th May.
	°		°	°	°	°
Baluchistan (Quetta)	+2·2	+3·7	+3·7	—1·0	+0·5	+2·5
Punjab	+6·7	+5·4	+9·0	+7·6	+2·6	+4·0
Sind and Rajputana	+4·7	+5·0	+4·6	+2·9	+2·2	+2·7
North-Western Provinces and Oudh.	+4·3	+4·3	+2·9	+3·8	+3·2	+1·9
Central India and Gujarat.	+4·2	+4·2	+3·5	+1·3	+1·3	+1·0
Central Provinces and Berar.	+3·1	+3·6	+3·7	+2·7	+2·5	+2·2
Bombay Deccan	+0·7	+1·0	—3·3	—2·1	—1·2	+0·1
Madras Deccan	—0·9	+0·4	—1·1	—1·1	+1·2	+2·7

The position of the area of greatest excess of temperature during the period is indicated by the following data :—

Date.	Station.	Variation from normal of actual temperature of 24 hours preceding 8 A.M. of date.		
		Maximum.	Minimum.	Mean.
		°	°	°
6th	Peshawar	+11·5	+14·4	+13·0
7th	Peshawar	+10·9	+5·3	+8·1
8th	Peshawar	+14·0	+13·2	+13·6
	Rawalpindi	+11·9	+11·4	+11·7
	Mooltan	+18·3	+10·1	+11·7
	D. I. Khan	+10·5	+11·7	+11·1
9th	Rawalpindi	+14·3	+8·0	+11·2
	Peshawar	+9·8	+11·8	+10·8

Temperature was hence most largely in excess in the North and West Punjab, and the highest temperatures of

the month were registered in the Punjab on the 8th and 9th, as shown below :—

STATION.	Date.	Highest maximum temperature recorded in May 1898.
		°
Mooltan	8th	117·8
Montgomery	8th	117·1
Sirsa	8th	115·3
Khushab	8th	113·4
Umballa	9th	112·9
Lahore	8th	111·6
Ludhiana	7th and 8th	111·4
Peshawar	8th	110·0

A noteworthy feature of the period was the very high temperature at the Madras coast stations from Cocanada to Negapatam, due to the prevalence of hot dry north-west winds blowing from the interior and heated in their descent to the coast.

The following gives variation data for seven stations in illustration :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	6th May.	7th May.	8th May.	9th May.	10th May.	11th May.
	°	°	°	°	°	°
Cocanada	+1·7	+5·3	+3·8	+0·7	+ 5·8	—0·1
Masulipatam	+2·6	+4·3	+6·6	+9·8	+10·2	+9·8
Madras	+3·1	+5·2	+8·0	+7·2	+ 8·7	+4·8
Negapatam	+5·9	—0·8	+5·2	+5·9	+ 7·3	+3·5
Hyderabad (Deccan)	+2·7	+5·3	+4·2	+4·6	+ 4·6	+4·3
Cuddapah	—0·5	+0·7	—0·2	+0·7	+ 3·1	+4·6
Madura	—1·8	—1·7	+0·1	+1·0	+ 3·2	+1·3

The excess at the coast stations was far more marked in the day than the night temperature, as is shown below :—

DATE.	STATION.	VARIATION FROM NORMAL OF ACTUAL TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF DATE.		
		Maximum.	Minimum.	Mean.
		°	°	°
9th	Masulipatam	+15·6	+3·9	+9·8
"	Madras	+10·6	+3·8	+7·2
"	Negapatam	+11·0	+0·7	+5·9
10th	Masulipatam	+16·8	+3·5	+10·2
"	Madras	+13·0	+4·4	+8·7
"	Negapatam	+11·8	+2·8	+7·3
11th	Musulipatam	+16·2	+3·3	+9·8
"	Madras	+10·8	—1·6	+4·6
"	Negapatam	+11·3	—2·9	+4·2

The highest day temperatures of the month were recorded at these coast stations during this period and were, as shown below, fairly comparable with the maximum temperatures recorded in the driest and hottest districts of the interior. The following gives data for these stations :—

STATION.	Highest maximum temperature recorded in May 1898.	Date on which recorded.
	°	
Masulipatam	115·7	10th
Nellore	114·8	11th
Cocanada	111·1	10th
Madras	110·0	10th

The variations from the normal of the temperature conditions of the third period were generally opposite in character to those of the second period. Temperature was throughout more or less in defect in North-Western and Central India, and more or less in excess in North-Eastern India. Weather was more or less disturbed with occasional showers in the plains of North-Western India and a late and unusually heavy fall of snow occurred in the Punjab and Kashmir Hymalayas. The following gives variation data for every second day from the 12th to the 22nd in the areas of deficient temperature during the greater part of the period :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	12th May.	14th May.	16th May.	18th May.	20th May.	22nd May.
	°	°	°	°	°	°
Baluchistan (Quetta)	—1·7	+2·5	—7·0	—5·5	—6·0	—0·7
Punjab	—0·3	—9·5	—9·3	—6·2	—5·7	—5·0
Sind and Rajputana	—2·6	—6·5	—4·7	—4·3	—3·1	+1·0
North-Western Provinces and Oudh.	—0·1	—3·7	—0·9	—1·3	—3·7	—3·6
Central India	—1·2	—4·0	—1·4	—2·5	—3·6	—0·4

The data show that temperature was very largely below the normal in North-Western India, and more especially in the North and North-East Punjab contiguous to the

areas of heavy snow in the hills. The deficiency was much less in the night than in the day temperature. The following gives data showing the greatest deficiency of temperature and its locality on each day from the 13th to the 22nd :—

Date.	Station.	Variation from normal of actual temperature of 24 hours preceding 8 A.M. of date.		
		Maximum.	Minimum.	Mean.
		°	°	°
13th	Sirsa	—17·7	— 9·0	—13·4
"	Delhi	—17·2	—10·1	—13·7
14th	Jeypore	—14·7	— 8·7	—11·7
"	Sialkot	—15·6	— 7·8	—11·7
15th	Murree	—11·2	—11·9	—11·6
"	D. I. Khan	—13·2	— 6·6	— 9·9
16th	Murree	—20·9	—12·5	—16·7
"	Peshawar	—14·9	— 9·1	—12·0
17th	Murree	—15·8	— 7·9	—11·9
"	Peshawar	—15·1	— 7·9	—11·5
18th	Peshawar	—12·5	— 7·3	— 9·9
"	D. I. Khan	—13·5	— 5·0	— 9·3
19th	Jeypore	—10·7	— 6·9	— 8·8
"	D. I. Khan	—10·2	— 9·7	—10·0
20th	Murree	— 9·4	— 9·8	— 9·6
21st	Murree	—19·0	— 9·4	—14·2
"	Rawalpindi	—16·5	—10·4	—13·5
22nd	Ranikhet	— 3·0	—17·8	—10·4
"	Rawalpindi	— 6·7	— 8·0	— 7·4

The lowest night temperatures of the month were recorded in North-Western India in this period, but were not so low as have been occasionally registered during the previous 20 years, as is shown by the following data :—

Station.	Lowest minimum temperature recorded in May 1898.	Date on which recorded.	Lowest minimum temperature recorded in May, previous to 1898.	Year in which recorded.
	°		°	
Peshawar	57·0	13th	51·3	1881
Rawalpindi	58·1	21st	53·1	1880&1891
Bareilly	60·7	12th	62·0	1868
Kalat	35·0	4th	26·8	1895
Murree	41·0	13th	32·0	1875
Simla	47·2	14th	42·0	1876
Chakrata	45·7	21st	37·2	1876
Dehra Dun	61·0	20th	56·0	1878

As a result of the contrast between the excess in the day temperature of the second period and the diminished night temperature of the third period in North-Western India, the absolute range of temperature during the month was unusually great and exceeded 50° at stations for which data are given below :—

Station.	Absolute range during the month of May 1898.
	°
Kalat	60·7
Peshin	54·1
Sharigh	51·8
Dras	50·8
Khushab	54·9
Peshawar	53·0
Rawalpindi	51·9
Sirsa	50·5

Temperature was more or less in excess in North-Eastern India and Madras during this period, as is shown by the following data :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	12th May.	14th May.	16th May.	18th May.	20th May.	22nd May.
	°	°	°	°	°	°
Bengal	+ 0·1	+0·7	+4·3	+4·3	+5·0	+2·6
Assam	+0·4	+3·1	+4·6	+3·2	+5·5	+1·7
Bihar	+2·1	+1·5	+2·2	+0·2	+2·9	+1·7
Chota Nagpur	+1·1	+1·0	+2·1	+1·4	+3·2	+0·7
Orissa	—1·2	—1·2	+1·2	+4·4	+2·7	+1
Madras	+2·9	+3·1	+0·8	+1·5	+1·5	+0·9

Temperature varied irregularly from the normal in Southern India and Burma, depending upon the occurrence of local and sporadic thunderstorms.

Temperature increased rapidly in North-Western India on the 23rd and 24th, and was more or less above the normal over the greater part of India during the fourth period of the month, extending from the 23rd to the 31st. The variations were less marked than in the preceding three periods.

The following table gives variation data of the mean

daily temperature for every second day of this period from the 23rd to the 31st in seventeen political divisions:—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	23rd May.	25th May.	27th May.	29th May.	31st May.
	°	°	°	°	°
Baluchistan (Quetta)	+1·9	−0·5	+7·1	+1·8	+1·8
Punjab	−2·4	+0·9	+3·9	+0·1	+3·5
Sind	+1·2	+0·6	+0·3	−0·8	+2·9
Rajputana	+2·6	+5·9	+4·1	+4·4	+6·0
North-Western Provinces and Oudh.	−1·3	+1·9	+3·1	−0·5	−2·5
Central India and Gujarat	+2·5	+2·3	+1·9	+2·4	+2·7
Bihar	+2·4	+1·9	−1·7	−4·4	−9·4
Chota Nagpur	+3·3	+7·3	+6·8	−1·0	−2·3
Bengal	+2·6	−0·4	−3·1	−1·8	−3·3
Assam	+0·6	−4·8	−4·0	−0·6	−2·5
Central Provinces	+2·6	+1·7	+2·5	+1·4	+4·9
Berar	+4·6	+4·3	+3·8	+5·6	+5·5
Bombay Deccan	+4·7	+1·7	+1·5	+3·6	+1·6
Madras Deccan	+2·3	+1·9	+0·9	+1·7	+0·1
Bombay Coast	+1·0	+1·3	+1·4	+1·9	+1·3
Madras Coast	−2·1	−3·1	−3·8	−3·9	−4·8
Burma	−1·8	−0·5	+0·3	+0·8	+2·0

The data indicate that temperature was reduced considerably below the normal in Bengal, Chota Nagpur, Bihar and the Madras coast on the 29th, 30th and 31st, due to rainfall accompanying series of thunderstorms. Temperature was very high in Sind at the end of the month, and the highest day temperatures of the year were recorded in that area on the 30th and 31st, the absolute maximum being 123°·0 on the 31st at Jacobabad.

The following table gives the variations of the mean temperature week by week during the month and also for the whole month:—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING				For May 1898.
	7th May.	14th May.	21st May.	28th May.	
	°	°	°	°	°
Burma	+1·1	−2·4	−0·3	−0·2	−0·2
Bengal and Assam	+3·7	+0·4	+3·5	+0·7	+1·7
North-Western Provinces and Oudh.	+5·0	+0·4	−2·5	+0·7	+0·7
Punjab	+6·1	+0·5	−7·5	+0·2	+0·2
Sind and Rajputana	+4·4	−0·3	−4·4	+1·7	+0·9
Central India and Gujarat	+4·5	−0·2	−2·6	+1·9	+1·0
Central Provinces and Berar	+4·5	+1·0	−1·6	+2·4	+1·8
Bombay	+1·6	+0·1	+0·5	+1·9	+1·2
Madras	+0·7	+2·7	+1·3	0	+1·0

Winds.

Winds were stronger than usual at Port Blair, Diamond Island and Akyab. They were, on the average of the month, much more westerly than usual at Port Blair and the Burma coast stations. The following gives data in illustration:—

STATION.	MEAN WIND DIRECTION.		
	Actual, May 1898.	Normal, May.	Westerly deflection.
Port Blair	S 68° W	S 38° W	+30°
Rangoon	S 43° W	S 21° W	+22°
Diamond Island	S 87° W	S 72° W	+15°
Akyab	S 65° W	S 24° W	+41°

The abnormal westing of the winds was related to the local deficiency of pressure in Tenasserim and probably Siam.

Winds were somewhat steadier than usual and, on the whole, of normal strength in Bengal and Orissa. The following gives data for five stations:—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, May 1898.	Normal, May.	Percentage variation from normal.	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.
Chittagong	180	150	+20	58	42	+16
False Point	292	338	−14	85	73	+12
Saugor Island	496	394	+26	82	73	+9
Calcutta	165	172	−4	69	65	+4
Dacca	184	157	+17	60	61	−1

The mean velocity of the winds at Saugor Island during the month was 21 miles per hour. A noteworthy feature of the meteorology of the month was the strength of the sea winds blowing across the Bengal coast.

As might be expected from the abnormal pressure features of the month, winds were less easterly or more westerly than usual in the interior of Bengal and Orissa. They were, on the other hand, less westerly at Saugor Island and False Point where winds almost invariably show an opposite deflection to that of the inland stations. The following data illustrate this feature of May 1898 :—

	Station.	Mean wind direction.	
		Actual, May 1898.	Normal, May.
Coast stations	False Point	S 12° W	S 23° W
	Saugor Island	S 22° E	S 8° W
Inland stations	Cuttack	S 25° W	S 13° W
	Narayanganj	S 15° E	S 18° E
	Calcutta	S 12° W	S 7° E
	Burdwan	S 5° W	S 5° E

Winds were slightly above their normal strength in Bihar and the greater part of the North-Western Provinces and were also very steady over nearly the whole of that area. This is shown by the following data for four representative stations :—

Station.	Mean steadiness.			Mean wind velocity in miles per diem.		
	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Hazaribagh	37	15	+22	221	222	— 1
Patna	31	42	—11	158	129	+29
Allahabad	43	24	+19	181	149	+32
Agra	53	37	+16	182	145	+37

Easterly winds frequently extend in May across the northern districts of Bihar into the eastern districts of the North-Western Provinces, and give a well marked easterly component to the wind directions. In May 1898 this influence extended westwards as far as Central Bihar and was less marked than usual. The following gives data for two stations in North Bihar, and also for Hazaribagh, Allahabad and Lucknow :—

Station.	Mean wind direction.		Mean steadiness.		
	Actual, May 1898.	Normal, May.	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.
Darbhanga	S 65° E	S 82° E	42	60	—18
Patna	N 45° E	N 57°E	31	42	—11
Hazaribagh	N 29° W	S 83° W	37	15	+22
Allahabad	N 34° W	N 3° W	43	24	+19
Lucknow	N 85° W	N 25° W	52	26	+26

Winds were, as usual in May, unsteady in the western districts of the North-Western Provinces, but were, on the other hand, steadier and stronger than usual in the East Punjab and Upper Sind. The following gives comparative data for stations at which this feature was most marked :—

Station.	Mean steadiness.			Mean wind velocity in miles per diem.		
	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual, from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Roorkee	6	11	— 5	75	90	—15
Meerut	26	22	+ 4	70	64	+6
Ludhiana	18	11	+ 7	70	58	+12
Jacobabad	24	10	+14	145	112	+33

The following gives comparative wind data of the various provinces of Northern India for the month :—

Province.	Mean steadiness.			Mean wind velocity in miles per diem.		
	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Bengal	57	55	+ 2	200	191	+ 9
Orissa	80	62	+18	208	232	—24
Bihar	37	51	—14	161	141	+20
Chota Nagpur	37	15	+22	221	222	— 1
North-Western Provinces and Oudh.	34	24	+10	109	100	+ 9
Punjab	27	18	+ 9	71	80	— 9

Winds were much steadier than usual and were normal, on the mean of the month, in direction and force in

Rajputana and Central India. The following data for three stations illustrate these features:—

STATION.	MEAN STEADINESS.			MEAN WIND DIRECTION.	
	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.
Ajmere	74	66	+ 8	S 81° W	S 76° W
Nowgong	66	53	+13	N 77° W	N 73° W
Sutna	66	55	+11	N 51° W	N 55° W

Winds varied very irregularly from the normal at the hill stations in Northern India. They were generally much more variable than usual. The northerly element was abnormally strong at several stations, as is shown by the following data:—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.		
	Actual, May 1898.	Normal, May.	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.
Srinagar	N 43° W	S 78° E	31	11	+20
Simla	N 66° W	S 68° W	11	33	—22
Ranikhet	N 86° W	S 65° W	48	46	+ 2
Katmandu	N 74° E	S 88° W	8	49	—41
Darjeeling	N 69° W	S 74° W	27	38	—11

This feature was chiefly a result of the prolonged and feebly unsettled showery weather in the hills from the 12th to the 21st.

The mean air movement of the month was stronger than usual and practically normal in direction in Berar, the Central Provinces and the Deccan. The data of the following stations illustrate these features:—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN WIND DIRECTION.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Westerly deflection.
Akola	237	224	+ 13	N 45° W	N 50° W	— 5°
Jubbulpore	109	102	+ 7	N 65° W	N 69° W	— 4°
Raipur	208	193	+ 15	N 89° W	N 80° W	+ 9°
Poona	443	342	+101	N 83° W	N 74° W	+ 9°
Sholapur	321	255	+ 66	N 49° W	N 49° W	0

The increased air movement in this area was, on the whole, most strongly shown in the West Deccan represented by Poona and Sholapur.

Winds were much steadier and slightly weaker than usual at the west coast stations. The variations were small and of no significance. Winds were normal in their mean direction at Bombay, Ratnagiri and Karwar. They were feebler in Mysore and slightly stronger than usual in the interior of Madras. The following gives data for five stations in illustration:—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.
Madras	194	219	—25	56	65	— 9
Trichinopoly	168	150	+18	52	58	— 6
Salem	129	98	+31	34	55	—21
Hassan	79	109	—30	61	72	—11
Chitaldroog	204	232	—28	68	75	— 7

The following gives comparative data of the air movement during the month in Rajputana, Central India and the Peninsula:—

PROVINCE.	MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Rajputana	228	228	0
Central India	122	144	—22
Central Provinces	159	163	— 4
Berar	271	255	+16
Deccan	303	279	+24
Bombay Coast	180	194	—14
Madras	176	168	+ 8

A reference to the wind section of the Weather Review of May 1897 will show that the abnormal features of the air movement in India in May 1897 and May 1898 were very similar in general character.

Winds were weaker and more southerly than usual at Aden and Perim. They were feeble and unsteady at the Seychelles.

The following gives comparative data for these stations:—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, May 1898.	Normal, May.	Actual percentage, May 1898.	Normal percentage, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Aden	S 18° E	S 60° E	39	40	— 1	238	266	—28
Perim	S 47° E	S 82° E	48	32	+16	294	337	—43
Seychelles	N 66° E	S 44° E	40	58	—18	133	173	—40

Humidity and Cloud.

The air contained more aqueous vapour than usual in Burma and Upper Assam, and humidity was hence above the normal in these areas to a moderate extent. The mean humidity percentage of the month was 5 in excess at Diamond Island, 3 at Rangoon and 1 at Akyab and Sibsagar.

The air was also slightly damper in the Indus Valley and the Madras coast districts from Vizagapatam to Madras and also locally at Salem and Belgaum.

It was drier than usual over the remainder of India. The increased dryness of the air was marked in two areas. The first included the greater part of the Southern Punjab, the adjacent districts of the North-Western Provinces and the Upper India hill districts. The following gives comparative data for stations in these plain districts in which humidity was most largely below the normal:—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
	"	"	"	%	%	
Mooltan . . .	·433	·592	—·159	30	42	—12
Ludhiana . . .	·386	·495	—·109	30	41	—11
Roorkee . . .	·361	·428	—·067	30	35	— 5

The humidity was also as largely below the normal in the adjacent hill districts, as is shown below:—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
	"	"	"	%	%	
Chakrata . . .	·211	·276	—·065	38	48	—10
Ramkhet . . .	·275	·334	—·059	41	50	— 9
Simla	·232	·279	—·047	40	46	— 6
Murree . . .	·232	·262	—·030	39	42	— 3

The air was, on the other hand, slightly damper at Srinagar and Leh. The mean humidity of the month agreed with the normal at Kailang.

The second area included Cachar, the greater part of Bengal, Chota Nagpur, Bundelkhand, the Central Provinces and Berar, in which areas the mean humidity of the month was more than 5 in defect. The following table gives comparative data:—

Division.	Station.	Mean absolute humidity.			Mean relative humidity.		
		Actual, May 1898.	Normal, May.	Variation of actual from normal.	Actual, May 1898.	Normal May.	Variation of actual from normal.
		"	"	"	%	%	
Cachar .	Silchar .	·757	·798	—·041	68	80	—12
Bengal .	Berhampore.	·731	·811	—·080	61	71	—10
	Calcutta.	·825	·883	—·058	66	74	— 8
	Narayanganj.	·842	·883	—·041	74	80	— 6
	Burdwan.	·780	·813	—·033	60	66	— 6
Chota Nagpur.	Hazaribagh.	·432	·467	—·035	34	40	— 6
Central Provinces.	Raipur .	·368	·468	—·100	24	32	— 8
	Khandwa.	·379	·466	—·087	25	33	— 8
	Hoshangabad.	·445	·474	—·029	27	32	— 5
Berar .	Buldana .	·358	·425	—·067	27	34	— 7
Bundelkhand.	Nowgong.	·362	·420	—·058	24	31	— 7

The following gives comparative data for Northern and Central India and the Central Provinces:—

Division.	Mean absolute humidity.			Mean relative humidity.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
	"	"	"	%	%	
Assam . . .	·779	·794	—·015	76	81	—5
Bengal . . .	·845	·875	—·030	70	76	—6
Chota Nagpur . .	·432	·467	—·035	34	40	—6
Bihar	·678	·730	—·052	56	59	—3
North-Western Provinces and Oudh.	·495	·474	+·021	37	37	0
Punjab . . .	·408	·488	—·080	34	39	—5
Rajputana . . .	·488	·509	—·021	36	37	—1
Central India . .	·347	·395	—·048	24	30	—6
Berar	·362	·417	—·055	26	32	—6
Central Provinces .	·405	·455	—·050	26	31	—5

As already pointed out, the increased dryness of the air was most marked at Silchar, representative of Cachar, as was also the case during the preceding months of April and March, the whole spring season of 1898 being, in fact, the driest on record in that area.

The following table gives comparative data for the Peninsula :—

AREA.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.	Actual, May 1898.	Normal, May.	Variation of actual from normal.
	"	"	"	%	%	
Bombay Coast	·858	·863	—·005	71	74	—3
Bombay Deccan	·516	·525	—·009	47	47	0
Madras Coast	·903	·875	+·028	67	65	+2
Madras, Central	·499	·577	—·078	40	44	—4
Madras, South	·738	·745	—·007	59	60	—1
Mysore	·602	·603	—·001	63		—4

The mean humidity of the month was 2 below the normal at Quetta (representative of Baluchistan) and 5 below at the hill station of Wellington in Southern India.

The following gives a list of the stations at which the mean humidity of the month was below 30 per cent., showing the driest areas in India during the month :—

STATION.	RELATIVE HUMIDITY, MAY 1898.	
	Mean daily.	Mean 16 hours.
	%	%
Sutna	23	13
Nowgong	24	13
Raipur	24	13
Khandwa	25	14
Buldana	27	15
Jubbulpore	27	16
Nagpur	27	19
Hoshangabad	27	19

Hence in May 1898 the area of greatest dryness of the air included the greater part of the Central Provinces, Bundelkhand and Baghelkhand.

The driest period of the month in North-Western and Central India was from the 3rd to the 7th. The following were the lowest humidities recorded during the month at the driest stations :—

STATION.	Date.	Relative humidity at 4 P.M.
		%
Deesa	3rd	7
Roorkee	"	7
Khandwa	4th	6
Akola	5th	5
Meerut	"	8
Raipur	6th	4
Akola	"	4
Jubbulpore	"	6
Jeypore	"	6
Nowgong	"	6
Raipur	7th	2
Sutna	"	4
Akola	"	5
Nowgong	"	6
Jubbulpore	"	6

The air was remarkably dry in Bihar, Chota Nagpur and West and Central Bengal from the 21st to the 23rd. The following gives the lowest humidities recorded in that area during the period :—

DATE.	STATION.	Relative humidity at 4 P.M.
		%
21st	Hazaribagh	12
	Patna	15
22nd	Burdwan	13
	Berhampore	14
	Hazaribagh	14
	Darbhanga	16
23rd	Hazaribagh	13
	Berhampore	15

The humidity percentages during these very dry periods were not quite so low as are occasionally registered in May.

The air was slightly drier at Zanzibar and Aden, and the mean humidity of the month was 7 below the normal at Aden and 4 below it at Zanzibar.

The chief features of the mean humidity conditions of the month were :—

(1) The air was slightly damper at Port Blair and in Burma and Upper Assam.

(2) The mean humidity of the month was more or less below the average over the remainder of India, with the local exception of the Madras East Coast districts and the Indus Valley where it was in very slight excess.

(3) The deficiency was very marked in the Southern Punjab and the Upper India hill districts and was chiefly a temperature effect, but was also, as in the preceding months of April and March, in part a result of the presence of a smaller qnantity of aqueous vapour than usual in the air.

(4) The deficiency was also large and pronounced in Cachar, Bengal, Chota Nagpur, the Central Provinces and Berar and was absolutely greatest at Silchar.

(5) This condition of decreased humidity extended westwards as far as Aden aud Bushire. It was the continuation of conditions established at the end of the previous south-west monsoon and remarkably persistent throughout the cold and hot weather periods of 1898.

The mean cloud amount of the month was in considerable excess at Port Blair and in Lower Burma. It was, on the other hand, in slight to large defect in Bengal, Bihar and Chota Nagpur. The following gives comparative data :—

Station or area.	Cloud amount.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal.
Port Blair	8·3	6·7	+1·6
Lower Burma	8·4	6·6	+1·8
Assam	5·7	6·4	—0·7
Bengal	4·6	5·1	—0·5
Chota Nagpur	3·5	3·6	—0·1
Bihar	1·5	2·3	—0·8

There was less cloud than usual in the North-Western Provinces, Lower Sind, Kathiawar and Berar. The mean cloud amount was normal or in excess in the areas, for which data are given below :—

Province or area.	Cloud amount.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal.
North-Western Provinces and Oudh	1·4	1·7	—0·3
Lower Sind	1·9	2·1	—0·2
Rajputana	1·9	1·7	+0·2
Central India	2·3	2·6	—0·3
Central Provinces	3·3	2·8	+0·5
Berar	2·4	2·5	—0·1

Cloud was largely above the normal on the mean of the month in the North and East Punjab, as is shown by the data of the stations given below :—

Station.	Cloud amount.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Peshawar	4·2	2·9	+1·3
Ludhiana	3·5	2·1	+1·4

Skies were clouded to an unusual extent during the month at the hill stations in Upper India and in Baluchistan and the mean cloud amount of the month was in largish excess at these stations. The following gives data :—

Station.	Cloud amount.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Leh	7·5	6·3	+1·2
Kailang	7·1	5·9	+1·2
Murree	4·4	4·0	+0·4
Simla	4·4	3·8	+0·6
Chakrata	3·7	3·5	+0·2
Quetta	2·9	1·2	+1·7

Cloud was also considerably in excess in the Madras, Deccan and in part of Mysore, as is shown below :—

Station.	Cloud amount.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Bellary	6·3	4·9	+1·4
Chitaldroog	5·4	4·2	+1·2
Hassan	6·3	5·4	+0·9

It was, on the other hand, below the normal over the whole of the Madras Presidency, except in Malabar and

the Madras Deccan. The following gives data for five representative stations :—

Station.	Mean cloud amount.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Cocanada	2·3	2·9	—0·6
Madras	2·8	3·8	—1·0
Trichinopoly	2·9	5·2	—2·3
Cochin	4·8	5·5	—0·7
Salem	4·3	4·6	—0·3

Cloud was in slight excess at Darjeeling and Chikalda and slightly below the normal at Pachmarhi and Mount Abu, and also at Wellington in Southern India. The following gives data :—

Station.	Mean cloud amount.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Darjeeling	8·0	7·4	+0·6
Mount Abu	0·6	1·4	—0·8
Pachmarhi	2·7	2·8	—0·1
Chikalda	3·4	2·9	+0·5
Wellington	5·6	5·8	—0·2

The mean cloud amount of the month was 1·0 or less at the stations for which data are given below :—

Station.	Mean cloud amount.		
	Actual, May 1898.	Normal, May.	Variation of actual from normal.
Mount Abu	0·6	1·4	—0·8
Deesa	0·9	1·5	—0·6
Agra	1·0	1·3	—0·3

Skies were hence, so far as is indicated by the observations, most serene throughout the whole month in South-West and probably West Rajputana.

The following is a summary of the chief features of the distribution of cloud during the month :—

(1) Cloud was in considerable excess in Lower Burma and the Bay Islands.

(2) Cloud was in slight to large defect in Bengal, Assam, Bihar, Chota Nagpur, the North-Western Provinces, the greater part of Madras and the East Deccan.

(3) Cloud was in large excess in Mysore and the Madras Deccan.

(4) Cloud was also largely above the normal in the North and East Punjab and in Baluchistan.

(5) The mean cloud amount of the month was largely above the normal in the Kashmir and Punjab Himalayan areas.

Rainfall.

The rainfall of the month of May is usually small in amount and of little economic importance over by far the greater part of the country, including the Punjab, Rajputana, the North-Western Provinces, Central India, Berar, the Central Provinces, the North Deccan and North Bombay. Moderate to heavy rain is usually received in three areas—

1st.—Bengal and Assam.

2nd.—Lower Burma and Tenasserim.

3rd.—Southern India, more especially Malabar.

The rainfall in the first of these areas is due to thundershowers which are heaviest and most frequent in East Bengal and Assam and the northern districts of North Bengal. The average rainfall of the month in Bengal Proper ranges from 3 inches in the western districts to 12 inches at Mymensingh in East Bengal, and 15 inches at Cooch Behar in North Bengal. In Assam, it ranges from 9 inches in the Central Assam Valley districts to 51 inches at Cherra Punji.

In the second and third areas the rainfall in the earlier part of the month is usually due to thundershowers, and in the latter part to the advance of the south-west monsoon humid currents.

The chief periods of disturbed weather and of rainfall during the month were as follows :—

1st.—From the 1st to the 5th, when Southern India obtained light to moderate rain from thunderstorms.

2nd.—From the 6th to the 12th. The rainfall of this period accompanied and followed a cyclonic storm which passed by a curved track from the neighbourhood of the Andamans to the Arakan Coast. Burma obtained moderate to heavy rain during this period, and Bengal light to moderate rain.

3rd.—From the 12th to the 20th. Weather was feebly unsettled during this period in Upper India, and rain accompanied series of duststorms and thunderstorms in the Punjab, Kashmir,

Rajputana and the western districts of the North-Western Provinces. Moderately heavy snow fell above 10,000 feet in the Punjab and Kashmir Himalayas during this period.

4th.—The 25th to the 31st. Weather was showery during this period in Bengal, Burma and Southern India. The precipitation chiefly accompanied thunderstorms. It was light in Burma and Southern India, and moderate in amount in Bengal.

Burma obtained heavier rain than usual, chiefly due to the precipitation accompanying the storm of the first week of the month. The Punjab, Baluchistan, Sind, Kathiawar and the eastern states of Rajputana received slightly more rain than the small normal of the month. The rainfall of the month was more or less in defect over the remainder of India. The chief feature of the month was the delay in the establishment of the monsoon on the Malabar Coast, and hence the rainfall of the month was in marked defect in Malabar, the Konkan and Southern India generally.

The following table gives comparative rainfall data for 56 meteorological or rainfall divisions of India:—

Provinces.	Division.	Number of Rainy days. Average actual, May 1898.	Number of Rainy days. Average normal, May.	Rainfall. Average actual, May 1898.	Rainfall. Average normal, May.	Rainfall. Variation of actual from normal.
				Inches.	Inches.	Inches.
Burma	Tenasserim*	?	?	31·43	19·03	+12·40
	Lower Burma (Deltaic)*	?	?	14·07	10·99	+3·08
	Central ditto*	?	?	6·88	6·24	+0·64
	Upper ditto*	?	?	5·32	5·31	+0·01
	Arakan*	?	?	8·03	19·16	−11·13
Bengal and Assam	Eastern Bengal	8·7	10·7	7·76	10·28	−2·52
	Assam (Surma)*	?	?	5·91	19·16	−13·25
	Do. (Hills)*	?	?	12·82	17·63	−4·81
	Do. (Brahmaputra)*	?	?	11·03	11·77	−0·74
	Deltaic Bengal	8·3	7·9	6·56	6·14	+0·42
	Central do.	5·9	6·7	4·06	5·21	−1·15
	North do.	10·8	11·0	9·07	10·56	−1·49
	Bengal Hills	12·0	13·4	6·08	11·38	−5·30
	Orissa	4·7	5·2	2·77	4·46	−1·69
	Chota Nagpur	3·1	4·2	1·59	2·44	−0·85
	Bihar (South)	1·9	2·2	1·08	1·70	−0·62
	Do. (North)	5·4	4·2	3·80	3·12	+0·68
North-Western Provinces and Oudh.	North-Western Provinces (East)	0·5	1·0	0·19	0·51	−0·32
	Oudh (South)	1·0	1·2	0·41	0·57	−0·16
	Do. (North)	1·4	1·8	0·75	0·95	−0·20
	North-Western Provinces (Central)	0·7	0·9	0·19	0·36	−0·17
	Do. do. (West)	1·6	1·2	0·42	0·48	−0·06
	Do. do. (East Submontane)	1·9	1·9	1·17	1·19	−0·02
	Do. do. (West do.)	1·1	1·9	0·46	0·97	−0·51
	Do. do. (Hills)	4·0	5·1	2·04	2·23	−0·19
Punjab	Punjab (South-East)	2·6	1·5	0·86	0·60	+0·26
	Do. (South)	1·8	1·3	0·95	0·56	+0·39
	Do. (Central)	2·2	1·8	0·89	0·83	+0·06
	Do. (Submontane)	1·8	1·9	0·83	0·86	−0·03
	Do. (Hills)	4·3	5·3	1·36	2·66	−1·30
	Do. (North)	3·4	2·0	1·41	1·10	+0·31
	Do. (West)	1·2	1·0	0·53	0·45	+0·08
Bombay and Malabar Coast Districts (Madras).	Malabar	7·1	8·2	5·04	7·17	−2·13
	Travancore	7·9	?	5·81	?	?
	Madras (South Central)	5·7	5·9	3·10	4·03	−0·93
	Coorg	8·8	?	4·87	?	?
	Mysore*	?	?	3·45	3·40	+0·05
	Konkan	1·4	2·4	0·51	1·72	−1·21
	Bombay Deccan	3·2	3·4	1·57	1·79	−0·22
	Khandesh	0·6	1·7	0·29	1·07	−0·78
Central Provinces and Berar.	Berar*	?	?	0·40	0·46	−0·06
	Central Provinces (West)	0·3	1·0	0·10	0·46	−0·36
	Do. (Central)	0·5	1·3	0·14	0·55	−0·41
	Do. (East)	1·4	1·6	0·53	0·85	−0·32

Province.	Division.	Number of rainy days. Average actual, May 1898.	Number of rainy days. Average normal, May.	Rainfall. Average actual, May 1898.	Rainfall. Average normal, May.	Rainfall. Variation of actual from normal, May 1898.
				Inches.	Inches.	Inches.
Bombay (North)	Gujarat	0·4	0·5	0·17	0·30	—0·13
	Kathiawar	0·5	0·4	0·31	0·24	+0·07
	Sind	0·5	?	0·14	0·11	+0·03
	Baluchistan Hills	1·1	?	0·34	0·13	+0·21
Rajputana and Central India.	Central India (East)	0·2	?	0·84	0·39	+0·45
	Rajputana (East) and Central India (West)	2·0	?	0·61	0·49	+0·12
	Rajputana (West)	0·7	?	0·27	0·53	—0·26
Madras	East Coast (North)	3·0	3·4	1·68	2·29	—0·61
	Do. (do.) (a)	6·5	5·3	3·48	2·98	+0·50
	Hyderabad (South)*	?	?	0·79	1·78	—0·99
	Madras (Central)	2·6	3·0	1·44	1·90	—0·46
	East Coast (Central)	1·8	1·8	1·34	1·66	—0·32
	Do. (South)	2·7	3·4	1·77	3·22	—1·45
	Madras (South)	3·3	3·4	2·03	2·10	—0·07

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

No statement of rainfall for the month of May has been received from Assam. The data of the daily weather reports for the month show that rain was scanty and deficient, more especially in Cachar. The rainfall of the month was in large defect, more especially in the Cachar or Surma division. The following gives comparative data derived from the weekly rainfall telegrams received from the District Officers in Assam :—

Division.		Rainfall. Average actual, May 1898.	Rainfall. Average normal, May.	Rainfall. Variation of actual from normal, May 1898.
		Inches.	Inches.	Inches.
Assam	Surma	5·91	19·16	—13·25
	Hills	12·82	17·63	— 4·81
	Brahmaputra	11·03	11·77	— 0·74

Bengal received rain chiefly during two periods. The first extended from the 4th to the 14th and was in part due to an influx of humid winds into the province after the breaking up of the cyclonic storm on the 8th of the month. The rainfall was general in Bengal and moderate in amount. It was partial in North Bihar and Orissa, and light and sporadic in Chota Nagpur. No rain fell during this period in the Gaya and Shahabad districts of South Bihar. The following falls exceeding three inches were registered during this period :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Malda	Kaliaganj	1st	5·20
Cooch Bihar	Dinhatta	2nd	3·45
Jalpaiguri	Jalpaiguri	,,	3·27
	Debiganj	,,	3·23
Cooch Bihar	Mathabhanga	,,	3·18
	Fulbari	3rd	4·60
Jalpaiguri	Alipore Duar	,,	4·19
Jessore	Jessore	10th	4·16
Khulna	Bagarhat	,,	3·70
Backergunge	Pirojpur	,,	3·70

Practically no rain fell between the 14th and 21st. Light showers were received in East Bengal and Orissa between the 22nd and 24th.

Rain fell daily in Bengal during the remainder of the month. It was heavy in East Bengal and moderate over the remainder of the province. The rainfall extended to Bihar on the 29th, and was general from that date to the end of the month. Chota Nagpur received light scattered showers and Orissa moderate rain on two days, *viz.*, the 28th and 30th.

The following data show that the rainfall of the month was in slight excess in Deltaic Bengal and North Bihar,

in moderate defect in Central Bengal (22 per cent.), and North Bengal (14 per cent.) and in largish defect, relatively to the normal, in the Bengal Hills (47 per cent.), Orissa (38 per cent.), Chota Nagpur (38 per cent.) and South Bihar (36 per cent.).

The following table gives comparative data of the rainfall of the month for the nine divisions of the province :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.
				Inches.	Inches.	Inches.
Eastern Bengal . .	8·7	10·7	—2·0	7·76	10·28	—2·52
Deltaic " . .	8·3	7·9	+0·4	6·56	6·14	+0·42
Central " . .	5·9	6·7	—0·8	4·06	5·21	—1·15
North " . .	10·8	11·0	—0·2	9·07	10·56	—1·49
Bengal Hills . .	12·0	13·4	—1·4	6·08	11·38	—5·30
Orissa . . .	4·7	5·2	—0·5	2·77	4·46	—1·69
Chota Nagpur . .	3·1	4·2	—1·1	1·59	2·44	—0·85
South Bihar . .	1·9	2·2	—0·3	1·08	1·70	—0·62
North " . . .	5·4	4·2	+1·2	3·80	3·12	+0·68

The rainfall of the month in the North-Western Provinces was slightly less than the normal of the month on the average of the whole province. Thundershowers were received during the period from the 11th to the 14th over the greater part of the province. Moderate rain fell in the east submontane and hill districts of the North-Western Provinces on the 29th, and in the hill districts on the 30th and 31st. The following comparative data show the distribution of the rainfall of the month :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.
				Inches.	Inches.	Inch.
North-Western Provinces, East.	0·5	1·0	—0·5	0·19	0·51	—0·32
South Oudh . . .	1·0	1·2	—0·2	0·41	0·57	—0·16
North " . .	1·4	1·8	—0·4	0·75	0·95	—0·20
North-Western Provinces, Central.	0·7	0·9	—0·2	0·19	0·36	—0·17
North-Western Provinces, West.	1·6	1·2	+0·4	0·42	0·48	—0·06
North-Western Provinces, East Submontane	1·9	1·9	0	1·17	1·19	—0·02
North-Western Provinces, West Submontane	1·1	1·9	—0·8	0·46	0·97	—0·51
North-Western Provinces Hills.	4·0	5·1	—1·1	2·04	2·23	—0·19

There were two periods of fairly general rainfall during the month in the Punjab.

The first period was from the 11th to the 16th. Thunderstorms gave moderate rain in the hill districts and light to moderate rain in the plain districts. The heaviest amounts were received in the Gurgaon, Shahpur and Gurdaspur districts.

The second period included the 20th and 21st. The rainfall during this period was very irregularly distributed. The central division (except the district of Lahore) received light rain and the hill districts moderate rain. Local showers fell in parts of the north-western division, but pratically none fell in the West Punjab.

Comparative data of the rainfall of the month are given in the table below, which shows that the rainfall was in slight excess in the plains, but was barely half the normal in the hill division :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.
				Inches.	Inches.	Inches.
South-East Punjab .	2·6	1·5	+1·1	0·86	0·60	+0·26
South " .	1·8	1·3	+0·5	0·95	0·56	+0·39
Central " .	2·2	1·8	+0·4	0·89	0·83	+0·06
Punjab Submontane .	1·8	1·9	—0·1	0·83	0·86	—0·03
" Hills . .	4·3	5·3	—1·0	1·36	2·66	—1·30
North Punjab . .	3·4	2·0	+1·4	1·41	1·10	+0·31
West " . . .	1·2	1·0	+0·2	0·53	0·45	+0·08

Baluchistan obtained light to moderate showers on the 14th and 15th during the disturbed period in Upper India. This gave light general rain in that area, averaging ·27 inch for these two days.

Kashmir received frequent rain during the month, but chiefly during the period from the 8th to the 20th. The heaviest falls occurred on the 12th and 13th.

Rajputana obtained general and moderate rain from the 11th to the 14th. The rainfall was light in the western states and moderate in the central and eastern states. Local showers were also received in the eastern and southern states on the 18th and 19th. The heaviest falls recorded were 2·56 inches at Kerowlee on the 12th, and

1·77 inches at Bahror in Ulwar on the 11th. The following gives comparative data for the larger states :—

STATE.	RAINFALL.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.
	Inches.	Inch.	Inch.
Jodhpore	0·25	0·51	—0·26
Jeypore	1·10	0·42	+0·68
Ulwar	1·00	0·96	+0·04
Bhurtpore	0·54	0·57	—0·03
Dholpur	0·40	?	?
Kotah	0·41	0·79	—0·38
Ajmere	0·56	0·53	+0·03
Oodeypore	0·24	0·54	—0·30
Sirohee	0·47	0·90	—0·43
Rewah	0·10	0·36	—0·26
Bundelkhand	0·12	0·33	—0·21
Gwalior	0·10	0·41	—0·31
Bhopal	0	0·36	—0·36
Indore	0·12	0·51	—0·39

Little or no rain fell over nearly the whole of Central India. Light local showers were received on the 11th, 12th and 13th in a part of the Gwalior state.

A little rain fell in Berar, Gujarat, Kathiawar and Lower Sind. Dry weather prevailed over the Konkan and Bombay Deccan during the first three weeks of the month. The districts of North Kanara and Ratnagiri had light to moderate showers between the 22nd and 30th, and the South Deccan or Karnatak districts, including Dharwar, Bijapur, Belgaum, Kolhapur, Satara, Sholapur and Poona, moderate to heavy showers between the 23rd and 30th. A few light showers of little value were also received in the North Deccan or Khandesh districts.

The rainfall of the month was practically normal in the Deccan Division, but was scanty and in large defect, relatively to the normal, in the Konkan and Khandesh. The following table gives comparative data for the month :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.
				Inches.	Inches.	Inches.
Konkan	1·4	2·4	—1·0	0·51	1·72	—1·21
Bombay Deccan	3·2	3·4	—0·2	1·57	1·79	—0·22
Khandesh	0·6	1·7	—1·1	0·29	1·07	—0·78
Gujarat	0·4	0·5	—0·1	0·17	0·30	—0·13
Kathiawar	0·5	0·4	+0·1	0·31	0·24	+0·07
Sind	0·5	?	?	0·14	0·11	+0·03
Baluchistan Hills	1·1	?	?	0·34	0·13	+0·21

The following table gives comparative data for the Deccan districts which received moderate rain during the last week or ten days of the month :—

DISTRICT.	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.
	Inches.	Inches.	Inch.
Dharwar	2·55	2·71	—0·16
Bijapur	1·26	1·21	+0·05
Belgaum	2·95	2·16	+0·79
Poona	0·46	1·30	—0·84
Sholapur	0·39	1·23	—0·84

The Central Provinces received occasional light local thundershowers chiefly in the last week of the month. The rainfall of the month was about a third of the small normal fall of the month, as is shown by the following statement :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.	Average actual, May 1898.	Average normal, May.	Variation of actual from normal, May 1898.
				Inch.	Inch.	Inch.
Central Provinces, West	0·3	1·0	—0·7	0·10	0·46	—0·36
" " Central	0·5	1·3	—0·8	0·14	0·55	—0·41
" " East	1·4	1·6	—0·2	0·53	0·85	—0·32

The commencement of the monsoon was considerably delayed on the Malabar Coast. Coorg, Travancore and the Malabar division of Madras received daily thundershowers from the 18th to the end of the month. The rainfall of the month was in moderate defect in these areas.

The south and south-central divisions of Madras had occasional thundershowers during the same period as the Malabar coast districts, *viz.*, from the 3rd to the 7th, and from the 18th to the end of the month. The rainfall of the month was very unequally distributed. It was in moderate excess in Madura (22 per cent.) and in large defect in Tanjore (51 per cent.), Tinnevelly (44 per cent.) and the Nilgiris (35 per cent.).

The east coast division received light thundershowers, chiefly from the 4th to the 7th and from the 15th to the 21st. The northern districts of the division also had series of thunderstorms which gave moderate general rain on the 24th, 25th, 30th and 31st. The rainfall of the month was normal in the Vizagapatam district and below it in the remaining districts of the east coast division. The deficiency (relatively to the normal) was greatest in Chingleput (73 per cent.), Madras (71 per cent.) and South Arcot (58 per cent.).

The Deccan districts of Madras received light thundershowers between the 1st and 5th and the 16th and 23rd. The rainfall of the month was below the normal in that area, but to a less extent than in the east coast south division.

The following table gives a summary of the rainfall data for each district or collectorate of the Madras Presidency:—

District.	Number of rainy days.		Rainfall.		
	Actual, May 1898.	Normal, May.	Actual, May 1898.	Normal, May.	Variation from normal.
			Inches.	Inches.	Inches.
Ganjam	3·9	4·3	1·77	2·54	—0·77
Vizagapatam	4·6	4·2	2·74	2·70	+0·04
Godavari	1·9	2·5	1·23	1·80	—0·57
Kistna	1·6	2·6	0·83	1·73	—0·90
Nellore	1·8	1·8	1·34	1·66	—0·32
Chingleput	1·2	2·1	0·69	2·56	—1·87
Madras	1·0	1·1	0·65	2·21	—1·56
North Arcot	3·8	3·5	2·47	2·95	—0·48
South Arcot	2·4	3·4	1·37	3·30	—1·93
Tanjore	2·3	3·5	1·62	3·34	—1·72
Trichinopoly	4·4	4·6	3·04	4·02	—0·98
Madura	4·3	3·8	2·84	2·33	+0·51
Tinnevelly	2·2	2·9	1·01	1·79	—0·78
Malabar	8·1	9·0	6·06	8·39	—2·33
South Canara	5·3	7·1	3·22	5·40	—2·18
Salem	5·5	6·2	2·94	4·31	—1·37
Coimbatore	5·9	5·5	3·31	3·69	—0·38
Nilgiris	9·6	9·8	4·07	6·31	—2·24
Cuddapah	1·9	2·8	1·31	1·92	—0·61
Anantapur	3·2	3·2	1·58	2·39	—0·81
Bellary	3·5	3·5	2·08	1·94	+0·14
Kurnool	1·8	2·4	0·88	1·30	—0·42

Table

Abstract of Observations taken at 8 A.M. at 213

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level, in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·032	...	...	...	...	...	...	...	88·9	−1·4	76·9	+0·5	82·9	−0·5	12·0	...	...	...	...	22·9
1	Tenasserim and Bay Islands.	Port Blair	61	29·787	?	29·779	29·863	23rd	29·664	5th	·199	81·1	85·9	?	77·1	?	81·5	?	8·8	90·8	1st	71·3	15th	19·5
		Mergui	96	29·761	?	29·789	29·857	23rd	29·686	17th	·171	80·4	87·9	?	74·7	?	81·3	?	13·2	92·1	3rd	71·0	15th	21·1
		Tavoy	26	29·824	−·047	29·781	29·920	23rd	29·746	12th	·174	79·1	86·9	−1·5	75·3	+0·2	81·1	−0·7	11·6	92·2	5th	73·5	12th	18·7
		Moulmein	94	29·730	−·038	29·762	29·831	27th	29·644	17th	·187	79·0	87·5	−2·5	75·5	−0·2	81·5	−1·4	12·0	94·5	2 days	72·3	17th	22·2
2	Lower Burma	Rangoon	41	29·776	−·038	29·754	29·883	27th	29·691	17th	·192	79·8	88·5	−4·0	76·4	?	82·5	?	12·1	98·2	1st	73·4	14th	24·8
		Bassein	27	29·789	−·024	29·751	29·902	28th	29·680	7th	·222	81·2	89·8	−2·2	77·5	+0·6	83·7	−0·8	12·3	97·7	3rd	72·7	15th	25·0
		Diamond Island	41	29·779	−·023	29·755	29·890	27th	29·637	6th	·253	83·3	87·4	−1·6	79·1	+0·6	83·3	−0·5	8·3	92·1	3rd	73·9	22nd	18·2
5	Arakan	Akyab	20	29·767	−·029	29·730	29·883	27th	29·587	7th	·296	84·8	92·1	+1·6	79·4	+1·6	85·8	+1·6	12·7	97·9	6th	70·8	8th	27·1
3	Central Burma	Toungoo	183	29·619	−·026	29·744	29·716	27th	29·541	17th	·175	81·5	93·9	−2·3	76·7	+0·3	85·3	−1·0	17·2	102·2	6th	72·7	26th	29·5
	II.—Burma Inland		...	...	−·032	...	...	...	...	...	...	...	97·1	+0·1	76·3	+0·3	86·8	+0·2	20·8	...	...	...	...	34·7
3	Central Burma	Thayetmyo	134	29·654	−·030	29·729	29·776	27th	29·548	17th	·228	83·5	96·5	−2·8	77·9	+0·4	87·2	−1·3	18·6	105·1	1st	72·1	21st	33·0
4	Upper Burma	Minbu	?	29·611	−·022	?	29·699	2 days	29·508	17th	·191	83·2	98·3	+1·0	79·0	?	88·7	?	19·3	106·6	1st	71·1	8th	35·5
		Yamethin	657	29·137	?	29·742	29·261	27th	29·012	8th	·249	81·6	97·0	+1·4	75·4	?	86·2	?	21·6	105·5	1st	70·2	19th	35·3
		Mandalay	250	29·522	?	29·719	29·639	27th	29·354	8th	·285	84·8	99·5	+0·1	78·4	−0·2	89·0	−0·1	21·1	106·1	5th	71·1	16th	35·0
		Kindat	?	29·356?	−·045	?	29·489	23rd	29·222	17th	·267	82·0	97·1	+2·2	74·2	+0·7	85·7	+1·5	22·9	103·8	19th	68·5	8th	35·3
		Bhamo	?	29·393	?	?	29·518	2 days	29·246	17th	·252	78·9	94·4	+0·9	73·0	+0·4	83·7	+0·7	21·4	103·1	2nd	68·8	6th	34·3
4(a)	Burma Hill Stations.	Taunggyi	?			Not recorded.						70·2	80·3	?	62·4	?	71·4	?	17·9	87·6	5th	59·0	2 days	28·6
		Lashio	?	27·051	+·004	?	27·162	28th	26·915	8th	·247	70·8	91·3	+4·6	65·7	−0·4	78·5	+2·1	25·6	97·0	21st	62·5	24th	34·5
	III.—Assam		...	...	−·025	...	...	...	...	...	...	...	88·9	+2·1	72·6	+0·5	80·8	+1·3	16·3	...	...	...	...	29·2
7	Surma	Silchar	104	29·685	−·022	29·741	29·806	2 days	29·530	8th	·276	81·0	93·6	+5·6	73·8	+1·7	83·7	+3·6	19·8	100·1	4th	69·3	25th	30·8
9	Brahmaputra	Sibsagar	333	29·453	−·027	29·745	29·608	27th	29·287	17th	·321	76·0	85·4	−0·9	70·9	−0·6	78·2	−0·8	14·5	94·2	21st	67·5	26th	26·7
		Dhubri	115	29·639	−·026	29·710	29·778	27th	29·479	17th	·299	77·4	87·6	+1·7	73·1	+0·3	80·4	+1·0	14·5	96·7	21st	66·7	6th	30·0
	IV.—Bengal and Orissa		...	...	−·016	...	...	...	...	...	...	...	95·6	+2·3	76·6	+0·6	86·1	+1·5	19·0	...	...	...	...	34·1
6	East Bengal	Chittagong	87	29·691	−·017	29·725	29·811	26th	29·540	8th	·271	83·4	91·4	+3·4	76·5	+1·4	84·0	+2·4	14·9	96·2	7th	68·6	26th	27·6
		Noakhali	43	29·718	?	29·708	29·849	26th	29·589	8th	·260	82·5	90·7	?	75·8	?	83·3	?	14·9	94·0	7th	65·9	10th	28·1
		Comilla	36	29·722	?	29·706	29·865	28th	29·582	8th	·283	83·1	94·4	?	75·2	?	84·8	?	19·2	99·3	4 days	66·8	26th	32·5
		Sirajganj	49	29·678	?	29·677	29·807	28th	29·534	17th	·273	79·7	93·7	?	74·0	?	83·8	?	19·7	101·8	19th	66·7	9th	35·1
		Narayanganj	26	29·726	−·018	29·700	29·859	28th	29·594	17th	·275	82·4	93·1	+2·3	76·5	+1·0	84·9	+1·7	16·6	99·1	16th	69·2	26th	29·9
		Barisal	13	29·738	−·008	29·696	29·855	28th	29·616	8th	·239	84·8	93·7	+2·6	77·0	+0·4	85·3	+1·5	16·7	100·3	18th	69·1	25th	31·2
		Mymensingh	59	29·700	−·021	29·711	29·811	27th	29·560	17th	·251	79·9	90·4	+2·1	74·6	+1·1	82·6	+1·6	15·8	97·2	2 days	66·6	5th	30·6
10	Deltaic Bengal	Faridpur	46	29·706	?	29·700	29·850	28th	29·584	17th	·266	81·5	94·9	?	74·5	?	84·8	?	20·4	102·8	18th	68·4	11th	34·4
		Jessore	33	29·693	−·025	29·673	29·810	27th	29·584	17th	·256	84·2	97·0	+2·8	76·8	+0·4	86·9	+1·6	20·2	106·0	19th	69·2	26th	36·8
		Calcutta	21	29·702	−·015	29·669	29·802	28th	29·596	9th	·206	85·0	96·0	+2·5	77·9	+1·0	87·0	+1·8	18·1	103·4	19th	70·7	27th	32·7
		Sangor Island	25	29·695	−·022	29·664	29·789	26th	29·588	2 days	·201	86·6	92·6	+1·1	82·3	+1·8	87·4	+1·5	10·3	93·9	3 days	72·1	12th	21·8
		Krishnagar	47	29·672	?	29·667	29·787	27th	29·576	9th	·211	83·7	99·4	?	76·6	?	88·0	?	22·8	109·2	20th	67·2	28th	40·0
		Midnapore	149	29·560	?	29·654	29·657	28th	29·459	8th	·198	86·6	103·8	?	79·3	?	91·6	?	24·5	110·4	21st	72·2	14th	38·2

I.

Stations in India, Burma, etc., in May 1898.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 31st May 1898.	Normal rainfall for period, 1st March to 31st May.	Variation from normal of period, 1st March to 31st May.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20·08	12·55	+ 7·54	...	...	...	...	**I.—Burma Coast and Bay Islands.**		
2	...	...	..	1	1	9	13	5	7·7	7·3	+ 4	89	·951	7·7	19	?	?	40·56	15·74	+24·82	45·72	18·39	+27·33	9·88	Port Blair .	TENASSERIM AND BAY ISLANDS.	1
18	1	...	...	3	2	3	1	3	1·3	2·1	−38	87	·903	5·5	24	?	?	19·58	16·86	+ 2·72	26·92	24·80	+ 2·12	2·25	Mergui.		
30	...	...	...	...	...	1	...	...	1·1	?	?	90	·888	6·8	20	?	?	24·28	18·19	+ 5·89	27·73	30·43	− 2·70	3·72	Tavoy.		
...	2	5	4	3	5	5	6	1	3·2	3·1	+ 3	88	·867	9·1	20	15·45	+ 4·55	35·91	17·45	+18·46	36·99	20·81	+16·18	9·95	Moulmein.		
...	1	1	2	2	6	10	6	3	3·8	3·9	− 3	91	·928	8·4	19	9·26	+ 9·64	21·69	9·42	+12·27	25·32	11·53	+13·79	3·09	Rangoon .	LOWER BURMA.	2
10	...	...	1	2	2	4	5	7	4·7	5·0	− 6	87	·926	6·2	13	12·27	+ 0·73	10·25	8·23	+ 1·93	10·30	9·83	+ 0·47	4·62	Bassein.		
2	3	3	3	1	2	5	7	5	10·5	4·5	+133	80	·916	7·5	10	11·18	− 1·18	15·42	8·55	+ 6·88	15·70	9·72	+ 5·98	4·24	Diamond Island.		
...	5	7	9	2	2	1	2	3	4·3	7·0	−39	83	·996	5·0	4	10·18	− 6·18	4·71	12·30	− 7·59	4·80	13·80	− 9·00	3·57	Akyab .	ARAKAN.	5
8	1	...	2	11	8	1	...	...	3·9	3·5	+11	84	·919	6·9	10	10·99	− 0·89	8·21	5·77	+ 2·44	10·91	7·91	+ 3·00	2·56	Toungoo .	CENTRAL BURMA.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·18	4·89	+0·29	...	...	...	...	**II.—Burma Inland.**		
...	1	...	2	5	20	2	...	1	3·4	7·3	−53	76	·866	4·5	7	6·64	+ 0·36	4·73	3·72	+ 1·01	4·93	4·57	+ 0·36	2·03	Thayetmyo.	CENTRAL BURMA.	3
2	...	...	3	23	1	...	1	1	11·9	?	?	76	·861	4·2	5	?	?	3·94	4·25	− 0·31	4·16	6·86	− 2·70	1·53	Minbu .	UPPER BURMA.	4
2	1	...	...	15	13	...	...	...	7·4	?	?	76	·809	2·9	11	?	?	8·68	4·97	+ 4·61	11·66	6·72	+ 4·94	2·15	Yamethin.		
...	1	3	1	5	11	9	...	1	6·4	?	?	71	·825	5·5	9	?	?	4·02	5·56	− 1·54	4·54	7·22	− 2·68	1·33	Mandalay.		
19	3	3	1	1	...	2	...	2	2·0	?	?	88	·978	4·2	11	?	?	4·78	5·73	− 0·95	5·03	7·82	− 2·79	1·36	Kindat.		
12	3	5	2	...	...	6	1	2	3·0	?	?	78	·769	5·5	13	?	?	4·92	6·02	− 1·10	5·46	8·80	− 3·34	0·91	Bhamo.		
2	1	..	1	6	8	9	3	1	?	?	?	84	·626	8·3	12	?	?	7·18	10·51	− 3·33	9·91	11·74	− 1·83	1·98	Taunggyi .	BURMA HILL STATIONS.	4(a)
			Not	rec	orde	d.			?	?	?	85	·638	8·2	6	?	?	3·22	5·67	− 2·45	5·68	9·57	− 3·89	1·75	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10·10	14·52	−4·42	...	...	...	...	**III.—Assam.**		
20	1	1	6	...	...	...	3	...	3·3	3·4	− 3	78	·827	6·2	11	16·46	− 5·46	6·02	16·95	−10·93	8·82	40·60	−31·78	1·56	Silchar .	SURMA.	7
15	2	9	...	...	...	4	1	...	3·7	2·9	+28	90	·799	8·0	14	16·26	− 2·26	11·09	12·63	− 1·54	21·85	27·07	− 5·22	2·69	Sibsagar .	BRAHMAPUTRA.	9
...	2	6	17	3	2	1	...	...	7·1	7·0	+ 1	84	·733	5·3	15	15·20	− 0·20	13·19	13·97	− 0·78	18·16	20·73	− 2·57	2·55	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·93	7·13	−1·20	...	...	...	...	**IV.—Bengal and Orissa.**		
2	...	3	6	11	7	2	...	...	7·7	6·4	+20	80	·914	5·9	8	10·69	− 2·69	5·63	10·48	− 4·85	8·80	16·85	− 8·05	1·88	Chittagong .	EAST BENGAL.	6
...	...	2	5	4	6	12	1	1	4·8	?	?	83	·926	4·2	9	10·46	− 1·46	10·70	10·31	+ 0·39	13·20	18·63	− 5·43	2·34	Noakhali.		
1	2	1	2	11	13	...	1	...	5·8	?	?	78	·878	5·2	11	12·09	− 1·09	10·54	11·46	− 0·92	11·33	20·23	− 8·90	2·22	Comilla.		
4	2	4	3	10	3	3	1	1	3·6	?	?	82	·834	5·8	8	10·23	− 2·23	7·09	8·04	− 0·95	10·28	12·47	− 2·19	2·20	Sirajganj.		
...	1	3	2	11	9	3	1	1	7·6	6·2	+23	82	·910	6·7	9	10·85	− 1·85	6·55	10·28	− 3·73	8·00	18·12	−10·12	1·72	Narayanganj.		
13	1	...	1	5	7	4	...	...	3·3	?	?	78	·919	5·8	10	10·08	− 0·08	8·27	8·09	+ 0·18	10·33	13·64	− 3·31	1·98	Barisal.		
5	1	1	11	13	...	...	...	...	1·7	?	?	81	·868	5·5	13	13·35	− 0·35	10·96	11·75	− 0·79	14·20	18·21	− 4·01	2·47	Mymensingh.		
9	4	...	1	4	9	4	...	...	3·4	?	?	84	·911	4·1	10	10·73	− 0·73	9·70	8·74	+ 0·96	11·45	15·54	− 4·09	2·73	Faridpur .	DELTAIC BENGAL	10
11	...	...	...	10	6	3	...	1	5·0	4·9	+ 2	81	·934	5·6	12	9·58	+ 2·42	14·71	8·74	+ 5·97	15·52	13·48	+ 2·04	4·16	Jessore.		
2	...	...	2	5	8	13	1	...	6·9	7·1	− 3	77	·932	4·4	5	7·24	− 2·24	4·06	7·62	− 3·56	5·10	8·74	− 3·64	1·35	Calcutta.		
...	...	...	...	10	16	3	...	2	20·7	15·3	+35	78	·993	6·7	3	6·73	− 3·73	1·99	5·43	− 3·44	2·71	6·99	− 4·28	1·11	Saugor Island.		
...	...	...	3	6	15	1	3	3	7·6	?	?	76	·880	4·0	6	7·62	− 1·62	8·32	5·76	+ 2·56	8·96	9·47	− 0·51	2·76	Krishnagar.		
3	4	...	...	2	21	1	...	...	8·1	?	?	67	·850	2·1	6	7·00	− 1·00	1·59	5·07	− 3·48	3·12	8·09	− 4·97	0·59	Midnapore.		

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal.	Bankura	298	29·375	?	29·620	29·480	28th	29·280	9th	·200	86·1	104·1	?	78·9	?	91·6	?	25·2	111·6	1st	69·1	14th	42.5
		Raniganj	334	29·363	?	29·642	29·463	28th	29·272	8th & 11th	·191	85·6	104·2	?	78·6	?	91·4	?	25·6	112·3	25th	69·4	14th	42·9
		Burdwan	99	29·609	−·026	29·654	29·713	27th	29·523	8th	·190	85·0	102·0	+4·8	78·2	+1·0	90·2	+2·9	23·8	109·5	2 days.	70·8	27th	38·7
		Naya Dumka	489	29·213	?	29·654	29·321	28th	29·107	9th	·214	86·0	101·4	?	76·8	?	89·1	?	24·6	110·4	4th	68·8	12th	41·6
		Berhampore	67	29·655	?	29·670	29·788	28th	29·544	17th	·244	82·1	98·7	+3·0	76·0	0	87·4	+1·5	22·7	108·1	24th	66·2	9th	41·9
		Rampur Boalia	70	29·656	?	29·672	29·792	28th	29·535	17th	·257	82·8†	97·4†	?	75·5†	?	86·5†	?	21·9	106·0	20th & 23th.	68·1	30th	37·9
		Malda	72	29·638	?	29·662	29·810	27th	29·501	17th	·309	82·1	97·5	?	74·1	?	85 8	?	23·4	106·1	23rd	67·0	31st	39·1
		Bogra	61	29·673	?	29·686	29·832	28th	29·548	9th	·284	79·8	94·7	+2·5	74·1	−0·1	84·4	+1·2	20·6	103·8	19th	66·7	9th	37·1
12	North Bengal	Dinajpur	123	29·604	?	29·681	29·764	28th	29·459	17th	·305	80·3	93·5	+2·4	73·1	−0·6	83·3	+0·9	20·4	104·3	21st	66·8	25th	37·5
		Rangpur	123	29·632*	?	29·710*	29·768	28th	29·487	9th	·281	78·9*	90·0*	?	72·4*	?	81·2*	?	17·6	99·2	21st	66·7	6th & 26th.	32·5
		Jalpaiguri	284	29·439	?	29·682	29·588	28th	29·291	17th	·297	77·5	88.6	+1·0	72·0	+0·9	80·3	+1·0	16·6	97·4	21st	66·1	26th	31·3
		Cooch Behar	156	29·584	?	29·697	29·737	27th	29·426	17th	·311	77·7	87·9	?	72·7	?	80·3	?	15·2	95·4	21st	67·1	5th	28·3
17	North Bihar	Purnea	125	29·590	−·022	29·669	29·753	28th	29·448	17th	·305	80·3	95·9	+1·4	73·4	−0·2	84·5	+0·6	22·5	105·3	21st	65·3	5th	40·0
18	Orissa	Balasore	46	29·665	−·006	29·657	29·755	27th	29·546	9th	·209	86·3	99·7	+4·1	78·8	+0·9	89·3	+2·5	20·9	106·5	21st	67·8	30th	38·7
		False Point	21	29·717	−·003	29·679	29·836	28th	29·600	2 days	·236	85·4	91·7	+0·6	79·5	+0·3	85·6	+0·5	12·2	96·5	1st	69·1	30th	27·4
		Cuttack	80	29·618	−·007	29·670	29·778	28th	29·531	8th	·247	85·5	101·8	+0·4	80·3	+0·8	91·1	+0·6	21·5	108·5	18th	72·7	30th	35·8
		Shortt's Island	?	29·692	?	?	29·817	28th	29·572	2nd	·245	85·8	91·4	?	81·1	?	86·3	?	10·3	95·2	31st	72·4	12th	22·8
		Puri	20	29·721	?	29·634	29·869	28th	29·599	8th	·270	85·6	91·1	?	80·9	?	86·0	?	10·2	94·2	13th	71·6	8th	22·6
	V.—Gangetic Plain and Chota Nagpur.		...	...	—·020	...	...	...	...	...	...	...	104·0	+2·8	77·3	+0·9	90·7	+1·9	26·7	...	...	...	...	41·0
15	Chota Nagpur	Hazaribagh	2,007	27·705	−·018	29·620	27·815	14th	27·579	9th	·236	85·9	102.4	+4·1	77·0	+2·7	89·7	+3·4	25·4	108·6	4th	67·8	29th	40·8
		Ranchi	2,128	27·609	?	29·639	27·716	14th	27·500	11th	·216	85·5	101·2	+3·2	76·6	+2·7	88·9	+3·0	24·6	106·8	3rd	67·9	29th	38·9
		Daltonganj	730 ?	28·966	?	29·638	29·105	14th	28·831	9th	·274	88·7	108·5	?	78·0	?	93·3	?	30·5	113·6	4th	70·5	1st	43·1
		Chaibassa	760	28·946	?	29·645	29·051	14th	28·846	9th	·205	87·4	106·8	+3·4	79·2	+0·4	93·0	+1·9	27·6	113·7	4th	72·5	8th	41·2
16	South Bihar	Gaya	375	29·302	−·018	29·626	29·411	14th	29·176	9th	·235	88·9	107·9	+3·8	80·3	+2·2	94·2	+3·0	27·6	113·5	4th	71·8	29th	41·7
		Dehri	351	29·316	?	29·616	29·438	14th	29·199	9th	·239	89·3	107·1	?	80·7	?	93·9	?	26·4	113·5	3rd	72·5	29th	41·0
		Patna	183	29·491	−·027	29·632	29·602	27th	29·392	9th	·210	85·1	101·3	+1·7	76·9	−0·3	89.1	+0·7	24·4	109·0	23th	69·2	29th	39·8
		Arrah	190	29·474	?	29·614	29·679	27th	29·360	9th	·319	85·6	103·4	?	77·3	?	90·4	?	26·1	109·4	4th	69·5	29th	39·9
		Buxar*	239	29·434	?	29·626	29·541	19th	29·319	9th	·222	86·9	103·5	?	78·0	?	90·8	?	25·5	110·0	5th. & 25th.	68·6	29th	41·4
17	North Bihar	Bhagalpur	160	29·535	?	29·647	29·665	27th	29·424	17th	·241	84·3	100·2	?	75·4	?	87·9	?	24·8	112·8	1st	68·1	9th & 26th.	44·7
		Darbhanga	166	29·524	−·037	29·644	29·644	27th	29·404	17th	·240	82·4	?	?	74·8	−1·0	?	?	?	?	?	68·5	30th	?
		Muzaffarpur	178	29·492	?	29·624	29·613	27th	29·389	9th	·224	82·0	96·4	?	73·6	?	85·0	?	22·8	104·2	24th	65·3	7th	38·9
		Motihari	224	29·468	?	29·650	29·631	29th	29·348	17th	·283	80.8	97·0	?	71·9	?	84·5	?	25·1	104·0	21st	65·8	4 days	38·2
		Chapra	181	29·503	?	29·638	29·611	27th	29·392	9th	·219	85·1	102·3	?	77·3	?	89·7	?	25·0	108·2	24th	71·1	29th	37·1
18	N.-W. P., East	Benares	267	29·412	−·007	29·632	29·539	14th	29·275	9th	·264	86·1	106·7	+2·1	77·9	?	92·3	?	28·8	112·3	3rd	72·7	22nd	40·1
		Allahabad	309	29·362	−·015	29·621	29·509	14th	29·217	9th	·292	89·4	107·8	+1·5	79·0	+0·3	93·4	+0·9	28·8	113·7	4th	74·3	1st	39·4
22	N.-W. P. (East Submontane).	Gorakhpur	256	29·416	−·024	29·626	29·535	28th	29·277	9th	·258	85·0	103·5	+2·9	76·7	0	90·1	+1·5	26·8	108·6	21st	69·2	29th	39·4
19	South Oudh	Lucknow	368	29·302	−·014	29·624	29·463	14th	29·174	9th	·289	86·9	106·9	+2·8	77·9	+1·3	92·5	+2·1	29·0	113·8	3rd	65·8	13th	45·0
20	North Oudh	Bahraich	403	29·265	?	29·625	29·381	14th	29·145	9th	·236	86·4	103·5	?	76·5	?	90·0	?	27·0	110·1	1st & 24th.	69·0	29th	41·1
21	N.-W. Provinces (Central).	Cawnpore	416	29·251	?	29·616	29·433	14th	29·127	9th	·306	88·3	107·0	+1·6	78·9	−1·1	93·0	+0·3	28·1	112·6	5 days	71·0	13th	41·6
		Mainpuri	516	29·146	?	29·614	29·311	14th	29·008	9th	·333	86·8	106·5	?	77·1	?	91·9	?	29·4	113·2	7th & 27th.	67·5	13th	45·7

* Mean of 29 days. † Mean of 30 days.

I—*continued.*

in India, Burma, etc., in May 1898—continued.

Wind Direction. Number of winds from: Calm	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 31st May 1898.	Normal rainfall for period 1st March to 31st May.	Variation from normal of period, 1st March to 31st May.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
6	...	...	...	16	2	1	5	1	4·5	?	?	68†	·830†	2·8	6	5·54	− 0·54	2·62	4·41	− 1·79	2·90	6·93	− 4·03	0·88	Bankura	Central Bengal	11
4	1	1	4	6	7	4	3	1	3·5	?	?	67	·815	2·2	4	5·23	− 1·23	2·87	3·68	− 0·81	3·16	5·77	− 2·61	1·59	Raniganj.		
9	...	...	1	3	7	7	1	3	3·2	5·5	−42	74	·894	3·3	3	7·31	− 4·31	0·82	5·73	− 4·91	2·46	9·37	− 6·91	0·39	Burdwan.		
1	2	2	6	6	5	3	2	4	2·7	?	?	63	·749	3·3	4	5·16	− 1·16	1·73	3·59	− 1·86	3·06	5·40	− 2·34	0·67	Naya Dumka.		
6	3	...	3	6	7	4	1	1	4·3	5·5	−22	76	·835	5·2	9	7·82	+ 1·18	7·00	5·36	+ 1·64	9·16	7·91	+ 1·25	2·32	Berhampore.		
2	2	2	7	5	4	3	4	2	6·6	?	?	80†	·895†	4·6	9	7·61	+ 1·39	5·88	5·25	+ 0·63	7·73	7·87	− 0·14	1·77	Rampur Boalia.		
...	1	5	4	6	6	2	5	2	3·0	?	?	70	·762	3·8	6	5·61	+ 0·39	3·48	4·08	− 0·60	5·00	6·00	− 1·00	1·22	Malda.		
			Not	recorde	d.				?	?	?	79	·802	4·4	11	9·42	+ 1·58	9·08	8·08	+ 1·00	10·58	11·59	−1·01	3·85	Bogra.		
1	...	5	9	8	3	3	2	...	3·9	?	?	74	·753	5·2	10	7·96	+ 2·04	7·57	7·46	+ 0·11	8·69	10·41	−1·72	1·59	Dinajpur	North Bengal	12
...	...	5	17	2	3	1	1	...	3·7††	?	?	83	·827	3·0	13	10·69	+ 2·31	7·55	9·83	− 2·28	9·34	14·44	− 5·10	1·46	Rangpur.(a)		
...	2	5	10	9	2	2	1	...	3·2	?	?	83	·781	3·0	13	12·20	+ 0·80	7·17	11·90	− 4·73	10·62	17·51	− 6·89	1·92	Jalpaiguri.		
8	1	5	11	5	1	...	...	...	2·2	?	?	83	·789	5·1	12	?	?	12·73	14·57	− 1·84	19·68	21·55	− 1·87	2·70	Cooch Behar		
2	1	3	17	3	...	2	1	2	6·8	3·4	+100	72	·742	5·0	7	5·08	+ 1·92	5·09	4·49	+ 0·60	6·36	6·32	+ 0·04	2·29	Purnea	North Bihar	17
1	...	1	...	...	7	20	2	...	8·3	?	?	81	1·017	2·8	4	7·92	− 3·92	2·60	5·36	− 2·76	4·58	9·08	− 4·50	1·18	Balasore	Orissa	16
...	...	...	...	...	7	19	4	1	11·9	12·6	−6	82	1·008	5·7	4	4·24	− 0·24	1·06	4·83	− 3·77	3·12	7·53	− 4·41	0·35	False Point.		
5	...	1	...	1	6	13	4	1	5·3	5·1	+4	72	·872	4·7	7	5·31	+ 1·39	2·56	4·41	− 1·85	4·54	6·97	− 2·43	0·67	Cuttack.		
...	...	...	...	...	14	13	3	1	24·1	?	?	79	·975	3·6	1	?	?	0·65	3·21	− 2·56	2·05	5·42	− 3·37	0·61	Shortt's Island		
3	1	...	...	...	2	22	3	...	14·8	?	?	83	1·016	3·8	5	3·19	+ 1·81	3·22	3·02	+ 0·20	4·05	4·08	− 0·03	1·52	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·43	1·66	−0·23	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
1	6	1	2	...	2	12	3	4	9·2	8·8	+5	40	·478	2·5	0	4·20	− 4·20	0·12	2·26	− 2·14	0·84	3·42	− 2·58	0·07	Hazaribagh.	Chota Nagpur	15
...	2	1	1	3	7	9	2	6	8·5	?	?	47	·565	1·7	4	5·00	−1·00	1·82	2·89	− 1·07	2·42	4·91	− 2·49	0·67	Ranchi		
7	1	1	5	3	5	6	2	1	?	?	?	40	·545	1·4	0	2·32	− 2·32	0·06	1·15	− 1·09	0·08	2·09	− 2·01	0·03	Daltonganj.		
13	...	...	...	...	1	3	11	3	6·7	?	?	59	·752	0·7	4	5·80	− 1·80	2·67	3·86	− 1·19	3·19	6·00	− 2·81	0·85	Chaibassa.		
9	...	6	2	5	1	4	3	1	12·4	3·9	+218	51	·676	2·1	0	2·11	− 2·11	0	1·13	− 1·13	0·64	2·02	− 1·38	0	Gaya	South Bihar	16
1	1	2	5	5	3	6	6	2	10·1†	?	?	39	·513	2·0	0	1·67	− 1·67	0	0·98	− 0·98	0·03	1·75	− 1·72	0	Dehri.		
2	...	2	14	3	1	3	4	2	6·5	4·8	−35	60	·694	2·1	6	2·88	+ 3·12	1·39	1·97	− 0·58	1·47	2·61	− 1·14	0·27	Patna.		
1	1	4	9	6	3	2	1	4	6·4	?	?	56	·672	1·5	2	2·53	− 0·53	0·80	1·63	− 0·83	0·83	2·26	− 1·43	0·41	Arrah.		
...	1	...	13	3	1	...	7	4	4·5	?	?	46	·572	1·6	2	2·03	− 0·03	0·59	0·91	− 0·32	0·59	1·39	− 0·80	0·35	Buxar.*		
5	1	9	5	3	2	4	2	...	5·1	?	?	61	·688	3·8	4	4·26	− 0·26	4·07	2·81	+ 1·26	5·41	4·11	+ 1·30	1·66	Bhagalpur	North Bihar	17
...	1	1	11	9	2	2	3	1	6·9	5·9	+17	64	·697	1·4	5	3·96	+ 1·04	3·64	2·52	+ 1·12	4·37	3·45	+ 0·92	1·30	Darbhanga.		
9	...	3	9	6	...	...	2	2	6·0	?	?	68	·742	1·0	6	3·42	+ 2·58	4·53	2·35	+ 2·18	5·25	3·23	+ 2·02	1·15	Muzaffarpur.		
...	1	3	20	...	...	3	2	2	8·4	?	?	71	·746	0·6	6	4·26	+ 1·74	3·90	2·81	+ 1·09	4·83	3·92	+ 0·91	1·15	Motihari.		
2	...	2	12	5	...	2	4	4	6·1	?	?	60	·703	1·9	2	2·19	− 0·19	1·02	1·45	− 0·43	1·05	2·04	− 0·99	0·65	Chapra.		
6	1	2	9	3	1	...	3	1	6·5	5·2	+25	48	·595	1·5	0	1·45	− 1·45	0·10	0·72	− 0·62	0·13	1·08	− 0·95	0·08	Benares	N.-W. P., East	18
1	3	2	10	...	1	2	6	6	7·5	6·2	+21	49	·673	1·5	0	1·18	− 1·18	0·09	0·39	− 0·30	0·09	0·82	− 0·73	0·09	Allahabad.		
2	3	10	6	2	2	...	3	2	4·0	3·9	+ 3	59	·682	1·3	3	2·64	+ 0·36	2·07	1·37	+ 0·70	2·90	2·22	+ 0·68	1·07	Gorakhpur	N.-W. P. (East Submontane).	23
5	4	...	8	...	2	...	10	2	3·4	4·3	−21	47	·590	2·1	1	1·91	− 0·91	1·54	1·10	+ 0·44	1·60	1·49	+ 0·11	1·46	Lucknow	South Oudh.	19
5	1	1	12	12	...	...	1	4	3·5	?	?	56	·701	0·3	2	?	?	0·82	1·42	− 0·60	1·28	2·23	− 0·95	0·51	Bahraich	North Oudh.	20
4	1	2	3	4	2	4	6	4	4·1	?	?	43	·563	0·6	0	1·10	−1·10	0·16	0·47	− 0·31	0·21	0·87	− 0·66	0·07	Cawnpore	N.-W. Provinces (Central).	21
	1	...	4	3	4	1	12	2	4·0	?	?	42	·539	2·3	1	?	?	0·62	0·66	− 0·04	0·66	1·02	− 0·36	0·62	Mainpuri.		

†† Mean of 27 days.

(a) Wind observations of 29 days.

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas		...	...	−·009	...	...	...	...	...	...	...	102·0	+0·1	74·0	+0·2	88·0	+0·1	28·0	...	...	...	...	45·6
24	N.-W. Provinces, West (Submontane).	Bareilly	568	29·103	−·001	29·630	29·288	14th	28·954	9th	·334	85·0	102·6	+0·1	75·4	0	89·0	+0·1	27·2	108·5	3rd	60·7	12th	47·8
		Dehra Dun	2,233	27·478	−·028	29·639	27·627	20th	27·325	9th	·302	78·6	95·4	+1·7	69·0	−1·0	82·2	+0·4	26·4	102·5	1st & 3rd,	61·0	20th	41·5
		Roorkee	887	28·778	−·013	29·623	28·944	14th	28·619	9th	·325	84·1	102·7	+0·6	72·5	−1·5	87·6	−0·5	30·2	109·7	3rd	67·2	17th & 21st,	42·5
22	N.-W. P., West	Meerut	738	28·928	−·002	29·625	29·123	14th	28·782	9th	·341	85·2	102·1	+0·2	74·1	−0·9	88·1	−0·4	28·0	109·7	3rd	66·0	21st	43·7
26	South-East Punjab.	Delhi	718	28·945	−·007	29·619	29·138	20th	28·778	9th	·360	86·0	102·4	−0·9	79·8	+0·6	91·6	−0·2	23·6	109·7	4 days	68·4	13th	41·3
28	Central Punjab.	Lahore	702	28·936	−·008	29·603	29·161	14th	28·678	9th	·483	83·5	101·9	−0·9	74·6	+2·5	88·3	+0·8	27·3	111·6	8th	63·1	13th	48·5
27	South Punjab	Sirsa	662	28·987	−·006	29·607	29·201	14th	28·755	9th	·446	86·0	105·6	−0·6	76·2	+0·3	90·9	−0·2	29·4	115·3	8th	64·8	14th	50·5
		Patiala	818	28·839	?	29·614	29·638	20th	28·647	9th	·391	86·1	102·3	?	75·3	?	88·8	?	27·0	109·2	6th	66·9	21st	42·3
29	Punjab (Submontane).	Ludhiana	812	28·835	−·018	29·607	29·038	14th	28·631	9th	·407	85·5	104·2	+0·3	75·7	+1·9	90·0	+1·1	28·5	111·4	7th & 8th,	69·1	3 days	42·3
		Sialkot	830	28·820	−·002	29·612	29·023	14th	28·609	8th	·414	85·7	102·1	−0·3	73·5	−0·2	87·8	−0·3	28·6	111·8	3 days	64·1	13th	47·7
		Umballa	892	28·763	?	29·610	28·939	20th	28·594	9th	·345	83·3	104·6	?	74·2	?	89·4	?	30·4	1·9	9th	66·0	22nd	46·9
31	North Punjab	Rawalpindi	1,643	28·009	−·001	29·611	28·199	14th	27·805	8th	·394	81·9	97·5	+0·3	68·0	+0·4	82·8	+0·4	29·5	110·0	9th	58·1	21st	51·9
	VII.—Indus Valley and N.-W. Rajputana.		...	...	+·002	...	...	...	...	...	...	...	104·2	+0·2	76·9	+0·9	90·6	+0·6	27·3	...	...	...	...	45·7
31	North Punjab	Peshawar	1,110	28·587	−·011	29·625	28·799	14th	28·377	8th	·422	81·6	96·9	−0·8	68·1	−1·4	82·5	−1·1	28·8	110·0	8th	57·0	13th	53·0
32	West Punjab	Khushab	612	29·042	?	29·619	29·255	14th	28·806	8th	·449	86·5	101·5	?	73·9	?	87·7	?	27·6	113·4	8th	58·5	13th	54·9
		Montgomery	558	29·089	?	29·601	29·319	14th	28·826	9th	·493	89·8	106·4	−1·7	75·6	?	91·0	?	30·8	117·1	8th	67·5	21st	49·6
		D. I. Khan	594	29·101	?	29·638	29·326	14th	28·865	8th	·461	84·8	100·7	−1·6	73·0	−0·6	86·9	−1·1	27·7	111·7	8th	64·0	13th	47·7
		Mooltan	420	29·233	−·001	29·617	29·440	15th	29·022	9th	·418	87·0	107·5	+2·8	78·2	+2·3	92·9	+2·0	29·2	117·0	8th	70·0	15th	47·0
47	Sind	Jacobabad	186	29·453	−·010	29·597	29·672	15th	29·281	30th	·391	89·3	112·1	+1·7	79·2	+2·3	95·6	+2·0	32·9	123·0	31st	69·1	16th	53·9
		Hyderabad	98	29·604	+·019	29·852	29·774	15th	29·495	30th	·279	86·3	106·3	−0·5	78·3	−0·1	92·3	−0·3	28·0	114·2	30th	74·5	12th	39·7
		Kurrachee	30	29·720	+·015	29·701	29·871	15th	29·611	31st	·260	84·8	92·7	−1·1	79·6	+0·8	86·2	−0·2	13·1	95·4	30th	77·0	5th	18·4
51	West Rajputana	Bickaneer	771	28·894	?	29·621	29·070	14th	28·729	9th	·341	89·7	107·4	+1·0	81·7	+2·9	94·6	+2·0	25·7	115·8	31st	67·5	13th	48·3
		Pachpadra	380	29·336	?	29·668	29·484	15th	29·195	30th	·289	86·8	108·3	?	78·1	?	93·2	?	30·2	115·9	6th	70·0	3rd & 15th.	45·9
		Jodhpur	782	28·919	?	29·651	29·073	19th	28·796	30th	·277	86·9	106·6	?	79·9	?	93·3	?	26·7	114·3	7th	70·3	15th	44·0
	VIII.—East Rajputana, Central India and Gujarat.		...	...	+·005	...	...	...	...	...	...	...	104·3	+0·9	79·2	+1·1	91·7	+1·0	25·1	...	...	...	...	39·4
50	East Rajputana	Jeypore	1,431	28·291?	0	29·658?	28·442	14th	28·136	30th	·306	87·1	105·6	+0·1	76·8	+0·6	91·2	+0·4	28·8	112·5	7th & 31st	66·0	13th	46·5
		Kotah	?	28·879	?	?	29·052	14th	28·764	30th	·288	93·0	108·4	?	84·7	?	96·5	?	23·7	113·6	4 days	67·6	13th	46·0
		Sambhar	1,254	28·449?	0	29·646?	28·607	14th	28·304	30th	·303	88·1	105·1	+0·8	78·7	+0·6	91·6	+0·7	26·4	111·5	3 days	68·0	12th	43·5
		Ajmere	1,611	28·130	+·007	29·678	28·279	14th	28·001	9th	·278	86·9	103·7	+0·5	80·3	+2·6	92·0	+1·6	23·4	110·4	7th & 30th.	69·6	18th & 19th.	40·8
		Oodeypore	1,925	27·844	?	29·681	27·992	14th	27·724	30th	·268	88·9	102·1	?	78·0	?	90·0	?	24·1	108·1	3 days	64·5	14th	43·6
		Deesa	466	29·308?	+·018	29·726?	29·474	15th	29·183	30th	·291	85·7	107·3	+1·1	78·0	+0·5	92·8	+0·8	29·3	114·5	6th	68·0	14th	46·5
46	Kathiawar and Cutch.	Bhuj	395	29·378	?	29·723	29·536	15th	29·283	30th	·253	86·4	102·7	+1·2	76·5	−0·2	89·6	+0·5	26·2	109·8	6th	72·9	19th	36·9
		Rajkot	429	29·362?	+·016	29·741?	29·499	15th	29·279	30th	·220	84·1	105·0	−0·4	75·6	+0·4	90·4	0	29·4	109·9	28th	70·6	3rd	39·3
		Veraval	?	29·795	?	29·755	29·933	15th	29·710	30th	·223	82·5	86·7	?	78·5	?	82·6	?	8·2	92·1	1st & 2nd,	75·3	16th	16·8
		Bhavnagar Para	35	29·761	?	29·740	29·903	15th	29·647	30th	·256	87·0	106·3	?	78·9	?	92·6	?	27·4	112·2	1st & 2nd,	70·3	13th	41·
49	Central India	Nowgong	757	28·939	+·001	29·639	29·138	14th	28·782	30th	·356	90·3	108·2	+0·9	80·4	+1·3	94·3	+1·1	27·8	113·5	31st	72·5	13th	41·0
		Indore	1,823	27·965	+·016	29·704	28·097	15th	27·854	30th	·243	87·1	103·9	+1·5	77·0	+1·6	90·5	+1·6	26·9	109·0	25th	71·6	13th & 20th.	37·4
		Neemuch	1,630	28·140	?	29·694	28·289	14th	28·018	30th	·271	89·1	105·0	+1·1	77·8	+1·4	91·4	+1·3	27·2	110·6	31st	72·1	5th	38·5

* Mean of 30 days.

I—*continued.*

in India, Burma, etc., in May 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 31st May 1898.	Normal rainfall for period 1st March to 31st May.	Variation from normal of period, 1st March to 31st May.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·70	1·07	−0·36	...	...	...	...	VI.—Upper Sub-Himalayas.		
7	...	3	4	5	1	...	4	7	3·2	5·2	− 38	44	·534	2·1	2	2·27	−0·27	0·45	0·84	− 0·39	1·02	1·95	− 0·93	0·32	Bareilly	N.-W. Provinces, West (Submontane).	24
15	3	1	2	1	3	1	3	2	2·4	2·5	− 4	40	·394	3·2	3	4·09	−1·09	0·64	1·95	− 1·31	2·18	3·55	− 1·37	0·21	Dehra Dun.		
15	...	...	...	12	...	2	...	2	3·1	3·7	− 16	36	·416	1·7	0	2·80	−2·00	0·16	0·86	− 0·70	0·50	2·00	− 1·50	0·09	Roorkee.		
12	1	2	7	1	...	...	3	5	2·5	2·6	− 4	38	·463	1·5	1	1·64	−0·64	0·33	0·69	− 0·36	0·43	1·70	− 1·27	0·25	Meerut	N.-W. P., West.	22
3	2	3	1	5	2	1	5	9	5·5	4·5	+ 22	39	·464	3·4	3	1·64	+1·36	0·60	0·78	− 0·18	0·63	1·58	− 0·95	0·30	Delhi	South-East Punjab,	26
6	9	3	4	6	...	...	...	3	3·5	3·3	+ 6	43	·482	2·1	3	2·00	+1·00	1·06	1·03	+ 0·03	1·06	2·22	− 1·16	0·68	Lahore	Central Punjab,	28
2	3	4	2	7	3	1	8	1	8·5	4·8	+ 77	37	·431	2·2	2	1·82	+0·18	1·77	0·81	+ 0·96	1·77	1·49	+ 0·28	1·17	Sirsa	South Punjab.	27
8	3	11	2	...	2	5	...	...	6·9	?	?	48	·579	2·7	2	?	?	0·63	?	?	0·63	?	?	0·31	Patiala.		
11	2	5	...	8	1	...	1	3	2·7	2·2	+ 23	38	·456	3·6	0	1·91	−1·91	0·08	0·78	− 0·70	0·08	2·62	− 2·54	0·08	Ludhiana	Punjab (Submontane),	29
8	7	9	4	1	...	...	1	1	2·4	2·5	− 4	37	·437	1·7	2	2·73	−0·73	1·06	1·23	− 0·17	1·09	3·32	− 2·23	0·74	Sialkot.		
9	...	...	7	2	2	...	4	7	2·9	?	?	42	·478	2·5	2	?	?	0·47	0·97	− 0·50	0·64	2·23	− 1·59	0·19	Umballa.		
18	4	1	3	...	...	...	2	3	3·4	2·8	+ 21	39	·392	3·7	2	3·00	−1·00	1·13	1·80	− 0·67	1·83	5·51	− 3·68	0·81	Rawalpindi.	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·68	0·47	+0·21	...	...	...	...	VII.—Indus Valley and N.-W. Rajputana.		
21	1	...	...	2	2	...	1	4	3·8	4·8	− 21	43	·433	3·6	2	2·09	−0·09	1·37	0·75	+ 0·62	4·14	4·29	− 0·15	0·78	Peshawar	North Punjab.	31
2	3	15	4	1	1	3	1	1	7·1	?	?	34	·390	1·8	5	1·00	+4·00	3·04	0·41	+ 2·63	3·20	1·57	+ 1·63	2·00	Khushab	West Punjab.	32
2	5	6	4	6	4	1	2	1	7·6	?	?	28	·402	1·4	0	1·10	−1·10	0	0·47	− 0·47	0	1·22	− 1·22	0	Montgomery.		
9	6	8	1	4	...	...	...	3	4·1	2·3	+ 78	45	·532	2·3	1	0·82	+0·18	0·41	0·40	+ 0·01	0·50	1·30	− 1·30	0·38	D. I. Khan.		
16	1	7	...	4	1	...	1	1	1·5	2·9	− 48	38	·473	0·7	0	0·82	−0·82	0	0·42	− 0·42	0	0·87	− 0·87	0	Mooltan.		
7	...	3	8	7	2	2	...	2	5·9	4·7	+ 26	43	·598	1·6	1	0·45	+0·55	0·23	0·10	+ 0·13	0·23	0·44	− 0·21	0·17	Jacobabad	Sind.	47
...	...	...	...	...	4	25	2	...	18·6	12·7	+ 46	57	·694	0·9	0	0·45	−0·45	0·11	0·25	− 0·14	0·11	0·43	− 0·32	0·08	Hyderabad.		
...	...	...	...	...	2	6	22	1	13·2	17·5	− 25	75	·901	3·5	0	0	0	0	0	0	0	0·56	− 0·56	0	Kurrachee.		
...	...	...	3	3	4	12	6	3	8·7	6·5	+ 34	50	·693	2·4	1	?	?	1·62	1·08	+ 0·54	1·62	1·45	+ 0·17	1·53	Bikaneer	West Rajputana.	51
Not		recorde		d.					?	8·8	?	57	·714	0·3	0	?	?	0·08	0·83	− 0·75	0·08	0·91	− 0·83	0·08	Pachpadra.		
3	...	1	...	...	2	22	3	...	5·3	?	?	42	·517	2·0	2	?	?	0·65	0·47	+ 0·18	0·65	0·55	+ 0·10	0·34	Jodhpur.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·36	0·49	−0·14	...	...	...	...	VIII.—East Rajputana, Cen. India and Gujarat.		
1	4	2	1	2	1	5	11	4	5·8	6·9	− 16	40	·497	2·1	4	1·20	+2·80	1·31	0·45	+ 0·86	1.31	0·93	+ 0·38	0·75	Jeypore	East Rajputana.	50
3	3	...	4	3	...	4	6	8	6·6	?	?	28	·420	0·7	3	?	?	0·80	1·11	− 0·31	0·84	1·20	− 0·36	0·36	Kotah.		
3	5	...	3	1	2	1	14	2	10·3	9·9	+ 4	39	·514	1·8	3	1·27	+1·73	0·66	0·80	− 0·14	0·66	1·24	− 0·58	0·33	Sambhar.		
2	...	3	...	...	1	11	10	4	9·7	7·1	+ 37	43	·568	1·9	1	2·09	−1·09	0·40	0·75	− 0·35	0·40	0·98	− 0·58	0·22	Ajmere.		
4	4	...	2	...	...	4	11	6	8·5	?	?	46	·615	0·3	2	?	?	0·38	?	?	0·38	?	?	0·27	Oodeypore.		
...	3	1	...	1	...	5	11	10	12·4	13·4	− 7	56	·680	1·6	1	0·55	+0·45	0·87	0·25	+ 0·62	0·87	0·31	+ 0·56	0·87	Deesa.		
...	...	...	...	...	...	6	19	6	18·7	15·4	+ 21	59	·736	0·9	0	?	?	0	0·13	− 0·13	0	0·40	− 0·40	0	Bhuj	Kathiawar and Cutch.	46
...	4	...	...	...	...	2	21	4	13·1	14·6	− 10	66	·777	1·3	1	0·36	+0·64	0·18	0·25	− 0·07	0·18	0·28	− 0·10	0·11	Rajkot.		
...	1	...	...	...	1	5	20	4	8·4	?	?	82	·913	2·6	0	?	?	0	0·02	− 0·02	0	0·02	− 0·02	0·	Veraval.		
...	1	...	...	...	3	15	5	7	12·4	?	?	53	·671	1·5	1	?	?	0·44	?	?	0·44	?	?	0·44	Bhavnagar Para.		
4	4	...	1	...	1	6	13	2	3·7	3·4	+ 9	32	·446	1·7	0	1·09	−1·09	0·08	0·42	− 0·34	0·08	0·75	− 0·67	0·08	Nowgong	Central India.	40
1	2	5	...	...	...	3	13	7	4·5	6·1	− 26	49	·633	1·2	1	1·36	−0·36	0·12	0·75	− 0·63	0·19	0·83	− 0·64	0·10	Indore.		
...	2	3	1	1	1	3	9	11	5·7	12·4	− 54	47	·636	0·7	0	1·18	−1·18	0	0·59	− 0·59	0	0·76	− 0·76	0	Neemuch.		

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
45	Gujarat	Surat	39	29·777	?	29·758	29·918	15th	29·683	30th	·235	87·3	99·8	?	79·6	?	89·7	?	20·2	108·6	23rd	76·5	1st & 4th.	32·1
		Ahmedabad	164	29·625	?	29·734	29·762	15th	29·523	30th	·239	87·9	107·6	?	80·3	?	94·0	?	27·3	112·8	3rd	74·6	13th	38·2
22	N.-W. P., West	Agra	555	29·115	—·009	29·621	29·311	14th	28·959	30th	·352	88·9	106·1	?	80·6	−0·1	93·4	?	25·5	112·0	4 days	71·9	14th	40·1
21	N.-W.P., Central	Jhansi	858	28·844	—·007	29·637	29·037	14th	28·688	30th	·349	92·7	109·4	+2·0	81·3	+2·0	96·9	+2·0	25·1	114·7	27th	73·9	19th	40·8
	IX.—Deccan	...	...	...	+·003	...	...	...	...	...	...	...	105·3	+1·7	79·1	+2·0	92·2	+1·9	26·2	...	...	...	...	37·9
38	Bombay (Deccan)	Belgaum	2,556	27·319	+·023	29·796	27·422	15th	27·240	6th	·182	75·2	92·4	−0·7?	67·8	−0·1?	80·1	−0·4?	24·6	100·2	22nd	64·8	3 days	35·4
		Sholapur	1,590	28·231	+·008	29·745	28·338	14th	28·126	6th	·212	85·8	105·4	+1·1	78·3	+2·3	91·9	+1·7	27·1	110·2	1st	73·5	28th	36·7
		Poona	1,840	28·010	+·009	29·779	28·122	15th	27·929	5th	·193	81·7	101·3	+2·8	72·6	+0·7	87·5	+1·8	28·7	109·0	24th	67·9	5th	41·1
		Bijapur	1,946	27·890	?	29·757	27·979	15th	27·808	6th	·171	81·6	101·7	?	73·5	?	87·6	?	28·2	106·2	22nd	69·0	26th	37·2
40	Khandesh	Malegaon	1,430	28·369?	0	29·729?	28·484	15th	28·273	30th	·211	87·1	104·7	+1·0	77·1	+2·4	90·9	+1·7	27·6	109·8	1st	71·2	15th	38·6
		Ahmednagar	2,152	27·695	?	29·756	27·803	15th	27·604	6th	·199	83·6	101·7	?	73·7	?	87·7	?	28·0	105·8	2nd	65·0	5th	40·8
41	Berar	Akola	930	28·834	+·004	29·692	28·963	14th	28·732	6th	·231	91·6	109·3	+2·2	82·4	+1·8	95·9	+2·0	26·9	116·0	1st	74·7	21st	41·3
		Amraoti	1,215	28·546	+·013	29·690	28·667	14th	28·439	7th	·228	90·6	109·3	+2·1	82·1	+2·9	95·7	+2·5	27·2	115·0	1st	77·3	17th	37·7
42	Central Provinces (West).	Khandwa	1,044	28·728	+·014	29·711	28·851	15th	28·619	30th	·232	90·0	108·0	+1·9	83·0	+2·8	95·5	+2·4	25·0	114·7	1st	76·1	13th	38·6
		Hoshangabad	1,006	28·736	+·002	29·678	28·867	14th & 15th	28·613	30th	·254	92·4	108·9	+1·4	83·1	+3·4	96·0	+2·4	25·8	113·0	6 days	74·7	15th	38·3
		Nagpur	1,025	28·696?	?	29·652?	28·833	14th	28·562	7th	·271	92·4	109·5	?	82·4	?	96·0	?	27·1	114·2	8th	74·1	14th & 15th	40·1
43	Central Provinces (Central).	Chanda	634	29·130?	?	29·694?	29·243	15th	29·007	6th	·236	92·2	110·5	+1·3	83·0	+1·5	96·8	+1·4	27·5	115·2	8th	76·2	7th & 8th	39·0
		Seoni	2,033	27·728	+·004	29·646	27·857	14th	27·611	7th	·246	90·4	105·0	+1·8	76·9	+0·3	91·0	+1·1	28·1	110·1	30th	70·9	14th	39·2
		Jubbulpore	1,327	28·397?	?	29·648?	28·529	15th	28·286	7th	·243	91·4	106·9	+2·0	79·1	+0·7	93·0	+1·4	27·8	111·0	31st	70·1	14th	40·9
		Saugor	1,807	27·943	?	29·656	28·091	14th	27·826	30th	·265	90·9	105·1	+0·4	80·8	+3·2	93·0	+1·8	24·3	109·9	27th & 31st.	73·1	19th	36·8
46	Central India	Sutna	1,040	28·648	−·004	29·625	28·801	14th	28·524	30th	·277	92·4	106·7	+2·0	80·1	+2·0	93·4	+2·0	26·6	111·6	29th	73·1	29th	38·5
44	Central Provinces (East).	Raipur	970	28·754	+·004	29·650	28·863	15th	28·623	7th	·240	92·2	108·5	+2·0	82·2	+1·1	95·4	+1·6	26·3	113·0	9th	75·6	29th	37·4
		Sambalpur	486	29·229	−·015	29·655	29·351	15th	29·109	7th	·242	90·3	107·5	+1·1	81·9	+1·0	94·7	+1·1	25·6	112·1	3rd	74·2	30th	37·9
39	Hyderabad (North).	Aurangabad	1,865	27·974	?	29·750	28·086	15th	27·883	7th	·203	87·2	105·4	?	76·3	?	90·8	?	29·1	113·5	1st	71·5	13th	42·0
		Indur	?				Not recorded.					90·5	106·7	?	83·1	?	94·9	?	23·6	115·5	3rd	78·1	15th	37·4
		Bidar	2,165?	27·645	?	29·705	27·753	15th	27·540	6th	·213	85·7	99·4	?	73·8	?	86·6	?	25·6	101·3	14th	70·2	9th & 12th.	31·1
53	Hyderabad (South).	Gulbarga	1,502	28·334?	?	29·765?	28·432	15th	28·226	6th	·206	85·7	105·0	?	78·5	?	91·8	?	26·5	109·0	1st	73·1	25th	35·9
		Raichur	1,309	28·497	?	29·736	28·582	14th	28·413	6th	·169	85·5	103·6	?	79·9	?	91·7	?	23·7	106·5	31st	72·1	15th	34·4
		Hyderabad (Deccan).	1,690	28·107	—·005	29·710	28·212	15th	27·982	6th	·230	87·5	104·4	+1·5	81·4	+3·5	92·9	+2·5	22·0	108·9	7th	74·2	31st	34·7
		Secunderabad	1,787	28·016	−·018	29·714	28·121	15th	27·899	6th	·222	86·5	105·9	+3·0	80·9	+3·0	93·4	+3·0	25·0	110·3	7th	68·0	31st	42·3
		Hanamconda (a)	?	28·880?	?	28·816?	28·997	27th	28·760	7th	·237	88·8	105·4	?	82·9	?	94·2	?	22·5	110·2	9th	73·8	26th	31·4
	X.—West Coast		...	...	+·007	...	...	...	...	...	...	...	90·1	+1·1	79·7	+0·8	84·9	+0·9	10·4	...	...	...	...	17·9
37	Konkan	Bombay	37	29·820	+·007	29·797	29·950	15th	29·739	30th	·211	84·9	91·1	+1·1	81·6	+1·2	86·4	+1·2	9·5	95·0	29th	79·5	3 days	15·5
		Ratnagiri	110	29·746	+·018	29·794	29·858	15th	29·671	3rd	·187	85·6	91·7	+0·8	80·4	+0·8	86·1	+0·8	11·3	92·4	8 days	73·9	29th	18·5
		Mormugao	60	29·816	?	29·810	29·910	15th	29·746	6th	·164	85·1	90·1	?	81·6	?	85·9	?	8·5	92·0	3 days	74·4	24th	17·6
		Goa	199	29·665	+·025	29·800	29·758	15th	29·590	6th	·168	84·7	88·4	?	81·2	?	84·8	?	7·2	90·0	4 days	74·0	24th	16·0
		Karwar	44	29·816?	+·005	29·791?	29·909	15th	29·744	6th	·165	83·8	90·6	+0·9	80·2	+1·0	85·4	+1·0	10·4	92·3	20th	75·5	17th & 24th.	16·8
33	Malabar	Cochin	10	29·86	−·005	29·801	29·937	15th	29·796	3rd	·141	82·4	90·8	+1·6	77·6	+0·4	84·2	+1·0	13·2	95·0	14th	72·6	5th	22·4
		Calicut	27	29·84	−·005	29·796	29·913	15th	29·753	1st	·160	83·1	91·1	+1·3	78·0	+0·7	84·6	+1·0	13·1	93·9	2nd	74·0	5th	19·9
		Mangalore	65	29·81	+·004	29·808	29·892	15th	29·742	3rd	·150	83·5	90·4	+0·6	79·0	+0·6	84·7	+0·6	11·4	92·8	1st	73·9	5th	18·9
		Trivandrum	198	29·6	?	29·801	29·741	15th	29·571	1st	·170	82·0	86·7	?	78·0	?	82·4	?	8·7	88·0	4 days	72·5	18th	15·5

(a) Not reduced to sea level.

I—*continued.*

in India, Burma, etc., in May 1898—continued.

Wind Direction. Number of winds from									Wind Velocity.			Hygrometry, 8 A.M.			Rainfall.												
Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Mean velocity in miles per hour.	Normal.	Percentage variation.	Mean humidity.	Mean vapour tension.	Mean cloud amount.	Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 31st May 1898.	Normal rainfall for period, 1st March to 31st May.	Variation from normal of period, 1st March to 31st May.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
7	1	...	...	...	4	12	6	1	6·8	12·7	− 46	64	·837	2·7	0	0·45	−0·45	0	0·19	− 0·19	0	0·20	− 0·20	0	Surat	Gujarat.	45
1	2	...	...	...	...	7	8	13	5·9	P	P	55	·716	1·9	0	P	P	0	0·51	− 0·51	0	0·54	− 0·54	0	Ahmedabad		
2	...	2	...	3	...	17	...	7	6·5	5·9	+ 10	47	·628	1·7	0	1·91	−1·91	0·43	0·60	−0·17	0·45	1·05	− 0·60	0·09	Agra	N.-W. P., West	22
3	1	...	1	1	1	6	6	12	4·8	4·8	− 4	34	·518	0·9	3	1·36	+1·64	0·39	0·49	− 0·10	0·47	0·97	− 0·50	0·13	Jhansi	N.W.P., Central	21
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·41	1·01	−0·58	...	...	...	...	IX.—Deccan.		
4	1	...	...	...	...	7	10	9	15·7	18·1	− 13	74	·650	3·5	5	4·36	+ 0·64	4·34	2·62	+ 1·72	9·60	4·69	+ 4·91	2·90	Belgaum	Bombay (Deccan).	38
...	1	1	1	2	...	1	6	19	17·9	10·0	+ 79	41	·500	3·2	1	2·18	− 1·18	0·42	1·15	− 0·73	0·61	2·06	− 1·45	0·23	Sholapur.		
...	...	1	...	...	...	6	13	11	15·6	14·2	+ 10	51	·548	2·8	0	2·00	− 2·00	0·07	1·65	− 1·58	1·35	2·24	− 0·89	0·04	Poona.		
...	...	...	1	...	...	5	15	10	7·3	P	P	80	·864	2·5	3	3·10	− 0·10	0·74	1·05	− 0·31	2·50	1·93	+ 0·57	0·23	Bijapur.		
...	1	1	...	...	...	4	14	11	21·0	10·4	+102	60	·769	2·7	0	1·27	− 1·27	0	0·95	− 0·95	0	1·08	− 1·08	0	Malegaon	Khandesh.	40
...	8	2	1	...	...	4	5	11	5·3	P	P	47	·511	2·8	0	P	P	0·11	1·25	− 1·14	0·14	1·81	− 1·67	0·06	Ahmednagar.		
...	...	1	...	...	...	...	14	16	10·1	8·6	+ 17	33	·479	1·3	1	0·91	+ 0·09	0·19	0·48	− 0·29	0·37	1·19	− 0·82	0·15	Akola	Berar.	41
...	2	2	1	...	1	4	13	8	8·0	6·0	+ 33	44	·633	1·9	0	1·73	− 1·73	0·05	0·75	− 0·70	0·15	1·40	− 1·25	0·05	Amraoti.		
...	1	...	...	...	...	...	17	13	9·8	9·1	+ 8	36	·488	1·1	0	1·09	− 1·09	0	0·45	− 0·45	0	0·75	− 0·75	0	Khandwa	Central Provinces (West).	42
4	...	3	1	...	1	13	8	1	3·6	3·8	− 5	33	·493	1·8	0	1·18	− 1·18	0	0·73	− 0·73	0·03	1·12	− 1·09	0	Hoshangabad.		
9	3	2	...	...	2	4	4	7	8·7	9·5	− 8	32	·476	3·2	1	2·09	− 1·09	0·35	0·80	− 0·45	1·71	1·75	− 0·04	0·30	Nagpur.		
1	5	...	3	5	4	...	7	6	4·1	4·9	− 16	34	·517	1·9	0	P	P	0·01	0·89	− 0·88	0·17	2·76	− 2·59	0·01	Chanda	Central Provinces (Central).	43
...	5	7	1	3	1	6	1	7	3·7	4·6	− 20	28	·394	1·2	1	2·36	− 1·36	0·39	0·76	− 0·37	0·84	1·81	− 0·97	0·26	Seoni.		
...	2	2	...	5	2	3	12	5	4·4	4·5	− 2	29	·434	1·4	1	1·45	− 0·45	0·18	0·71	− 0·53	0·28	1·40	− 1·12	0·13	Jubbulpore.		
...	4	2	2	1	2	4	14	2	4·3	4·4	− 2	45	·644	1·9	0	1·27	− 1·27	0	0·69	− 0·69	0·09	1·05	− 0·96	0	Saugor.		
1	3	2	2	...	5	1	8	9	8·2	8·1	+ 1	25	·366	0·8	1	1·64	− 0·64	0·55	0·39	+ 0·16	0·55	1·01	− 0·46	0·55	Sutna	Central India	49
4	2	3	2	2	1	11	2	4	8·6	7·4	+ 16	32	·465	2·4	0	2·91	− 2·91	0	1·04	− 1·04	0	2·32	− 2·32	0	Raipur	Central Provinces (East).	44
...	2	1	1	11	5	6	2	3	5·2	3·0	+ 73	52	·739	2·6	1	P	P	0·31	2·05	− 1·74	0·56	3·76	− 3·20	0·14	Sambalpur.		
2	2	3	...	...	...	5	14	5	4·8	P	P	37	·462	2·1	2	P	P	0·64	0·75	− 0·11	0·71	0·99	− 0·28	0·35	Aurangabad	Hyderabad (North).	39
3	4	...	1	2	1	1	8	11	9·0	P	P	57	·819	3·1	0	P	P	0·13	0·33	− 0·20	0·90	0·91	− 0·01	0·07	Indur.		
...	6	...	2	1	1	6	12	3	7·5	P	P	67	·825	0·7	3	P	P	1·20	1·07	+ 0·13	2·59	2·24	+ 0·35	0·90	Bidar.		
2	5	3	...	1	...	5	1	14	12·3	P	P	48	·587	1·4	1	P	P	0·24	1·39	− 1·15	1·07	2·31	− 1·24	0·12	Gulbarga	Hyderabad (South).	53
...	1	1	1	2	1	5	17	3	9·6	P	P	53	·648	2·6	2	P	P	0·39	1·05	− 0·66	0·91	1·99	− 1·08	0·22	Raichur.		
8	1	...	1	2	...	...	15	4	6·3	P	P	46	·596	2·0	0	P	P	0·09	1·15	− 1·06	2·21	2·57	− 0·36	0·09	Hyderabad (Deccan).		
1	1	...	3	2	1	7	9	7	7·4	7·4	0	45	·577	2·3	1	P	P	0·33	1·15	− 0·82	1·53	2·57	− 1·04	0·21	Secunderabad.		
2	...	...	1	11	7	...	5	5	11·6	P	P	48	·641	3·0	0	P	P	0	P	P	2·31	P	P	0	Hanamconda. (a)		
...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	3·77	5·59	−1·82	...	..	...	...	X.—West Coast.		
1	3	3	...	...	6	6	6	6	9·1	9·9	− 8	73	·887	3·9	1	1·00	0	0·16	0·94	− 0·78	0·16	0·98	− 0·82	0·15	Bombay	Konkan.	37
1	5	...	...	2	2	3	8	10	6·5	11·2	− 42	69	·843	3·6	2	1·64	+ 0·36	0·41	1·89	− 1·48	0·84	1·97	− 1·13	0·17	Ratnagiri.		
2	13	1	2	2	1	...	2	8	10·9	P	P	76	·925	5·2	2	P	P	1·70	2·00	− 0·30	2·00	2·29	− 0·29	1·20	Mormugao.		
1	11	3	2	...	3	1	2	8	?	P	P	76	·907	6·9	2	P	P	0·81	2·81	− 2·00	1·21	2·88	− 1·67	0·60	Goa.		
...	12	1	...	...	...	...	1	17	5·9	P	P	73	·844	4·5	2	4·09	− 2·09	0·61	3·85	− 3·24	0·95	4·26	− 3·31	0·24	Karwar.		
10	10	5	1	1	...	...	1	3	5·8	P	P	82	·907	5·6	12	13·45	− 1·45	13·56	13·30	+ 0·26	17·62	20·11	− 2·49	3·94	Cochin	Malabar.	33
11	1	1	...	1	2	...	1	14	8·6	P	P	79	·889	5·7	10	9·00	+ 1·00	6·78	8·05	− 1·27	9·18	11·74	− 2·56	3·15	Calicut.		
12	3	3	4	2	...	1	...	6	3·7	4·6	− 20	76	·875	6·8	7	6·80	+ 0·20	5·43	7·67	− 2·24	5·77	8·86	− 3·09	1·90	Mangalore.		
7	13	3	1	...	...	...	...	7	6·2	P	P	79	·866	6·3	8	P	P	4·43	9·80	− 5·37	9·53	15·95	− 6·42	1·71	Trivandrum.		

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	XI.—South India		...	...	−·008	...	...	...	...	...	...	...	96·3	+1·7	78·1	+0·6	88·2	+1·1	20·1	...	...	...	...	32·4
37	Madras (South)	Pamban	37	29·785	?	29·748	29·867	15th	29·698	6th	·169	86·0	91·9	?	81·4	?	86·7	?	10·5	93·3	8 days	76·2	29th	17·1
		Tinnevelly	168	29·663	?	29·759	29·755	15th	29·575	6th	·180	87·5	101·8	?	80·5	?	91·2	?	21·3	106·6	11th	69·9	26th	36·7
		Madura	447	29·375	−·012	29·754	29·470	15th	29·270	6th	·200	84·6	99·9	−0·2	77·9	+1·1	89·0	+0·5	22·0	105·5	11th & 13th	72·5	21st	33·0
34	Madras (South Central).	Salem	940	28·916	−·010	29·789	28·989	15th	28·837	6th	·152	83·6	99·5	+0·7	76·1	+0·6	87·8	+0·7	23·4	104·9	11th	69·0	17th	35·9
		Coimbatore	1,348	28·496?	−·004	29·781?	28·571	15th	28·412	3rd	·159	80·7	95·8	+1·0	73·8	+0·3	84·8	+0·7	22·0	99·9	14th	69·3	2nd	30·6
35	Coorg	Mercara	3,781	26·198	+·011	?	26·290	15th	26·112	5th	·178	70·0	79·9	−1·0	65·6	+1·1	72·8	+0·1	14·3	84·0	4th	62·2	2nd & 26th.	21·8
36	Mysore	Chitaldroog	2,405	27·467	?	29·777	27·578	15th	27·384	3rd	·194	78·0	94·5	?	71·2*	?	82·8*	?	23·3	99·2	1st	63·9	23rd	35·3
		Bangalore	3,021	26·887	−·001	29·780	26·965	15th	26·795	5th	·170	76·0	93·0	+1·8	69·4	+0·3	81·2	+1·1	23·6	97·2	4th	66·3	17th	30·9
		Hassan	3,091	26·835	?	29·813	26·906	14th	26·724	5th	·182	74·9	87·5	?	66·6	?	77·1	?	20·9	92·3	1st	63·1	13th	29·2
		Mysore	2,518	27·386	?	29·807	27·462	15th	27·303	5th	·159	76·8	92·6	?	69·5	?	81·0	?	23·1	97·4	11th	66·0	24th	31·4
56	Madras (East Coast, South).	Negapatam	31	29·782	−·014	29·741	29·879	15th	29·688	6th	·191	87·2	100·8	+4·7	79·3	−0·6	90·1	+2·1	21·5	108·5	15th	74·4	23rd	34·1
		Cuddalore	12	29·786	?	29·727	29·863	15th & 23rd	29·675	6th	·188	87·8	99·8	?	79·0	?	89·5	?	20·8	109·4	3 days	73·2	26th	36·2
		Trichinopoly	255	29·559	−·021	29·744	29·641	15th	29·460	6th	·181	85·2	102·8	+1·7	79·2	+1·0	91·1	+1·4	23·6	108·2	15th	71·9	21st	36·3
		Madras	22	29·772	−·017	29·724	29·866	23rd	29·666	6th	·200	88·9	100·0	+2·2	81·3	+0·5	90·7	+1·4	18·7	110·0	10th	72·5	31st	37·5
55	Madras (East Coast, Central).	Nellore	71	29·696	?	29·700	29·800	27th	29·588	7th	·212	90·7	106·8	?	82·1	?	94·5	?	24·7	114·8	11th	71·1	31st	43·7
		Masulipatam	15	29·752	−·004	29·701	29·865	27th	29·629	9th	·236	90·3	102·5	+3·3	83·1	+1·9	92·8	+2·6	19·4	115·7	10th	78·1	31st	37·6
54	Madras (Central)	Cuddapah	433	29·369	−·013	29·734	29·464	15th	29·289	3rd	·175	89·7	106·8	+1·6	83·8	+0·5	95·3	+1·1	23·0	109·8	1st	73·8	31st	36·0
		Kurnool	923	28·879	−·010	29·732	28·966	15th	28·794	3rd	·172	86·6	105·5	+1·2	80·6	+0·2	93·1	+0·7	24·9	108·3	1st	75·5	2nd	32·8
		Bellary	1,475	28·352	+·007	29·756	28·462	15th	28·267	6th	·195	84·5	102·7	+0·3	77·5	+0·3	90·1	+0·3	25·2	105·7	22nd & 23rd.	71·2	31st	34·5
52	Madras (East Coast, North).	Cocanada	26	29·740	+·002	29·701	29·854	28th	29·609	9th	·245	88·6	99·9	?	83·1	+0·2	91·5	?	16·8	111·1	10th	79·0	31st	32·1
		Vizagapatam	31	29·726	−·007	29·695	29·849	28th	29·601	9th	·248	88·0	94·9	?	82·1	0	88·5	?	12·8	103·7	17th	73·4	25th	30·3
		Waltair	?				Not	record	ed.			86·4	91·8	?	81·1	?	86·5	?	10·7	100·7	17th	71·6	25th	29·1
		Gopalpur	21	29·715	?	29·675	29·857	28th	29·605	9th	·252	85·1	91·1	?	80·7	?	85·9	?	10·4	96·3	26th	74·1	30th	22·2
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·707	?	?	25·850	15th	25·560	9th	·290	82·1	93·4	?	65·3	?	79·4	?	28·1	103·0	31st	51·2	16th	51·8
		Pishin	?			Not	record	ed.				?	86·8	?	48·6	?	67·8	?	38·2	95·0	3 days	40·9	13th	54·1
		Quetta	5,502	24·579	+·002	?	24·675	20th	24·439	12th	·236	69·5	82·9	0	51·9	−0·1	67·5	−0·1	31·0	90·6	31st	43·4	13th	47·2
		Kalat	?			Not	record	ed.				68·7	83·8	?	46·1	?	65·0	?	37·7	95·7	26th	35·0	4th	60·7
		Chaman	4,311	25·618	?	?	25·725	20th	25·515	11th	·210	78·4	91·3	?	64·5	?	77·9	?	26·8	100·2	27th & 31st	55·1	15th	45·1
30	Punjab	Leh	11,503	19·713	−·005	?	19·827	1st	19·538	16th	·289	45·2	61·9	−2·2	36·0	−0·2	49·0	−1·2	25·9	71·6	1st	30·5	22nd & 23rd.	41·1
		Srinagar	5,204	24·841	?	?	24·959	19th	24·712	12th	·247	58·4	74·0	?	48·0	?	61·0	?	26·0	86·3	7th	41·8	17th	44·5
		Skardu	?	22·848	?	?	22·995	4th	22·626	16th	·369	58·1	70·1	?	49·2	?	59·7	?	20·9	82·0	31st	43·8	21st	38·2
		Dras	?	20·774	?	?	20.879	1st & 4th	20·608	16th	·271	49·9	65·9	?	33·0	?	49·5	?	32·9	76·9	31st	26·1	22nd	50·8
		Gilgit	?	25·068	?	?	25·221	4th	24·430	16th	·791	67·1	76·9	?	59·1	?	68·0	?	17·8	86·9	31st	51·1	21st	35·8
		Chitral	?	24·742	?	?	24·900	4th & 20th	24·600	5 days	·300	58·4	79·8	?	53·5	?	66·6	?	26·3	93·2	31st	45·0	17th	48·2
		Killa Drosh	?			Not	record	ed.				63·5	79·2	?	57·5	?	68·4	?	21·7	91·4	11th & 31st.	48·3	17th & 18th	43·1
		Fara Chinar	6,000	24·387	?	?	24·495	23rd	24·224	12th	·271	66·5	77·8	?	54·2	?	66·0	?	23·6	90·4	8th	42·3	17th	48·1
		Cherat	?	25·587	?	?	25·725	14th	25·425	9th	·300	71·8	84·6	?	65·2	?	74·9	?	19·4	96·4	8th	47·5	13th	48·9

I—*continued.*

in India, Burma, etc., in May 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.*	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 31st May 1898.	Normal rainfall for period, 1st March to 31st May.	Variation from normal of period, 1st March to 31st May.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·90	2·57	−0·68	...	...	...	...	**XI.—South India.**		
1	...	2	...	2	7	16	2	1	12·9	?	?	80	·994	3·0	2	2·30	− 0·30	0·88	2·21	−1·33	1·25	7·13	− 5·88	0·52	Pamban	Madras (South)	57
...	3	1	...	3	2	2	7	13	4·8	?	?	59	·767	2·5	3	3·80	− 0·80	1·31	1·56	−0·25	4·15	4·95	− 0·80	1·02	Tinnevelly.		
1	10	...	...	...	...	2	2	16	4·6	3·7	+ 24	70	·837	3·3	6	4·00	+ 2·00	4·17	2·87	+1·30	6·43	5·36	+ 1·07	1·30	Madura.		
9	2	...	1	...	1	7	4	7	5·3	4·4	+ 20	72	·835	2·9	8	8·64	− 0·64	4·81	5·20	− 0·39	9·77	7·66	+ 2·11	1·75	Salem	Madras (South Central).	34
...	...	...	7	4	5	12	3	...	1·1	5·2	− 79	75	·794	5·5	4	6·45	− 2·45	2·25	2·61	− 0·36	3·26	4·91	− 1·65	1·19	Coimbatore.		
13	1	...	...	...	...	...	...	17	3·6	5·3	− 32	85	·632	5·7	7	10·00	− 3·00	3·68	6·59	− 2·91	6·38	10·18	− 3·80	0·88	Mercara	Coorg.	35
...	...	...	...	1	...	9	16	5	9·8	?	?	69	·675	6·5	5	?	?	4·83	3·69	+ 1·14	5·60	5·11	+ 0·49	1·85	Chitaldroog	Mysore.	36
...	...	...	1	...	3	8	16	3	7·2	5·5	+ 31	74	·667	4·2	6	7·55	− 1·55	2·41	4·02	− 1·61	2·98	5·71	− 2·73	0·80	Bangalore.		
2	1	...	...	1	...	4	11	12	3·3	?	?	74	·645	6·3	10	?	?	5·36	4·55	+ 0·81	7·18	6·71	+ 0·47	1·12	Hassan.		
...	1	...	1	...	2	9	14	4	9·2	?	?	74	·678	5·4	8	?	?	3·28	5·67	− 2·39	4·33	8·60	− 4·27	0·55	Mysore.		
2	...	...	...	2	2	17	8	...	10·4	7·4	+ 41	67	·864	4·5	1	2·18	− 1·18	0·42	1·94	− 1·52	0·42	2·83	− 2·41	0·35	Negapatam	Madras (East Coast, South).	56
...	1	...	...	4	7	7	9	3	2·7	?	?	70	·921	1·9	0	1·50	− 1·50	0·03	1·26	− 1·23	0·11	2·45	− 2·34	0·02	Cuddalore.		
6	...	...	1	2	...	9	10	3	7·0	6·0	+ 17	67	·810	3·4	4	3·91	+ 0·09	2·55	3·04	− 0·49	6·06	5·12	+ 0·94	1·16	Trichinopoly.		
...	...	...	...	1	14	6	8	2	8·2	9·2	− 11	62	·852	3·6	1	1·45	− 0·45	0·65	2·12	− 1·47	0·65	3·13	− 2·48	0·65	Madras.		
3	...	...	...	6	7	...	7	8	9·5	?	?	60	·860	3·7	1	2·10	− 1·10	0·68	1·11	− 0·43	0·69	1·44	− 0·75	0.52	Nellore	Madras (East Coast, Central).	55
...	1	...	...	8	9	3	3	7	10·4	8·9	+ 17	68	·959	5·0	1	2·73	− 1·73	0·42	1·55	− 1·13	0·42	1·82	− 1·40	0·42	Masulipatam		
...	2	1	...	...	...	8	10	10	?	?	?	58	·808	2·8	2	3·40	− 1·40	0·98	1·60	− 0·62	5·63	2·04	+ 3·59	0·80	Cuddapah	Madras (Central)	54
3	...	...	2	1	...	7	17	1	?	?	?	51	·643	3·8	2	2·67	− 0·67	0·45	1·16	− 0·71	2·48	2·35	+ 0·13	0·22	Kurnool.		
2	...	1	...	1	3	1	14	9	8·6	8·4	+ 2	44	·529	5·6	3	3·36	− 0·36	2·08	1·70	+ 0·38	3·81	2·50	+ 1·31	1·19	Bellary.		
...	1	1	1	5	4	10	8	1	8·8	?	?	68	·929	3·1	1	3·60	− 2·60	0·32	1·22	− 0·90	0·40	1·96	− 1·56	0·23	Cocanada.	Madras (East Coast, North)	52
...	1	1	...	...	1	24	4	...	?	3·8	?	72	·852	6·7	3	4·36	− 1·36	1·49	2·62	− 1·13	2·27	3·50	− 1·23	0·68	Vizagapatam.		
...	...	1	...	1	2	22	4	1	15·0	?	?	77	·966	6·7				No	rain gau	ge.					Waltair.		
2	1	...	...	2	7	18	1	...	18·9	13·3	+ 42	90	1·076	0·9	1	3·44	− 2·44	0·45	2·35	− 1·90	0·75	3·80	− 3·05	0·41	Gopalpur.		
																									XII.—Hill Stations.		
1	21	...	1	1	2	...	2	3	7·8	?	?	27	·278	1·2	1	?	?	0·45	0·48	− 0·03	2·38	1·86	+ 0·52	0·32	Sharigh	Baluchistan.	48
			Not	rec	orde	d.			?	?	?	?	?	?	1	?	?	0·69	0·19	+ 0·50	3·87(a)	2·74	+ 1·13	0·60	Pishin.		
26	1	...	...	1	1	1	1	...	3·1	4·7	− 34	49	·349	1·7	1	1·18	− 0·18	0·54	0·41	+ 0·13	4·10	3·31	+ 0·79	0·53	Quetta.		
...	1	...	2	...	11	2	11	4	?	?	?	41	·283	1·0	2	?	?	0·85	0·16	+ 0·69	3·12	2·22	+ 0·90	0·56	Kalat.		
...	3	2	1	1	6	13	3	2	12·6	?	?	25	·241	0·8	2	?	?	0·34	0	+ 0·34	2·37	1·81	+ 0·56	0·18	Chaman.		
...	...	1	1	...	2	2	21	4	3·9	?	?	42	·123	5·4	0	?	?	0·16	0·16	− 0·06	0·24	0·60	− 0·36	0·08	Leh	Punjab.	30
5	1	4	4	6	6	1	2	2	7·4	?	?	79	·387	4·0	5	?	?	2·64	2·31	+ 0·33	4·65	5·96	− 1·31	1·52	Srinagar.		
18	...	7	...	1	...	...	5	...	5·6	?	?	63	·300	4·2	2	?	?	0·54	1·01	− 0·47	3·12	6·41	− 3·29	0·28	Skardu		
28	1	...	...	...	...	2	...	...	6·0	?	?	86	·315	4·2	3	?	?	0·89	?	?	7·32	?	?	0·30	Dras.		
18	...	...	1	...	...	3	7	2	4·3	?	?	47	·298	5·8	0	?	?	0·16	0·41	− 0·25	3·34	1·88	+ 1·46	0·09	Gilgit.		
26	4	...	...	...	...	...	...	1	6·1	?	?	40	·323	1·3	2	?	?	0·47	?	?	22·00	?	?	0·21	Chitral.		
5	1	1	7	...	1	1	15	...	?	?	?	50	·286	3·8	6	?	?	1·94	?	?	19·40	?	?	0·48	Killa Drosh.		
—	2	4	2	3	3	6	7	3	5·9	?	?	42	·250	3·1	9	?	?	2·62	?	?	9·88	?	?	0·52	Para Chinar.		
1	12	3	...	1	6	1	...	6	13·0	?	?	41	·296	3·3	7	?	?	1·12	1·45	− 0·33	3·12	8·68	− 5·56	0·19	Cherat.		

* Mean of 30 days.

(a) For March and May only.

Table

Abstract of Observations taken at 8 A.M. at 213 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
		Murree	6,333	23·782	0	?	23·875	14th	23·662	9th	·213	65·5	73·9	−2·0	59·3	+0·6	66·6	−0·7	14·6	86·3	7th	41·0	13th	45·3
		Gulmarg	?	18·999	?	?	19·131	22nd	18·863	31st	·268	49·6	57·1	?	36·4	?	46·8	?	20·7	67·6	1st	29·2	17th & 22nd.	38·4
		Poo	?			Not	record	ed.				?	57·1	?	45·4	?	56·7	?	21·7	79·1	1st	38·0	21st	41·1
		Simla	7,224	23·062	−·009	?	23·154	27th	22·952	9th & 12th	·202	63·5	73·0	+1·4	57·5	+0·2	65·3	+0·8	15·5	79·9	9th	47·2	14th	32·7
25	North-Western Provinces.	Chakrata	7,022	23·243	+·012	?	23·324	14th	23·150	9th	·174	63·1	73·0	−0·8	55·2	−0·6	64·2	−0·7	17·7	80·8	3 days	45·7	21st	35·1
		Mussooree	6,705	23·490	?	?	23·578	20th & 27th.	23·378	9th	·200	65·9	76·0	+0·4	59·0	+1·7	67·5	+1·1	17·0	83·3	1st	49·0	20th	34·3
		Ranikhet	6,069	24·048	+·004	?	24·162	14th	23·950	9th	·212	68·1	79·5	+2·6	60·6	+1·2	70·1	+1·9	18·9	87·1	1st & 3rd.	50·0	20th	37·1
		Muktesar	?	22·817	?	?	22·924	28th	22·720	9th	·204	62·9	75·3	?	54·6	?	64·9	?	20·7	83·5	3rd	45·8	20th	37·7
13	Bengal	Yatung	10,430?				Not	record	ed.			?	58·9	?	48·7	?	53·8	?	10·2	66·0	1st	42·9	5th	23·1
		Darjeeling	7,409	22·942	0	?	23·013	2 days	22·837	9th	·176	57·2	64·7	+2·0	51·6	+0·9	58·2	+1·5	13·1	73·2	18th	48·2	26th	25·0
		Gantok	5,680	24·467	?	?	24·558	27th	24·363	17th	·195	62·6	72·3	?	45·2	?	58·7	?	27·1	80·8	30th	39·8	26th	41·0
	Central India	Mount Abu	3,945	25·967	−·009	?	26·088	20th	25·880	29th	·208	76·7	87·3	−1·3	71·5	+0·6	79·4	−0·4	15·8	93·7	6th	61·4	14th	32·3
		Pachmarhi	3,528	26·368	+·008	?	26·471	14th	26·288	30th	·183	83·7	96·8	+2·2	75·5	+0·9	86·2	+1·6	21·3	101·7	3rd & 27th.	67·2	20th	34·5
	South India	Wellington	6,200	24·219	−·018	?	24·288	14th & 15th.	24·122	5th	·166	69·4	77·3	+1·7	57·4	−0·9	67·4	+0·4	19·9	81·7	13th	53·7	3 days	28·0
XIII.—Extra India.																								
	Ceylon	Trincomalee	12	29·800	?	29·738	29·895	15th	29·715	2nd	·180	83·6	93·4	?	79·0	?	86·2	?	14·4	96·5	17th	76·0	28th	20·5
		Colombo	40	29·843	−·011	29·809	29·942	15th	29·745	2nd	·197	82·6	87·9	?	78·5	?	83·2	?	9·4	90·5	12th & 14th.	72·0	3rd	18·5
	Persia	Meshed	3,104			Not	record	ed.				69·8	Not recorded.	?	57·0	?	?	?	?	?	...	50·9	12th	?
		Teheran	(a)?	25·930 25·312	? ?	? ?	26·045 25·410	20th 20th	25·760 25·160	13th 13th	·285 ·250	69·0	82·1	?	58·8	?	70·5	?	23·3	87·3	25th	47·2	1st	40·1
		Ispahan	(a)?	24·372 24·681	? ?	? ?	24·450 24·750	23rd 29th	24·290 24·590	17th 17th	·160 ·160	69·8	82·2	?	53·7	?	67·9	?	28·5	86·5	7th	47·4	2nd	39·1
		Bushire*	14	29·759	−·007	29·732	29·859	23rd	29·671	12th	·188	82·3	83·0	−1·7	75·8	+0·6	81·9	−0·6	12·2	100·5	8th	66·6	3rd	33·9
		Jask	?	29·774	?	29·726	29·922	20th	29·607	31st	·315	84·5	91·4	?	78·2	?	84·8	?	13·2	98·3	28th	74·7	1st & 4th	23·6
	Arabia	Muscat	20	29·724	?	29·691	29·868	20th	29·616	31st	·252	89·3	91·8	?	86·7	?	89·3	?	5·1	100·5	27th	81·5	3rd	19·0
		Baghdad	220	29·697	−·015	29·891	29·812	23rd	29·546	8th	·266	76·9	94·5	+3·1	66·2	−1·8	80·4	+0·7	28·3	100·5	12th	60·4	1st	40·1
		Aden	94	29·750	−·020	29·775	29·807	1st	29·657	31st	·150	84·8	93·4	−0·3	81·0	+0·3	87·2	0	12·4	99·3	19th	75·4	4th	23·9
		Perim	?	29·634	?	?	29·686	15th	29·554	31st	·132	85·3	92·6	?	82·0†	?	87·1†	?	10·6	99·3	18th	78·2	1st	21·1
	Afghanistan	Kabul	?				Not	record	ed.			61·9	78·1	?	50·7	?	64·4	?	27·4	90·1	31st	41·4	16th	48·7
	Central Asia	Kashgar	?(b)	25·492	?	?	25·748	19th	25·310	2nd	·438	69·2	82·7	?	57·6	?	70·1	?	25·1	100·3	3rd	48·3	23rd	52·0
	Arabian Sea Island.	Minicoy	10	29·830		29·765	29·909	15th	29·769	1st	·140	84·5	89·2	?	?	?	?	?	?	91·7	1st	?	?	?
	Africa	Zanzibar	73	29·968	?	29·868	30·016	15th	29·902	2nd	·114	78·4	85·0	?	77·2	?	81·1	?	7·8	87·4	4th	74·1	19th	13·3

* Observations of 30 days.
† Mean of 26 days.
(a) Aneroid uncorrected.
(b) Aneroid corrected.

NOTE.—When a query is inserted against any reading or in the variation returns for any

I—*concluded.*

in India, Burma, etc., in May 1898—concluded.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st March to 31st May 1898.	Normal rainfall for period, 1st March to 31st May.	Variation from normal of period, 1st March to 31st May.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
21	...	1	1	6	2	...	...	...	7·6	8·3	− 8	40	·235	3·0	5	5·55	−0·55	2·89	3·50	− 0·61	6·65	10·55	− 3·90	1·06	Murree.		
19	2	8	...	1	1	...	...	...	3·2††	?	?	76	·270	4·5	13	?	?	5·32	?	?	5·32(*d*)	?	?	1·43	Gulmarg.		
14	...	...	6	...	2	2	5	2	?	?	?	?	?	4·0	2	?	?	0·33	0·71	− 0·38	1·03	6·54	− 5·51	0·17	Poo.		
5	10	6	2	2	5	1	...	...	4·8††	2·9	+ 66	42	·234	3·6	5	6·18	−1·18	1·21	2·64	− 2·43	2·21	7·78	− 5·57	0·62	Simla.		
13	8	2	...	...	7	...	...	1	12·8	6·0	+113	42	·231	2·7	4	?	?	1·79	2·62	− 0·83	2·07	6·49	− 4·42	0·62	Chakrata .	North-Western Provinces.	25
...	1	1	10	2	2	1	4	10	?	12·3	?	44	·276	3·2	2	4·55	−2·55	1·34	2·51	− 1·17	1·67	6·51	− 4·84	0·86	Mussooree.		
5	5	2	4	3	4	2	1	5	4·5	3·3	+ 36	45	·294	3·1	4	6·00	−2·00	1·80	2·71	− 0·91	2·33	6·06	− 3·73	0·65	Ranikhet.		
...	1	1	3	5	2	4	3	12	1·2	?	?	42	·230	3·5	5	?	?	1·31	?	?	1·73	?	?	0·59	Muktesar.		
Not recorded.									?	?	?	?	?	?	13	?	?	5·31	?	?	9·24	?	?	1·00	Yatung .	Bengal.	13
6	2	6	4	4	...	1	4	2	7·5	6·2	+21	87	·409	5·5	10	12·56	−3·56	8·36	3·50	−2·14	10·02	14·76	− 4·72	1·72	Darjeeling.		
21	...	2	...	...	...	4	4	...	3·5	?	?	81	·459	?	19	?	?	15·00	26·68	−11·68	38·69	42·04	− 3·35	1·62	Gantok.		
...	1	1	...	...	2	10	8	9	12·5	9·4	+33	38	·325	0·6	2	1·45	+0·55	1·01	1·18	−0·17	1·01	1·36	− 0·35	0·85	Mount Abu	Central India.	
16	...	1	...	...	...	4	6	4	7·6	6·8	+12	43	·489	1·7	6	2·09	−2·09	0·11	0·66	−0·55	1·06	1·21	− 0·15	0·07	Pachmarhi.		
14	11	4	...	1	...	...	...	1	3·5	3·0	+17	58	·421	4·0	9	8·48	+0·52	3·42	3·95	−0·53	7·47	9·54	− 2·07	0·69	Wellington.	South India.	
																									XIII.—Extra India.		
2	...	...	...	...	...	29	...	...	?	?	?	81	·338	2·2	4	?	?	0·80	4·97	−4·17	6·25	8·30	−2·05	0·20	Trincomalee	Ceylon.	
3	1	...	...	...	4	20	3	...	7·6	3·5	−11	83	·334	6·5	12	?	?	8·04	11·79	−3·75	33·82	28·76	+5·06	2·59	Colombo.		
Not recorded												56	·408	2·2	3	?	?	0·59	0·81	−0·22	3·34	4·94	−1·60	0·28	Meshed .	Persia.	
27	...	...	...	...	2	...	...	2	2·0	?	?	?	?	2·7	1	?	?	0·48	0·34	+0·14	5·36	4·13	+1·23	0·30	Teheran.		
8	4	2	1	...	1	4	6	5	4·8	?	?	61	·445	1·2	0	?	?	0·11	0·17	−0·06	1·55	2·53	−0·98	0·08	Ispahan.		
3	7	4	3	...	1	...	...	12	10·2	8·9	+15	55	·601	2·4	0	?	?	0	0·02	−0·02	4·69	1·47	+3·22	0	Bushire.*		
...	...	...	9	6	1	1	6	8	12·8	?	?	70	·840	0·3	0	?	?	0	0	0	2·33	1·24	+1·09	0	Jask.		
3	3	3	5	2	1	1	3	10	5·0†	?	?	56	·756	0·4	0	?	?	0	?	?	1·43	?	?	0	Muscat .	Arabia.	
13	5	1	...	1	...	...	2	9	2·6	?	?	48	·438	1·4	1	?	?	0·51	0·26	+0·25	2·00	3·38	−1·38	0·43	Baghdad.		
2	1	3	9	1	5	1	8	1	9·1††	10·6	−14	76	·926	3·2	1	?	?	0·11	0·21	−0·10	0·11	2·03	−1·92	0·11	Aden.		
6	...	...	8	10	...	4	3	...	12·5	?	?	76	·930	5·9	0	?	?	0	0·15	−0·15	1·56	0·31	+1·23	0	Perim.		
10	...	5	1	...	...	...	11	4	?	?	?	51	·277	1·3	5	?	?	2·09	0·27	+1·82	8·69	3·42	−1·73	0·70	Kabul .	Afghanistan.	
11	4	1	1	...	3	2	7	2	?	?	?	49	·356	5·0	0	?	?	0	1·65	−1·65	0·80	2·02	−1·22	0	Kashgar .	Central Asia.	
1	1	1	...	...	...	4	10	14	8·1	?	?	76	·395	?	8	?	?	5·99	?	?	6·31	?	?	1·22	Minicoy .	Arabian Sea Islands.	
...	...	...	...	1	25	5	...	...	7·8	?	?	85	·832	6·6	9	?	?	3·46	8·84	−5·38	11·34	25·83	−14·49	1·15	Zanzibar .	Africa.	

station, the data for that station are not utilized in calculating the Provincial variations.

†† Mean of 30 days.
(*d*) For May only.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86

Meteorological Province.	Station.	Elevation of barometer above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Hay Islands.	Port Blair	...	29·800	29·710	·090	29·756	0	29·795	88·8	77·1	8·7	99·4	71·3	19·1	83·5	82·7	80·4	− 1·8	75·3	79·5	78·7	77·8
	Rangoon	...	·786	·669	·117	·732	−·023	·709	88·3	76·4	11·9	96·9	73·5	23·4	82·9	82·9	80·1	− 2·4	74·7	79·2	77·9	77·3
	Diamond Island	...	·796	·691	·105	·742	−·024	·717	87·3	79·2	8·1	91·9	73·6	18·3	84·5	84·6	82·3	− 0·4	75·3	78·9	78·5	77·6
	Cocos Island	111	·725*	·633*	·092	·677	+·020	·718*	90·2	76·8*	13·4	95·9	71·3	24·6	85·7*	85·0	81·9*	− 0·2	73·4*	80·4*	79·8	77·9
	Akyab	...	·782	·666	·116	·728	−·080	·690	92·1	79·4	12·0	97·8	70·6	27·2	88·3	83·2	84·8	+ 1·6	76·4	82·0	82·1	80·2
Assam.	Silchar	...	·693	·544	·149	·619	−·027	·672	93·3	73·8	20·0	100·1	69·3	30·8	85·4	91·5	83·0	+ 3·5	70·9	76·7	77·2	74·9
	Sibsagar	...	·467	·338	·129	·402	−·014	·680	85·4	70·9	14·5	94·3	67·6	26·7	79·6	83·5	77·2	− 0·3	70·6	75·5	76·6	74·2
	Dhubri	...	·644	·507	·137	·571	−·027	·539	87·4	73·1	14·3	96·9	66·9	30·0	80·7	86·4	78·6	+ 1·2	70·7	75·3	77·0	74·3
Bengal and Orissa.	Chittagong	...	·704*	·587	·117	·647	−·022	·679*	91·3	76·4	14·9	96·4	66·5	27·9	87·1*	87·5	82·8	+ 1·8	74·7	80·5*	80·4	78·5
	Narayanganj	...	·736	·614	·122	·677	−·009	·651	92·9	76·5	16·4	99·3	69·2	30·1	86·1	88·6	83·9	+ 1·3	73·2	79·0	78·6	76·9
	Calcutta (Alipore)	...	·709	·589	·120	·650	−·008	·618	90·0	77·9	12·1	102·2	70·8	32·4	90·1	92·6	86·5	+ 1·1	73·9	80·0	78·7	77·5
	Saugor Island	...	·703	·594	·110	·654	−·013	·622	92·6	82·2	10·4	93·9	71·9	22·0	89·3	89·9	86·4	+ 1·2	77·9	82·0	82·6	80·8
	Burdwan	...	·621	·478	·143	·558	−·015	·596	101·8	78·3	23·5	109·8	71·0	38·8	91·9	97·8	88·1	+ 1·9	73·7	79·6	78·4	77·2
	Berhampore	...	·660	·516	·144	·591	−·008	·605	98·3	76·0	22·3	108·1	66·2	41·9	88·8	96·3	85·8	−0·1	70·9	78·0	77·2	75·3
	False Point	...	·725	·615	·110	·672	−·012	·634	91·5	79·5	12·0	95·2	69·1	26·1	89·0	88·8	84·5	+ 0·5	77·4	82·3	83·0	80·9
	Cuttack	...	·651	·522	·129	·587	−·005	·616	101·9	80·3	21·6	108·5	72·6	35·9	92·0	97·7	88·7	+ 0·3	75·4	79·7	80·2	78·4
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·712	27·600	·112	27·660	−·023	·537	102·0	77·0	25·0	108·6	67·7	40·9	93·1	98·2	88·5	+ 2·9	69·9	70·0	70·7	68·2
	Patna	...	29·509	29·380	·129	29·443	−·018	·572	100·5	76·9	23·6	109·0	69·2	39·8	91·4	98·5	87·8	+ 0·3	68·9	76·0	77·1	74·0
	Darbhanga	...	·541	·410	·131	·474	−·024	·589	?	74·3	?	?	69·3	?	88·0	94·3	?	?	70·3*	76·0	76·6	74·3
	Allahabad	...	·371	·241	·130	·306	−·011	·556	107·8	79·0	28·8	113·7	74·3	39·4	97·8	106·0	93·5	+ 1·1	68·5	77·2	80·2	75·3
	Lucknow	...	·317	·192	·125	·251	−·012	·563	106·5	78·0	28·5	113·8	68·9	44·9	96·3	103·9	92·2	+ 1·1	67·1	74·8	77·0	73·0
Upper Sub-Himalayas.	Dehra Dun	...	27·601	27·460	·101	27·440	−·020	·568	95·2	68·9	26·3	102·2	60·8	41·4	85·9	91·3	81·4	− 1·2	57·9	64·5	65·2	62·5
	Roorkee	...	28·490	28·370	·120	28·724	−·010	·547	102·4	72·5	29·9	109·7	67·2	42·5	92·1	101·9	87·4	− 0·5	60·7	68·4	70·1	66·4
	Meerut	...	·339	·229	·110	·876	−·002	·555	101·8	74·1	27·7	109·5	66·0	43·5	93·4	100·0	87·8	− 0·7	64·5	70·1	71·2	68·6
	Lahore	...	·951	·861	·090	·839	−·008	·547	101·7	74·6	27·1	111·8	63·1	48·7	91·9	101·0	88·3	+ 0·9	62·9	70·3	72·9	68·4
	Ludhiana	...	·844	·747	·097	·789	−·013	·539	104·2	75·5	28·7	111·7	68·9	42·8	94·1	101·8	89·6	+ 1·7	62·6	68·8	71·2	67·9
Indus Valley and N.-W. Rajputana.	Peshawar	...	·593	·507	·086	·543	0	·612	97·0	68·1	28·9	110·0	57·4	52·6	88·4	92·9	81·8	− 1·6	58·7	67·2	68·0	64·6
	Mooltan	...	29·243	29·124	·114	29·184	+·003	·557	107·6	78·1*	29·5	117·0	70·0	47·0	95·1	104·8	92·4*	+ 1·5	62·8	71·5	74·2	69·8
	Jacobabad	...	·472	·341	·131	·399	−·009	·534	112·3	79·3	33·0	123·0	69·1	53·9	100·2	110·4	95·8	+ 1·4	64·8	76·6	80·5	74·0
	Kurrachee	...	·735	·643	·092	·688	+·012	·668	92·8	79·6	13·2	95·2	76·9	18·3	89·0	89·5	84·5	+ 0·5	76·3	79·8	80·5	78·8
East Rajputana, Central India, and Gujarat.	Jeypore	...	28·900	28·794	·106	28·846	+·001	·586	105·7	76·8	28·9	112·5	65·9	46·6	95·9	102·8	90·7	+ 0·1	63·5	70·8	71·8	68·7
	Ajmere	...	·139	·035	·104	·085	+·002	·601	108·7	80·2	23·5	110·4	69·6	40·8	93·8	101·2	91·4	+ 1·3	67·2	73·5	75·3	72·0
	Oodeypore	...	27·850	27·753	·097	27·802	?	·607	102·0	78·0	24·0	108·2	64·5	43·7	94·5	99·1	89·3	?	65·5	75·3	75·6	72·1
	Deesa	...	29·311	29·179	·132	29·244	+·010	·697	107·2	78·0	29·2	114·4	68·9	46·4	93·7	105·6	92·0	+ 0·2	67·3	74·1	73·0	71·6
	Nowgong	...	28·945	28·827	·118	28·886	−·001	·563	108·1	80·3	27·8	113·8	72·6	41·2	100·0	107·1	94·4	+ 1·2	64·2	71·4	71·8	69·1
	Agra	...	29·123	29·007	·116	29·056	−·018	·550	106·1	80·6	25·5	112·3	71·9	40·4	97·1	102·9	93·0	0	69·2	77·4	79·6	75·4
Deccan.	Belgaum	...	27·330	27·224	·106	27·281	−·012	·706	92·6	67·8	24·8	100·1	64·8	35·3	82·1	87·4	77·7	0	65·8	70·3	72·9	69·7
	Sholapur	...	28·226	28·076	·150	28·153	+·001	·630	105·1	78·3	26·8	109·6	73·3	36·3	93·0	101·3	90·3	+ 1·1	67·0	70·2	70·8	69·3
	Poona	...	·002	27·881	·121	27·949	0	·675	101·0	72·6	28·4	108·9	63·1	40·8	89·8	96·7	85·9	+ 1·5	64·1	69·6	70·4	68·7
	Akola	...	·826	28·683	·143	28·753	−·006	·597	109·0	82·4	26·6	115·1	74·7	40·4	99·3	106·0	95·3	+ 1·5	65·4	71·6	72·0	69·3
	Buldana	2,132	27·681	27·557	·124	27·618	0	·607	102·6	79·3	23·3	108·6	72·0	36·6	92·4	100·2	90·6	+ 1·9	63·0	68·6	68·3	66·6
	Khandwa	...	28·726	28·583	·138	28·656	+·007	·613	107·8	83·0	24·8	114·2	76·1	38·1	98·0	105·9	94·8	+ 2·3	64·2	73·1	70·9	69·4

* Mean of 30 days.

II.

Stations in India, Burma, etc., for May, 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from											Wind steadiness.		Wind velocity.		Rainfall.			
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·856	·960	·933	·916	−·021	92	84	83	86	+3	8·2	8·3	8·3	+1·6	1	1	...	1	7	2	19	25	6	S. 68° W.	S. 38° W.	64	41	202	171	...	...	Port Blair	Burma Coast and Bay Islands.
·837	·950	·892	·893	+·023	92	85	80	86	+8	8·9	8·7	8·8	+1·9	...	1	3	3	5	13	19	13	5	S. 43° W.	S. 21° W.	52	58	93	113	...	...	Rangoon	
·828	·914	·896	·879	−·012	83	77	76	79	+5	7·8	8·1	8·0	+1·7	4	5	3	4	5	4	11	16	10	S. 37° W.	S. 72° W.	34	47	259†	177	...	...	Diamond Island.	
·775*	·970*	·949	·898	+·008	84*	79*	79	81	0	6·1*	6·4	6·3	−0·2	...	4	3	3	4	15	21	10	1	S. 56° W.	S. 51° W.	50	58	?	?	14·94	2·91	Cocos Island.	
·978	1·013	1·003	·965	+·067	88	76	73	79	+1	4·6	3·7	4·2	−1·3	...	1	2	8	4	6	13	21	7	S. 65° W.	S. 24° W	40	30	103	89	...	...	Akyab	
·723	·895	·744	·757	−·041	86	67	51	68	−12	6·5	5·7	6·1	−0·3	19	4	4	7	3	3	5	9	8	N. 59° W.	N. 72° E.	11	10	138†	77	...	...	Silchar	Assam.
·747	·830	·827	·801	+·007	98	82	73	84	+1	7·7	6·4	7·1	−0·4	23	12	17	...	3	2	3	...	2	N. 29° E.	N. 58° E.	35	38	119†	67	...	...	Sibsagar	
·725	·810	·804	·780	−·011	89	78	65	77	−4	4·9	2·9	3·9	−1·4	6	1	10	25	5	4	5	6	...	N. 81° E.	N. 72° E.	42	27	164†	175	...	...	Dhubri	
·840	·958*	·950	·916	+·045	92	74*	73	80	0	5·6	3·2	4·4	−1·0	3	1	1	1	10	8	27	8	3	S. 33° W.	S. 1° E.	58	42	180	150	...	...	Chittagong	
·778	·903	·845	·842	−·041	85	72	64	74	−6	6·4	6·7	6·6	+1·0	...	1	6	4	14	26	8	2	1	S. 15° E.	S. 18° E.	60	61	184	157	...	...	Narayanganj.	Bengal and Orissa.
·767	·889	·799	·825	−·058	82	63	54	66	−8	4·1	3·4	3·3	−0·5	1	1	...	4	8	23	21	3	1	S. 12° W.	S. 7° E.	69	65	155	172	...	...	Calcutta (Alipore).	
·904	·996	1·019	·973	−·014	82	72	73	76	−4	6·3	4·1	5·2	−0·6	...	...	...	1	31	25	2	1	2	S. 22° E.	S. 8° W.	82	73	496	394	...	...	Saugor Island.	
·773	·850	·716	·780	−·033	80	58	42	60	−6	3·0	3·6	3·3	−0·9	11	1	3	2	12	12	17	1	3	S. 5° W.	S. 5° E.	43	52	74†	141	...	...	Burdwan.	
·691	·818	·684	·731	−·080	77	62	44	61	−10	3·9	4·0	4·0	−1·2	16	...	4	6	6	14	7	8	1	S. 2° W.	S. 33° E.	32	39	102†	129	...	...	Berhampore	
·919	1·018	1·054	·997	+·027	91	74	77	81	−1	4·2	4·5	4·4	−0·4	...	...	...	1	4	37	17	3	...	S. 12° W.	S. 23° W.	85	73	292†	338	...	...	False Point	
·825	·851	·798	·825	−·012	80	56	45	60	−4	3·3	3·3	3·6	−0·3	...	...	1	...	5	26	20	8	2	S. 25° W.	S. 13° W.	74	50	124	125	...	...	Cuttack	
·435	·449	·413	·432	−·035	48	30	28	34	−6	2·1	4·8	3·5	−0·1	2	21	3	4	5	...	10	6	11	N. 25° W.	S. 33° W.	37	15	221	222	...	...	Hazaribagh	Ganghetic Plain and Chota Nagpur.
·606	·697	·648	·651	+·042	66	50	38	51	−4	2·0	0·9	1·5	−1·0	...	3	11	23	2	1	2	11	9	N. 45° E.	N. 57° E.	31	42	158†	129	...	...	Patna	
·688*	·743	·680	·704	−·061	79*	57	44	60	−2	1·4	1·5	1·5	−0·5	...	1	2	22	20	...	4	8	5	S. 65° E.	S. 82° E.	42	60	164	152	...	...	Darbhanga	
·563	·663	·693	·639	+·113	56	38	30	42	+5	1·2	1·4	1·3	−0·3	1	6	7	8	2	2	1	13	22	N. 34° W.	N. 3° W.	43	24	181†	149	...	...	Allahabad	
·523	·575	·567	·555	+·017	54	34	27	38	−2	1·3	0·9	1·1	−0·8	8	3	1	7	...	2	1	37	3	N. 35° W.	N. 25° W.	52	16	90†	100	...	...	Lucknow	
·349	·343	·300	·331	−·076	50	29	21	33	−6	3·9	4·2	4·1	+1·4	2	6	6	3	9	4	12	18	2	S. 63° W.	S. 80° W.	26	25	56	54	...	...	Dehra Dun	Upper Sub-Himalayas.
·378	·381	·324	·361	−·067	47	26	17	30	−5	2·3	1·7	2·0	+0·4	19	3	2	1	14	1	7	1	14	S. 68° W.	S. 53° W.	6	11	75	90	...	...	Roorkee	
·484	·427	·384	·432	−·062	58	28	21	36	−4	1·5	1·8	1·7	0	11	...	1	14	1	...	4	21	10	N. 75° W.	N. 54° W.	26	22	70†	64	...	...	Meerut	
·423	·452	·399	·425	−·016	51	32	21	35	+2	2·0	2·0	2·0	−0·2	1	19	7	10	8	1	...	5	11	N. 18° E.	N. 11° E.	42	17	86	79	...	...	Lahore	
·400	·405	·254	·386	−·109	46	26	18	30	−11	3·4	3·6	3·5	+1·4	10	6	10	1	11	4	1	4	15	N. 2° E.	N. 61° W.	18	11	67	58	...	...	Ludhiana	
·381	·405	·378	·388	−·035	58	33	29	40	+1	3·6	4·8	4·2	+1·3	23	11	4	3	2	2	1	9	7	N. 27° W.	N. 17° E.	26	29	92†	116	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·406*	·458	·435	·433	−·159	43*	28	20	30	−12	0·6	1·5	1·1	+0·1	26	...	12	..	13	2	5	...	3	S. 75° E.	N. 85° W.	21	15	35†	65	...	...	Mooltan	
·426	·698	·641	·558	+·110	43	32	25	33	+3	1·7	2·1	1·9	+0·8	5	1	4	12	15	5	7	4	9	S. 23° E.	S. 40° E.	24	10	145†	112	...	...	Jacobabad	
·863	·895	·821	·898	+·004	86	66	66	73	0	1·9	1·9	1·9	−0·2	...	...	...	...	...	1	23	38	...	S. 72° W.	S. 66° W.	92	86	393†	407	...	...	Kurrachee	
·427	·442	·389	·419	−·017	47	27	29	31	−1	1·0	3·7	2·4	+0·2	1	2	3	2	3	4	14	26	7	S. 79° W.	N. 86° W.	56	49	140	156	...	...	Jeypore	East Rajputana, Central India and Gujarat.
·509	·570	·554	·544	+·017	50	37	29	39	+1	2·0	3·0	2·5	+0·9	...	...	2	...	...	5	17	26	12	S. 81° W.	S. 76° W.	74	66	238	204	...	...	Ajmere	
·477	·642	·599	·573	?	50	40	38	41	?	0·4	1·7	1·1	?	7	2	...	2	2	1	14	24	10	S. 85° W.	?	61	?	206	?	...	...	Ogjeypore	
·548	·563	·376	·502	−·064	57	38	17	38	−2	0·8	1·0	0·9	−0·6	...	2	1	...	1	...	6	34	18	N. 76° W.	S. 60° W.	82	68	396	325	...	...	Deesa	
·891	·389	·307	·362	−·058	38	21	19	24	−7	1·0	4·7	2·9	−0·1	...	6	2	3	1	2	2	38	8	N. 77° W.	N. 73° W.	66	53	79†	88	...	...	Nowgong	
·569	·681	·706	·652	+·200	55	40	35	43	+12	0·6	1·4	1·0	−0·3	...	...	7	...	3	...	17	..	35	N. 62° W.	N. 72° W.	53	37	182†	145	...	...	Agra	
·613	·596	·630	·613	+·018	90	55	49	65	+4	2·7	3·5	3·1	−0·5	...	5	1	...	1	1	11	26	11	N. 84° W.	S. 88° W.	72	60	383	424	...	...	Belgaum	Deccan.
·524	·455	·372	·450	−·021	54	30	19	34	−3	2·3	5·6	4·0	−0·1	...	1	3	4	4	2	3	7	33	N. 49° W.	N. 42° W.	57	55	321†	255	...	...	Sholapur	
·562	·474	·417	·484	−·024	70	34	24	43	−1	3·1	4·3	3·7	+0·7	...	...	2	...	...	...	8	37	15	N. 33° W.	N. 74° W.	84	78	443†	342	...	...	Poona	
·402	·405	·289	·365	−·043	37	22	13	24	−4	1·6	4·5	3·1	+0·7	1	4	5	2	...	...	...	16	34	N. 45° W.	N. 50° W.	75	75	237†	224	...	...	Akola	
·374	·403	·296	·358	−·067	38	27	15	27	−7	0·7	2·4	1·6	−0·9	1	14	1	1	...	...	2	15	28	N. 46° W.	N. 49° W.	77	69	305†	286	Nil.	Nil.	Buldana	
·371	·447	·320	·379	−·087	34	26	14	25	−8	1·0	3·9	2·5	+0·4	...	10	3	2	2	...	2	11	31	N. 42° W.	N. 62° W.	68	72	235	241	...	...	Khandwa	

† Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86

Meteorological Province.	Station.	Elevation of barometer cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—*concld.*	Hoshangabad	...	28·736	28·595	·141	28·665	−·006	29·584	108·8	82·7	26·1	113·2	74·6	38·6	99·8	106·8	95·2	+2·0	65·6	73·1	74·1	70·9
	Nagpur	...	·700	·558	·142	·628	−·004	·563	109·5	82·4	27·1	114·2	74·1	40·1	99·3	105·7	95·3	+0·7	65·2	73·0	73·4	70·5
	Nagpur (Sanitary Commissioner's Office).	...	·719	·584	·135	·651	P	·574	111·4	83·0	28·4	115·4	74·7	40·7	101·2	108·0	96·4	?	67·0	73·8	74·2	71·7
	Jubbulpore	...	·393	·261	·132	·326	−·012	·548	107·1	79·2	27·9	113·0	70·2	42·8	99·3	104·4	92·4	+1·3	64·9	71·0	71·0	69·0
	Saugor	...	27·949	27·833	·116	27·890	+·011	·566	105·1	80·9	24·2	109·9	73·3	36·6	97·7	102·3	92·2	+2·2	66·4	Rejected.		P
	Sutna	...	28·649	28·531	·118	28·590	−·006	·546	106·7	80·0	26·7	111·6	73·1	38·5	99·8	104·0	82·9	+1·3	63·3	69·6	68·9	67·3
	Raipur	...	·757	·612	·145	·684	+·005	·548	108·4	82·2	26·2	113·0	75·4	37·6	99·3	105·6	94·9	+1·0	65·5	71·7	70·8	69·3
	Hyderabad (Deccan).	...	·107	27·971	·136	·039	−·008	·605	104·5	81·4	23·1	109·2	74·4	34·8	94·7	101·7	92·3	+1·2	68·2	73·6	73·9	71·9
West Coast.	Bombay	...	29·823	29·725	·098	29·772	+·003	·748	91·1	81·5	9·6	94·9	79·4	15·5	87·3	88·1	85·5	+0·8	75·7	79·0	79·5	78·1
	Ratnagiri	...	·747	·654	·093	·698	+·004	·744	91·7	80·5	11·2	93·6	73·9	19·7	88·8	88·8	85·3	+0·9	75·6	78·2	78·7	77·5
	Karwar	...	·825	·722	·103	·771	−·008	·746	90·6	80·1	10·5	92·5	75·5	17·9	87·8	88·6	84·8	+0·9	75·8	78·0	78·8	77·5
	Cochin	...	·870	·789	·081	·828	−·010	·765	90·6	77·6	13·0	95·1	72·7	22·4	85·8	87·4	83·2	+0·6	75·4	79·4	80·0	78·3
South India.	Salem	...	28·913	28·766	·147	28·851	−·024	·706	99·5	76·0	23·5	104·7	69·1	35·6	89·1	94·6	85·1	+0·2	73·4	78·0	78·5	76·6
	Mercara	...	26·210	26·123	·087	26·178	−·004	P	79·8	65·6	14·2	83·8	62·0	21·8	74·0	75·4	71·6	+0·3	63·6	67·9	69·9	67·1
	Chitaldroog	...	27·471	27·344	·127	27·409	−·012	·678	94·2	71·2*	23·0*	98·4	64·0	34·4	83·6	92·7	82·4*	−1·1	66·6	71·9	71·2	69·9
	Bangalore	...	26·894	26·768	·126	26·838	−·007	·676	92·9	69·4	23·5	97·3	66·5	30·8	82·7	90·1	80·5	+1·9	68·0	71·2	70·3	69·2
	Hassan	...	·840	·739	·101	·796	−·015	·728	87·4	66·6	20·8	92·2	63·1	29·1	80·2	83·5	76·0	+0·6	65·2	70·0	71·1	68·8
	Mysore	...	27·386	27·260	·126	27·323	−·019	·706	92·6	69·5	23·1	97·5	65·9	31·6	82·6	89·5	80·3	+1·2	67·1	71·8	71·4	70·1
	Trichinopoly	...	29·564	29·414	·150	29·501	−·029	·680	102·9	79·2	23·6	108·0	71·9	36·1	94·0	100·2	89·0	+1·3	73·6	76·8	77·1	75·8
	Madras	...	·771	·659	·112	·725	−·010	·674	100·0	81·4	18·6	109·8	72·4	37·4	95·4	90·5	88·3	+0·8	P	79·8	80·9	79·7
	Bellary	...	28·356	28·209	·147	28·284	−·006	·657	102·4	77·5	24·9	105·5	71·2	34·3	90·4	99·3	88·8	+0·2	68·2	70·4	71·6	70·1
	Cocanada	...	29·740	29·611	·129	29·675	P	·636	99·8	83·0	16·8	111·0	79·0	32·0	93·6	94·4	90·1	−1·2	78·0	80·2	81·2	79·8
	Vizagapatam	...	·734	·628	·106	·680	−·003	·648	94·8	81·8	13·9	103·5	73·3	30·2	92·1	89·7	87·8	−0·5	77·3	81·6	81·6	80·1
Hill Station, Baluchistan	Quetta	...	24·588	24·513	·075	24·542	−·005	P	83·1	52·0	31·1	90·5	43·5	47·0	76·5	80·9	67·0	−0·1	45·2	57·9	58·4	53·8
Hill Stations, Punjab.	Leh	...	19·706	19·627	·079	19·678	−·015	P	61·9	36·0	25·9	72·1	30·5	41·6	51·9	56·8	47·9	−0·5	34·2	38·4	40·6	36·7
	Srinagar	...	24·850	24·766	·084	24·799	−·005	P	74·1	47·6	26·5	87·8	41·8	46·0	64·5	70·8	60·0	−4·6	47·4?	58·9	62·8	56·7
	Murree	...	23·802	23·769	·033	23·776	0	P	73·7	59·4	14·3	86·7	41·0	45·7	69·0	70·5	66·2	−1·0	47·0	53·3	54·1	51·5
	Kalang	10,087	20·749	20·701	·048	20·737	P	P	61·5	36·7	24·8	72·7	31·0	41·7	52·4	54·7	47·1	−1·1	33·9	42·0	42·5	39·5
	Simla (Ridge)	...	23·078	23·042	·036	23·051	−·010	P	73·0	57·2	15·8	79·9	47·2	32·7	67·4	69·1	64·5	−0·6	46·5	52·1	53·7	50·8
Hill Stations, N.-W. P.	Chakrata	...	·256	·210	·046	·224	−·002	P	72·6	55·3	17·3	80·8	45·7	35·1	68·5	68·1	63·2	−1·6	45·8	51·9	51·0	49·6
	Ranikhet	...	24·060	·993	·067	24·015	+·001	P	79·2	60·6	18·6	87·1	50·0	37·1	73·5	74·0	69·0	+0·8	50·5	56·2	56·7	54·5
	Muktesar	...	22·836	22·775	·061	22·806	P	P	75·1	54·6	20·5	83·5	45·8	37·7	67·2	68·6	63·2	P	45·5	52·4	53·3	50·4
Hill Station, Nepal.	Katmandu	4,388	25·531	25·438	·093	25·481	−·012	P	85·0	58·6	26·4	91·2	53·4	37·8	77·0	78·6	70·2	−0·5	56·9	67·1	66·8	63·6
Hill Station, Bengal.	Darjeeling	...	22·954	22·883	·071	22·915	−·007	P	64·5	51·6	12·9	73·4	48·2	25·2	59·5	60·3	57·0	+0·7	49·7	56·8	56·9	54·5
Hill Stations, Central India.	Mount Abu	...	25·966	25·918	·048	25·951	−·009	P	87·3	71·5	15·8	93·7	61·4	32·3	80·3	86·0	79·0	0	58·1	61·6	63·1	60·3
	Pachmarhi	...	26·384	26·284	·100	26·333	+·004	P	96·7	75·5	21·2	101·7	67·4	34·3	88·8	94·4	85·6	+1·3	62·0	70·4	72·1	68·2
	Chikalda	3,642	·272	·178	·094	·224	+·004	P	94·6	74·9	19·7	99·4	67·5	31·9	86·3	93·0	84·5	+1·6	61·0	63·9	65·5	63·5

II—*continued.*

Stations in India, Burma, etc., for May, 1898—continued.

Vapour Tension.					Humidity.					Cloud.				Wind Direction.											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
														Number of winds from																		
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·419	·434	·433	·445	−·029	37	26	19	27	− 5	1·2	4·0	2·6	+0·1	14	2	2	4	...	2	17	14	6	S. 75° W.	S. 87° W.	41	59	86	100	...	...	Hoshangabad.	Deccan—*concld.*
·412	·430	·418	·437	−·011	37	26	19	27	− 2	2·5	6·0	4·3	+0·5	2	9	5	2	1	3	12	11	17	N. 64° W.	N. 46° W.	45	41	213	228	...	...	Nagpur.	
·469	492	·422	·461	?	42	25	18	28	?	1·7	5·2	3·5	?	3	12	3	...	1	8	10	12	13	N. 73° W.	?	42	?	85†	?	...	...	Nagpur (Sanitary Commissioner's Office).	
·444	·405	·341	·397	−·023	44	22	16	27	− 3	1·1	5·4	3·3	+0·4	2	3	4	1	3	2	6	16	25	N. 65° W.	N. 69° W.	58	48	109	102	...	...	Jubbulpore.	
·473	?	?	?	?	45	?	?	?	?	1·1	5·8	3·5	+1·5	1	10	4	2	2	2	4	25	12	N. 63° W.	N. 89° W.	55	59	101	114	...	...	Saugor.	
·380	·347	·270	·332	−·037	37	19	13	23	− 4	0·6	2·5	1·6	−0·4	...	8	3	2	1	3	1	16	28	N. 51° W.	N. 55° W.	66	55	165†	199	...	...	Sutna.	
·408	·408	·289	·368	−·100	38	22	13	24	− 8	2·2	4·4	3·3	−0·2	10	5	4	...	...	4	17	10	12	N 89° W.	N. 80° W.	45	45	208†	193	...	...	Raipur.	
·527	·563	·493	·529	−·032	49	35	25	36	− 5	11	4·0	2·6	−0·3	18	2	2	3	8	...	1	25	3	S. 87° W.	N. 57° W.	29	50	152†	173	...	...	Hyderabad (Deccan).	West Coast.
·812	·879	·892	·861	−·016	75	68	67	70	− 4	2·9	2·3	2·6	−1·2	...	...	1	...	...	1	9	34	17	N. 84° W.	N. 83° W.	34	70	221	247	...	...	Bombay.	
·822	·825	·846	·831	+·003	79	61	62	67	− 2	2·2	2·6	2·4	+0·1	...	5	...	...	...	...	6	22	29	N. 66° W.	N. 69° W.	33	67	213	254	...	...	Ratnagiri.	
·834	·829	·855	·839	−·014	81	63	64	69	− 4	3·5	3·3	3·4	+0·2	...	5	...	...	...	...	7	11	39	N. 58° W.	N. 67° W.	33	82	143	128	...	...	Karwar.	
·853	·922	·928	·901	+·009	90	74	71	78	− 2	4·5	5·0	4·8	−0·7	8	3	1	...	...	...	2	24	24	N. 65° W.	N. 80° W.	74	54	143	148	...	...	Cochin.	
·788	·813	·761	·787	+·025	68	60	49	66	+ 3	2·6	6·0	4·3	−0·3	4	5	6	5	1	3	19	12	7	S. 82° W.	S. 47° W	34	55	129	98	...	...	Salem.	South India.
·565	·614	·669	·616	+·007	90	74	76	80	0	5·4	6·1	5·8	−0·8	21	...	...	...	...	...	...	...	41	N. 45° W.	N. 68° W.	66	69	80	129	...	...	Mercara.	
·599*	·638	·501	·579*	−·012	79*	55	33	56*	0	5·4	5·4	5·4	+1·2	...	3	2	3	2	...	4	26	22	N. 68° W.	N. 80° W.	68	75	204†	232	...	...	Chitaldroog.	
·604	·631	·517	·584	−·010	84	57	37	59	− 3	3·4	4·3	3·9	−0·5	1	5	2	4	2	4	9	20	15	N. 80° W.	S. 78° W.	50	68	174†	143	...	...	Bangalore.	
·607	·615	·619	·614	+·004	93	60	55	69	− 1	6·1	6·4	6·3	+0·9	1	2	2	4	1	1	10	24	17	N. 80° W.	N. 85° W.	61	72	79†	109	...	...	Hassan.	
·634	·646	·545	·608	+·003	88	58	40	62	− 2	5·3	5·8	5·6	+0·2	1	5	5	1	1	2	13	27	7	N. 87° W.	S. 83° W.	58	64	219†	271	...	...	Mysore.	
·756	·691	·620	·689	−·038	76	44	33	51	− 4	1·8	3·9	2·9	−2·3	12	...	...	1	8	1	18	18	4	S. 59° W.	S. 78° W.	52	58	168	150	...	...	Trichinopoly	
?	·814	·928	·899	+·022	?	50	65	68	0	2·6	3·0	2·8	−1·0	...	...	1	4	28	12	4	9	3	S. 18° E.	S. 13° E.	56	65	194	219	...	...	Madras.	
·575	·496	·425	·499	−·078	61	25	23	40	− 4	5·4	7·2	6·3	+1·4	2	...	...	9	...	2	6	21	22	N. 74° W.	N. 73° W.	53	55	215†	201	...	...	Bellary.	
·896	·854	*894	·881	0	79	55	56	63	+ 1	2·1	2·4	2·3	−0·6	...	...	2	6	19	12	16	6	1	S. 4° E.	S. 21° W.	56	48	212†	206	...	...	Cocanada.	
·882	·939	·968	·929	+·062	81	63	69	71	+ 5	5·0	5·0	5·0	+0·7	...	2	1	1	3	17	33	4	1	S. 32° W.	S. 40° W.	74	69	?	80	...	...	Vizagapatam	
·236	·291	·258	·262	−·014	60	32	25	39	− 2	2·1	3·7	2·9	+1·7	20	5	...	...	2	2	6	12	15	N. 73° W.	N. 68° W.	43	47	56†	91	...	...	Quetta.	Hill Station, Baluchistan.
·136	·117	·114	·122	−·006	65	33	26	41	+ 2	6·3	8·6	7·5	+1·2	...	1	4	1	...	8	9	32	7	S. 82° W.	S. 71° W.	64	31	92	73	...	...	Leh.	Hill Stations, Punjab.
·327?	·441	·527	·432	+·001	*97?	72	69	79	+ 8	3·7	6·4	5·1	+1·6	5	13	5	3	5	4	3	14	10	N. 43° W.	S. 72° E.	31	11	129†	95	...	...	Srinagar.	
·198	·246	·252	·232	−·030	43	38	37	39	− 3	3·5	5·3	4·4	+0·4	33	2	2	3	7	9	...	...	6	S. 40° E.	S. 9° E.	13	18	182†	196	...	...	Murree.	
·173	·180	·168	·174	−·010	80	47	42	56	0	5·6	8·6	7·1	+1·2	...	1	...	1	6	17	15	14	8	S. 44° W.	S. 58° W.	58	69	59	56	3·16	0·58	Kailang.	
·208	·233	·255	·232	−·047	47	36	37	40	− 6	3·7*	5·1*	4·4	+0·6	2	12	1	1	2	14	9	4	8	N. 66° W.	S. 68° W.	11	33	118*	143	...	...	Simla (Ridge).	
·211	·217	·204	·211	−·065	51	33	31	38	−10	2·9	4·4	3·7	+0·2	6	5	2	...	3	45	1	...	...	S. 4° E.	S. 65° W.	68	33	291	164	...	...	Chakrata.	Hill Station, N.-W.P.
·263	·279	·282	·275	−·059	52	36	35	41	− 9	2·6	3·7	3·2	−0·2	3	6	1	2	3	6	9	18	14	N. 86° W.	S. 65° W.	48	46	122†	94	...	...	Ranikhet.	
·216	·243	·251	·337	?	52	39	36	42	?	4·5	5·5	5·0	?	...	2	5	3	11	1	5	5	30	N. 47° W.	?	34	?	28†	?	...	...	Muktesar.	
·449	·582	·516	·516	+·020	90	60	56	69	+ 1	2·7	4·5	3·6	−1·8	...	...	...	28	4	...	3	18	9	N. 74° E.	S. 88° W.	8	49	33	43	4·25	1·07	Katmandu.	Hill Station, Nepal.
·339	·435	·432	·402	−·006	88	85	83	85	− 2	7·7	8·2	8·0	+0·6	6	2	8	7	4	...	5	23	7	N. 69° W.	S. 74° W.	27	38	182	170	...	...	Darjeeling.	Hill Station, Bengal.
·278	·336	·316	·310	−·044	39	35	27	34	− 3	0·4	0·8	0·6	−0·8	...	1	1	...	...	2	28	20	9	S. 72° W.	S. 67° W.	77	71	293†	247	...	...	Mount Abu	Hill Stations, Central India.
·405	·522	·534	·487	+·138	47	39	33	40	+ 8	1·5	3·9	2·7	−0·1	22	5	1	...	...	...	9	7	18	N. 64° W.	N. 66° W.	45	58	136†	170	...	...	Pachmarhi.	
·378	·336	·311	·341	−·032	45	28	20	31	− 4	1·6	5·2	3·4	+0·5	15	19	4	...	...	...	1	1	22	N. 21° W.	N. 36° W.	64	65	287†	239	0·26	0·20	Chikalda.	

* Mean of 30 days. † Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86

Meteorological Province.	Station.	Elevation of barometer above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Hill Station, S. India.	Wellington	...	24·227	24·155	·072	24·191	−·014	?	77·5	57·4	20·1	81·7	53·5	28·2	74·0	71·0	65·8	+0·1	54·0	61·0	61·5	58·8
Extra India.	Aden	...	29·764	29·654	·110	29·706	−·011	29·729	93·5	81·0	12·5	99·5	75·3	24·2	88·5	91·7	87·0	+0·9	73·3	78·7	77·7	76·6
	Perim	...	·642	·528	·114	·582	−·001	?	92·9	82·0*	10·9	99·3	78·2	21·1	88·0	89·6	86·6	0	75·9	79·8	79·8	78·5
	Minicoy	...	·846	·760	·086	·801	?	·736	89·1	?	?	91·6	?	?	86·4	85·6	?	?	?	79·0	78·8	?
	Zanzibar	...	·931	·871	·110	·926	−·049	·926	85·0	77·2	7·8	87·4	74·1	13·3	80·2	84·1	80·9	+2·9	73·7	76·1	75·8	75·2
	Port Victoria (Seychelles).	15	·940	·859	·081	·900	−·041	·838	85·1	78·1	7·0	88·2	75·2	11·0	83·4	84·4	81·4	+0·5	74·2	77·4	77·5	76·4
	Mauritius	181	?	?	?	·877	−·029	30·007	?	?	?	84·4	61·4	23·0	?	?	72·1	+0·3	?	?	?	?

* Mean of 26 days.

II—*concluded.*

Stations in India, Burma, etc., for May, 1898—concluded.

Vapour tension.					Humidity.					Cloud.				Wind direction.											Wind steadiness.		Wind velocity.		Rainfall.		Station.	Meteorological Province.
														Number of winds from																		
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·382	·404	·448	·411	−·028	82	49	60	64	− 5	4·1	7·1	5·6	−0·2	7	21	8	8	13	3	...	1	1	N. 54° E.	N. 87° E.	42	19	83	71	...	...	Wellington.	Hill Station, S. India.
·724	·853	·764	·780	−·066	68	63	52	61	− 7	2·5	1·7	2·1	+0·5	1	1	5	13	6	20	7	7	2	S. 18° E.	S. 60° E.	39	40	238‡	266	...	...	Aden.	Extra India.
·835*	·910	·887	·877	+·002	77*	69	64	70	+ 1	4·7	4·5	4·6	+3·0	5	...	1	12	28	2	4	4	5	S. 47° E.	S. 82° E.	48	32	294	337	...	...	Perim.	
?	·897	·897	?	?	?	71	73	?	?	?	?	?	?	...		...	...	...	...	7	29	23	N. 74° W.	?	84	?	194*	?	...	...	Minicoy.	
·785	·845	·783	·804	+·009	84	82	67	78	− 4	5·8	4·8	5·3	−0·5	...	1	...	...	14	42	5	...	...	S. 7° E.	S. 5° E.	89	85	187†	194	...	...	Zanzibar.	
·794	·862	·853	·836	+·024	83	76	72	77	+ 1	5·8	6·3	6·1	+1·0	9	2	4	4	29	8	2	...	4	N. 66° E.	S. 44° E.	40	58	133	173	6·60	1·60	Port Victoria (Seychelles).	
?	?	?	·642	?	?	?	?	80	+ 4	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	310	248	8·32	3·53	Mauritius.	

† Corrected. ‡ Mean of 30 days.

G. I. C. P. O.—No. 29 Meteor.—17-9-08.—285.

LITHO. BY J.N. MUNDLE.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows *flying with the wind*, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2 miles per hour	...	one feather added to the wind arrow
" "	2 to 5 " " "	...	two feathers " " " "
" "	5 to 10 " " "	...	three " " " " "
" "	10 to 20 " " "	...	four " " " " "
	over 20 " " "	...	five " " " " "

LITHO. BY J. N. MUNDLE

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

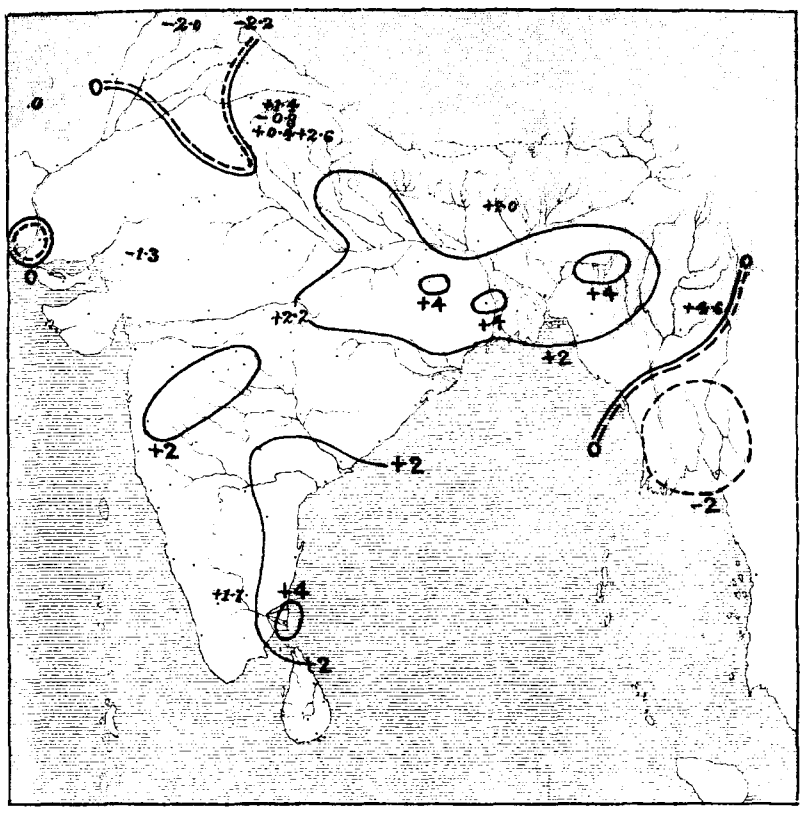
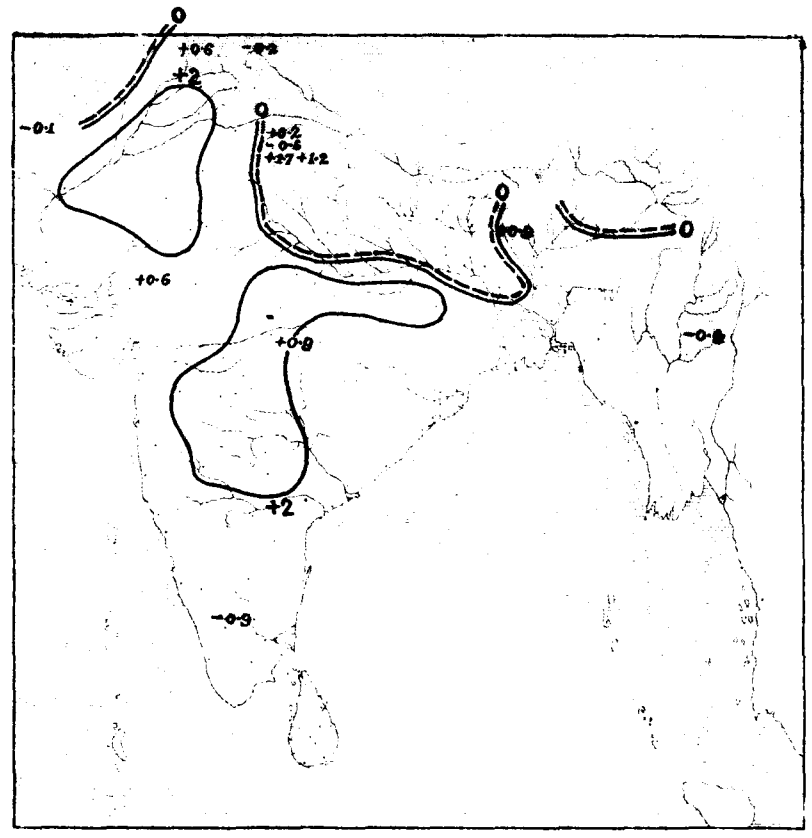


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

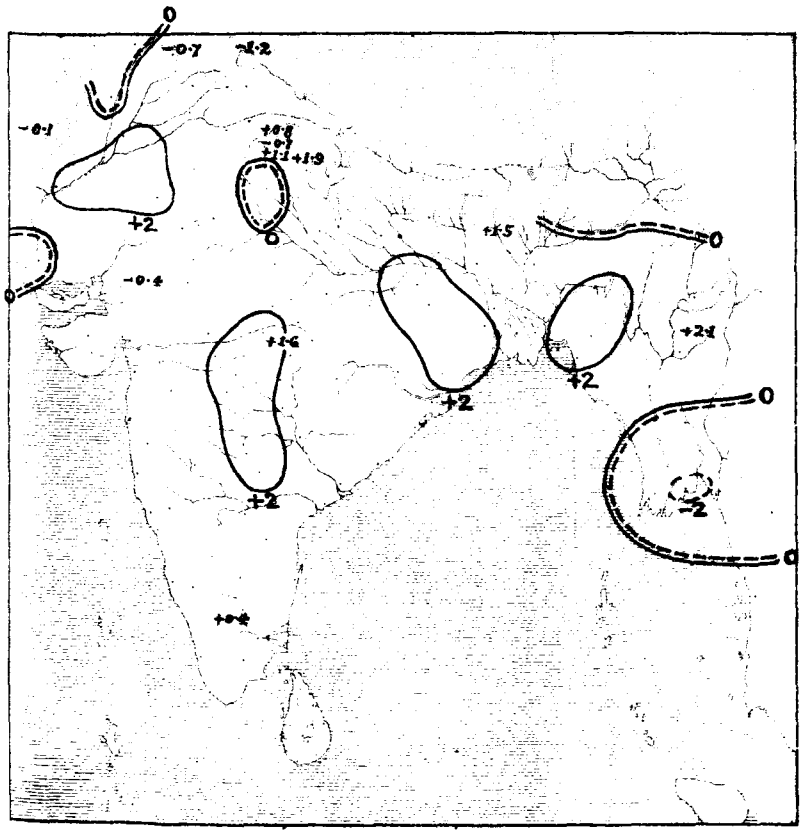
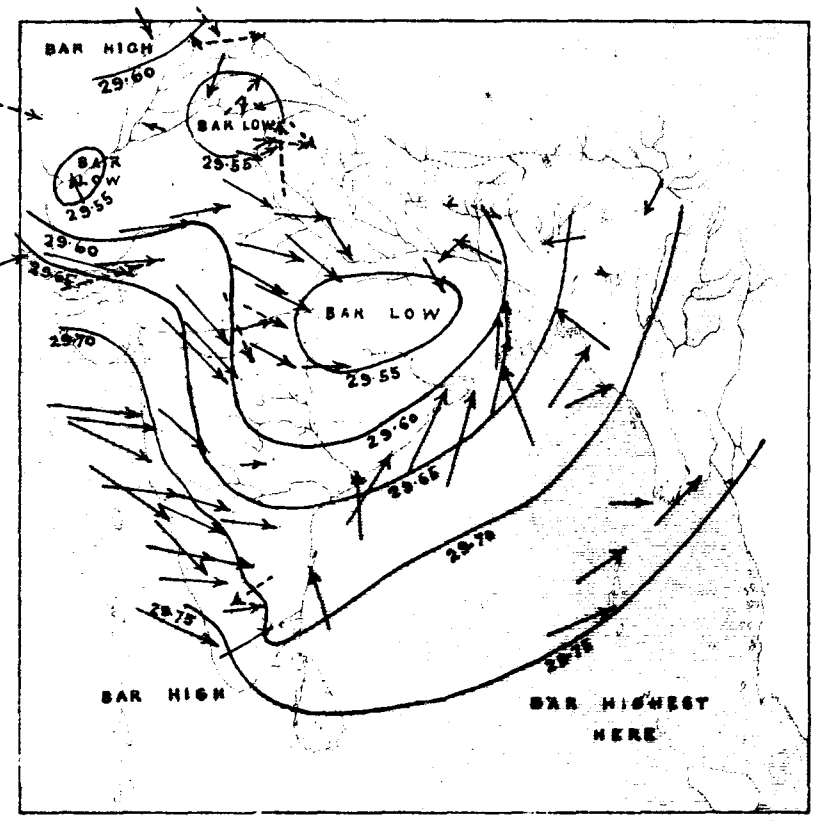


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF MAY 1898



LITHO. BY J.N. MUNDLE.

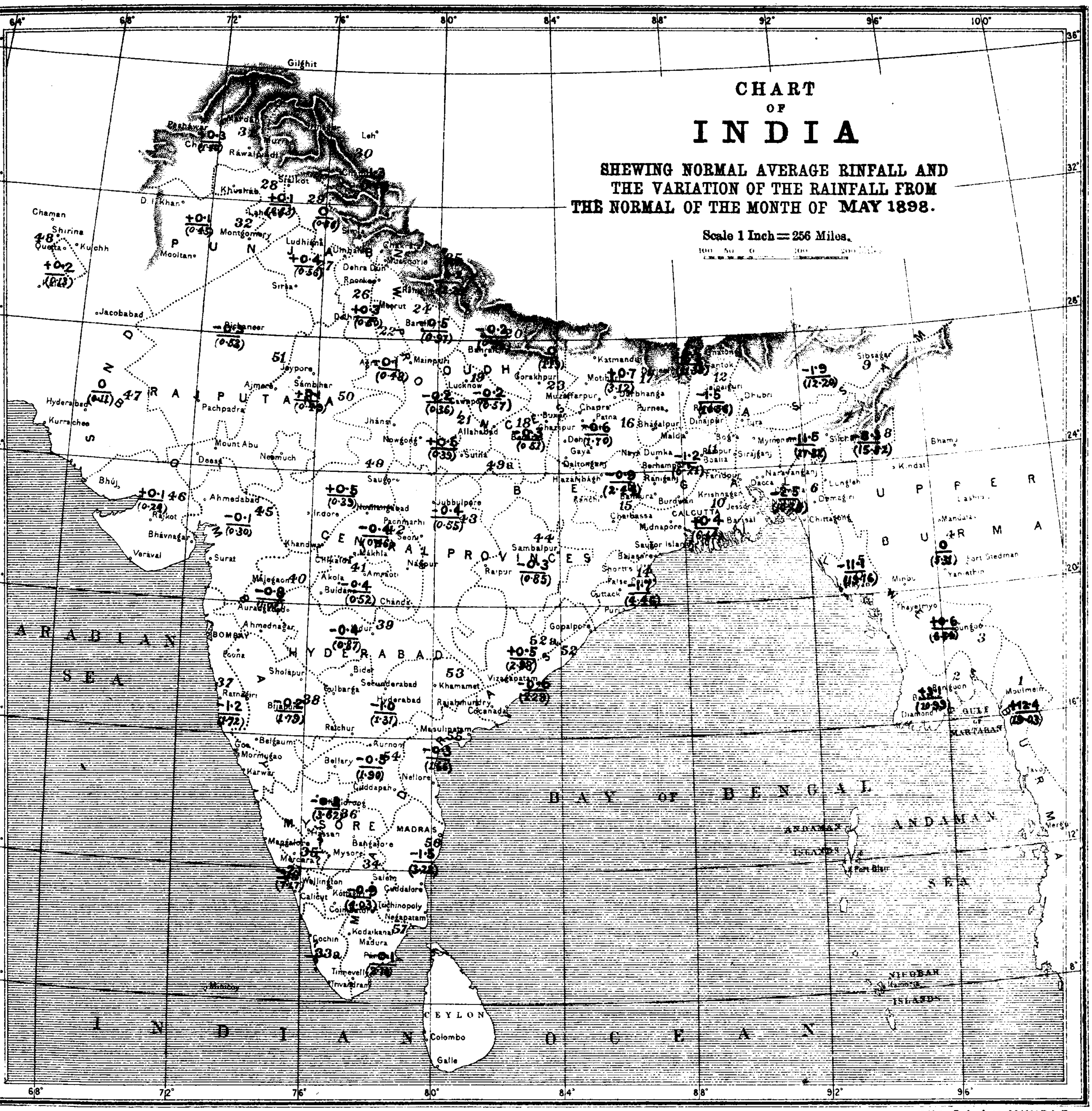
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of ⅕th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this Chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in Elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Reg. No. 243, Wr., I.—June 98.—52,50.

LITHO. BY J. N. MUNDLE

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma, Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North Punjab
32. West do.
33. Malabar
33a Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do. do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

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Weather Bureau

GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, JUNE, 1898.

INTRODUCTION.

THIS Review of the weather in India during the month of June 1898 is based on observations taken daily at 8 A.M. at 215 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 86 stations. In the rainfall summary, the rainfall data of the meteorological observatories and the weekly rainfall telegrams received during the month from District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the publication of the review are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of June, 1898.

The most important feature of the meteorology of the month (and also of the year) is the advance of the south-west monsoon currents over the Arabian Sea and the Bay of Bengal into India and their establishment in the latter area. Brief and partial advances of these currents occur occasionally in the month of May, but it is not until the last week of May or the first and second weeks of June, that the great advance occurs which culminates in the establishment of the "rainy season" in Central and Northern India.

Judging solely from the land observations, there are very considerable differences from year to year in the character of the advance of the monsoon currents over the Indian Seas towards Northern India. The manner of advance of the currents over India depends very largely upon the pressure and other weather conditions prevailing at the time in India, and hence differs very considerably from one year to another.

Temperature is usually excessive over the whole of Upper and Central India at the commencement of the month. The advance of the monsoon currents over the interior increases humidity rapidly and brings up much cloud, and is followed by frequent rain showers; hence temperature falls rapidly with their advance, and the area of excessive temperature retreats northwards to Upper Sind, the North and West Punjab and North-West Rajputana. The highest maximum temperatures of the year in that area are hence occasionally recorded in June or July.

The change from great heat and dryness of the air to moderate heat, excessive humidity and frequent rain is usually not completed over Northern India until the third or fourth week of June, by which time the south-west monsoon currents usually penetrate into the East and North Punjab.

There is always much disturbance and squally weather in front of the advancing monsoon. This squally weather, if conditions be favourable, may develop in either sea area into a cyclonic storm. Hence cyclonic storms frequently accompany the great advance of the monsoon currents in the Arabian Sea and Bay of Bengal.

After the south-west monsoon currents are fully established in Northern India, small cyclonic storms form at short intervals in the Bay of Bengal or in Bengal. These

storms constitute one of the more important and characteristic features of the rains. In June and July they usually march in a west or west-north-west direction along the trough of low pressure, which generally stretches from Orissa to Sind or the South-West Punjab, and which in its eastern half separates the area in which easterly winds from the Bay of Bengal prevail from the area in which westerly winds from the Bombay coast obtain. These storms not only give heavy rain to the areas they traverse, but draw rain away for the time being from other districts to concentrate it on the comparatively narrow belts over which they pass. They are hence one of the most important of the causes of the irregular distribution of the monsoon rainfall.

The following is a brief sketch of the chief features of the meteorology of the month :—

The first advance of south-west monsoon winds in the Arabian Sea occurred in the last week of May over the west and centre of that area. Weather was very disturbed and squally in front of the advancing current on the 28th and 29th, and a cyclonic storm formed in the centre of the sea on the 30th and 31st. Winds of force 8 to 10 and a tremendous sea were experienced by vessels proceeding between Aden and Bombay on the 1st and 2nd. The storm apparently advanced north-north-westwards to the Gulf of Oman and gave heavy rain and destructive winds at Muscat and on the Mekran coast which inflicted much damage on property and wrecked many native craft.

The monsoon rains commenced on the Malabar and Konkan coasts on the 8th and 9th. The period from the 1st to 8th was marked by excessive temperature in North Western and Central India.

The following gives mean variations of the daily temperature from the normal in that area of excessive temperature :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of							
	1st June.	2nd June.	3rd June.	4th June.	5th June.	6th June.	7th June.	8th June.
	°	°	°	°	°	°	°	°
Punjab	+4·1	+ 3·7	+1·8	+1·9	+4·8	+7·0	+7·4	+8·1
Upper Sind	+4·7	+4·9	+7·1	+5·1	+6·0	+4·2	+6·1	+7·5
Rajputana	+5·0	+4·1	+4·8	+4·7	+4·9	+5·1	+4·5	+5·2
Central India and Gujarat.	+0·3	+1·6	+3·6	+4·1	+3·6	+4·0	+3·4	+3·5
Central Provinces and Berar.	+3·0	+3·7	+5·0	+5·9	+6·5	+6·5	+4·9	+2·7

The period was also characterized by very great dryness of the air in the same areas. The following gives the lowest humidities recorded in these areas and in Baluchistan where the air was also exceedingly dry :—

Station.	Date.	Hour.	Lowest humidity recorded during June 1898.
			%
Nowgong	3rd	16	9
Khandwa	3rd	16	9
Raipur	4th	16	9
Buldana	3rd	16	9

The highest temperatures of the month were generally recorded in Upper and Central India during this period. The following gives the highest (exceeding 112°).

Province.	Station.	Highest maximum temperature recorded in June 1898.	Date on which recorded.
		°	
Sind	Jacobabad	122·0	8th, 22nd and 23rd.
Punjab	Montgomery	118·6	22nd.
	Peshawar	117·5	29th.
	Mooltan	117·5	5th.
	Rawalpindi	117·0	28th.
	Sialkot	117·0	7th.
	Khushab	116·4	8th.
	Umballa	115·4	9th.
	Sirsa	115·3	6th.
	Ludhiana	115·3	7th.
	D. I. Khan	115·2	22nd & 24th.
	Lahore	114·6	7th.
	Delhi	112·2	7th.
North-Western Provinces.	Jhansi	114·2	7th.
	Mainpuri	112·2	7th.
	Hyderabad	114·2	17th.
Rajputana	Bickaneer	113·9	1st.
	Kotah	113·1	1st, 6th & 19th.
	Pachpadra	113·0	3rd and 4th.
Central India	Nowgong	113·0	4th.
Central Provinces and Berar.	Chanda	115·2	5th.
	Nagpur	113·2	2nd, 3rd & 4th.
	Jubbulpore	113·0	1st.
	Raipur	112·5	5th.
	Amraoti	113·0	3rd.

They were not so high as were registered in the same areas during the corresponding period of June 1897.

storms constitute one of the more important and characteristic features of the rains. In June and July they usually march in a west or west-north-west direction along the trough of low pressure, which generally stretches from Orissa to Sind or the South-West Punjab, and which in its eastern half separates the area in which easterly winds from the Bay of Bengal prevail from the area in which westerly winds from the Bombay coast obtain. These storms not only give heavy rain to the areas they traverse, but draw rain away for the time being from other districts to concentrate it on the comparatively narrow belts over which they pass. They are hence one of the most important of the causes of the irregular distribution of the monsoon rainfall.

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	°	°	°	°	°	°	°	°
Punjab	+4·1	+ 3·7	+1·8	+1·9	+4·8	+7·0	+7·4	+8·1
Upper Sind	+4·7	+4·9	+7·1	+5·1	+6·0	+4·2	+6·1	+7·5
Rajputana	+5·0	+4·1	+4·8	+4·7	+4·9	+5·1	+4·5	+5·2
Central India and Gujarat.	+0·3	+1·6	+3·6	+4·1	+3·6	+4·0	+3·4	+3·5
Central Provinces and Berar.	+3·0	+3·7	+5·0	+5·9	+6·5	+6·5	+4·9	+2·7

The period was also characterized by very great dryness of the air in the same areas. The following gives the lowest humidities recorded in these areas and in Baluchistan where the air was also exceedingly dry:—

Station.	Date.	Hour.	Lowest humidity recorded during June 1898.
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Buldana	3rd	16	9

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	Peshawar	117·5	29th.
	Mooltan	117·5	5th.
	Rawalpindi	117·0	28th.
	Sialkot	117·0	7th.
	Khushab	116·4	8th.
	Umballa	115·4	9th.
	Sirsa	115·3	6th.
	Ludhiana	115·3	7th.
	D. I. Khan	115·2	22nd & 24th.
	Lahore	114·6	7th.
	Delhi	112·2	7th.
North-Western Provinces.	Jhansi	114·2	7th.
	Mainpuri	112·2	7th.
	Hyderabad	114·2	17th.
Rajputana	Bickaneer	113·9	1st.
	Kotah	113·1	1st, 6th & 19th.
	Pachpadra	113·0	3rd and 4th.
Central India	Nowgong	113·0	4th.
Central Provinces and Berar.	Chanda	115·2	5th.
	Nagpur	113·2	2nd, 3rd & 4th.
	Jubbulpore	113·0	1st.
	Raipur	112·5	5th.
	Amraoti	113·0	3rd.

They were not so high as were registered in the same areas during the corresponding period of June 1897.

Series of thunderstorms occurred in Bengal, Bihar and Chota Nagpur on the 1st and 2nd. The rainfall accompanying these storms was moderately heavy, and temperature was hence reduced largely below the normal from the 1st to the 3rd, as is shown by the following variation data :—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF		
	1st June.	2nd June.	3rd June.
	°	°	°
Bengal	—4·2	—2·7	—1·0
Bihar	—8·5	—4·5	—1·5
Chota Nagpur	—4·3	—2·2	—2·2

Fine and dry weather generally prevailed in North-Eastern India from the 3rd until the initiation of the monsoon rains in the beginning of the third week of the month. Light thundershowers were received in Bengal on the 10th, 11th and 12th.

A very feeble wave of low pressure, such as usually accompanies the establishment of the monsoon on the west coast, but much feebler than usual, advanced northwards between the 3rd and 7th. It lay over and off the Malabar Coast on the 3rd and 4th, and the South Konkan Coast on the 5th and 6th. Rain, chiefly accompanying thunderstorms, extended northwards along the coast as far as Goa, but it was light to moderate in amount. Rain became more general and heavier on the 7th, 8th and 9th, and was on the 9th of the normal monsoon character. The monsoon rains on the west coast hence date from the 9th and 10th. Heavy rain fell daily from the 9th to the 18th, the 14th and 15th being, on the whole, the days of heaviest downpour.

The following table shows the character of this precipitation :—

DISTRICT.	AVERAGE ACTUAL RAINFALL DURING 24 HOURS PRECEDING 8 A.M. OF										Total rainfall of period 9th to 18th June 1898.
	9th June.	10th June.	11th June.	12th June.	13th June.	14th June.	15th June.	16th June.	17th June.	18th June.	
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
Malabar	1·61	1·18	1·04	1·51	1·98	3·25	2·10	1·11	1·94	1·61	17·33
South Canara	2·28	2·68	2·56	2·38	3·07	4·05	2·87	1·08	2·53	3·67	27·17
North Kanara	2·70	1·84	2·55	2·24	1·56	3·29	1·40	1·15	1·61	2·87	21·61
Ratnagiri	0·57	2·28	4·72	2·25	2·27	6·01	5·90	3·90	4·06	1·65	33·61
Kolaba	0·49	1·10	1·86	0·87	1·40	4·52	3·18	4·32	3·31	2·34	23·39
Thana	0·15	0·40	2·00	0·78	0·83	2·66	1·55	2·88	1·37	2·02	14·64

The heaviest downpours in 24 hours were as follows :—

DISTRICT.	STATION.	DATE.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Ratnagiri	Rajapur	14th June	11·14
Do.	Vengurla	,, ,,	8·70
Colaba	Alibagh	,, ,,	8·45
Ratnagiri	Chiplun	15th ,,	10·00
Do.	Ratnagiri	,, ,,	8·42
Do.	Khed	,, ,,	8·20
Satara	Malcolmpeth	,, ,,	9·25
Do.	Do.	16th ,,	10·75
Ratnagiri	Mandangad	,, ,,	8·41
Satara	Malcolmpeth	17th ,,	12·10
Poona	Lanoli	,, ,,	8·05
Ahmedabad	Gogha	18th ,,	8·64
Broach	Vagra	19th ,,	9·45
Do.	Broach	,, ,,	8·23

The conditions for the extension of the monsoon currents were exceedingly favourable. The first heavy showers were received in the Central Provinces on the 9th, and in Central India, Rajputana, the North-Western Provinces and the South-East Punjab on the 10th, in many cases accompanying severe thunderstorms and duststorms. This rainfall accompanied a large increase of humidity, and gave rise to a great reduction of temperature in the areas affected. The following gives temperature variation data for North-Western and Central India and the North Deccan from the 10th to the 18th :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF								
	10th June.	11th June.	12th June.	13th June.	14th June.	15th June.	16th June.	17th June.	18th June.
	°	°	°	°	°	°	°	°	°
Central Provinces and Berar.	—3·8	—4·6	—3·4	0	+1·4	+0·1	—4·3	—4·6	—4·8
Central India and Gujarat.	+1·2	—1·5	—1·6	—1·5	—1·0	—1·1	—1·7	—0·3	—0·3
Sind and Rajputana.	+3·0	+2·5	+3·0	+2·2	+0·5	+1·7	+0·2	+3·2	+4·5
North-Western Provinces and Oudh.	+0·2	—1·8	—3·5	—4·6	—4·1	—5·5	—6·0	—4·0	—2·2
Punjab	+3·7	+3·8	+1·7	+1·0	+0·4	—4·8	—4·9	+0·1	+3·8

Showery weather continued in Upper India until the 19th, when the current fell off on the west coast and withdrew from Upper India.

The rains in North-Eastern India were initiated by a storm of somewhat unusual character. It formed in the usual manner in front of the advancing humid current in the north-west of the Bay on the 12th and 13th, and drifted slowly northwards, the centre passing over or near to Puri and False Point on the 15th. It passed into South-West Bengal, and advanced very slowly (at a rate not exceeding 80 miles per diem) through South-West and Central Bengal on the 16th, 17th and 18th, into North Bengal on the 19th and 20th, and broke up at the foot of the Sikkim Hills.

This rainfall was of course directly related to its slow rate of motion. Falls exceeding 10 inches in 24 hours were recorded at a considerable number of stations, including the following :—

DISTRICT.	STATION.	DATE.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Hazaribagh	Chatra	17th June	12·39
Manbhum	Purulia	18th "	17·27
Do.	Jhalda	" "	12·88
Bankura	Bankura	" "	12·48
Do.	Khatra	" "	10·27
Chittagong	Kodala	" "	10·20
Murshidabad	Kandi	19th "	11·52

The following is a summary of the rainfall data of the storm :—

DIVISION.	AVERAGE ACTUAL RAINFALL DURING 24 HOURS PRECEDING 8 A.M. OF								Total of period 14th to 21st June.
	14th June.	15th June.	16th June.	17th June.	18th June.	19th June.	20th June.	21st June.	
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
South-West Bengal	0·09	0·23	0·47	1·53	1·95	2·36	0·39	0·09	7·11
East Bengal	0·17	0·45	0·68	1·83	3·09	2·43	1·62	1 61	11·88
North Bengal	0·27	0·55	0·37	0·52	1·09	1·62	2·91	2·36	9·69
North Bihar	0·54	0·03	0·05	0·11	0·32	0·70	1·05	0·39	3·19
South Bihar	0·28	0	0·10	0·35	0·50	0·52	0·36	0·12	2·23
Chota Nagpur	0	0·16	0·53	2 99	3·88	1·23	0·14	0·04	8·97
Orissa	0·42	0·90	1·27	0·19	0·13	0·37	0·01	0	3·29

The rainfall reduced temperature slightly to very largely below the normal in North-Eastern India from the 17th to the 21st, as is shown by the following data :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	17th June.	18th June.	19th June.	20th June.	21st June.	22nd June.
	°	°	°	°	°	°
Orissa	—5·1	—4·5	—3·6	—2·4	+1·1	+2·5
Bengal	—1·0	—3·3	—2·4	—3·1	—1·6	—0·6
Chota Nagpur	—5·4	—7·9	—7·4	—5·4	—0·2	+2·0
Bihar	+1·7	—0·7	—2·1	—3·8	—1·9	+1·0

The indraught from the west coast to this storm area withdrew the humid currents from Upper India on the 17th and 18th, and hence temperature, which on the 16th and previous days was generally below the normal in that area, increased rapidly and was again excessive. The following gives variation data from the 17th to the 21st for that area :—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	17th June.	18th June.	19th June.	20th June.	21st June.
	°	°	°	°	°
Upper Sind	+5·3	+6·5	+5·9	+3·3	+5·8
Rajputana	+1·9	+4·7	+6·1	+4·6	+4·9
Punjab	+0·1	+3·8	+6·0	+5·8	+5·5
North-Western Provinces and Oudh.	—4·0	—2·2	+1·2	+0·9	+3·2
Central India and Gujarat	—0·3	—0·3	—1·1	—2·1	+0·5

The breaking up of this storm was followed by an unusual distribution of pressure for the period. Pressure fell from the 18th to the 21st in Northern India, more especially in the submontane districts, and increased in the Peninsula. It was in large defect in the submontane districts from the 21st to the 24th and in moderate excess in the west coast districts.

Very strong westerly winds due to these conditions hence prevailed over the whole of Northern and Central India and the Deccan during this period. Little or no rain fell except in Malabar, East and North Bengal and Burma. The break in the rains extended from Upper India over the whole of the interior during the next three days.

Temperature hence increased and was more or less in excess from the 21st to the 24th over the whole of India

except Bengal. The excess was large in two areas. The first included North-Western India for which data are given below :—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	21st June.	22nd June.	23rd June.	24th June.
	°	°	°	°
Punjab	+ 5·5	+7·4	+6·7	+5·0
Upper Sind	+ 5·8	+6·4	+5·5	+4·6
Rajputana	+ 4·9	+2·6	+1·3	+1·0
North-Western Provinces and Oudh.	+ 3·2	+5·1	+3·7	+0·4
Central India and Gujarat	+ 0·5	+1·8	+1·4	+1·0

The second area included the coast districts of South and Central Madras where westerly winds blowing from the interior and heated in their descent gave very high temperature. The following gives variation data for four stations :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	21st June.	22nd June.	23rd June.	24th June.
	°	°	°	°
Cocanada	+4·1	+5·4	+3·6	+4·5
Masulipatam	+3·8	+5·4	+1·9	+2·7
Madras	+4·1	+2·6	+3·9	+1·6
Negapatam	+0·8	—0·4	+0·1	+2·2

The break in the rains extended to Bengal on the 25th and the whole of India (except Southern India and Lower Burma) was practically rainless from that date to the 27th.

Temperature was more or less above the normal during this period over India, as is shown by the following data—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	24th June.	25th June.	26th June.	27th June.
	°	°	°	°
Punjab	+5·0	+4·2	+4·8	+5·6
Sind and Rajputana	+1·1	+0·9	+0·7	+1·7
North-Western Provinces and Oudh.	+0·4	—1·0	+0·9	+2·9
Central India and Gujarat	+1·0	+1·0	—0·2	+1·2
Bihar	+0·7	+2·1	+2·5	+5·4
Chota Nagpur	+4·3	+3·6	+3·6	+5·4
Bengal	—4·0	—0·2	+2·3	+4·6
Central Provinces and Berar	+2·3	+3·0	+3·6	+5·3
Bombay Deccan	+1·2	+0·7	+1·7	+2·3
Madras Deccan	+2·6	+3·6	+4·0	+4·4
Bombay Coast	+1·4	+1·3	+1·6	+1·3
Madras Coast	+2·7	+3·9	+4·4	+4·0
Burma	—1·6	—0·2	+0·5	+0·8

Temperature was very high in the North Punjab during this period and up to the end of the month, as is shown by the following data giving the greatest excess day by day :—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
24th June	Sialkot	+ 9·8	+ 9·8	+ 9·8
	Rawalpindi	+12·5	+ 3·8	+ 8·2
25th "	Rawalpindi	+10·6	+10·8	+10·7
26th "	Rawalpindi	+ 9·8	+11·1	+10·5
	Sialkot	+ 6·2	+12·2	+ 9·2
27th "	Rawalpindi	+12·6	+ 9·6	+11·1
	Sialkot	+ 8·2	+10·2	+ 9·2
28th "	Rawalpindi	+15·1	+ 8·9	+12·0
	Murree	+11·7	+10·9	+11·3
	Sialkot	+ 9·8	+11·2	+10·5
29th "	Delhi	+11·1	+10·4	+10·8
	Murree	+12·0	+10·7	+11·4
	Sialkot	+10·5	+11·7	+11·1
	Rawalpindi	+10·2	+10·4	+10·3
	Ludhiana	+ 8·8	+12·3	+10·6

The highest temperatures of the month in the North Punjab were recorded during this period. They were as follows :—

STATION.	Highest maximum temperature recorded in June 1898.	Date on which recorded.	Highest maximum temperature recorded in June previous to 1898.
	°		
Rawalpindi	117·0	28th June.	118·0
Peshawar	117·5	29th "	119·0
D. I. Khan	115·2	22nd and 24th "	121·5

The pressure conditions began to change on the 25th and the trough of low pressure was transferred to its normal position on the 27th. Winds decreased in strength and shifted round to easterly directions in the Gangetic Plain. Rain increased rapidly in amount in the West coast and Bengal on the 28th and extended rapidly into the interior on the 29th and 30th and on the latter day was falling over the Central Provinces, Central India, the Gangetic Plain and East Punjab. A storm commenced to form in the north-west angle of the Bay on the 30th which formed the chief feature of the meteorology of the first week of July.

Pressure.—The mean pressure of the Indian land area for the month of June was ·025″ below the normal. Relatively to this general condition, pressure was in local defect in Burma, Assam and Upper India. The deficiency was nowhere large and was greatest in the Punjab, Upper Sind and Tenasserim where it ranged between ·021″ at Sirsa and Moulmein and ·039″ at Peshawar. The excess was greatest in the Circars where it was slightly more than ·02″. The vertical pressure anomalies were positive in Northern India and Baluchistan and were moderate to large in amount.

The following table gives the mean pressure variations and anomalies of the eleven meteorological provinces: —

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of June 1898.	Pressure anomaly, June 1898.
	″	″
Burma Coast and Bay Islands	—·036	—·011
Burma Inland	—·032	—·007
Assam	—·031	—·006
Bengal and Orissa	—·024	+·001
Gangetic Plain and Chota Nagpur	—·022	+·003
Upper Sub-Himalayas	—·040	—·015
Indus Valley and North-West Rajputana	—·052	—·027
East Rajputana, Central India and Gujarat	—·026	—·001
Deccan	—·016	+·009
West Coast	—·013	+·012
South India	—·010	+·015

Temperature—Was in general excess, in part due to the delay in the establishment of the Bombay monsoon current and its weakness during the latter part of the month and in part to the break in the rains which commenced in North-Western India on the 19th and extended over the whole of India on the 25th and lasted until the 27th.

The mean maximum temperature of the month was above the normal over the whole of India with the exception of Bengal, Chota Nagpur, Bihar, the greater part of the North-Western Provinces, the Circars and Kathiawar. The deficiency exceeded 2° at Berhampore (—2°·3) and Bareilly (—2°·9). The mean maximum or day temperature was more than 2° above the normal in Upper India. It exceeded 5° in a portion of the Punjab represented by Rawalpindi (+7°·7), Mooltan (+5°·3), Sialkot (+5°·2), Murree (+5°·1) and Jacobabad (+5°·1).

The mean night temperature was above the normal over the whole of India except Orissa, South-West Bengal, the Circars and the eastern and central districts of the North-Western Provinces. The variations were generally small but exceeded 2° over the greater part of Upper India and in a small part of the Deccan. The excess was absolutely greatest in the East Punjab at Rawalpindi (+6°·4), Lahore (+5°·6), Sialkot and Ludhiana (each +5°·1) and Murree (+5°·0) and perhaps locally at Mooltan (+5°·6).

The mean temperature of the month was below the normal in an area including South and Central Bengal, Orissa, the Circars, Chota Nagpur, Bihar and the greater part of the North-Western Provinces. The variations were however small, nowhere exceeding 2° in these areas. The mean temperature was above the normal over the remainder of the country, the excess being more than 2° in the Central Deccan (represented by Sholapur and Hyderabad) and in Upper Sind, Rajputana and the Punjab. The excess was absolutely greatest at Rawalpindi (+7°·1), Mooltan (+5°·5), Sialkot, (+5°·2) and Murree (+5°·1) and hence in the North-East and South-West Punjab.

The following table gives temperature variation data of the month for the eleven meteorological provinces of India :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, June 1898.	Mean minimum temperature, June 1898.	Mean daily temperature, June 1898.
	°	°	°
Burma Coast and Bay Islands	+0·9	+0·8	+0·9
Burma Inland	+1·3	+1·1	+1·2
Assam	+1·7	+0·4	+1·1
Bengal and Orissa	—0·2	+0·1	0
Gangetic Plain and Chota Nagpur	—0·7	0	—0·4
Upper Sub-Himalayas	+1·4	+3·4	+2·4
Indus Valley and North-West Rajputana.	+2·8	+2·5	+2·7
East Rajputana, Central India and Gujarat.	+1·4	+1·8	+1·6
Deccan	+1·3	+1·2	+1·3
West Coast	+0·8	+1·0	+0·9
South India	+0·8	+0·6	+0·7

Winds.—Winds were more westerly and stronger than usual at Port Blair and Diamond Island, indicating a slightly stronger set of the monsoon current than usual to Tenasserim and Lower Burma. Winds were considerably stronger than usual at the coast stations of Bengal and were much more easterly than usual in Bengal, Orissa and Chota Nagpur. They were more easterly and stronger than usual in the Gangetic Plain. Winds were slightly weaker than usual on the North Konkan coast but stronger on the Malabar and Sind coasts. They were less southerly and more westerly than usual in Rajputana, Central India and the West Deccan and also above their normal strength as was also the case in Mysore. They were normal in direction in the East Deccan and Madras, but somewhat stronger than usual. They were normal in direction at Aden, Zanzibar and the Seychelles and slightly steadier than usual.

Humidity and Cloud.—The air was drier than usual over the whole of India except Upper Assam, West Bengal, Chota Nagpur and an area including the North-Western Provinces, Bundelkhand and Baghelkhand. The variations of the mean humidity of the month from the normal were small over the greater part of that area, but exceeded 5 in a small area including the stations of Sutna (9 in excess) and Allahabad and Lucknow (each 6 in excess). Humidity was below the normal over the remainder of India, but the variations were small and of little significance except in two areas. The first included the greater part of the Punjab. Thus the mean humidity of the month was 9 below the normal at Murree, 8 below at Ludhiana, and 5 below at Mooltan and Leh. The second area included the greater part of the Deccan represented by the stations of Bellary (where humidity was 11 in defect), Secunderabad and Sholapur (each 7 in defect) and Buldana (6 in defect) There were two very dry periods in North-Western India during the month, *viz.*, the 1st to the 8th and the 18th to the 26th.

The variations of the mean amount of cloud of the month were generally small. There was more cloud over India to the east and south of a line joining Ratnagiri, Khandwa, Saugor and Bareilly (except South Madras Bihar and Assam). The excess was most marked at Port Blair and at Bangalore and Mysore, at each of which stations it was slightly above 1·0. There was less cloud than the normal amount on the mean of the month to the west of the line defined above. The deficiency was large and marked in the East Punjab, East Rajputana and the adjacent districts of the North-Western Provinces, more especially at Lahore (—2·1) Ludhiana (—1·9), Srinagar (—1·5), Murree (—1·2) and Meerut and Agra (each—1·1). The following table gives variation data of the mean aqueous vapour pressure, mean humidity and mean cloud amount of ten meteorological provinces :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean aqueous vapour pressure, June 1898.	Mean humidity, June 1898.	Mean cloud amount, June 1898.
	"		
Burma Coast and Bay Islands . .	+·013	—1	+0·2
Assam	+·003	—1	—0·3
Bengal and Orissa	+·001	—1	+0·2
Gangetic Plain and Chota Nagpur .	+·036	+2	+0·5
Upper Sub-Himalayas . .	+·052	0	—1·0
Indus Valley and North-West Rajputana	+·035	—2	+0·1
East Rajputana, Central India and Gujarat	+·045	0	—0·8
Deccan	+·001	—1	+0·2
West Coast	+·004	—1	+0·2
South India	—·013	—2	+0·7

Rainfall.—The chief features in the meteorology of the month were the slight delay in the establishment of the Bombay or west coast monsoon current and the break in the rains which commenced in Upper India on the 19th and extended over the whole of India on the 25th. Bengal had series of thundershowers on the 1st and 2nd which gave moderate rain. A feeble low pressure wave advanced northwards from Ceylon along the west coast on the 4th and following three days and gave moderate rain from the 4th to the 7th in the coast districts and light showers in the Deccan. The rainfall increased on the 8th and 9th on which days the monsoon rains proper may be considered as having commenced in that part of India. Heavy rain continued to fall in the west coast districts until the 18th when it rapidly diminished in amount. The humid winds advanced rapidly into the interior and gave rain to the Central Provinces on the 9th and thundershowers to Central India, Rajputana, the North-Western Provinces and the South-East Punjab on the 10th.

The rains in North-Eastern India were initiated by a storm which formed in the north-west of the Bay on the 12th and 13th and drifted with unusual slowness northwards through the coast districts of Orissa and West Bengal into North Bengal where it broke up on the 21st. This storm gave very heavy rain to Chota Nagpur and Bengal, falls of 10 to 17 inches in 24 hours occurring at several stations.

The rainfall of the month was in slight excess in Lower Burma, in moderate excess in Bengal and Orissa (averaging 15 per cent.) and on the West Coast (14 per cent.). It

was in defect in the remaining meteorological provinces of India, but the deficiency was small in actual amount in all these divisions except Burma Inland which received an average of 2·33 inches less than its normal amount (8·35 inches). The rainfall of the month was hence on the whole normal and favourably distributed.

The following table gives the rainfall data of the month for the eleven meteorological provinces :—

Meteorological Province.	Rainfall.		
	Average actual for June 1898.	Average normal for June.	Variation of actual from normal, June 1898.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	28·64	27·47	+2·33*
Burma Inland	6·01	8·35	—2·33
Assam	18·81	19·65	—0·84
Bengal and Orissa	15·29	13·26	+2·03
Gangetic Plain and Chota Nagpur	5·98	6·58	—0·60
Upper Sub-Himalayas	2·94	3·65	—0·78*
Indus Valley and North-West Rajputana.	0·37	0·75	—0·38
East Rajputana, Central India and Gujarat.	3·83	4·22	—0·57*
Deccan	5·66	6·44	—0·70*
West Coast	31·78	27·73	+4·05
South India	2·55	2·81	—0·26

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian area averaged ·025″ below the normal in June.

The pressure anomalies were generally opposite in character to those of the preceding month, as is the usual rule when the monsoon currents are of normal strength or stronger than usual.

Pressure was, relatively to the general condition, in defect in Burma, Assam and Upper India. The anomalies were small in those areas except in Tenasserim, Upper Sind and the Punjab. The following gives data for these areas :—

Province or Division.	Station.	Variation from normal of mean 8 A. M. pressure of June 1898.	Pressure anomaly, June 1898.
		″	″
Tenasserim	Tavoy	—·050	—·025
	Moulmein	—·046	—·021
Punjab	Peshawar	—·064	—·039
	D. I. Khan	—·063	—·038
	Ludhiana	—·050	—·025
	Rawalpindi	—·049	—·024
	Lahore	—·049	—·024
	Sirsa	—·046	—·021
Upper-Sind	Jacobabad	—·058	—·033

Pressure was, relatively to the general condition, in excess over the remainder of India. The excess was nowhere large in amount and exceeded ·02″ only at Masulipatam and Cocanada (each +·023″).

Pressure was generally in defect at the lower hill stations in Northern India and Baluchistan but by smaller amounts than at the neighbouring plains stations. It was on the other hand, in excess at the most elevated station of Leh. The vertical pressure anomalies were positive and moderate to large in amount in Northern India, as is shown by the following data of nine pairs of stations :—

Hill Station.	Variation of actual from normal pressure, June 1898.	Plain Station.	Variation of actual from normal pressure, June 1898.	Vertical pressure anomaly (Hill—Plain).
	″		″	″
Quetta	—·006	Jacobabad	—·058	+·052
Murree	—·012	Peshawar	—·064	+·052
Leh	+·025	Lahore	—·049	+·074
Kailang	?—·081	Lahore	—·049	?—·032
Simla	—·015	Ludhiana	—·050	+·035
Chakrata	—·011	Roorkee	—·031	+·020
Ranikhet	—·004	Bareilly	—·019	+·015
Darjeeling	—·018	Dhubri	—·031	+·013
Mount Abu	—·024	Deesa	—·017	—·007

The following gives a summary of the chief abnormal features of the pressure distribution :—

(1) Pressure was in defect in the Indian area by amounts averaging ·025″.

(2) Pressure was in relative defect in Upper India and also in Burma and Assam. The deficiency was slight to moderate in amount and was largest in the Punjab, Upper Sind and Tenasserim.

(3) Pressure was in relative excess over the remainder of India. The excess was small in amount except locally at Masulipatam and Cocanada (each ·023″).

(4) Pressure was relatively in excess or the vertical pressure anomalies were positive in the Himalayan area and Baluchistan.

Barometric depressions and cyclonic storms of the month.

The pressure conditions at the commencement of the month were abnormal and such as were not favourable to the early establishment of the monsoon in India.

Pressure was increasing and was more or less in excess over the whole of India except in the extreme south and in Ceylon, where it was normal or in slight defect. The following gives the actual mean pressure and variation from the normal in each of thirteen different provinces at 8 A.M. of the 1st :—

Province or Division.	Pressure at 8 A.M. on the 1st June.	
	Average actual	Variation from normal.
	″	″
Bengal	29·716	+·090
Bihar	·705	+·110
Chota-Nagpur	·659	+·055
North-Western Provinces and Oudh	·658	+·090
Punjab	·586	+·058
Rajputana	·655	+·056
Central India	·685	+·080
Central Provinces	·652	+·060
Bombay Coast	·807	+·044
Bombay Deccan	·789	+·082
Madras North Coast	·761	+·130
Madras Deccan	·737	+·032
Ceylon (Colombo)	·778	—·045

Pressure increased briskly to rapidly in the Punjab, Sind and Baluchistan during the next 24 hours and was practically unchanged over the remainder of India.

A storm formed at the end of the previous month in the centre and west of the Arabian Sea and advanced northwards to the Gulf of Oman during the first three days of June.

The following gives a brief history of the storm so far as can be deduced from the available data :—

Cyclonic storm of the 31st May to the 3rd June.—Weather was fine with light to fresh winds over nearly the whole of the Arabian Sea on the 27h May. Winds were very irregular in direction and light thundershowers were experienced by vessels near the Malabar Coast. The S.S. *Muttra* near the equator in Long. 75° E. had fresh north-west winds with occasional squalls.

Winds were even lighter and more irregular in direction over the north and centre of the Arabian Sea on the 28th, 12 vessels out of 46 in various parts of the sea reporting calms and light variable airs (force 0 to 1).

The S.S. *Muttra* had advanced to Lat. 3° 12′ N. and Long. 77° 39′ E. at 8 A.M. of this day and had light NNW winds force 1 throughout the day.

Conditions were apparently unchanged on the 29th, 17 vessels out of 48 reporting calms and variable airs. Weather was however becoming unsettled in the south as is shown by the following data :—

Name of Vessel.	8 A.M. Position.		Barometer corrected (Bombay office).	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force	
	° ′	° ′	″			
S. *Grosvenor*	8 51S	59 17	?	ESE	5 to 6	
S. *Safari*	6 58N	53 42	29·803	W	7	Heavy thunderstorm and lightning during the whole night.
S.S. *Purulia*	9 05	65 15	·713	Var.	2	4 A.M. heavy squall from SW and continuous rain.
S.S. *Bavaria*	11 04	61 02	?	E	2	Cloudy. 4 P.M. squally with heavy rain.
S.S. *Patna*	Calicut.		·767	...	...	4 A.M. Squally.
S.S. *Chilka*	12 23	74 41	·780	SW	4	Overcast. 4 A.M. continuous heavy rain with lightning from SW; 8 P.M. vivid lightning and heavy thunder.

The observations taken on board the ship *Grosvenor* and also at the Seychelles show that fresh to strong south-east trade winds prevailed to the south of the equator and the data furnished by the log of the S. *Safari* that monsoon winds were advancing north-

wards up the west of the Arabian Sea in the neighbourhood of the African coast. The *Safari* had a moderate westerly gale with almost continuous thunder and rain during the evening, and the S.S. *Purulia* (in the south of the Arabian Sea and advancing north-eastwards) had heavy south-west squalls with continuous rain during the early morning and light variable airs force 2 during the day.

30th May.—Conditions were unchanged in the north and centre of the Arabian Sea, the majority of vessels in these areas reporting calms and variable winds, as on the 28th and 29th. Monsoon winds continued to press forwards in the south-west, and weather was squally, more especially in the front of this advance. The following table gives data in illustration :—

Name of Vessel.	8 A.M. Position.		Barometer corrected (Bombay office).	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S. S. *Minerva* .	3 06S	42 32	29·856	SE	6	Fine.
S. *Safari* . .	8 45N	56 49	·743	W	...	Heavy squalls with rain and thunder.
S. S. *Purulia* . .	12 03	67 07	·653	SE by E	4	Cloudy.
S. S. *Sobraon* . .	14 39	53 42	?	Calm	0	
S. S. *Armenia* .	15 56	60 45	·719	Calm	0	
S. S. *Easby Abbey* .	16 21	62 15	...	Var.	0 to 1	

The data of the S. S. *Minerva*, as also of the Seychelles, indicate the continuance of strong south-east trade winds to the south of the equator and in the western half of the equatorial belt. The S. *Safari* had advanced to Lat. 8°45′ N., and continued to experience a westerly gale with heavy squalls. The remaining vessels were at considerable distances to the north and north-east of the advancing current. All but one had calms or light winds with fine but cloudy weather. It is possible that a cyclonic whirl was forming to the east of Socotra, but the available observations of this day give practically no indication of its existence.

31st May.—Winds were as light and irregular over the north and north-east of the Arabian Sea as on the previous day. Out of 40 vessels in the Arabian Sea contributing wind data for the day, five experienced calms at 8 A.M., five light airs of force 1, seventeen light breezes of force 2, and only twelve vessels, chiefly in the west and south-west, had winds exceeding 2 in force. The monsoon current had advanced as far as about Lat. 12° N. in the south-west of the Arabian Sea, and a marked tendency was now shown towards the establishment of a cyclonic whirl. This is clearly indicated by the following observations :—

Name of Vessel.	8 A.M. Position.		Barometer corrected (Bombay office).	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S. S. *Minerva* .	2 40S	45 23	29·956	SE	6	Fine.
S. S. *Lawada* . .	0 52S	76 36	·882	WSW	6	Rainy, 4 A.M. squally.
S. S. *Bavaria*. .	9 13N	69 15	?	SW	4	Cloudy.
S. *Safari* . .	9 39	59 55*	·573	W	...	Thunderstorms and heavy squalls and rain during the whole day and night.
S. S. *Clan Matheson*	10 18	59 44	·597	SW	6	High sea and hazy. Noon heavy rain squalls.
S. S. *Stolzenfels* .	12 37	59 50	·537	ENE	5	
S. S. *Metis* . .	13 53	59 18	?	NE	4	4 A.M. rain with thunder and much lightning.
S. S. *Lavernock* .	15 13	57 03	?	NE	5	Moderate sea.
S. S. *Cylde* . .	16 12	57 27	·656	NW	1	4 P.M. Cloudy.

*Noon position.

The general conditions were unchanged. Strong south-east trades continued in the western half of the equatorial belt and their northward extension across the equator as far as Lat. 12° N. is indicated by the strong south-west to west winds experienced by the S.S. *Lawada*, *Bavaria*, *Clan Matheson* and *Safari*. Strong south-west winds, force 6, were reported by the *Clan Matheson* in Lat. 10° 18′ N. and Long 59° 44′ E. and fresh east-north-east winds by the *Stolzenfels* about 150 miles to the north of the former vessel, and moderate north-east winds by the *Metis* about 80 miles to the north of the latter vessel, thus evidencing that a cyclonic whirl of slight intensity the centre of which was in about Lat. 11½° N. and Long. 59½° E., was now established.

1st June.—The pressure conditions in India have already been stated. The data contributed by vessels show that the cyclonic storm had developed rapidly during the previous 24 hours, and now covered a considerable area. The following gives 8 A.M. data showing its position and character at that hour :

Name of Vessel.	8 A.M. Position.		Barometer corrected (Bombay office).	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S. S. *Stolzenfels* .	11 26	63 25	29·597	SSW	8 to 9	
S. *Safari* . .	13 00	63 38	·633	S	7	Heavy squalls with stormy rain showers and thunderstorms and very high sea.
S. S. *Aurora* . .	14 18	58 12	·445	NE	7	Strong sea and heavy rain.
S. S. *Falls of Inversnaid.*	14 39	58 12	·395	NNE	7	High head sea. Noon rain at times.

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected (Bombay office).	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Goa* . .	14 55	54 54	?	W	5	Moderate following sea. 8 P.M. vivid lightning and loud peals of thunder, suspicious squally weather with very heavy rain.
S.S. *Strathnairn* .	14 57	55 00	29·625	NW	4	8 P.M. squally with heavy rain and lightning.
S.S. *Ujina* . .	15 41	59 47	·473	ENE	5	Noon, squally and frequent heavy rain.
S.S. *Calliope* .	16 17	62 02	?	ESE	6	High sea, noon heavy squalls.
S.S. *Lorenzo* .	16 24	59 22	?	ENE	6	Rough sea and overcast.
S. S. *Lavernock* .	16 31	60 38	?	E	6	8 P.m. heavy rain.

The storm area in which winds ranged between 4 and 9 in force lay between the 8th and 17th north parallels of latitude, and the 54th and 64th east meridians. The centre was in about Lat. 13½°N., and Long. 58¾° E., and had hence begun to move northwards. Heavy to hard squalls with much rain were experienced by vessels in the storm area during the day.

2nd June.—The available data indicate that the storm had advanced rapidly northwards during the previous 24 hours. All the vessels contributing information were now in the south quadrant, and hence it is not possible to fix with accuracy the position of the storm centre at 8 A.M.

The following gives data of the storm area :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected (Bombay office).	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S. S. *Inchisla*. .	10 41	61 50	?	SW	9	Tumbling sea and heavy squalls.
S. S. *Magician* .	11 53	58 53	?	SW	9	High confused sea and heavy squalls.
S. S. *Strathnairn* .	15 03	58 37	29·415	SW	10	High confused sea and squally with rain.
S. S. *Aston Hall* .	15 16	58 30	?	SW	10	High sea and thunder and lightning. 4 A.M. violent squalls and torrents of rain.
S. S. *Goa* . .	15 37	58 05	?	SW	9	Frequent violent squalls with very thick heavy rain and thunder and lightning.
S. S. *Falls of Inversnaid*.	15 42	60 32	29·355	SW	9	Dangerous sea and squalls with winds of hurricane force.
S. S. *Oriental*. .	16 43	62 01	29·481	SSW	9 to 10	High confused sea and frequent squalls of hurricane force.
S. S. *Sobraon*. .	16 45	61 29	?	S	8	Heavy sea. 4 A.M. strong squalls.
S. S. *Lorenso* . .	17 17	61 46	?	SSE	9	Overcast. Noon, rain squalls.
S. S. *Lavernock* .	17 24	63 54	?	SE	8	4 A.M. heavy rain.

The south-west monsoon winds had advanced rapidly northwards and now prevailed over nearly the whole of the western half of the Arabian Sea. In the storm area itself winds of force 8 to 10 were experienced and squalls of hurricane force with heavy to torrential rain were reported by some of the vessels.

The S.S. *Goa* and *Falls of Inversnaid* experienced the most severe weather from the storm during the day. The following gives extracts from their logs :—

Hour.	NAME OF VESSEL.	POSITION.		Barometer corrected (Bombay office).	WIND.		WEATHER.
		Lat. N.	Long. E.		Direction.	Force.	
		° ′	° ′	″			
1st June .	S. S. *Falls of Inversnaid*.	...	...	...	...	...	
4 A.M. .	,,	...	...	...	NNE	5	
8 ,, .	,,	14 39	58 12	29·395	NNE	7	High head sea.
Noon .	,,	14 37	58 36	...	NE	6	High head sea and rain at times.
4 P.M. .	,,	...	...	...	NE	4	Confused high sea.
8 ,, .	,,	...	...	...	SW	2	Ditto.
Midnight.	,,	...	...	...	SW	10	Strong hurricane and dangerous sea.
4. A.M. of 2nd.	,,	...	...	...	SW	10	Hurricane with high cross and dangerous sea.
2nd June.	S.S. *Goa* .	...	...	...	...	...	...
Midnight.	,, .	...	...	...	NW	5	Wind unsteady and shifting from W to ENE and very high, confused sea.
4 A.M. .	,, .	...	...	...	NW	9	High confused sea and heavy squall with continuous rain and lightning to E.
8 ,, .	,, .	15 37	58 05	...	SW	9	Frequent violent squalls with very thick heavy rain and thunder and lightning.
Noon .	,, .	15 43	58 35	...	SW	9	Very high sea and heavy squalls.
4 P.M. .	,, .	...	...	...	S by W	9	Very high sea and squalls less violent.
8 ,, .	,, .	...	...	...	S by W	7	Frequent violent gusts and high sea.

The barometer readings given in the log of the S.S. *Goa* are remarkable. Her barometer was steady at 30·52″ during the storm from 6 A.M. to midnight of the 2nd, and fell suddenly (if the readings were correctly taken) to 29·82″ at 4 A.M. of the 3rd.

3rd June.—South-west winds of force 4 to 8 prevailed over the west and centre of the Arabian Sea. The storm had continued to advance northwards or north-north-westwards and lay apparently near and to the west of Muscat. The only vessel which was in the storm area at 8 A.M. was the S.S. *Simla*. The following gives the meteorological information contained in her log:—

Hour.	Name of Vessel	Position.		Barometer corrected (Bombay office).	Wind.		Weather.
		Lat. N.	Long. E.		Direction.	Force.	
		° ′	° ′	″			
2nd June.	S.S. *Simla*	3 40	P.M.	Left Muscat on 2nd June.			
8 P.M.	,,	...	...	...	SE	6	Light rain and high sea.
Midnight	,,	...	...	...	SE	6 to 8	Continuous rain and high sea.
3rd-4 A.M.	,,	...	...	...	E	9	Overcast and high sea.
8 ,,	,,	...	...	29·631	E	9	Light rain and high sea.
Noon	,,	26 00	57 04	...	E	7	Overcast and high sea.
4 P.M.	,,	...	...	...	SE	4	Overcast and S. swell.
7·50 P.M.	,,	B.	Abbas	...	NE	...	

It is probable that the centre of the storm at 8 A.M. was in about Lat. 23½° N. and Long. 58° E.

The storm affected Muscat and Jask on the 2nd and 3rd. The observer at Muscat describes the storm at that station as follows:—

"A cyclone passed over Muscat on the 2nd and 3rd June and gave heavy rain." The following observations were recorded during the storm:—

Date.	Hour.	Barometer corrected.	Relative humidity.	Wind.		Weather.
				Direction.	Average hourly velocity in miles.	
		″	%			
2nd June 1898	8 A.M.	29·648	76	ESE	6	Rough sea and cloudy.
,, ,, ,,	4 P.M.	·606	76	SE	11	Rough sea and drizzling.
3rd ,, ,,	8 A.M.	·481	83	SE	31(?)	Squally.
,, ,, ,,	Noon.	·426	85	SE	7	Squally.
,, ,, ,,	4 P.M.	·331	75	SE	7	Squally.
4th ,, ,,	8 A.M.	·394	75	SE	6	Cloudy.
,, ,, ,,	10 A.M.	·431	75	SE	5	Cloudy.
,, ,, ,,	4 P.M.	·427	73	NW	7	Cloudy.
5th ,, ,,	8 A.M.	·548	73	NW	13	Squally.

2·42 inches rain fell at Muscat during the 24 hours preceding 8 A.M., of the 3rd. The storm was very disastrous to shipping, property, date plantations, etc., all over the Oman coast. Several native craft are reported to be lost, and a large number of date trees and houses have been thrown down by the violence of the wind."

The observer at Jask recorded the following observations during the storm:—

Date.	Hour.	Barometer corrected.	Relative Humidity.	Wind.		Weather.
				Direction.	Average hourly velocity in miles.	
		″	%			
3rd June 1898	2·30 P.M.	29·514	52	E	29	Severe gale with dust set in at 1 A.M. Continued blowing all day. Sky overcast. Very high sea. Mail Steamer *Kilwa* arrived noon. Reported met squall off Bundar Abbas at 2 A.M.
,, ,, ,,	6 P.M.	·559	72	E	30	Overcast, occasional drizzling rain 4 P.M., distant thunder and lightning. 5 P.M. light rain. Very high sea. Charbar 200 miles east of Jask reported cyclonic weather and heavy rain.
4th ,, ,,	2·35 P.M.	·453	85	E	14	Overcast, scudding clouds, high wind and sea.
,, ,, ,,	6 P.M.	·542	87	ESE	24	Overcast threatening weather, wind dropping and varying, clouds scudding; upper strata invisible. Very high sea 7 P.M., change of direction of wind to NE and heavy rain falling.
,, ,, ,,	8·30 P.M.	·472	95	ENE	6	Overcast. Breeze variable and sea moderating.

The rainfall at Jask during the storm was 1·16 inches. The observer adds:—"The storms apparently extended inland to a considerable distance as all rivers between Jask and Charbar are in heavy flood. Many native craft were wrecked on the coast east of Jask, and great damage has been done to property inland."

The data appear to indicate that the centre of the storm passed to the west of Muscat and Jask. The storm marched slowly northwards during the next 24 hours and advanced across the West Mekran Coast on the morning of the 4th and broke up during the day against the hills to the north of the Mekran Coast to which it gave a heavy downpour of rain.

The storm formed in the usual manner in front of the first great advance of monsoon winds up the western half

of the Arabian Sea and was in several respects similar to the corresponding storm of June 9th and 10th last year. It, however, formed further to the east than that storm and advanced by a much longer track across the sea, and hence developed into a larger and more severe storm than that of June 1897.

The following gives the position of the centre and rate of its advance from the 31st May to the 4th June:—

Date.	Position of centre at 8 A.M.				Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.		Long. E.			
	°	′	°	′	Miles.	Miles.
31st May .	11	30	59	30	...	.....
1st June .	13	30	58	45	145	6
2nd " .	17	0	58	0	260	11
3rd " .	23	30	58	0	455	19
4th " .	24	15	58	0	50	2

Series of thunderstorms occurred on the 1st and 2nd in Bengal. They gave moderate to heavy rain over the greater part of that area. Weather was fine and dry over the remainder of India.

Pressure gave way over nearly the whole of India during the next four days, very rapidly on the 4th and slightly to briskly on the 3rd, 5th and 6th. The following gives data showing the amount of this fall and the variations from the normal at the end of this period:—

Province or Division.	Average, 8 A.M. pressure 2nd June.	Average 8 A.M. pressure 6th June.	Change of average 8 A.M. pressure from 2nd to 6th June.	Variation of mean pressure from normal at 8 A.M. on the 6th June.
	"	"	"	"
Bengal	29·695	29·541	—·154	—·055
Assam	·757	·576	—·181	—·067
Bihar	·705	·511	—·194	—·050
Chota Nagpur	·660	·485	—·175	—·066
North-Western Provinces and Oudh.	·676	·463	—·213	—·070
Punjab	·640	·382	—·258	—·105
Rajputana	·692	·504	—·188	—·060
Central India	·712	·510	—·202	— 057
Central Provinces	·665	·480	—·185	—·080
Berar	·697	·534	—·163	—·062
Bombay	·783	·699	—·084	—·018
Madras	·733	·676	—·057	—·012
Mysore	·786	·714	—·072	—·035

Pressure was hence in general defect on the 6th and the deficiency was large, exceeding a tenth of an inch, in a part of Burma and in the Punjab.

The pressure observations taken at the west coast stations during the next four days indicate that a feeble low pressure wave advanced northwards along the coast during this period similar in character to those which usually accompany the advance of the monsoon up the west coast but much feebler than usual.

Burma and Southern India received moderate rain from series of thunderstorms on the 3rd, 4th, 5th and 6th. The rainfall was heaviest on the 3rd and 6th in Southern India, and on the 5th and 6th in Burma.

The continuous fall of pressure during this period established ordinary monsoon pressure conditions and gradients in India, and pressure on the 7th was four-tenths of an inch lower in the Punjab than in Ceylon.

Pressure increased to a moderate extent on the 7th and 8th, but without altering the conditions established by the changes of the previous four days. Moderate rain continued in Burma and the rainfall increased in amount on the Malabar Coast on the 7th, and extended to the Konkan Coast on the 8th. The rainfall increased in amount on the 9th and extended eastwards into the North Deccan and Central Provinces which received light showers accompanying duststorms and thunderstorms, such as usually occur in front of the advancing humid monsoon winds in the interior of India. The rainfall in the west coast districts was very heavy on the 10th, indicating that the monsoon was fully established on that coast. Rainfall in the interior extended into Central India and the western districts of the North-Western Provinces and the South-East Punjab during the 24 hours preceding 8 A.M. of the 10th, weather being disturbed in these districts with numerous thunderstorms and duststorms.

The preceding discussion has established that the advance of the monsoon current over the Arabian Sea was accompanied by the formation of a cyclonic storm, apparently of large extent and of considerable intensity. The storm was generated about a week earlier than that which occurred during the advance of the monsoon in June 1897, and in the centre instead of the west of the sea area. Weather was very stormy from the 1st to the 3rd in the western half of the Arabian Sea, and winds of force 8 to 10 were experienced by vessels between Bombay and Socotra. The breaking up of the storm in the Gulf of Oman, South-East Persia and Baluchistan was followed by a short period of lighter monsoon winds than usual from the 5th to the 8th. The monsoon winds in the Arabian Sea strengthened considerably again on the 9th, and were of normal intensity from the 9th to the 13th. They increased on the 14th and 16th, on which day they were of average force 5·3, the normal force for the whole sea being 4·5. They fell off on the 17th, and the monsoon current was of normal strength again from that date to the 19th.

The following gives the mean force of the winds and

hence an approximate estimate of the strength of the monsoon current in the Arabian Sea from the 8th to the 19th:—

Date.	Force of wind.	Date.	Force of wind.
8th June	3·8	14th June	4·9
9th "	4·4	15th "	4·8
10th "	4·6	16th "	5·3
11th "	4·5	17th "	4·5
12th "	4·4	18th "	4·5
13th "	4·4	19th "	4·3

During the whole of this period heavy rain fell steadily in the west coast districts and the West Ghats, and light to moderate rain in the North-Western Provinces, Rajputana, Central India, the Central Provinces, Berar and the North Deccan.

The monsoon current advanced up the Bay in the second week of the month, and, as usual, its establishment in the north of the Bay was accompanied by the formation of a storm. This storm advanced along a northerly track through West Bengal to North Bengal, and gave a very heavy burst of rain, the commencement of the monsoon rains in North-Eastern India. The following gives a history of this storm.

Cyclonic storm of the 12th to the 19th June.—This storm originated in the north-west of the Bay during the establishment of the monsoon, current in the north of the Bay. On the 9th and 10th, prior to the formation of the storm, moderate to strong south-west to west-south-west winds prevailed over the south of the Bay. Light winds (force 1 to 4) obtained in the north and north-west of the Bay, where weather was cloudy and showery. Conditions were unchanged generally on the 11th except that winds were increasing off the Arakan Coast and weather was squally. On the 12th the first indications were shown by the wind directions of a tendency to the establishment of a cyclonic circulation. The following gives data:—

Name of Vessel.	8 A.M. Position.		Barometer corrected.	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Shahjehan*	16 13	91 56	29·621	SW	...	Squally and rainy.
S.S. *Meanatchy* .	17 33	92 04	·627	SE	5	Moderate sea and passing clouds. 4 P.M. frequent heavy squalls of wind and rain.
S.S. *Wanderer* .	18 06	87 02	?	Var.	2	Squally.
S.S. *Malda* . .	19 52	89 19	·586	SE	4	Heavy S. W. swell and fine.
F. L. V. *Hesperus* .	Ridge.		·590	ESE	2	High S.E. swell.
F. L. V. *Torch* .	Mutlah.		·584	ESE	3	Heavy quick S. swell, 4 P.M. passing rain squalls.
S.S. *Magician* .	Saugor.		?	NE	4	Fine.

Winds were easterly at False Point, northerly at Gopalpur and westerly at Cocanada. There was hence a marked tendency to the establishment of a cyclonic circulation, the centre of which at 8 A.M. was probably not far from the position of the S.S. *Wanderer*.

Weather was more disturbed and squally than on the previous day in the east of the Bay. The S.S. *Meanatchy* in that area had frequent heavy squalls during the afternoon. All the vessels in that part of the Bay reported occasional to frequent rain squalls.

13th June.—The pressure changes in India were very irregular. Pressure had given way briskly in the north-west of the Bay and a shallow closed depression was now shown in that area. The following gives 8 A.M. data taken from the logs of vessels in the north and centre of the Bay:—

Name of Vessel.	8 A.M. Position.		Barometer corrected.	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Shahjehan* .	12 58	93 17	29·711	SW	6	Overcast and squally appearance.
S.S. *Stolzenfels* .	18 04	85 03	·497	W	6 to 7	
S.S. *Ameer* . .	18 59	85 20	·481	N	...	Rain squalls all round.
S.S. *Mascotte* .	19 37	86 51	?	E	4	Cloudy. Noon showery.
S.S. *Kohinur* .	20 30	87 15	29·507	...	...	Passing showers.
F. L. V. *Hesperus* .	Ridge.		·540	ENE	3	
F. L. V. *Torch* .	Mutlah.		·529	ESE	4	Heavy quick S. swell. 4 P.M. passing rain showers.
S.S. *Karagola* .	21 22	90 31	·589	ESE	4	Overcast and moderate sea, 4 P.M. rainy.
S.S. *Caithness* .	Hooghly River.		·540	SE	2	Fine. 8 P.M. rain squalls.

Winds had strengthened considerably in the east and north-east of the Bay and were of force 4 to 6. Squally weather had extended northwards and now prevailed over the whole of the north of the Bay, and rain had commenced to fall in the Orissa and Ganjam coast districts. A cyclonic circulation of moderate intensity was now established in the north-west of the Bay, the centre of which at 8 A.M. was probably nearly midway between the position of the S.S *Mascotte* and *Stolzenfels* or in about Lat. 18° 30′N. and Long. 86°E.

The weather at the head of the Bay is described in the following terms by Captain Beahan of the F. L. V. *Torch*:—

"Squally unsettled weather with a sharp and rather heavy S. S.W. swell and moderate E.S.E. breeze. Noon, wind increasing, swell more heavy; 4 P.M., fresh E.S.E. breeze and high cross S.E. and S.S.W. swell with passing rain showers. During the night a strong S.E. breeze with occasional passin squa.ls."

The observer at Diamond Island describes the weather as follows:—

"2 to 8 P.M. weather monsoonish with occasional drizzle and smart showers, wind shifting between SSW, WSW, S and W. Sea smooth, but heavy swell seen through telescope in the neighbourhood of the Alguada Reef Light-house. Wind increased in velocity from 4·15 P.M. but not steadily, coming in occasional violent puffs. Sky completely overcast and heavy banks of clouds to the south-west and over the mainland in a north-east direction, *i.e.*, towards Bassein. Heavy nimbus clouds from the west-south-east passing over island towards the north-east. Greatest velocity of wind between 2 P.M. and 8 P.M. was at 5·10 P.M. when the anemometer registered 0·9 mile in three minutes, or 18 miles an hour. The anemograph (self-registering) belonging to the Tidal Observatory registered 18 miles between 5 P.M. and 6 P.M.

14th June.—Pressure had given way over the whole of India. The fall was largest in the storm area in the north-west of the Bay. The depression had hence intensified considerably, and pressure was at least two-tenths of an inch below the normal in the centre of the storm area. The following data show its character and position at 8 A.M.:—

Name of Vessel.	8 A.M. Position.		Barometer corrected.	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Ethopia* . .	16 00	93 47	29·631	SW	5	Moderate SW sea and cloudy. Noon occasional heavy rain.
S.S. *Mascotte* .	17 50	86 01	?	WSW	9	Continuous rain.
S.S. *Golconda*. .	18 36	86 14	29·347	S	6	Moderate sea and heavy clouds.
S.S. *Buldana* . .	False Point.		·390	SE	5	4 A.M. squally.
S.S. *Stolzenfels* .	20 25	87 45	...	ESE	6 to 7	
F. L. V. *Hesperus* .	Ridge.		·410	SE	4	Moderate SE sea and swell.
S.S. *Caithness* .	20 56	87 50	·440	SSE	6	Strong sea and cloudy. Noon, heavy squalls.
F. L. V. *Torch* .	Mutlah.		·447	SE	5	Heavy S. sea. 4 P.M. squally.

Winds had increased very rapidly in the north of the Bay and were now of force 8 to 10 in the central storm area. The centre of the storm at 8 A.M. was probably about 80 miles to the north of the position of the S.S. *Mascotte*, in about Lat. 18°50′ N., and Long. 86°E. The following gives the weather experienced by the S.S. *Golconda* and *Mascotte* which were near the centre at 8 A.M.:—

Hour.	Name of Vessel.	Position.		Barometer corrected.	Wind.		Weather.
		Lat. N.	Long. E.		Direction.	Force.	
		°	°	″			
4 A.M. .	SS *Mascotte*	...	...	...	SW	9	High sea.
8 ,, .	,, .	17 50	86 01	...	WSW	9	Continuous rain.
Noon .	,, .	17 35	85 55	...	W by S	10	Fierce squalls and high sea.
4 P.M. .	,, .	...	...	...	SW	8	Wind and sea moderating.
8 ,, .	,, .	...	...	...	Var.	7	Cloudy and high head sea.
Mid-night.	,, .	...	...	...	Var.	7	Cloudy and high head sea.
4 A.M. .	SS *Golconda*	...	...	...	SW	...	Fine and clear.
8 ,, .	,, .	18 36	86 14	29·347	S	6	Heavy clouds and moderate sea.
Noon .	,, .	19 05	86 48	...	S	4	Moderate sea and overcast.
4 P.M. .	,, .	...	...	...	SSE	4	Fine.
8 ,, .	,, .	...	...	...	SSE	4	Fine.
Mid-night.	,, .		...	...	SSE	4	Fine.

Captain Beahan describes the weather in the north-west angle of the Bay as follows:—

"8 A.M., rather heavy south and south-west cross sea, frequent passing rain squalls and a strong south-east breeze; 10 A.M. weather the same but heavy thunder; observed several rainbows to the south-west; 4 P.M., heavy cross sea from south-south-east, south and south-west. Weather squally. At sunset a finer appearance in the weather, a very red appearance in the sky from north-east round to south. During the night passing rain squalls, a strong south-south-east breeze rising to a gentle gale and sea heavy and confused."

Heavy rain had fallen in the Circars and moderate rain in Orissa and South Bengal. The following gives the heaviest falls in the Circars:—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 14th June.
		Inches.
VIZAGAPATAM . . .	Balacheruvu . . .	6·98
,, . . .	Polavaram . . .	6·61
,, . . .	Malakanagiri . .	6·18
,, . . .	Yellamanchili . . .	5·60
GANJAM	Purushottapur . . .	6·35

The following gives the observations recorded at Gopalpur on the 14th:—

Hour.	Barometer reduced to sea level and constant gravity.	Relative humidity.	Wind.		Cloud amount.	Weather.
			Direction.	Velocity in miles per hour during previous interval.		
	″	%				
8 A.M. . .	29·315	87	NNW	14	5	Squally, passing showers.
2 P.M. . .	29·213	91	NW	17	8	Wind variable.
8 P.M. . .	29·294	91	WSW	13	10	Overcast with rain.

The storm centre was probably nearest and to the east of Gopalpur about 3 P.M.

A careful series of hourly observations were taken by the observer at Puri during the storm. The following gives those for the afternoon of the 14th :—

HOUR.	Barometer reduced to sea-level and constant gravity.	Relative humidity.	WIND. Direction.	WIND. Velocity in miles per hour.	Cloud.	WEATHER.
	"	%				
1 P.M. . .	29·264	86	ESE	Averaged 21 Miles per hour: between 2 P.M. and 8 P.M.	7	
2 „ . .	·222	84	ESE		7	Passing clouds.
3 „ . .	·200	86	ESE		6	Threatening.
4 „ . .	·200	88	ESE		7	
5 „ . .	·194	90	ESE		7	Passing clouds.
6 „ . .	·218	88	S		6	
7 „ . .	·236	89	Calm.		7	Drizzling.
8 „ . .	·262	89	SW		7	Stormy to east, distant lightning.
9 „ . .	·272	91	SW		3	Heavy bank of rain clouds to south-west.
10 „ . .	·286	85	SW		7	Drizzling.

These observations indicate that the storm centre passed near or over Puri between 6 P.M. and 7 P.M. of this day.

15th June.—Pressure had changed very irregularly in India. It had given way briskly in Orissa and South-West Bengal. The central depression at 8 A.M. lay over Orissa, as is shown by the following data :—

STATION.	PRESSURE. 8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	PRESSURE. Change in past 24 hours.	PRESSURE. Variation from normal.	WIND. Direction at 8 A.M.	WIND. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	WEATHER
	"	"	"				Inch.	
Puri .	29·309	—·025	..	W	25	10	0·37	Passing showers
False Point	·302	—·094	—·226	SW	16	10	0·47	Showery.
Shortt's Island.	?	—·079	?	SSW	14	9	0·45	
Burdwan .	·411	—·062	—·087	E	1	10	0·20	Showery.
Calcutta .	·400	—·072	—·100	ESE	6	8	0·62	Showery.
Saugor Island.	·359	—·076	—·142	SE	19	10	0·11	Sea slight.
Chaibassa .	·358	—·089	?	NNE	14	7	0·06	Showery.

The centre at 8 A.M. was a little to the north-west of False Point in about Lat. 21° N. and Long. 87° E. Assuming that it had passed over or near Puri at about 6 P.M. of the 14th, it had advanced about 120 miles in the interval between that hour and 8 A.M. of the 15th. Pressure was about a quarter of an inch below the normal in the centre, and the depression was hence of moderate intensity.

Strong monsoon winds (force 2 to 7) now prevailed in the north of the Bay. The weather in the north-west angle is described as follows by Captain Beahan :—

"Commenced with a strong south-south-east breeze, passing rain squalls and confused south-south-east and south-south-west cross sea. 8 A.M., less wind, but otherwise weather and sea the same ; 10 A.M. more wind and sea ; 4 P.M., very much less wind but a heavy bank of cloud to the south, upper and lower clouds moving towards north. During the night a moderate south-south-west gale, with passing rain squalls and high confused sea."

Moderate to heavy rain had fallen in Orissa, and light to moderate rain in Bengal.

The following gives observations recorded at Saugor Island during the day :—

HOUR.	Barometer reduced to sea-level and constant gravity at Lat. 45°.	Relative humidity.	WIND. Direction.	WIND. Velocity in miles per hour during previous interval.	Cloud.	WEATHER.
	"	%				
2 A.M. . .	29·338	87	SE	20	8	Dark, gloomy.
8 „ . .	·359	83	SE	...	10	Sea slight.
2 P.M. . .	·309	74	SE	...	10	Drizzling with rain squals. all round; wind becoming slowy more southerly.
8 „ . .	·292	89	SSE	18	10	Dark, gloomy.

The observations indicate that the storm continued to advance in a northerly direction during the day.

16th June.—Pressure had risen briskly to rapidly in Orissa, the east of the Central Provinces and North Madras, and fallen briskly to rapidly in Bengal. The storm had advanced north-eastwards during the previous twenty-four hours, and was at 8 A.M. of this day central between Calcutta and Saugor Island. The following observations define its position at that hour :—

STATION.	PRESSURE. 8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	PRESSURE. Change in past 24 hours.	PRESSURE. Variation from normal.	WIND. Direction at 8 A.M.	WIND. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	WEATHER
	"	"	"				Inch.	
False Point .	29·388	+·086	—·134	W	16	10	0·82	
Saugor Island	29·275	—·084	—·228	SW	25	10	0·46	Sea very rough.
Calcutta .	·293	—·107	—·210	ENE	6	10	0·63	Showery.
Jessore .	·335	—·133	—·192	SE	8	9	0·51	

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Berhampore	·352	—·091	—·158	E	5	9	0·03	
Burdwan .	·328	—·083	—·171	Calm.	0	10	0·24	Showery.
Midnapur .	·319	—·057	—·187	N	5	10	2·51	Drizzling rain.
Balasore .	·335	+·001	—·153	Calm.	6	9	2·53	Showery.

The depression was unchanged in character and intensity. The centre was in about Lat. 22°N. and Long. 87°45′ E. or nearly midway between Saugor Island and Calcutta. Very strong cyclonic winds now prevailed in South Bengal.

Very strong monsoon winds (force 5 to 8) continued in the north of the Bay. Winds were, on the other hand, very light in the north-west quadrant, and Burdwan and Balasore reported calms at 8 A.M. Heavy rain had fallen in Orissa and South-West Bengal and light to moderate rain over the remainder of Bengal, and in Chota Nagpur and South Bihar. The following gives the largest amounts reported :—

DISTRICT.	Station.	Rainfall during 24 hours preceding 8 A.M. of 16th June.
		Inches.
CHITTAGONG . . .	Kodala	4·75
BANKURA	Onda	3·14
MYMENSINGH . . .	Subarnakhali . . .	3·11
MIDNAPUR	Midnapur	3·00
CUTTACK	Banki	3·35
BALASORE	Balasore	3·20

Conditions were unchanged over the Bay, where steady strong monsoon winds continued. Captain Beahan describes the weather in the north-west angle of the Bay as follows :—

"Commenced with a fresh south-south-west gale, passing rain squalls and high cross confused sea ; 8 A.M., very much less wind but no difference in the sea, sky overcast with heavy P.k , P.c., and P. clouds ; 10 A.M., a fresh west-south-west gale with a high cross sea ; 4 P.M., a fresh west-south-west gale, high confused south and west-south-west sea and very heavy passing rain squalls. During the night wind and weather the same, much lightning between south-west and west with heavy thunder, and P.k. clouds moving towards north."

17th June.—The cyclonic storm had shifted slightly northwards and the changes of pressure were hence small in amount. The centre was to the north of Calcutta at 8 A.M. in about Lat. 23°20′ N. and Long. 88°20′ E. The following 8 A.M. observations indicate the position and character of the storm at that hour :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"					Inches	
Saugor Island	29·358	+·083	—·153	SW	38	10	0·18	Sea very rough.
Calcutta .	·352	+·059	—·160	SSW	8	10	0·19	Showery.
Jessore .	·353	+·018	—·182	Calm.	4	9	0·64	
Berhampore	·315	—·037	—·202	S	4	10	0·73	Showery.
Malda .	·335	—·047	?	NE	5	8	0·10	
Naya Dumka	·318	—·037	—·176	ENE	4	10	1·41	Dark, gloomy.
Raniganj .	·265	—·070	?	NE	3	10	3·83	Drizzling rain.
Bankura .	·250	—·051	?	Calm.	4	10	6·45	Raining.
Burdwan .	·290	—·038	—·216	Calm.	1	10	2·20	Thunder-storm.

The depression at the centre of the storm was practically unchanged, being between a quarter and a fifth of an inch in amount.

The contrast between the strength of the winds in the south-east and north-west quadrants was as marked as on the previous day. For example, the average wind velocity at Saugor Island during the previous 24 hours was 38 miles per hour and at Burdwan was only one mile per hour. South-west winds force 4 to 8 with occasional squalls prevailed in the north-west angle of the Bay. Very heavy rain had fallen in Chota Nagpur and South-West Bengal. The following gives some of the more noteworthy falls :—

DISTRICT.	Station.	Rainfall during 24 hours preceding 8 A.M. of 17th June.
		Inches.
BANKURA	Onda	8·30
"	Bankura	6·45
CHITTAGONG . . .	Kutubdia	7·45
"	Satkanya	7·45
"	Kodala	6·70
"	Fenoa	6·05
HAZARIBAGH . . .	Chatra	12·39
SINGHBHUM . . .	Kalikapur	7·94
"	Ghatsila	6·28
MANBHUM	Barahbhum . . .	7·22

Light to moderate rain had been received during the previous 24 hours in North Bengal and Bihar.

18th June.—The storm had continued to advance northwards and was in Central Bengal, as is shown by the following observations :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches	
Calcutta .	29·430	+·078	—·094	SW	14	10	0·06	
Jessore .	·414	+·061	—·135	WSW	3	9	0·31	
Mymensingh	·449	+·058	—·130	ESE	5	9	1·75	Showery.
Rungpur .	·398	—·010	—·168	E	4	4	1·42	Passing showers.
Bogra .	·364	—·004	?	...	...	10	1·42	Raining.
Rampur Boalia.	·308	—·017	—·218	SSW	13	10	0·72	Drizzling.
Dinajpur .	·348	—·033	—·198	E	13	10	0·37	
Malda .	·286	—·049	?	NNE	5	10	0·62	Threatening.
Bhagalpur .	·351	+·004	—·153	NE	6	10	0·36	Passing showers.
Naya Dumka.	...	...	...	WNW	2	10	1·85	
Burdwan .	·380	+·090	—·140	SW	5	10	3·10	Continuous rain for upwards of 12 hours.

Pressure was, as on the previous day, slightly more than a fifth of an inch below the normal in the central area. The centre at 8 A.M. was probably near Malda in about Lat. 24¼° N. and Long. 88¼° E. Very heavy rain had fallen during the previous 24 hours in Chota Nagpur and Central Bengal, moderate rain in North Bengal, and light rain in South Bengal. Practically none had fallen in Orissa. The most noteworthy falls were as follows :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 18th June.
		Inches.
BANKURA	Bankura	12·48
"	Khatra	10·27
"	Gangajalghati . . .	9·46
"	Sonamukhi . . .	7·15
BURDWAN	Mankur	7·15
CHITTAGONG . . .	Kodala	10·20
"	Fenoa . . .	9·51
CHITTAGONG HILL TRACTS .	Bandarban	7·31
BACKERGUNGE . . .	Patnakhali . . .	8·50
"	Bhola	7·40
NOAKHALI	Noakhali	7·64
MANBHUM	Purulia	17·27
"	Jhalda	12·88
"	Barabhum	9·69
LOHARDAGA	Silli	9·30

19th June.—The storm had continued to drift slowly northwards, and lay over North Bengal at 8 A.M., the centre being a little to the south of Dinajpur. The following observations define its position and character at that hour :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches	
Burdwan .	29·434	+·054	—·097	SW	4	10	4·01	Continuous rain.
Berhampore	·378	+·050	—·162	SW	25	10	7·97	Heavy rain.
Jessore .	·438	+·024	—·123	SW	4	10	0·38	
Mymensingh	·427	—·022	—·164	SSE	7	10	2·25	Drizzling.
Rungpur .	·347	—·051	—·228	E	7	10	2·64	
Bogra .	·334	—·030	?	...	...	10	3·77	Showery.
Dinajpur .	·312	—·036	—·242	ENE	11	10	1·18	
Malda .	·329	+·043	?	WNW	6	10	0·20	Overcast.
Naya Dumka	·412	+·073	?	WNW	3	10	3·50	Dark, gloomy.

The depression in the central area was unchanged in amount. Very strong cyclonic winds now prevailed over South and Central Bengal, and light winds to the north and west of the central depression. The mean wind velocity at Saugor Island during the previous 24 hours was 37 miles and at Berhampore 25 miles per hour.

Very heavy rain had fallen over North and Central Bengal, and light to moderate rain in Bihar, Chota Nagpur and South Bengal. The following gives the more remarkable falls of the previous 24 hours :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 19th June.
		Inches.
MURSHIDABAD . . .	Kandi	11·52
"	Lalbagh	9·89
"	Azimganj	8·25
"	Berhampore . . .	7·97
BIRBHUM	Rampur Hat . . .	9·64
"	Suri	7·15
BURDWAN	Mankur	7·31
NOAKHALI	Harishpur	7·31

20th June.—The storm had advanced to the foot of the Sikkim Hills, and was well defined as a cyclonic circulation, although no longer represented as a closed area in the chart of the day. The centre was a little to the south-west of Dhubri, as indicated by the following observations:—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches.	
Begra	29·428	+·094	?	...	...	10	1·96	Raining.
Mymensingh	·426	−·001	−·178	SSW	6	10	3·45	"
Rungpur	·420	+·073	−·165	W	7	10	3·14	"
Dhubri	·354	−·047	−·231	ENE	22	10	2·24	Continuous rain.
Jalpaiguri	·398	−·008	−·194	NNW	3	7	1·48	Showery.
Dinajpur	·406	+·094	−·159	W	12	10	4·53	Continuous rain for upwards of 12 hours.

The depression in the central area was slightly less than on the previous day, and the cyclonic circulation in the storm area was as vigorous as hitherto.

Rain had fallen over the same area in North-Eastern India as on the previous day, and was very heavy in North and Central Bengal. The following gives the more noteworthy falls during the previous 24 hours:—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 20th June.
		Inches.
Chittagong Hill Tracts	Bandarban	7·98
Chittagong	Satkanya	7·37
Dinajpur	Raiganj	7·06
Cooch Behar	Dinhatta	6·09
Rajshahi	Manda	5·83
Purnea	Kaliaganj	6·30
Malda	Chanchal	5·49

The storm broke up during the next 24 hours, but heavy rain continued to fall for some days in North and East Bengal. The following gives the more noteworthy falls on the 21st and 22nd:—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Mymensingh	Durgapur	21st June	8·70
"	Diwanganj	"	8·32
Chittagong	Cox's Bazar	"	8·60
Cooch Behar	Dinhatta	"	7·50
Jalpaiguri	Jalpaiguri	"	6·08
Cooch Behar	Cooch Behar	"	6·00
"	Matabhanga	"	6·01
"	Fulbari	"	5·15
Tippera	Laksam	22nd	7·10
Cooch Behar	Matabhanga	"	5·91
"	Fulbari	"	5·45

The storm formed in the usual manner in front of the advancing monsoon in the north-west of the Bay. It followed an unusual course, and also advanced very slowly and was unchanged in character during its advance through Bengal quite up to the foot of the hills. In the latter feature it was almost unique.

The following gives the position of the storm centre at 8 A.M. from the 13th to the 20th:—

Date.	Position of centre at 8 A.M.		Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.	Long. E.		
	° ′	° ′	Miles.	Miles.
13th June	18 30	86 0	...	...
14th "	18 50	86 10	30	1
15th "	21 5	87 0	175	7
16th "	22 0	87 45	90	4
17th "	23 20	88 20	100	4
18th "	24 20	88 20	70	3
19th "	25 0	88 30	50	2
20th "	25 45	89 25	75	3

Another noteworthy feature of the storm (related to its slow motion) was the heavy rainfall which accompanied its

progress through Bengal. The following gives a summary of the rainfall data for the period 14th to the 21st :—

Division.	Average actual rainfall during 24 hours preceding 8 A.M. of								Total of period, 14th to 21st June.
	14th June.	15th June.	16th June.	17th June.	18th June.	19th June.	20th June.	21st June.	
	Inch.	Inch.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
South-West Bengal.	0·09	0·23	0·47	1·53	1·95	2·36	0·39	0·09	7·11
East Bengal .	0·17	0·45	0·68	1·83	3·09	2·43	1·62	1·61	11·88
North „ .	0·27	0·55	0·37	0·52	1·09	1·62	2·91	2·36	9·69
North Bihar.	0·54	0·03	0·05	0·11	0·32	0·70	1·05	0·39	3·19
South „ .	0·28	0	0·10	0·35	0·50	0·52	0·36	0·12	2·23
Chota-Nagpur	0	0·16	0·53	2·99	3·88	1·23	0·14	0·04	8·97
Orissa . .	0·42	0·90	1·27	0·19	0·13	0·37	0·01	0	3·29

The pressure conditions in Northern India established on the breaking up of the storm were as noteworthy as the storm itself.

Pressure had increased during the previous three or four days in the Peninsula, and had fallen somewhat irregularly in Northern India, more especially the submontane districts. The recovery of pressure in North Bengal was also very slow, and hence on the 21st and following days pressure was very low and in considerable to large defect in the North Gangetic Plain, and was in slight to moderate excess in the Peninsula.

The following gives the greatest deficiency in North-Eastern India, and the greatest excess in the Peninsula from the 21st to the 24th :—

Date.	Greatest defect of pressure in N. E. India.		Greatest excess of pressure in the Deccan.	
	Station.	Variation from normal.	Station.	Variation from normal.
21st June .	Jalpaiguri .	—·215	Calicut . .	+·071
	Gorakhpur	—·209	Salem . .	+·060
22nd „ .	Darbhanga .	—·198	Bombay . .	+·070
	Jalpaiguri .	—·189	Ratnagiri . .	+·068
23rd „	Sibsagar . .	—·181	Bombay .	+·046
	Darbhanga .	—·129	Ratnagiri . .	+·044

There were hence total abnormal gradients on the 21st and 22nd amounting to over a quarter of an inch between Western and North-Eastern India. Abnormally strong westerly winds hence prevailed over the whole of Northern and Central India and the Deccan. These strong winds were associated with an almost entire absence of rain. The break in the rains accompanying them commenced in Rajputana on the 19th, and extended to Central India and the North-Western Province, and the North Deccan on the 21st. Light showers continued in the west coast districts, and moderate rain in Bengal until the 24th.

An almost complete break in the rains obtained in India during the next three days. Pressure gave way rapidly in North-Western India on the 27th and 28th, and the trough of low pressure shifted southwards (more especially its eastern extremity) to its normal position. Rain recommenced in the west coast districts and the Deccan on the 28th, and extended into the interior of Northern India on the 29th, and light to moderate rain fell on the 30th over the greater part of Northern and Central India and the Central Provinces. Normal monsoon conditions were hence again established, and a slight depression was in process of formation in the north-west angle of the Bay on the 30th.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-west of India.

No reports of snowfall have been received for the month, thus indicating that there has been no general fall in any part of the North-Western Himalayas or on the Afghan mountains.

Summary of Special Storm Reports.

As stated in the pressure section one cyclonic storm formed during the month in the Bay. The special storm observations taken by certain observers during the passage of the storm across their stations have been utilized in the history of the storm given in the pressure section. A number of local disturbances also occurred during the month, of which reports have been received from various observing stations, and the principal facts with reference to them are detailed below. The majority of these local disturbances were duststorms and thunder-

storms, such as almost invariably accompany the advance and establishment of the south-west monsoon over the drier districts of Northern and Central India.

1st.—Duststorm at Delhi from the west-south-west at 7 P.M.

Nor'wester at Gopalpur at 4 P.M.

Violent duststorm at Jacobabad from the south-west at 7-30 P.M.

Violent duststorm at Lahore from the north-west at 10 P.M.

Thunderstorm at Salem from 4-45 P.M. to 5-10 P.M.

2nd.—Thunderstorm at Poona at 3-20 P.M. and again at 4-30 P.M. The storms came down from the north-east.

Duststorm at Raipur from 3-30 P.M. to 4-20 P.M. Temperature fell from 105° at 3-30 P.M. to 91° at 3-55 P.M. 4·8 miles of wind were registered by the anemometer between 3-50 P.M. and 3-55 P.M.

Thunderstorm with hail at Simla between 3 A.M. and 4 A.M.

4th.—Duststorm at Allahabad from the east-north-east. The storm lasted from 6 P.M. to 7-30 P.M.

5th.—Duststorm at Raipur during the evening.

Duststorm at Saugor between 8-40 A.M. and 9-20 A.M.

7th.—Severe thunderstorm at Mussooree between 7-45 P.M. and 8-10 P.M. The storm came down from the north-west.

Severe thunderstorm at Poona (5-10 P.M. to 6-40 P.M.)

Severe duststorm at Raipur during the evening which is stated to have caused much destruction of property.

Thunderstorm at Simla from 5-50 P.M. to 7 P.M. The storm came from the north-west.

8th.—Thunderstorm at Belgaum at 4 P.M. A flash of lightning is stated to have set fire to a stable filled with hay.

Thunderstorm at Jubbulpore from the north-west. The greatest velocity of the wind during the storm was 46 miles per hour.

Thunderstorm at Poona from 5-53 P.M. to 6-23 P.M.

Duststorm at Raipur followed by heavy rain.

Thunderstorm at Simla from 11-12 P.M. to 11-40 P.M. The storm came from the west.

9th.—Duststorm with thunder at Khandwa at 3 P.M.

Thunderstorm at Simla from 5-45 P.M. to 6-50 P.M. The total amount of wind during the storm recorded by the anemograph was only three miles. The storm came from the west.

10th.—Thunderstorm at Allahabad from 3-30 P.M. to 5-30 P.M. The storm came down from the south-west.

11th.—Thunderstorm at Simla from 2-30 A.M. to 5 A.M. The storm came down from the west.

Duststorm at Deesa.

12th.—Thunderstorm at Allahabad from 2-15 P.M. to 5-30 P.M. The strongest winds recorded blew with a velocity of 38 miles per hour as given by a Dines's Pressure Tube anemometer.

Duststorm at Jodhpur from 6-48 P.M. to 7 P.M.

Thunderstorm at Lahore from 6-10 A.M. to 6-50 A.M.

Thunderstorm at Simla at noon. The storm came from the north-west.

13th.—Duststorm at Ajmere at 2-45 P.M. The storm came from the south.

Duststorm at Allahabad from 6-15 P.M. to 7-30 P.M. The storm came from the north-east and was followed by very heavy rain. A total of 1·96 inches fell in less than an hour, of which 1·30 inches fell in less than half an hour. Pressure increased from 29·308″ at 6-15 P.M. to 29·364″ at 6-30 P.M. and temperature fell from 93°·5 to 81°·0 in the same interval.

Duststorm at Jodhpur at 5-7 P.M. The storm came from the south-east.

Duststorm at Pachpadra between 7-10 P.M. and 7-30 P.M. The storm came down from the south-east.

Thunderstorm at Simla between 1-15 A.M. and 2-30 A.M. The storm came from the west.

14th.—Thunderstorm with slight hail at Jeypore between 5 P.M. and 5-20 P.M.

Thunderstorm at Simla from 8-10 A.M. to 9 A.M. and again from 9-30 A.M. to 10 A.M.

15th.—Duststorm at Jeypore from 8-25 A.M. to 8-45 A.M.

17th.—Duststorm at Jodhpur at 5-18 P.M.

Thunderstorm of moderate severity at Allahabad from 3 P.M. to 4 P.M.

18th.—Severe thunderstorm with heavy rain at Rampur Boalia during the night.

19th.—Duststorm at Allahabad from 4-20 P.M. to 4-40 P.M. and thunderstorm from 8 P.M. to 8-30 P.M.

Duststorm at Cawnpore from 4-45 P.M. to 5-10 P.M. Many trees were uprooted during the storm.

20th.—Waterspout at Akyab at 7-30 A.M.

Severe duststorm at Allahabad from 7-35 P.M. to 8-20 P.M. The greatest velocity of the

wind in the gusts was nearly 50 miles an hour. The storm came from the north-west.

Duststorm at Cawnpore from 5 P.M. to 5-30 P.M.

21st.—Thunderstorm with small hail at Simla from 5-45 P.M. to 6-15 P.M.

Thunderstorm at Delhi at 10 P.M.

22nd.—Thunderstorm at Rampur Bolia at 9-15 P.M. The storm came from the west.

Severe nor'wester at Mymensingh at 5-45 A.M.

23rd.—Severe nor'wester at Burdwan from midnight to 0-20 A.M. Many trees were blown down by the strong winds.

Severe thunderstorm at Simla from 6-25 P.M. to 7 P.M. The storm came from the west.

24th.—Thunderstorm at Allahabad from 2-30 P.M. to 8 P.M. Temperature fell from 100° at noon to 79°·3 at 7 P.M.

Thunderstorm at Simla from 7-45 P.M. to 9 P.M. The storm came from the west-north-west. Winds were very light during the storm.

25th.—Duststorm from the north-west at Jubbulpore.

28th.—Severe duststorm at Allahabad. Pressure fell from 29·173″ at 4 P.M. to 29·156″ at 6 P.M., and increased suddenly as the storm came on to 29·240″ (at 6-55 P.M.). The wind previous to the advance of the storm was blowing at the rate of two miles per hour. The velocity of the first gust was 32 miles per hour, when the wind changed from west to east. The sky to the east-north-east as the storm approached was of a red brown colour. Temperature decreased on the approach of the storm from 104° to 91°. No rain fell at Allahabad during the storm.

29th.—Thunderstorm at Simla from 6 P.M. to 8 P.M. Winds were remarkably light during the storm. Only 14 miles were recorded during the interval from 6 P.M. to 9 P.M. The rainfall during the storm amounted to 2·15 inches.

Brief Summary of the Weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—At the commencement of the month weather was very disturbed with winds of force 3 to 7, heavy rain squalls and a moderate to rough sea over the centre and west of the Arabian Sea in front of the advancing monsoon current, and a storm was in process of development in that area. Along the India coast, on the other hand, weather was fine with light to fresh winds of indraught to the land area. In the Gulf of Oman the winds were variable in direction and light in force. The mean strength of the air movement over the whole of the Arabian Sea was 4·2 or 0·3 below the normal. The storm apparently intensified rapidly during the day and marched in a northerly direction towards the Gulf of Oman. There were no vessels in the north-west and north of the sea on the 2nd and it is hence not possible to determine with certainty the character of the storm on that day. The only evidence of its continued existence on the 3rd is afforded by the observations taken at Jask and Muscat which experienced heavy cyclonic weather on these days. The only vessel in the Gulf of Oman was the *Simla*. She experienced easterly gales force 9 and a high sea in Lat. 26°N. and Long. 57°E. at 8 A. M. of the 3rd. The storm was, so far as can be judged from the scanty information available, a severe disturbance, and inflicted great loss on shipping in the Gulf of Oman and to property on the neighbouring coasts. The strongest winds actually experienced by vessels in the southern quadrant on the 2nd were of force 10, and more than one vessel reported frequent squalls of hurricane force. The mean intensity of the air movement for all parts of the Arabian Sea was 5·2 on the 2nd and 4·3 on the 3rd. With the north-ward advance of the storm weather moderated rapidly and was on the morning of the 3rd fine with clouded skies over the whole of the Arabian Sea except to the south-west of Socotra, where the S. S. *Canara* experienced hard squalls, and off the Malabar coast where it was more or less showery and squally. Winds continued to decrease during the next 48 hours and averaged 3·6 in force at 8 A. M. of the 5th. Weather was showery on this day in the neighbourhood of the Malabar coast and fine over the remainder of the sea. No important change occurred during the next three days. Winds increased rapidly in force on the 8th, more especially in the south and weather became more disturbed and rainy in the south-east than during the previous three days. Winds increased further in strength on the 9th and the wave of squally weather in the south-east of the sea intensified and extended rapidly northwards up the coast, so that on the morning of the 10th heavy squalls and much rain prevailed over the east and centre of the sea as far north as Lat. 17°N. and on the morning of the 11th as far as Lat. 21° or 22° N. Strongly marked monsoon conditions were hence established over the whole of the Arabian Sea on the 12th, at 8 A.M. of which day the average strength of the current was 4·4. A moderate to strong monsoon continued to prevail generally over the Arabian Sea during the next seven days. The strongest winds during this period from the 13th to the 19th were of force 10 and the mean wind force

for the whole area fluctuated between 4·3 and 5·3. The current took off slightly on the 20th and was of normal strength or slightly weaker than usual until the 25th when a further decrease occurred in its intensity. Winds were very feeble from the 26th to the 29th. They were feeblest during this period on the 27th when their average strength was only 2·8 or 1·7 below the normal. They, however, began to strengthen again during the 29th and were blowing with an average force of 4·3 at the close of the month. Winds were, it may be noted, slightly more westerly than usual in June in the centre and east of the sea during the last ten or eleven days of the month.

Bay of Bengal.—At the beginning of the month pressure was very uniform over the greater part of the Bay, and winds over that area were hence light and irregular, except in the neighbourhood of the coast where ordinary winds of indraught to the heated land area prevailed. The mean intensity of the air movement as determined from the data of 22 vessels was 2·8 as compared with 4·0, the normal for the month. Weather was generally fine with a smooth to moderate sea. The pressure changes of the next 48 hours were such as tended to give moderate gradients over the Bay. The air movement hence increased on these two days, and on the morning of the 3rd was fairly normal both in direction and intensity. Steeper gradients than usual held over the Bay during the next five days, and the air movement was stronger than usual during this period. The winds were strongest on the 6th when they averaged 4·8 in force or 0·8 above the normal. Except near the coast where they were somewhat unsteady, being under the influence of the varying pressure conditions over the land, steady south-west or west-south-west winds obtained over the Bay throughout the period. They were strongest in the south where they ranged between 4 and 9 in force and lightest in the north where they varied between 2 and 4. Weather was fine with passing clouds and occasional squalls, more especially in the south-east. Winds fell off rapidly in the north of the Bay during the next 48 hours and became variable in direction. In the southern half of the Bay, on the other hand, winds from between west and south continued to prevail steadily. The mean force of the wind at 8 A.M. of the 11th was 3·6. Weather was disturbed on this day in the north-east of the Bay off the Arakan Coast and was fine over the remainder of the Bay. Weather became further unsettled in the east and north-east of the Bay during the day, but remained fine over the rest of the Bay. On the 12th winds were irregularly cyclonic in the north of the Bay and there was a tendency to the formation of a cyclonic storm in the north-west of the Bay off the Circars coast. It intensified during the day, and on the morning of the 13th a fairly regular cyclonic circulation was exhibited over the north of the Bay. The storm developed and began to march along a northerly course towards the Orissa Coast which it crossed on the 16th. Very disturbed weather was experienced over the northern half of the Bay from the 13th to the 17th, and fine weather with clouded skies over the southern half. The mean air movement during the existence of the storm over the Bay ranged between 4·2 and 5·6, and the strongest winds experienced in the storm area were of force 9. Strongly pronounced monsoon conditions obtained generally during the next six days. The current, however, began to show signs of weakness on the 25th and was only of moderate intensity during the remainder of the month, except in the extreme north of the Bay, where light variable airs obtained.

From the preceding account of the weather in the Indian Seas, it will be seen that the advance of the monsoon currents occurred about the normal date, both in the Arabian Sea and the Bay of Bengal, and that while the Bombay branch of the current was weaker than usual, the Bay branch was above its normal intensity.

Equatorial Belt.—There is no information for the eastern half of this area. In the western half, south-east trade winds of force 2 to 6 obtained steadily during the month, except for a short period from the 10th to the 13th when light and irregular airs were experienced.

Temperature of the Air.

The mean temperature conditions of the month were chiefly determined by the slight delay in the establishment of the south-west monsoon on the west coast, and by the rapid advance of the monsoon currents after their establishment in the coast districts to the Gangetic Plain and Central and Upper India, and by the break in the rains which prevailed during the period from the 20th to the 27th over the greater part of India.

The mean maximum temperature of the month was above the normal over the whole of Burma and India, with the exception of West and Central Bengal, Chota Nagpur, Bihar, the greater part of the North-Western Provinces, Kathiawar, the South Deccan and Mysore.

The local deficiency was more than 2° at Berhampore (—2·°3) and Bareilly (—2·°9).

The excess ranged between 2° and 8° over Upper India,

including Rajputana, Upper Sind, and the Punjab. It was more than 5° in the areas represented by the stations for which comparative data are given below:—

AREA.	STATION.	MEAN MAXIMUM TEMPERATURE.		
		Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
		°	°	°
UPPER SIND	Jacobabad	117·0	111·9	+5·1
NORTH AND WEST PUNJAB	Rawalpindi	110·4	102·7	+7·7
	Mooltan	112·0	106·7	+5·3
	Sialkot	110·8	105·6	+5·2
	Murree	87·1	82·0	+5·1

The excess was hence most pronounced in the North and West Punjab and Upper Sind.

The following gives the actual maximum temperature recorded at the hottest stations during the month:—

STATION.	Highest maximum temperature recorded in June 1898.	Date on which recorded.	Highest maximum temperature in June previous to 1898.	Year in which recorded.
	°		°	
Jacobabad	122·0	8th, 22nd and 23rd.	126·0	1897
Jodhpur	111·2	12th	121·3	1897
Hyderabad (Sind)	114·2	17th	121·2	1897
Mooltan	117·5	5th	121·0	1897
Montgomery	118·6	22nd	121·4	1890
Khushab	116·4	8th	120·4	1896 & 1897
Peshawar	117·5	29th	119·0	1880
Sialkot	117·0	7th	120·0	1876
Rawalpindi	117·0	28th	118·0	1880

The maximum temperatures were considerably lower than were registered in the extraordinary hot period of the second week of June 1897.

The mean minimum temperature of the month was above the normal over the whole of Burma and India, with the exception of South-West and Central Bengal, Orissa, the Circars and the eastern districts of the North-Western Provinces. The positive variations were largest in Rajputana, Upper Sind and the Punjab, where the night temperature was considerably to largely (2° to 6°) above the normal.

The following gives comparative data for the stations at which the excess was more than 3° in amount:—

AREA.	STATION.	MEAN MINIMUM TEMPERATURE.		
		Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
		°	°	°
PUNJAB	Rawalpindi	81·1	74·7	+6·4
	Mooltan	87·8	82·2	+5·6
	Lahore	85·5	79·9	+5·6
	Ludhiana	85·2	80·1	+5·1
	Sialkot	85·2	80·1	+5·1
	Sirsa	86·2	82·8	+3·4
	Montgomery	86·6	83·4	+3·2
RAJPUTANA	Bickaneer	86·4	82·5	+3·9
	Ajmere	83·3	80·0	+3·3
	Sambhar	84·8	81·6	+3·2
UPPER SIND	Jacobabad	86·9	83·5	+3·4

The mean temperature of the month was below the normal by small amounts in South and Central Bengal, Orissa, the Circars, Chota Nagpur, Bihar and the greater part of the North-Western Provinces. The deficiency was greatest at Berhampore (—1·°5) and Burdwan (—1·°4).

The mean temperature of the month was in excess over the remainder of India. The excess was more than 2° in amount in two areas. The first included a portion of the Deccan defined by the stations of Sholapur (+2·°4) and Hyderabad Deccan (+2·°3).

The second area included the Punjab, Upper Sind and Rajputana. The following gives comparative data for the stations in that area at which the mean temperature of the month was more than 3° above the normal:—

AREA.	STATION.	MEAN DAILY TEMPERATURE.		
		Actual, June 1898.	Normal, June.	Variation of actual from normal June 1898.
		°	°	°
UPPER SIND	Jacobabad	102·0	97·7	+4·3
RAJPUTANA	Bickaneer	97·8	94·2	+3·6
	Sambhar	95·0	91·6	+3·4
PUNJAB	Rawalpindi	95·8	88·7	+7·1
	Mooltan	99·9	94·4	+5·5
	Sialkot	98·0	92·8	+5·2
	Lahore	96·6	92·7	+3·9
	Peshawar	94·6	91·0	+3·6
	Ludhiana	96·6	93·0	+3·6
	Sirsa	97·8	94·7	+3·1

The temperature was almost as largely above the normal at the hill stations in Kashmir and the North Punjab as in the adjacent plains, as is shown below :—

STATION.	MEAN DAILY TEMPERATURE.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
	°	°	°
Murree	78·3	73·2	+5·1
Leh	62·1	58·6	+3·5
Srinagar	74·4	?	?

The mean temperature of the month was more than 95° in seven of the meteorological or rainfall divisions of the Empire. Data are given of those, the hottest districts of the month, and also of Upper Sind (represented by Jacobabad) :—

DIVISION.	MEAN ACTUAL TEMPERATURE, JUNE 1898.			
	Maximum.	Minimum.	Mean.	Daily range.
	°	°	°	°
Upper Sind	117·0	86·9	102·0	30·1
West Punjab	111·4	85·9	98·6	25·5
Central ,,	107·7	85·5	96·6	22·2
Submontane ,,	107·9	84·2	96·1	23·7
South ,,	106·8	84·9	95·9	21·9
South-East ,,	104·7	86·0	95·4	18·7
North ,,	110·2	80·2	95·2	30·0
West Rajputana	107·4	84·0	95·6	23·4

The following is a brief summary of the most important variations of the mean temperature conditions of the month from the normal in India :—

(1) The day and night temperatures were both slightly above the normal in Burma, Assam and North Bengal and hence also the mean temperature of the month. The excess was most marked in Central Burma.

(2) The day and night temperatures and hence also the mean temperature of the month were slightly higher than usual in the Peninsula. The variations were generally small and were greatest in the Central Deccan represented by Hyderabad and Sholapur where the variations of the mean temperature of the month were +2°·3 and +2°·4 respectively.

(3) The day and night temperatures and hence also the mean temperature of the month were below the normal in South and Central Bengal, Chota Nagpur, Bihar and the North-Western Provinces due over the greater part of the area to heavier rain than usual. The deficiency was greatest in Central and West Bengal where the mean temperature of the month was about 1°·5 below the normal.

(4) Both the day and night temperatures and hence also the mean temperature were in moderate to large excess in the Punjab, Upper Sind and Rajputana.

The excess was most pronounced in the North and Submontane Punjab, the mean temperature of the month being 7° above the normal at Rawalpindi and 5° at Murree and Sialkot.

The following table gives temperature data of the month for the 57 meteorological divisions of the Empire :—

PROVINCE.	DIVISION.	ACTUAL TEMPERATURE.					VARIATION FROM NORMAL OF		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
BURMA	Tenasserim	85·2	75·5	80·4	9·8	18·4	+0·4	+1·0	−0·6
	Lower Burma (Deltaic)	86·5	77·2	81·9	9·2	18·7	+0·4	+0·5	−0·1
	Central do.	92·1	77·0	84·5	15·1	26·0	+2·4	+1·2	+1·2
	Upper do.	92·6	77·2	84·9	15·4	26·4	+1·1	+1·0	+0·1
	Arakan	87·1	78·6	82·9	8·5	19·6	+1·2	+0·7	+0·5
BENGAL AND ASSAM	Eastern Bengal	88·0	77·2	82·6	10·8	21·8	+0·2	+0·4	−0·2
	Assam (Surma)	90·9	76·4	83·7	14·5	24·3	+2·2	+0·3	+1·9
	Do. (Brahmaputra)	88·0	76·2	82·1	11·8	24·4	+1·2	+0·5	+0·7
	Deltaic Bengal	91·4	78·7	85·1	12·7	24·8	−0·3	−0·5	+0·2
	Central do.	92·0	78·1	85·1	13·9	27·6	−1·2	−0·6	−0·6
	North do.	88·6	76·7	82·7	11·9	23·9	+0·5	+0·8	−0·3
	Bengal Hills	67·8	53·8	60·8	14·0	26·7	+1·5	+1·0	+0·5
	Orissa	92·1	80·3	86·2	11·8	24·9	+0·1	+0·2	−0·1
	Chota Nagpur	95·0	78·2	86·6	16·7	30·5	−0·8	+0·2	−1·0
	Bihar (South)	99·2	81·2	90·2	17·9	31·5	−0·1	+0·3	−0·4
	Do. (North)	93·1	78·6	85·9	14·5	28·2	−0·5	+0·5	−1·0

Province.	Division.	Actual Temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
North-Western Provinces and Oudh.	North-Western Provinces (East)	100·9	81·9	91·4	19·0	35·2	—0·9	—0·8	—0·1
	Oudh (South)	99·8	81·4	90·6	18·4	33·5	—1·7	—0·1	—1·6
	Do. (North)	97·6	79·4	88·4	18·2	35·0	?	?	?
	North-Western Provinces (Central)	103·4	83·9	93·7	19·4	36·0	+1·3	+1·2	+0·1
	Do. do. (West)	103·1	85·1	94·2	18·0	31·7	0	+2·3	—2·3
	Do. do. (Submontane, East)	101·5	79·6	90·6	21·9	33·9	?	?	?
	Do. do. (do. West)	96·6	78·9	87·7	17·7	33·8	—1·9	+1·0	—2·9
	Do. do. (Hills)	74·2	61·1	67·7	13·0	27·6	—1·7	+0·8	—2·5
Punjab	Punjab (South-East)	104·7	86·0	95·4	18·7	38·3	+0·4	+2·6	—2·2
	Do. (South)	106·8	84·9	95·9	21·9	42·3	+2·8	+3·4	—0·6
	Do. (Central)	107·7	85·5	96·6	22·2	40·5	+2·1	+5·6	—3·5
	Do. (Submontane)	107·9	84·2	96·1	23·7	44·7	+3·7	+5·1	—1·4
	Do. (Hills)	85·8	60·8	73·3	25·1	43·2	+2·9	+3·0	—0·1
	Do. (North)	110·2	80·2	95·2	30·0	45·7	+6·1	+4·6	+1·5
	Do. (West)	111·4	85·9	98·6	25·5	39·1	+2·8	+3·2	—0·4
Bombay and Malabar Coast Districts (Madras).	Malabar	84·8	75·8	80·3	9·0	18·8	+0·8	+0·8	0
	Madras (South Central)	93·7	74·2	83·9	19·5	27·5	+1·6	+1·7	—0·1
	Coorg	71·9	64·0	68·0	7·9	21·3	—0·2	+0·8	—1·0
	Mysore	83·5	67·8	75·7	15·8	29·0	—0·1	+0·6	—0·7
	Konkan	86·1	78·2	82·2	8·0	18·3	+0·7	+1·2	—0·5
	Bombay Deccan	90·0	71·7	80·9	18·3	35·2	+1·9	+1·3	+0·6
	Hyderabad (North)	95·6	73·6	84·6	22·0	37·3	?	?	?
	Khandesh	93·9	73·9	84·0	20·0	37·1	+1·1	+1·2	—0·1
Central Provinces and Berar.	Berar	97·9	77·7	87·9	20·2	39·8	+0·8	+1·0	—0·2
	Central Provinces (West)	98·8	79·8	89·3	19·0	38·5	+0·9	+1·9	—1·0
	Do. (Central)	97·7	77·9	87·8	19·8	41·6	+0·7	+0·3	+0·4
	Do. (East)	97·5	79·9	88·7	17·6	36·9	+1·9	+1·1	+0·8
Bombay (North)	Gujarat	96·1	79·7	88·0	16·4	32·5	?	?	?
	Kathiawar & Cutch	95·4	79·7	87·6	15·7	29·7	—0·1	+1·1	—1·2
	Sind	105·3	84·1	94·7	21·1	30·4	+2·0	+1·7	+0·3
	Baluchistan Hills	98·1	63·4	80·8	34·7	47·3	+1·7	+0·6	+1·1
Rajputana and Central India.	Central India (East)	99·2	80·0	89·6	19·2	38·9	+0·7	+1·1	—0·4
	Rajputana (East), Central India (West)	103·7	82·9	93·3	20·8	33·3	+2·6	+2·5	+0·1
	Do. (West)	107·4	84·0	95·6	23·4	35·2	+3·3	+3·9	—0·6
Madras	East Coast (North)	92·3	80·4	86·3	11·9	25·3	—0·3	—0·6	+0·3
	Hyderabad (South)	95·9	75·8	85·9	20·1	41·4	+2·6	+2·3	+0·3
	Madras (Central)	97·1	78·0	87·6	19·1	36·5	+0·7	+0·8	—0·1
	East Coast (Central)	98·9	80·7	89·8	18·3	34·9	—0·8	—1·0	+0·2
	Do. (South)	99·5	79·6	89·5	19·9	32·3	+1·9	+1·0	+0·9
	Madras (South)	95·0	79·2	87·2	15·8	22·5	?	?	?

It has been pointed out in the pressure section that the month may be divided into the following periods, *viz.* :—the 1st to the 8th, the 9th to the 12th, the 13th to the 20th, the 21st to the 24th, the 25th to the 28th and the 29th and 30th.

During the first period very dry hot weather held steadily in the interior of India. Weather was showery in Burma, Bengal and Southern India. North-Eastern India obtained thunder showers, chiefly on the 1st and 2nd, Burma from the 5th to the 7th and Southern India from the 5th to the 8th.

Temperature was throughout the period from the 1st to the 8th in considerable to large excess in North-Western and Central India and the Deccan. The following table gives variation data for this period :—

Division or Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 1st June.	2nd June.	3rd June.	4th June.	5th June.	6th June.	7th June.	8th June.
	°	°	°	°	°	°	°	°
Baluchistan (Quetta)	+0·8	+2·7	+0·2	+3·8	+1·1	+1·5	+2·1	—0·1
Punjab	+4·1	+3·7	+1·8	+1·9	+4·8	+7·0	+7·4	+8·1
Sind and Rajputana	+3·4	+1·8	+3·7	+3·8	+3·6	+3·5	+3·3	+4·2
Central India and Gujarat.	+0·3	+1·6	+3·6	+4·1	+3·6	+4·0	+3·4	+3·5
Central Provinces and Berar.	+3·0	+3·7	+5·0	+5·9	+6·5	+6·5	+4·9	+2·7
Bombay Deccan	+3·3	+5·4	+6·1	+6·0	+5·3	+4·7	+3·3	+3·3
Madras Deccan	+2·7	+5·5	+6·9	+4·1	+5·7	+3·0	—1·1	+1·3

The following gives data of the temperature conditions

at the stations at which temperature was most largely in excess day by day throughout this period:—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
1st June	Mooltan	+ 9·0	+ 9·1	+ 9·1
	Jubbulpore	+ 8·8	+ 5·4	+ 7·1
2nd "	Sholapur	+ 8·3	+ 8·8	+ 8·6
	Kurnool	+ 6·1	+ 7·4	+ 6·8
3rd "	Hyderabad Deccan	+ 9·5	+ 9·8	+ 9·7
	Kurnool	+12·3	+ 5·4	+ 8·9
4th "	Sholapur	+10·0	+ 7·4	+ 8·7
	Akola	+ 7·6	+ 9·0	+ 8·3
5th "	Chanda	+11·4	+ 9·7	+10·6
	Murree	+ 9·0	+11·9	+10·5
6th "	Rawalpindi	+10·2	+15·1	+12·7
	Seoni	+11·0	+ 7·7	+ 9·4
7th "	Ludhiana	+ 8·9	+12·3	+10·6
	Sialkot	+10·4	+10·3	+10·4
	Murree	+ 8·4	+12·1	+10·3
8th "	Ludhiana	+ 6·8	+14·1	+10·5
	Sialkot	+ 8·9	+11·7	+10·3
	Murree	+10·5	+ 9·4	+10·0

The greatest excess of temperature was hence in the Deccan from the 1st to the 5th and was transferred to the North-East Punjab from the 6th to the 8th.

The rainfall in North-Eastern India on the 1st and 2nd reduced temperature largely below the normal from the 1st to the 3rd, as is shown by the following statement:—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF		
	1st June.	2nd June.	3rd June.
	°	°	°
Assam	—1·8	—2·6	+1·3
Bengal	—4·2	—2·7	—1·0
Bihar	—8·5	—4·5	—1·5
Chota Nagpur	—4·3	—2·2	—2·2
North-Western Provinces and Oudh	—2·9	—1·1	+1·1

The rainfall in Burma and Southern India produced no large effect in the temperature which varied slightly but somewhat irregularly from the normal throughout the whole period as was also the case from the 4th to the 8th in North-Eastern India.

Heavy general rain commenced in the Malabar and Konkan coast districts on the 8th and continued steadily until the 18th. The rainfall extended eastwards into the Central Provinces on the 9th and the Deccan, Central India and the western districts of the North-Western Provinces on the 10th. This rainfall caused a large reduction of temperature and hence temperature was slightly to considerably below the normal from the 10th to the end of the second period (9th to the 12th) in the Deccan, Central Provinces, Central India and the North-Western Provinces, as is shown below:—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	9th June.	10th June.	11th June.	12th June.	13th June.
	°	°	°	°	°
Bombay Deccan	+2·2	—1·3	—3·2	—2·4	—1·0
Madras Deccan	+0·5	—1·5	—1·5	—2·0	—2·7
Central Provinces and Berar	—0·5	—3·8	—4·6	—3·4	0
Central India and Gujarat	+2·5	+1·2	—1·5	—1·6	—1·5
North-Western Provinces and Oudh.	+1·4	+0·2	—1·8	—3·5	—4·6

The chief feature of the second period was excessive temperature in Upper Sind and the Punjab where very hot dry weather continued. The following gives variation data:—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	9th June.	10th June.	11th June.	12th June.	13th June.
	°	°	°	°	°
Upper Sind	+3·4	+1·5	+1·7	+5·6	+7·1
Punjab	+7·5	+3·7	+3·8	+1·7	+1·0

The following gives comparative data of the stations at which the excess was greatest, day by day, from the 9th to the 13th:—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
9th June	Sialkot	+7·6	+12·0	+9·8
	Lahore	+7·1	+12·5	+9·8
10th "	Rawalpindi	+6·0	+12·4	+9·2
	Mooltan	+5·4	+ 8·7	+7·1
11th "	Rawalpindi	+4·7	+11·6	+8·2
	Mooltan	+4·9	+ 7·5	+6·2
12th "	Mooltan	+8·1	+ 7·6	+7·9
	Bickaneer	+6·1	+ 6·6	+6·4
13th "	Mooltan	+4·1	+10·7	+7·4
	Jacobabad	+5·1	+ 9·1	+7·1

The area of greatest excess of temperature was hence transferred from the East to the West Punjab during this period.

The highest temperatures of the month were generally recorded in Upper India between the 1st and the 12th.

The following gives the highest temperatures recorded at the hottest stations during this period :—

Stations.	Highest maximum temperature recorded in June 1898.	Date on which recorded.
	°	
Jacobabad	122·0	8th
Bickaneer	113·9	1st
Mooltan	117·5	5th
Ludhiana	115·3	7th
Lahore	114·6	7th
Sialkot	117·0	7th

During the period from the 9th to the 12th the monsoon current was advancing up the Bay and light winds with fine weather obtained in Burma and Bengal. Temperature was slightly higher than usual but the variations were nowhere large and were generally unimportant. Data for these areas are given below :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	8th June.	9th June.	10th June.	11th June.	12th June.
	°	°	°	°	°
Burma	+2·0	+2·4	+2·7	+2·6	+3·0
Assam	+4·0	+4·0	+1·8	+1·5	+0·4
Bengal	+0·7	+1·1	+1·5	+0·9	+1·7
Orissa	—1·8	—2·9	—0·8	—0·1	+0·9
Chota Nagpur	—0·7	—0·7	—0·4	+1·1	+1·2
Bihar	+1·6	+2·0	+2·2	+2·5	+1·0

A storm formed in front of the advancing monsoon current in the Bay on the 12th and 13th in the north-west of the Bay. It intensified slightly on the 14th and 15th and crossed the coast of the north-west angle on the 16th. It thence advanced slowly northwards through West and Central Bengal into North Bengal, where it broke up on the 20th. It gave heavy rain to North Madras, Orissa and Bengal, which was followed by a large fall of temperature. As rain continued during this period from the 12th to the 19th in the Central Provinces and Central India, temperature was more or less considerably in defect in North-Eastern India, North Madras and the Central Provinces. The following gives data in illustration :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	13th June.	14th June.	15th June.	16th June.	17th June.	18th June.	19th June.
	°	°	°	°	°	°	°
Assam	+0·9	+1·9	+0·1	+0·8	+1·9	—1·0	—1·3
Bengal	+2·2	+1·7	+0·6	+0·4	—1·0	—3·3	—2·4
Bihar	—0·6	—2·2	+0·3	+0·4	+1·7	—0·7	—2·1
Chota Nagpur	+1·9	+1·5	+0 2	—3·2	—5·4	—7·9	—7·4
Orissa	+0·9	—1·0	—1·6	—3·9	—5 1	—4·5	—3·6
Central Provinces and Berar	0	+1·4	+0·1	—4·3	—4·6	—4·8	—4·1
North Madras	—4·3	—8·8	—7·9	—3·4	—2·2	—1·6	—1·5

Temperature was in moderate to very large defect in the East Punjab, the North-Western Provinces and Central India (due to rainfall), from the 13th to the 17th, when dry hot weather with westerly winds extended from the Indus Valley eastwards over North-Western India. The following gives data illustrating these features and changes :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	13th June.	14th June.	15th June.	16th June.	17th June.	18th June.	19th June.
	°	°	°	°	°	°	°
North-Western Provinces and Oudh.	—4·6	—4·1	—5·5	—6·0	—4·0	—2·2	+1·2
Punjab	+1·0	+0·4	—4·8	—4·9	+0·1	+3·8	+6·0
Sind (Upper)	+7·1	+7·1	+8·8	+5·9	+5·3	+6·5	+5·9
Rajputana	+0·7	—3·0	—1·4	—3·0	+1·9	+4·7	+6·1

The following gives comparative data for the 20th, at the end of the third period of the month :—

Province.	Variation from normal of		
	Mean maximum temperature, 20th June.	Mean minimum temperature, 20th June.	Mean temperature, 20th June.
	°	°	°
Burma	0	+1·6	+0·8
Bengal and Assam	—5·4	—0·8	—3·1
North-Western Provinces and Oudh	+1·5	+0·3	+0·9
Punjab	+6·9	+4·7	+5·8
Sind and Rajputana	+4·6	+2·7	+3·7
Central India and Gujarat	—2·9	—1·3	—2·1
Central Provinces and Berar	—4·9	—1·0	—3·0
Bombay	—3·7	0	—1·9
Madras	—1·5	+1·3	—0·1

When the Bengal cyclonic storm broke up on the 20th, pressure was lowest in the submontane districts of Northern India and was largely below the normal of the period. Steep gradients for westerly winds hence obtained and dry westerly winds prevailed from the 21st to the 27th or 28th over the whole of Northern and Central India. Rain fell in Bengal on the 21st, 22nd, 23rd and 24th and the break in the rains initiated by the abnormal pressure conditions extended over Bengal on the 25th and prevailed over nearly the whole of India from the 24th to the 27th. Temperature increased more or less rapidly in Northern India from the 21st to the 23rd and was in general excess over the whole of India from the 26th to the 28th. The following gives variation data for this period :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of							
	21st June.	22nd June.	23rd June.	24th June.	25th June.	26th June.	27th June.	28th June.
	°	°	°	°	°	°	°	°
Punjab	+5·5	+7·4	+6·7	+5·0	+4·2	+4·8	+5·6	+7·2
Sind and Rajputana	+3·6	+2·8	+1·4	+1·1	+0·9	+0·7	+1·7	+2·7
North-Western Provinces and Oudh.	+3·2	+5·1	+3·7	+0·4	—1·0	+0·9	+2·9	+8·3
Central India and Gujarat.	+0·5	+1·8	+1·4	+1·0	+1·0	—0·2	+1·9	+3·2
Bihar	—1·9	+1·0	+3·4	+0·7	+2·1	+2·5	+5·4	+8·5
Chota Nagpur	—0·2	+2·0	+4·4	+4·3	+3·6	+3·6	+5·4	+6·1
Bengal	—1·6	—0·6	—0·9	—4·0	—0·2	+2·3	+4·6	+2·8
Central Provinces and Berar.	—1·3	+1·0	+2·5	+2·3	+3·0	+3·6	+5·3	+4·1
Bombay Deccan	—0·6	—0·9	+1·2	+1·2	+0·7	+1·7	+2·3	+2·3
Madras Deccan	—0·3	+1·2	+2·1	+2·6	+3·6	+4·0	+4·4	+1·9
Bombay Coast	+0·4	+1·1	+1·7	+1·4	+1·3	+1·6	+1·3	+1·9
Madras Coast	+2·9	+3·3	+3·1	+2·7	+3·9	+4·4	+4·0	+2·7
Burma	—0·9	—0·2	—1·3	—1·6	—0·2	+0·5	+0·8	+1·1

The following gives comparative data for stations at which the excess was more than 10° :—

Date.	Station.	Variation from normal of		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
23rd June	Peshawar	+ 9·6	+13·5	+11·6
	Murree	+10·1	+10·0	+10·1
25th „	Rawalpindi	+10·6	+10·8	+10·7
26th „	Rawalpindi	+ 9·8	+11·1	+10·5
27th „	Rawalpindi	+12·6	+ 9·6	+11·1
28th June	Rawalpindi	+15·1	+ 8·9	+12·0
	Murree	+11·7	+10·9	+11·3
	Sialkot	+ 9·8	+11·2	+10·5
	Agra	+10·5	+ 9·7	+10·1
	Gorakhpur	+13·8	+ 7·8	+10·8
	Gaya	+11·2	+11·2	+11·2
29th „	Delhi	+11·1	+10·4	+10·8
	Murree	+12·0	+10·7	+11·4
	Sialkot	+10·5	+11·7	+11·1
	Rawalpindi	+10·2	+10·4	+10·3
	Ludhiana	+ 8·8	+12·3	+10·6

Hence temperature was most largely in excess in the North and West Punjab, and the stations in that area including Peshawar, Rawalpindi and Dera Ismail Khan registered the highest day temperatures of the month during this period. They are given below :—

Station.	Highest maximum temperature recorded in June 1898.	Date on which recorded.
Peshawar	117·5°	29th
Rawalpindi	117·0	28th
Dera Ismail Khan	115·2	22nd and 24th

General rain set in again over the interior on the 28th. It extended and increased in amount on the 29th and 30th, and was followed by a large reduction of temperature. The following table illustrates the contrast of conditions between the 28th and 30th :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of		Reduction of temperature from the 28th to 30th June.
	28th June.	30th June.	
Punjab	+7·2°	+1·3°	—5·9°
Sind and Rajputana	+2·7	+0·6	— 2·1
North-Western Provinces and Oudh	+8·3	—5·2	—13·5
Central India and Gujarat	+3·2	—1·7	— 4·9
Bihar	+8·5	—0·5	— 9·0
Chota Nagpur	+6·1	—0·3	— 6·4
Bengal	+2·8	—0·2	— 3·0
Central Provinces and Berar	+4·1	—3·2	— 7·3
Bombay Deccan	+2·3	—1·9	— 4·2
Madras Deccan	+1·9	—1·5	— 3·4
Bombay Coast	+1·9	+1·8	— 0·1
Madras Coast	+2·7	—0·4	— 3·1
Burma	+1·1	+0·5	— 0·6

The following gives variation data of the Indian area for the 24 hours preceding 8 A.M. of the 30th, illustrating the temperature conditions obtaining at the end of the month in that area :—

PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 30th June.	Mean minimum temperature, 30th June.	Mean temperature, 30th June.
	°	°	°
Burma	+0·4	+0·5	+0·5
Bengal and Assam	+0·1	—0·2	—0·1
N.-W. Provinces and Oudh	—7·4	—3·0	—5·2
Punjab	+4·1	—1·6	+1·3
Sind and Rajputana	—1·0	+2·1	+0·6
Central India and Gujarat	—3·0	—0·3	—1·7
Central Provinces and Berar	—4·6	—1·8	—3·2
Bombay	+0·5	+1·0	+0·8
Madras	+0·1	—0·1	0

The following table gives the variations of the mean temperature week by week during the month and also for the whole month :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING					
	4th June	11th June.	18th June.	25th June.	2nd July.	For whole month, June 1898.
	°	°	°	°	°	°
Burma	+2·0	+1·6	+1·2	—0·3	+0·7	+1·0
Bengal and Assam	—2·1	+0·7	—0·1	—0·9	+1·8	0
North-Western Provinces and Oudh	—1·2	+2·0	—4·3	+1·9	+1·0	+0·1
Punjab	+2·3	+6·0	—0·4	+5·8	+2·1	+3·9
Sind and Rajputana	+3·4	+3·3	+2·2	+2·6	+1·4	+2·6
Central India and Gujarat	+2·6	+2·4	—1·1	+0·4	+0·7	+0·8
Central Provinces and Berar	+3·7	+1·7	—2·2	+0·1	+1·2	+0·9
Bombay	+3·4	+1·3	—1·1	+0·2	+1·5	+1·1
Madras	+0·7	+0·9	—1·2	+1·5	+1·9	+0·8

Winds.

Winds were stronger than usual on the average of the month at Port Blair and in Lower Burma, and were more westerly in direction than usual. The following gives data in illustration :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN WIND DIRECTION.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Westerly deflection.
Port Blair	310	231	+ 79	S 62° W	S 43° W	+19°
Rangoon	104	123	— 19	S 35° W	S 23° W	+ 12°
Diamond Island	339	216	+123	S 46° W	S 35° W	+ 11°

Winds were considerably above their normal strength on the mean of the month at Saugor Island and were normal at some of the interior stations of Bengal. They were more easterly or less westerly than usual at almost all stations in that area. The following gives comparative data for five stations :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN WIND DIRECTION.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Easterly deflection.
False Point	255	303	— 48	S 4 W	S 37° W	+33°
Saugor Island	472	372	+100	S 7° E	S 12° W	+19°
Calcutta	134	142	— 8	S 25° E	S 3° E	+22°
Burdwan	?	122	?	S 19 E	S 16° E	+ 3°
Berhampore	99	127	— 28	S 39° E	S 37° E	+ 2°

Winds were steadier than usual in the Gangetic Plain, more especially at the western stations. Easterly winds prevailed over the whole of Bihar and the greater part of the North-Western Provinces.

The following gives comparative data for five stations in that area :—

STATION.	MEAN STEADINESS.			MEAN WIND DIRECTION.		
	Actual percentage, June 1898.	Normal percentage, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Easterly deflection.
Darbhanga . . .	53	6	+47	S 69° E	S 14° E	55
Patna	47	48	— 1	N 75° E	N 75° E	0
Allahabad . . .	16	15	+ 1	N 1° E	N 9° W	10
Lucknow . . .	15	16	— 1	S 81° E	N 46° E	?
Roorkee . . .	43	17	+26	S 41° E	S 10° E	31

Winds were somewhat steadier than usual and were of normal strength in the Punjab. The following gives data for four stations in that area :—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.		
	Actual, June 1898.	Normal, June.	Actual percentage, June 1898.	Normal percentage, June.	Variation of actual from normal, June 1898.
Meerut . . .	S 48° E	N 16° W	25	10	+15
Ludhiana . . .	S 25° W	S 64° W	20	8	+12
Lahore . . .	S 36° W	N 19° E	18	6	+12
Mooltan . . .	S 25° W	S 33° W	66	32	+34

The trough of low pressure and area of unsteady variable winds of the month occupied its normal position in the eastern half, but was further north than usual in the western half. Its axis was defined by the stations of Hazaribagh, Allahabad, Lucknow, Meerut and Lahore. The following gives comparative data of the mean wind direction and steadiness at these stations :—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.		
	Actual, June 1898.	Normal, June.	Actual percentage, June 1898.	Normal percentage, June.	Variation of actual from normal, June 1898.
Hazaribagh . .	S 67° E	S 38° W	20	15	+ 5
Allahabad . . .	N 1° E	N 9° W	16	15	+ 1
Lucknow . . .	S 81° E	N 46° E	15	16	— 1
Meerut . . .	S 48° E	N 16° W	25	10	+15
Lahore . . .	S 36° W	N 19° E	18	6	+12

The following table gives comparative data of the mean air movement of the month in different provinces of Northern India and Burma :—

PROVINCE.	MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
Burma	187	145	+42
Bengal	185	184	+ 1
Assam	120	90	+30
Chota Nagpur	238	225	+13
Bihar	139	136	+ 3
North-Western Provinces and Oudh . .	129	103	+26
Punjab	81	87	— 6

The Arabian Sea monsoon current set in fully on the Bombay or west coast on the 8th and 9th and was of normal intensity until the 19th. Very strong westerly winds prevailed over the whole of Northern and Central India from the 21st to the 24th due to abnormal pressure conditions. Winds fell off in strength during the next four days and were below their normal force at the end of the month.

The following gives data for ten representative stations illustrating the abnormal strength of the winds from the 21st to the 24th :—

STATION.	Mean hourly wind velocity during period 21st to 24th June 1898.	Greatest reported hourly wind velocity during period.	Mean actual hourly wind velocity of month.	Mean normal hourly wind velocity of month.
	Miles.	Miles.	Miles.	Miles.
Bhuj	32·0	33·0	19·6	16·1
Rajkot	16·5	21·0	12·9	14·5
Veraval . . .	16·6	18·6	10·8	11·5
Deesa	29·0	32·0	17·5	16·5
Mount Abu . . .	24·8	28·1	13·0	10·6
Sutna	27·1	28·1	12·0	9·8
Hyderabad, Sind . .	29·1	31·8	24·0	15·3
Sambhar . . .	21·3	24·0	12·6	11·2
Khandwa . . .	19·3	22·0	11·0	9·8
Pachmarhi . . .	25·8	28·6	12·1	8·6

The most remarkable feature of these strong winds was that they accompanied an almost entire absence of rain.

The mean velocity of the winds at the west coast stations for June was practically normal, as is shown by the following data:—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, June 1898.	Normal, June.	Percentage variation from normal.
Cochin	152	147	+ 3
Karwar	161	128	+26
Ratnagiri	268	268	0
Bombay	337	376	—10
Kurrachee	441	423	+ 4

Winds were normal in direction at these stations except at Cochin where they were more northerly than usual.

Winds were on the mean of the month stronger than usual in the Deccan, the Central Provinces, Berar, Central India and Rajputana, chiefly due however to the strength of the winds during the last ten days of the month and more especially from the 20th to the 24th. The following gives data in illustration:—

DIVISION.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Percentage variation from normal.
Bombay Deccan	505	411	+94	+23
Madras Deccan	294	251	+43	+17
Central Provinces	197	181	+16	+ 9
Berar	259	238	+21	+ 9
Central India	180	174	+ 6	+ 3
Rajputana	294	259	+35	+14
Sind	308	274	+34	+12

The mean wind directions were very approximately normal at the stations in the Central Provinces and Deccan and generally steadier than usual, as is shown by the following examples:—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.		
	Actual, June 1898.	Normal, June.	Actual, percentage, June 1898.	Normal percentage, June.	Variation of actual from normal, June 1898.
	°	°			
Akola	N 80 W	N 68 W	75	72	+ 3
Khandwa	N 68 W	N 79 W	68	72	— 4
Nagpur	N 89 W	N 83 W	59	52	+ 7
Sholapur	S 79 W	S 86 W	72	70	+ 2
Bellary	S 85 W	S 86 W	82	78	+ 4

Winds were, on the other hand, less southerly and more westerly than usual in Rajputana. The following gives data in illustration:—

STATION.	MEAN WIND DIRECTION.		
	Actual, June 1898.	Normal, June.	Westerly deflection.
	°	°	°
Jeypore	S 77° W	N 66° W	?
Ajmere	S 83° W	S 78° W	+5
Deesa	S 73° W	S 42° W	+51
Agra	W	N 60° W	+30

Winds were on the mean of the month normal in character in Mysore and Southern India, as is shown by the following data for four stations:—

STATION.	MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual percentage, June 1898.	Normal percentage, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
Bangalore	87	87	0	269	209	+60
Mysore	82	77	+ 5	356	265	— 9
Madras	40	61	—21	206	212	— 6
Trichinopoly	68	80	—12	209	226	—17

Winds were stronger and steadier at the majority of the Himalayan stations. The following gives comparative data for five stations:—

STATION.	MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual percentage, June 1898.	Normal percentage, June	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
Leh	89	31	+58	105	57	+ 48
Kailang	77	65	+12	73	49	+ 24
Murree	27	20	+ 7	150	175	—25
Simla	18	30	—12	94	97	— 3
Chakrata	84	52	+32	296	153	+143

Winds were, as usual in June, very unsteady at Darjeeling, the percentage of steadiness being only 12.

The mean wind direction of the month at Zanzibar was S. 8° E., and at the Seychelles, S. 18° E., and hence practically identical with the normal. Winds were very steady at both stations and of normal strength.

Humidity and Cloud.

The variations of the mean humidity conditions of the month from the normal were small in amount in Burma and over the greater part of India.

The air was generally drier than usual, although there was, as measured by its pressure, slightly more aqueous vapour present in the air than usual. The decreased humidity was hence solely a temperature effect and was on the whole most marked in the area of greatest excess of temperature in Upper India.

It may be noted that the humidity data for Lahore and Agra are fallacious, due to large changes in the exposure of the instruments, and at Saugor to mistakes committed by the observer.

The air was generally drier than usual over the whole of Northern and Central India. There were three exceptions *viz.*, Chota Nagpur and West Bengal, Upper Assam and the North-Western Provinces, Bundelkhand and Baghelkhand.

The excess was largest in amount in the area represented by the stations for which comparative data are given below :—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June	Variation of actual from normal, June 1898.
	"	"	"	%	%	
Sutna	·789	·648	+·141	60	51	+9
Allahabad . . .	·865	·769	+·096	62	56	+6
Lucknow . . .	·803	·761	+·042	62	56	+6

The air was considerably drier than usual over the greater part of the Punjab, due, however, almost solely to the prevailing high temperature of the month, as is shown below :—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
	"	"	"	%	%	
Murree	·345	·367	—·022	39	48	— 9
Ludhiana . .	·645	·654	—·009	41	49	— 8
Mooltan . .	·746	·737	+·009	41	46	— 5
Leh	·164	·172	—·008	33	38	— 5

The deficiency was hence as pronounced at the hill stations as at the neighbouring plain stations in the Punjab.

The following gives comparative data for the chief provinces in Northern and Central India, and for Burma :—

Division or Province.	Mean absolute humidity.			Mean relative humidity.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
	"	"	"	%	%	
Punjab . . .	·645	·632	+·013	40	44	—4
Rajputana . . .	·722	·700	+·022	50	52	—2
Central India . .	·769	·684	+·085	58	52	+6
North-Western Provinces and Oudh.	·779	·702	+·077	58	54	+4
Bihar	·893	·892	+·001	72	73	—1
Chota Nagpur . .	·732	·692	+·040	67	66	+1
Bengal . . .	·943	·944	— 001	82	83	—1
Orissa . . .	·935	·928	+·007	77	78	— 1
Assam . . .	·912	·909	+·003	84	85	—1
Burma. . . .	·925	·904	+·021	87	88	— 1

It may be noted that the condition of great dryness which had characterized Silchar during the previous three months continued throughout June, although to a less marked extent than hitherto. The following gives data for that station :—

STATION.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Actual, June 1898.	Normal June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
	"	"	"	%	%	
Silchar . . .	·895	·907	—·012	80	85	—5

The air was drier at almost all stations in the Peninsula with the exception perhaps of Hassan (+2), Mercara (+2) and Vizagapatam (+6).

The following gives comparative data :—

DIVISION OR PROVINCE.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
	"	"	"	%	%	
Central Provinces . .	·713	·707	+·006	59	60	— 1
Berar	·646	·680	—·034	58	62	— 4
Bombay Deccan . .	·640	·660	—·020	68	70	— 2
Madras Deccan . .	·526	·650	—·124	47	58	—11
Bombay Coast . .	·877	·873	+·004	82	83	— 1
Madras Coast . .	·840	·841	—·001	66	66	0
Mysore . . .	·624	·623	+·001	74	74	0

The mean humidity of the month was more than 5 below the normal locally at Trichinopoly (—6), and in the Deccan area as represented by the stations for which data are given below :—

STATION.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.	Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
	"	"	"	%	%	
Bellary . . .	·526	·650	—·124	47	58	—11
Hyderabad (Deccan) .	·667	·707	—·040	58	65	— 7
Sholapur . . .	·589	·632	—·043	53	60	— 7
Buldana . . .	·614	·664	—·050	59	65	— 6

The air was considerably damper than usual at Simla, Ranikhet and perhaps Katmandu (the observations of which are of doubtful accuracy). It was, on the other hand, 6 in defect at Wellington in Southern India.

The humidity conditions were normal at the Seychelles. The air was slightly drier at Zanzibar (—4), but damper at Aden (+3) and Perim (+7).

The following gives the lowest humidities recorded at stations at which relative humidity percentages below 10 were recorded during the month :—

STATION.	Date.	Hour.	Lowest humidity recorded during June 1898.
			%
Murree	22nd	16	5
Peshawar	21st	16	8
Murree	21st	16	9
Peshawar	23rd	10	9
Nowgong	3rd	16	9
Khandwa	3rd	16	9
Raipur	4th	16	9
Buldana	3rd	16	9

The chief features of the mean humidity conditions of the month were as follows :—

(1) The air was damper than usual in the North-Western Provinces, more especially in the eastern and central districts and in Bundelkhand, Baghelkhand, West Bengal, Chota Nagpur and Upper Assam.

(2) The air was drier than usual, chiefly due to increased temperature and not to a smaller amount of aqueous vapour in the air, over nearly the whole of the remainder of India and in Burma. The variations were, however, small and unimportant, except in two areas, *viz* :—the East and South Punjab and the Deccan, in both of which areas the mean humidity was more than 5 below the normal. The deficiency was absolutely greatest at Bellary (—11).

(3) The air was damper in the Himalayan area, except in the extreme west in Kashmir, where it was, as in the adjacent plains, much drier than usual.

The mean cloud amount of the month was generally above the normal to the east and south of a line running through Ratnagiri, Khandwa, Saugor and Bareilly. The variations were less than 1·0, except at Saugor (+1·5), Port Blair (+1·3), Bangalore (+1·7), Lucknow (+1·2),

and Mysore (+1·2). The following gives comparative data for this area of increased cloud :—

Province or Division.	Mean cloud amount. Average actual, June 1898.	Average normal, June.	Variation from normal.
Burma	8·3	8·1	+0·2
Bengal	7·7	7·6	+0·1
Chota Nagpur	8·1	7·5	+0·6
Orissa	7·4	6·9	+0·5
North-Western Provinces (East)	5·5	4·7	+0·8
Central Provinces	6·4	6·1	+0·3
Bombay Deccan	7·8	7·6	+0·2
Madras Deccan	8·5	7·6	+0·9
Bombay Coast	7·5	7·3	+0·2
Madras Coast	6·9	6·1	+0·8
Mysore	8·5	7·5	+1·0

Cloud was in considerable defect locally at Trichinopoly, (probably representative of the whole of South Madras) and in Assam, North Bengal and Bihar where it was slightly less than usual.

There was less cloud than usual on the mean of the month to the west and north of the line as defined above (*viz.*, by the stations of Ratnagiri, Khandwa, Saugor and Bareilly). The following gives comparative data for this large area of decreased cloud :—

Province.	Mean cloud amount. Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.
Punjab	1·5	2·4	—0·9
North-Western Provinces (West)	2·5	3·6	—1·1
Rajputana	3·5	4·3	—0·8
Sind	2·5	2·6	—0·1
Central India	4·8	5·4	—0·6

Over a part of this area defined by the stations for which comparative data are given below the mean cloud amount of the month was more than 1·0 below the normal :—

Station.	Mean cloud amount. Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
Lahore	0·9	3·0	—2·1
Ludhiana	1·3	3·2	—1·9
Agra	2·6	3·7	—1·1
Meerut	2·3	3·4	—1·1

There was more cloud than usual in the North-Western Provinces Himalayas, but less in the Punjab and Kashmir Himalayas, as is shown below :—

Station.	Mean cloud amount. Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
Ranikhet	6·2	5·5	+0·7
Chakrata	6·0	5·1	+0·9
Kailang	4·9	5·3	—0·4
Leh	4·0	4·8	—0·8
Srinagar	2·3	3·8	—1·5
Murree	2·8	4·0	—1·2

The mean amount of cloud was less than 1·0 at stations in Upper Sind and the South-West Punjab for which data are given below :—

Station.	Mean cloud amount. Actual, June 1898.	Normal, June.	Variation of actual from normal, June 1898.
Mooltan	0·8	0·9	—0·1
Jacobabad	0·8	0·9	—0·1

The following gives a brief summary of the abnormal features of the cloud distribution of the month :—

(1) There was slightly less cloud than usual in Assam, North Bengal and Bihar.

(2) Cloud was in slight to considerable defect to the west and north of a line joining Ratnagiri, Khandwa, Saugor and Bareilly and also in South Madras. The deficiency was most marked in the east and south-east of the Punjab and adjacent hill districts.

(3) There was more cloud than usual to the east and south of the line joining Ratnagiri, Khandwa, Saugor and Bareilly (except Assam, Bihar and South Madras). The variations were, however, small, except in Mysore and the Bay Islands where there was a considerable excess of cloud.

Rainfall.

The conditions under which the south-west monsoon rains of 1898 were initiated, have been stated in the pressure and temperature sections.

Bengal and Burma obtained moderate to heavy showers from thunderstorms during the first three days of the month.

Malabar received moderately heavy rain from the 6th to the 8th during which period a strongish advance of south-west monsoon winds was in progress in the west and centre of the Arabian Sea. The advance of the monsoon up the west of the Arabian Sea commenced on the 27th and 28th of May. It gave squally stormy weather in the west and north of the Arabian Sea, and a small cyclonic storm formed and advanced northwards to the north-east coast of Arabia and broke up in the hills to the north of the Mekran coast on the 4th after giving moderate to heavy rain to Muscat and Jask. The disappearance of this disturbance was followed by the establishment of the monsoon rains on the Malabar and Konkan coasts. Heavy rain fell daily from the 9th to the 18th. The North Kanara district received an exceptionally heavy down-pour during this period.

The humid current advanced rapidly from the west coast across the Deccan and Central India and gave disturbed weather with series of severe thunder-storms and dust-storms to Berar, the Central Provinces, Central India, South Rajputana and the North-Western Provinces on the 9th and following days. Whilst these changes were in progress in the Arabian Sea and Western India a corresponding advance of monsoon winds was made in the Bay of Bengal. A cyclonic storm formed on the 12th and 13th in the north-west of the Bay in front of the advancing monsoon. It advanced northwards (the centre probably passing near False Point on the 15th) through South-West Bengal on the 16th and 17th, Central Bengal on the 18th and broke up in North Bengal on the 19th and 20th. The indraught to the storm gave heavy and prolonged rain to Bengal, Chota Nagpur and Bihar from the 16th to the 20th. The dispersion of the storm was followed by remarkable pressure conditions, accompanying the prevalence of very strong but dry westerly winds in Northern and Central India. These conditions lasted from the 21st to the 27th, during which a complete break in the rains obtained in North-Western and Central India and the Deccan.

North and East Bengal received a heavy down-pour from the 21st to the 23rd. Dry westerly winds and fine weather extended into Bengal on the 24th and 25th and the break in the rains already established in the Gangetic plain extended to Bengal on the 25th. Rain recommenced in Northern India on the 28th and 29th and was fairly general again on the 30th.

The dates of the commencement of the monsoon rains in 1898 in the different provinces of India are as follows :—

	Date of commencement of the monsoon rains.
Malabar	9th
Konkan	10th
Kathiawar	10th
Central Provinces East	14th
Central Provinces West	10th
Central India	1[illegible]th
Rajputana	11th
Bengal	16th
Chota Nagpur	16th
Bihar	18th
North-Western Provinces	11th
East Punjab	15th

The distribution of the rainfall of the month was largely determined.

1st.—By the slight delay in the establishment of the monsoon currents, more especially the Bombay branch.

2nd.—By the relative weakness of the Bombay current compared with the Bengal current.

3rd.—By the unusually rapid advance of both currents towards Upper India.

4th.—By the break in the rains which set in over Northern-Western and Central India on the 19th. This break extended over the whole of India by the 25th and lasted until the 27th.

The chief abnormal features of the rainfall distribution in June 1898 were:—

(1) Deficiency of rain over the greater part of Burma, Assam and Arakan, most marked in Upper Burma and Arakan.

(2) Normal rain in Bengal and the North-Western Provinces and slight deficiency in Bihar and Orissa.

(3) Normal rain in the Punjab, Central India and the Central Provinces.

(4) Deficiency in Berar, Khandesh and North Hyderabad.

(5) Heavier rain than usual over the greater part of Bombay.

(6) Moderate deficiency over the greater part of the Madras Presidency.

The following table gives comparative rain fall data of June 1898 for the 57 meteorological divisions of India :—

Province.	Division.	Rainy days. Average actual, June 1898.	Rainy days. Average normal, June.	Rainfall. Average actual, June 1898.	Rainfall. Average normal, June.	Rainfall. Variation of actual, from normal, June 1898.
				Inches.	Inches.	Inches.
Burma	Tenasserim*	?	?	33·38	39·82	— 6·44
	Lower Burma (Deltaic)*	?	?	21·38	19·03	+ 2·35
	Central do.*	?	?	10·88	12·58	— 1·70
	Upper do.*	?	?	5·46	10·68	— 5·22
	Arakan*	?	?	41·65	53·14	—11·49
Bengal and Assam	Eastern Bengal	15·2	15·9	18·99	17·04	+ 1·95
	Assam (Surma)	19·0	20·3	19·46	23·26	— 3·80
	Do. (Hills)	20·4	21·3	27·55	32·88	— 5·33
	Do. (Brahmaputra)	14·9	17·1	14·87	15·82	— 0·95
	Deltaic Bengal	12·3	12·8	10·10	10·66	— 0·56
	Central do.	11·5	11·8	11·92	9·99	+ 1·93
	North do.	18·5	15·8	21·85	21·14	+ 0·71
	Bengal Hills	17·8	20·5	16·29	27·22	—10·93
	Orissa	9·8	10·8	6·97	9·20	— 2·23
	Chota Nagpur	7·8	10·2	11·35	8·34	+ 3·01
	Bihar (South)	5·9	7·4	4·14	6·14	— 2·00
	Do. (North)	7·9	9·5	6·63	8·85	— 2·22
North-Western Provinces and Oudh.	North-Western Provinces (East)	5·1	5·0	4·40	4·29	+ 0·11
	Oudh (South)	6·1	4·6	5·26	4·39	+ 0·87
	Do. (North)	6·7	5·6	4·97	4·93	+ 0·04
	North-Western Provinces (Central)	5·5	4·4	4·78	3·53	+ 1·25
	Do. do. (West)	1·7	3·2	1·13	2·35	— 1·22
	Do. do. (Submontane, East)	7·0	6·2	7·19	5·54	+ 1·65
	Do. do. (do. West)	5·6	5·4	5·26	5·16	+ 0·10
	Do. do. (Hills)	12·8	10·3	10·17	7·53	+ 2·64
Punjab	Punjab (South-East)	2·8	2·9	2·33	2·52	— 0·19
	Do. (South)	1·9	2·2	1·58	1·62	— 0·04
	Do. (Central)	1·4	2·2	0·92	1·58	— 0·66
	Do. (Submontane)	3·2	3·1	2·48	2·78	— 0·30
	Do. (Hills)	8·4	6·9	6·49	4·78	+ 1·71
	Do. (North)	1·7	1·6	0·96	0·89	+ 0·07
	Do. (West)	1·6	1·3	0·72	0·67	+ 0·05
Bombay and Malabar Coast Districts, (Madras).	Malabar	23·7	24·8	36·27	37·30	— 1·03
	Travancore	19·5	?	20·44	?	?
	Madras (South Central)	2·7	3·8	1·01	2·03	— 1·02
	Coorg	21·4	?	20·18	?	?
	Mysore	7·2	6·6	4·70	4·20	+ 0·50
	Konkan	18·3	19·2	31·12	27·14	+ 3·98
	Bombay Deccan	9·0	8·2	7·11	5·80	+ 1·31
	Hyderabad North	6·8	?	3·37	5·77	— 2·40
	Khandesh	6·8	7·6	4·37	5·69	— 1·32
Central Provinces and Berar.	Berar	9·3	?	5·74	7·17	— 1·43
	Central Provinces (West)	9·3	8·8	6·96	7·49	— 0·53
	Do. do. (Central)	9·3	9·1	8·19	8·11	+ 0·08
	Do. do. (East)	7·9	9·2	6·67	8·31	— 1·64
Bombay (North)	Gujarat	6·6	6·6	9·28	6·26	+ 3·02
	Kathiawar	3·4	3·6	3·77	3·26	+ 0·51
	Sind	0·1	?	0·01	0·18	— 0·17
	Baluchistan Hills	0	?	0·01	0·46	— 0·45
Rajputana and Central India.	Central India (East)	5·4	?	4·54	6·52	— 1·98
	Rajputana (East) and Central India (West)	2·6	?	2·00	3·27	— 1·27
	Rajputana (West)	0·6	?	0·37	1·73	— 1·36
Madras	East Coast (North)	8·2	6·7	6·17	4·91	+ 1·26
	Do. (do.) (a)	12·5	11·1	9·30	10·41	— 1·11
	Hyderabad (South)	5·5	?	4·27	4·33	— 0·06
	Madras (Central)	3·5	4·8	1·90	2·63	— 0·73
	East Coast (Central)	3·3	3·1	1·89	1·65	+ 0·24
	Do. (South)	2·8	3·8	1·43	2·27	— 0·84
	Madras (South)	1·7	2·2	0·77	1·06	— 0·29

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Tenasserim, Lower Burma and Arakan received light to moderate showers daily from the 1st to the 13th. Moderate to heavy monsoon rain fell daily during the remainder of the month. The rainfalls were not so heavy generally as in the west coast districts of India, but the following large amounts in 24 hours (exceeding 8 inches) were registered :—

DISTRICT.	STATION.	DATE.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Toungoo	Shwegyin	20th	8·11
Akyab	Akyab	21st	14·97
"	Maungdaw	"	14·69
"	Minbya	"	12·92
Kyaukpyu	Kyaukpyu	"	9·94
Bassein	Bassein	23rd	10·75
Myaungmya	Myaungmya	"	8·62

The total rainfall of the month exceeded 50 inches at stations for which data are given below :—

DISTRICT.	STATION.	Total rainfall of month.
		Inches.
Tavoy	Yebyu	68·75
"	Launglon	56·38
"	Thayetchaung	54·76
Akyab	Akyab	53·08
Kyaukpyu	Myebon	50·41

The rainfall in Central Burma occurred chiefly during two periods, *viz.*, from the 4th to the 7th and the 5th to the 24th.

The rainfall of the month was scanty and averaged less than 5 inches in the districts for which data are given below :—

DISTRICT.	Average actual rainfall of June 1898.
	Inches.
Sagaing	4·77
Yamethin	4·72
Thayetmyo	4·12
Magwe	3·44
Meiktila	3·24
Myingyan	2·71
Kyaukse	1·54

The following is a summary of the rainfall data of the province for the month as published in the provincial Gazette :—

DIVISION.	NUMBER OF RAINY DAYS.		RAINFALL.		
	Average actual, June 1898.	Average normal, June.	Average actual, June 1898.	Average normal June.	Variation from normal.
			Inches.	Inches.	Inches.
Tenasserim	26·3	?	41·04	?	?
Lower Burma	22·0	?	21·98	?	?
Central "	15·1	?	8·77	?	?
Upper "	9·1	?	6·28	6·07	+0·21
Arakan	20·6	?	40·46	?	?

Bengal and Orissa had frequent rain from thunderstorms during the first fortnight of the month. The rainfall due to these storms was most general in Bengal on the 1st and 11th, and in Orissa on the 7th and 9th. Light local showers of little importance were also received during this period in Bihar and Chota Nagpur.

The cyclonic storm which initiated the monsoon rains in North-Eastern India gave unusually heavy rain, due in part to its unusually slow movement. The following statement of rainfalls in 24 hours accompanying the storm indicates the areas of heavy downpours :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
HAZARIBAGH	Chatra	17th June	12·39
BANKURA	Onda	" "	8·30
LOHARDAGA	Silli	18th "	9·30
MANBHUM	Purulia	" "	17·27
"	Jhalda	" "	12·88
"	Barabhum	" "	9·69
BANKURA	Bankura	" "	12·48
"	Khatra	" "	10·27
"	Gangajalghati	" "	9·46
BIRBHUM	Rampur Hat	19th "	9·64
MURSHIDABAD	Kandi	" "	11·52
"	Lalbagh	" "	9·89
"	Azimganj	" "	8·25

Very heavy rain also fell in East Bengal during the storm. The following gives the more noteworthy falls :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
BACKERGUNGE . .	Patuakhali . .	18th June .	8·50
CHITTAGONG . . .	Kodala . . .	" " .	10·20
" . . .	Fenoa . . .	" " .	9·51

The daily falls averaged over 5 inches in the following districts :—

DISTRICT.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
		Inches.
Chittagong	17th June .	5·41
"	18th " .	6·74
Manbhum	" " .	6·76
Bankura	" " .	6·49

The rainfall accompanying the storm was hence exceptionally heavy in which respect it resembled the storm of May 1887 which advanced by a north-westerly track into Central and North Bihar.

The whole province received more or less general rain between the 14th and 24th. The rainfall was light to moderate in amount in Bihar and very partially distributed.

Fine weather with local showers obtained between the 25th and 28th in the province followed by moderate general rain on the 29th and 30th, heaviest and most general in South-West Bengal and Bihar.

The heavy rainfall of the 17th and 18th gave rise to disastrous floods in the Midnapore district.

The rainfall of the month was in very large excess in the districts named below which received heavy downpours during the progress of the cyclonic storm :—

DIVISION.	Station.	RAINFALL.		
		Actual, June 1898.	Normal, June 1898.	Percentage variation from normal.
		Inches.	Inches.	
CHOTA NAGPUR .	Manbhum . .	19·14	9·23	+107
" . .	Hazaribagh . .	11·89	7·90	+ 51
SOUTH-WEST BENGAL	Burdwan . .	17·52	9·18	+ 91
" " .	Murshidabad .	17·84	9·32	+ 91
" " .	Bankura . .	20·04	10·55	+ 90
" " .	Birbhum . .	17·42	10·73	+ 62
EAST BENGAL . .	Chittagong Hill Tracts.	28·37	17·87	+ 59

The rainfall was normal or in moderate excess in the remaining districts in Bengal and North Orissa. It was in moderate defect in Bihar, South Orissa and Sikkim. Data are given below for the districts in these three areas in which the rainfall averaged upwards of 30 per cent. in defect :—

DIVISION.	District.	RAINFALL.		
		Average actual, June 1898.	Average normal, June.	Percentage variation from normal.
		Inches.	Inches.	
SIKKIM . . .	Darjeeling .	13·52	22·16	—39
BIHAR . . .	Monghyr .	3·05	6·96	—56
" . . .	Patna . .	4·09	6·70	—39
" . . .	Champaran .	6·46	9·94	—35
ORISSA . . .	Puri . .	5·74	8·47	—32

The following table gives a summary of the rainfall data of the month for the nine rainfall divisions of the province :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.
				Inches.	Inches.	Inches.
Bengal, East . .	15·2	15·9	—0·7	18·99	17·04	+ 1·95
" Deltaic . .	12·3	12·8	—0·5	10·10	10·66	— 0·56
" Central . .	11·5	11·8	—0·3	11·92	9·99	+ 1·93
" North . .	18·5	15·8	+2·7	21·85	21·14	+ 0·71
" Hills . .	17·8	20·5	—2·7	16·29	27·22	—10·93
Orissa . . .	9·8	10·8	—1·0	6·97	9·20	— 2·23
Chota Nagpur . .	7·8	10·2	—2·4	11·35	8·34	+ 3·01
South Bihar . . .	5·9	7·4	—1·5	4·14	6·14	— 2·00
North " . . .	7·9	9·5	—1·6	6·63	8·85	— 2·22

The data of the preceding table show that the rainfall of the month averaged 36 per cent. in excess in Chota Nagpur, 19 per cent. in excess in Central Bengal, 11 per cent. in excess in East Bengal and 3 per cent. in excess in North Bengal. It was 33 per cent. in defect in

South Bihar, 25 per cent. in defect in North Bihar, 24 per cent. in Orissa, 40 per cent. in Sikkim and 5 per cent. in Deltaic Bengal.

The rainfall of the month was less than usual in Assam, the deficiency being greatest in the Surma Division. Almost daily rain fell in that area, but the amounts were generally small, except between the 14th and 23rd, when moderately heavy rain was received. The Assam Valley received light local falls of little importance between the 1st and 9th and moderate daily rain from the 12th to the 24th. During the remainder of the month light local showers were received, chiefly in the Surma Division.

The total rainfall of the month at Cherrapunji was 90·46 inches, of which 53·64 inches fell during the five days from the 18th to the 22nd. The largest amount recorded in 24 hours at that station was 15·96 inches, on the 20th.

The following table gives comparative data for the plains districts in the province of Assam:—

District.	Rainfall.			
	Average actual, June 1898.	Average normal, June	Variation of actual from normal, June 1898	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Cachar	18·83	19·17	—0·34	— 2
Sylhet	20·31	26·77	—6·46	—24
Goalpara	30·67	26·09	+4·58	+18
Kamrup	11·83	15·47	—3·64	—24
Darrang	13·21	13·22	—0·01	0
Nowgong	10·44	12·99	—2·55	—20
Sibsagar	11·38	12·22	—0·84	— 7
Lakhimpur	18·90	16·83	+2·07	+12

The rainfall of the month was hence normal or in moderate excess in five districts, and was in moderate defect in Sylhet, Kamrup and Nowgong.

Rain was received in the North-Western Provinces, chiefly during two periods. The first period was from the 8th to the 17th. The rainfall during this period was scanty in the western division, moderate in Oudh, the south-eastern, central and submontane divisions and heavy in the hill districts. The hill districts and the central and submontane divisions received occasional showers from the 23rd to the 28th. Moderate to heavy general rain fell over the whole province on the 29th and 30th. The following gives comparative data for the eight rainfall divisions of the province :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.
				Inches.	Inches.	Inches.
North-Western Provinces (East).	5·1	5·0	+0·1	4·40	4·29	+0·11
Oudh (South)	6·1	4·6	+1·5	5·26	4·39	+0·87
„ (North)	6·7	5·6	+1·1	4·97	4·93	+0·04
North-Western Provinces (Central).	5·5	4·4	+1·1	4·78	3·53	+1·25
North-Western Provinces (West).	1·7	3·2	—1·5	1·13	2·35	—1·22
North-Western Provinces (East Submontane)	7·0	6·2	+0·8	7·19	5·54	+1·65
North-Western Provinces (West Submontane).	5·6	5·4	+0·2	5·26	5·16	+0·10
North-Western Provinces (Hills).	12·8	10·3	+2·5	10·17	7·53	+2·64

The preceding table shows that the rainfall of the month was above the normal in all divisions, except the western. The excess was small in amount, except in the hill and central divisions in both of which it averaged 35 per cent. The following gives comparative data for the five districts comprised in the western division in which the rainfall of the month was more or less considerably in defect :—

District	Rainfall			
	Average actual, June 1898.	Average normal, June	Variation of actual from normal, June 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Agra	1·01	2·26	—1·25	—55
Muttra	0·89	2·00	—1·11	—56
Aligarh	1·00	2·51	—1·51	—60
Bulandshahr	0·59	2·57	—1·98	—77
Meerut	1·86	2·46	—0·60	—24

The rainfall of the month was below the normal over the greater part of the Punjab.

There were three periods of rain during the month. The first period was from the 1st to 3rd. The north-west and hill districts including Bannu, Simla and Kangra

received light showers during this period, chiefly from thunderstorms or duststorms.

The second period extended from the 9th to 15th. The southern, central, submontane, north-west and hill districts obtained light to moderate rain during this period, chiefly from thunderstorms, and the western division only light local showers. The falls were generally light. The Umballa, Hissar, Rohtak, Karnal, Ludhiana, Jullundur, Hoshiarpur, Gurdsapur and Amritsar districts, however, received moderate rain during this burst.

The third period commenced on the 30th, and continued until the 4th July. The submontane and parts of the north-west and central divisions obtained light to moderate rain on the 30th.

The rainfall of the month was more or less below the average over the greater part of the province. The following table gives comparative data for the seven rainfall divisions of the province. It shows that the rainfall of the month was practically normal in the north-west, south-east and south divisions. It averaged 42 per cent. in defect in the central division and 11 per cent. in defect in the submontane division :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.	Average actual, June, 1898.	Average normal, June.	Variation of actual, from normal June 1898.
				Inches.	Inches.	Inches.
South-East Punjab .	2·8	2·9	—0·1	2·33	2·52	—0·19
South ,, .	1·9	2·2	—0·3	1·58	1·62	—0·04
Central ,, .	1·4	2·2	—0·8	0·92	1·58	—0 66
Punjab Submontane .	3·2	3·1	+0·1	2·48	2·78	—0·30
,, Hills . .	8·4	6·9	+1·5	6·49	4·78	+1·71
North Punjab . .	1·7	1·6	+0·1	0·96	0·89	+0·07
West ,, . .	1·6	1·3	+0·3	0·72	0·67	+0·05

No rain fell in Baluchistan during the month.

Occasional light showers were received in Kashmir, chiefly on the 2nd, 29th and 30th. The rainfall of the month was very scanty and probably much below the normal of the month.

Rajputana received rain almost solely during two periods. The first was from the 9th to the 19th, corresponding to the first advance of monsoon winds over that area. The falls were in the majority of cases light The second period commenced on the 29th. The rainfall was heavy on the 29th in the Kerowlee and Bhurtpore states and on the 30th in the Ulwar state. The following gives comparative data for the more important states :—

STATE.	RAINFALL.			
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Jodhpur . . .	0·32	1·82	—1·50	—82
Jeypore . . .	1·21	2·65	—1·44	—54
Ajmere . . .	0·91	2·35	—1·44	—61
Bhurtpore . . .	2·96	2·20	+0·76	+35
Ulwar . . .	2·30	3·53	—1·23	—35
Kotah . . .	2·33	4·05	—1·72	—42
Kerowlee . . .	4·06	3·63	+0·43	+12
Oodeypore . . .	1·79	4.30	—2·51	—58
Dholpur . . .	0·98	?	?	?
Sirohi	2·13	4·97	—2·84	—57

Central India obtained rain during two periods, *viz.*, from the 9th to the 19th and from the 27th to the 30th. The rainfall during the first period was moderate, the only heavy falls being 5·70 inches at Narsinghgarh on the 16th and 4·78 inches at Jobat in Gwalior on the 15th. The rainfall of the second period was not only heavier but more equally distributed, and a large number of stations received falls in 24 hours exceeding 2 inches. The following gives falls exceeding 3 inches :—

STATE.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Bhopal . .	Sironj . . .	29th June .	4·76
Bundelkhand . .	Charkhari . .	,, ,, .	3·40
Bhopal . .	Kurwai . . .	30th ,, .	3·04

Comparative data of the rainfall for the month are given for the larger states in the following table :—

STATE.	RAINFALL.			
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Rewah	7·33	8·02	—0·69	— 9
Bundelkhand . .	7·51	6·00	+1·51	+25
Gwalior. . . .	2·69	4·61	—1·92	—42
Bhopal	5·10	7·39	—2·29	—31
Indore	5·63	6·65	—1·02	—15
Rutlam	3·22	5·41	—2·19	—40
Nagode. . . .	8·33	5·97	+2·36	+40
Maihar	5·84	7·85	—2·01	—26

Little or no rain fell in the Central Provinces between the 1st and 6th and only occasional thunder showers during the second week of the month. On the 14th general rain due to the advance of the monsoon currents from the west coast commenced.

Daily general rain fell between the 15th and the 19th, when the rains ceased temporarily for an interval of a week. Moderate general rain was received on the last three days of the month.

The heaviest falls in 24 hours during the month were 4·89 inches at Umrer and 4·12 inches at Drug on the 15th and 4·00 inches at Bijeraghogarh on the 28th. The daily falls were as a rule moderate in amount.

The following table gives a summary of the rainfall data of the month for the three rainfall divisions of the province, and also for Berar which received moderate daily rain between the 8th and 19th and on the 29th and 30th:—

Division.	Number of rainy days.			Rainfall.		
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.	Average actual, June 1898.	Average normal, June.	Percentage variation from normal.
				Inches.	Inches.	
Central Provinces (East)	7·9	9·2	—1·3	6·67	8·31	—20
" " (Central)	9·3	9·1	+0·2	8·19	8·11	+ 1
" " (West) .	9·3	8·8	+0·5	6·96	7·49	— 7
Berar . . .	9·3	?	?	5·74	7·17	—20

The rainfall was normal in the central and western divisions of the Central Provinces and in moderate defect in the eastern division and in Berar, in both of which the deficiency averaged 20 per cent. The rainfall was, however, well distributed and characterized by the absence of heavy cyclonic downpours.

The monsoon rains commenced in the same manner on the Bombay Coast in May 1898 as in May 1897. They were preceded by a period of showery weather in Malabar and the Konkan extending from the commencement of the month to the 8th. The falls during the period were generally light to moderate and were heaviest in Malabar and accompanied thunderstorms.

The first heavy burst of the monsoon rains proper occurred in North Kanara on the 9th, in Ratnagiri on the 10th and in Kolaba and Thana on the 14th. This initial burst of rain in the Konkan was not so heavy as usually occurs. The following gives average data of the rainfall in the coast districts from the 9th to the 15th:—

District.	Average actual rainfall during 24 hours preceding 8 A.M. of							Total rainfall of period 9th to 15th June 1898.
	9th June.	10th June.	11th June.	12th June.	13th June.	14th June.	15th June.	
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
North Kanara	2·70	1·84	2·55	2·24	1·96	3·29	1·40	15·98
Ratnagiri .	0·57	2·28	4·72	2·25	2·27	6·01	5·90	24·00
Kolaba .	0·49	1·10	1·86	0·87	1·40	4·52	3·18	13·42
Thana . .	0·15	0·40	2·00	0·78	0·83	2·66	1·55	8·37

The chief feature of the establishment of the monsoon rains on the Konkan coast was the heavy downpours in the Ratnagiri district on the 14th, 15th and 16th. The following gives data of the heaviest rainfalls exceeding 8 inches:—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Ratnagiri . .	Rajapur . . .	14th June .	11·14
" . . .	Vengurla . . .	" " . .	8·70
" . . .	Chiplun . . .	15th " . .	10·00
" . . .	Ratnagiri . .	" " . .	8·42
" . . .	Khed . . .	" " . .	8·20
" . . .	Mandangad . .	16th " . .	8·41

The excessive rainfall on the summit of the West Ghats during this period is shown by the following data for two hill stations:—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of				Total rainfall of period 15th to 18th June 1898.
		15th June.	16th June.	17th June.	18th June.	
		Inches.	Inches.	Inches.	Inches.	Inches.
Satara . .	Malcolmpeth .	9·25	10·75	12·10	7·18	39·28
Poona . .	Lanoli . .	0·97	3·77	8·05	1·68	14·47

The Bombay Deccan districts received daily rain during the second week of the month, *i.e.*, from the 13th to the 20th, and light local showers during the remainder of the month. The North Deccan districts, including Khandesh, Poona, Nasik and Ahmednagar, received light to moderate rain from the 10th to the 21st and from the 28th to the end of the month. The rainfall of the month was in moderate to large excess in the Dharwar and Satara dis-

tricts and normal in Belgaum, Bijapur and Poona. It was irregularly distributed in the Bijapur and Poona districts. It was in moderate defect in the remaining districts, including Ahmednagar, Sholapur, Nasik and Khandesh.

The following table gives comparative data for the collectorates in the Deccan and Khandesh :—

DISTRICT.	RAINFALL.			
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Dharwar	4·89	3·54	+ 1·35	+38
Satara	11·46	7·09	+ 4·37	+62
Belgaum	8·64	8·24	+ 0·40	+ 5
Sholapur	4·03	4·64	− 0·61	−13
Bijapur	3·69	3·59	+ 0·10	+ 3
Poona	7·69	7·84	− 0·15	− 2
Ahmednagar	3·07	4·27	− 1·20	−28
Nasik	5·92	6·89	− 0·97	−14
Khandesh	4·03	5·12	− 1·09	−21

Gujarat received moderate rain from the 10th to the 20th, and occassional showers during the remainder of the month. Kathiawar obtained light to moderate rain between the 11th and 18th and Cutch light local showers during the same period. Sind received no rain.

The following table gives comparative data of the rainfall of the month in the six divisions of the Bombay Presidency and also for Baluchistan :—

DIVISION.	RAINFALL.		
	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.
	Inches.	Inches.	Inches.
Konkan	31·12	27·14	+ 3·98
Bombay Deccan	7·11	5·80	+ 1·31
Khandesh	4·37	5·69	− 1·32
Gujarat	9·28	6·26	+ 3·02
Kathiawar	3·77	3·26	+ 0·51
Sind	0·01	0·18	− 0·17
Baluchistan Hills	0·01	0·46	− 0·45

The data of the preceding table show that the rainfall of the month was favourably distributed, and was above the normal over by far the greater part of the Presidency.

Weather was showery in the Malabar districts of Madras at the commencement of the month. Heavy rain began to fall on the 6th and continued steadily during the remainder of the month. The rainfall averaged more than two inches on four days only in the Malabar district, and on twelve days in the South Canara district. The following gives details of this heavy rain:—

DISTRICT.	AVERAGE ACTUAL RAINFALL DURING 24 HOURS PRECEDING 8 A.M. OF												Total.
	7th June.	9th June.	10th June.	11th June.	12th June.	13th June.	14th June.	15th June.	17th June.	18th June.	19th June.	20th June.	
	"	"	"	"	"	"	"	"	"	"	"	"	"
South Canara	2·24	2·28	2·68	2·56	2·38	3·07	4·05	2·87	2·53	3·67	3·34	2·96	34·63

The rainfall of the month averaged 31·47 inches in the Malabar district and 44·79 inches in the South Canara district and was normal in amount in both districts. The heaviest falls in 24 hours were 7·30 inches at Tirurangadi on the 7th and 6·67 inches at Karakal. The data illustrate clearly the character of the rainfall accompanying the monsoon proper in the west coast districts as distinguished from the rainfall in May due to local thunderstorms. The burst of rain initiating the monsoon was not so heavy as in June 1897. Although the monsoon rains commenced on the Malabar coast a week later than usual, the rainfall of the month in the Malabar division was normal in both the South Canara and Malabar districts.

The south and south-central divisions of Madras received occasional showers, local in character, during the month and the rainfall was more or less in defect in these two divisions. It was most largely below the normal in the Salem district.

The east coast south and central divisions obtained occasional showers, but the rainfall of the month was more or less in defect in all districts in these two divisions except Nellore. The defect was most marked in the North Arcot, Tanjore and Trichinopoly districts and was, relatively to the normal, absolutely greatest in the Trichinopoly district which obtained barely 22 per cent. of its normal amount.

The Deccan districts received occasional showers from the 3rd to the 13th and again from the 26th to the 30th. The rainfall of the month was normal in amount in Kur-

nool, in moderate defect in Anantapur and in large defect in Bellary (39 per cent.) and in Cuddapah (55 per cent.).

The northern coast districts received occasional rain from the 1st to the 12th and the 26th to the 30th and heavy rain from the 13th to the 16th during the formation and early advance of the cyclonic storm in the Bay. The following falls exceeding 5 inches in 24 hours were registered on the 14th :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M of date.
			Inches.
GANJAM	Purushottapur . .	14th June	6·35
VIZAGAPATAM . . .	Malkanagiri . .	" "	6·18
"	Balacheruvu . .	" "	6·98
"	Polavaram . .	" "	6·61
"	Yellamanchili . .	" "	5·60

The rainfall of the month was in moderate to large excess in this division, and more especially in the Ganjam district, which received nearly double the normal fall of the month.

The following gives comparative data for the 22 collectorates of the Presidency :—

District.	Number of rainy days.		Rainfall.		
	Average actual, June 1898.	Average normal, June.	Average actual, June 1898.	Average normal, June.	Variation of actual from normal, June 1898.
			Inches.	Inches.	Inches.
Ganjam	10·2	6·4	8·33	4·76	+3·57
Vizagapatam	9·3	8·1	7·38	5·91	+1·47
Godavari	6·5	5·9	5·45	4·55	+0·90
Kistna	6·9	6·0	3·38	4·29	—0·91
Nellore	3·3	3·1	1·89	1·65	+0·24
Chingleput	4·2	4·8	2·22	3·10	—0·88
Madras	5·0	4·7	2·09	2·11	—0·02
North Arcot	2·7	4·5	1·55	2·86	—1·31
South Arcot	3·8	4·0	1·81	2·16	—0·35
Tanjore	2·1	3·2	0·95	1·97	—1·02
Trichinopoly	0·7	2·1	0·27	1·21	—0·94
Madura	1·7	2·3	0·91	1·21	—0·30
Tinnevelly	1·6	2·0	0·59	0·87	—0·28
Malabar	22·7	23·9	31·47	32·01	—0·54
South Canara	25·3	26·2	44·79	44·96	—0·17
Salem	2·8	4·4	1·14	2·54	—1·40
Coimbatore	2·6	3·0	0·85	1·42	—0·57
Nilgiris	11·8	13·8	7·78	10·64	—2·86
Cuddapah	2·4	4·4	1·03	2·30	—1·27
Anantapur	2·5	4·4	1·84	2·32	—0·48
Bellary	4·5	5·2	1·77	2·89	—1·12
Kurnool	4·8	5·3	3·06	3·08	—0·02

Table

Abstract of Observations taken at 8 A.M. at 21

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level, in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·036	...	...	...	...	...	...	...	86·6	+0·9	77·0	+0·8	81·8	+0·9	9·6	...	...	...	...	19·1
1	Tenasserim and Bay Islands.	Car Nicobars	25	29·806	?	29·759	29·904	18th	29·715	6th	·189	81·2	86·5	?	77·9	?	82·2	?	8·6	90·2	3rd	74·5	10th	15·7
		Port Blair	61	29·739	−·022	29·731	29·815	18th	29·668	11th	·147	81·8	85·9	?	78·9†	?	82·4†	?	7·0	90·0	3rd	73·4	26th	16·6
		Mergui	96	29·743	?	29·771	29·824	18th	29·675	4th	·149	78·9	85·9	?	75·4	?	80·7	?	10·5	90·1	21st	73·4	2 days	16·7
		Tavoy	26	29·793	−·050	29·750	29·869	18th	29·729	25th	·140	78·4	84·4	−0·3	75·4	+0·8	79·9	+0·3	9·0	91·2	2 days	71·5	25th	19·7
		Moulmein*	94	29·681	−·046	29·712	29·740	18th	29·603	6th	·137	78·4	85·4	+1·1	75·6	+1·1	80·5	+1·1	9·8	91·5	2 days	72·8	20th	18·7
2	Lower Burma	Rangoon	41	29·723	−·037	29·701	29·785	18th	29·643	24th	·142	79·0	86·9	+0·7	76·6	+0·2	81·8	+0·5	10·3	93·2	3rd	73·9	3 days	19·3
		Bassein	27	29·724	−·034	29·686	29·801	1st	29·657	25th	·144	80·2	86·1	0	77·0	+0·8	81·6	+0·4	9·1	93·2	3rd	73·7	25th	19·5
		Diamond Island.	41	29·712	−·034	29·688	29·792	1st	29·656	5th	·136	83·2	86·4	+0·9	78·1	?	82·3	?	8·2	90·6	3rd	73·4	3 days	17·2
5	Arakan	Akyab	20	29·668	−·033	29·631	29·776	1st	29·575	16th	·201	81·3	87·1	+1·2	79·6	+0·7	82·9	+1·0	8·5	93·9	1st	74·3	22nd	19·6
3	Central Burma	Toungoo	183	29·561	−·033	29·686	29·610	2 days	29·488	24th	·122	80·0	91·1	+2·7	76·1	+0·9	83·6	+ 1·8	15·0	101·7	3rd	74·2	3 days	27·5
	II.—Burma Inland.		...	...	−·032	...	...	...	...	...	...	...	92·7	+1·3	77·3	+1·1	85·0	+1·2	15·4	...	...	...	...	26·1
3	Central Burma	Thayetmyo	134	29·591	?	29·666	29·663	1st	29·519	24th	·144	82·2	93·0	+2·0	77·8	+1·4	85·4	+1·7	15·2	99·6	1st	75·1	21st	24·5
4	Upper Burma	Minbu	165	29·537	−·033	29·646	29·614	2 days	29·460	22nd	·154	82·1	94·5	+1·9	78·7	+1·3	86·6	+1·6	15·8	103·1	2nd	76·1	2 days	27·0
		Yamethin	657	29·072	?	29·677	29·157	1st	28·996	24th	·161	80·5	91·3	?	75·3	0	83·3	?	16·0	101·0	13th	72·1	23rd	28·9
		Mandalay	250	29·438	−·037	29·635	29·498	27th	29·369	22nd	·129	84·6	96·7	+2·1	80·1	+1·8	88·5	+2·0	16·6	100·6	14th	75·1	23rd	25·5
		Kindat	377	29·240?	?	29·569?	29·389	1st	29·119	22nd	·270	79·9	90·1	+0·2	76·3	+0·1	83·2	+0·2	13·8	97·8	5th	71·5	1st	26·3
		Bhamo	381	29·303	−·026	29·640	29·396	1st	29·208	22nd	·190	78·8	90·5	+0·2	75·6	+0·8	83·1	+0·5	14·9	97·6	2nd	73·3	29th	24·3
4(a)	Burma Hill Stations.	Taunggyi	?				Not re	corded.				69·6	78·3	?	64·3	?	71·3	?	14·0	83·2	2 days	60·5	10th	22·7
		Lashio	?	27·001	+·009	?	27·090	1st	26·946	22nd	·144	73·1	86·6	+1·8	69·1	+0·1	77·9	+1·0	17·5	95·5	2nd	61·0	12th	34·5
	III.—Assam		...	...	−·031	...	...	...	...	...	...	...	88·9	+1·7	76·3	+0·4	82·6	+1·1	12·7	...	...	...	...	24·3
7	Surma	Silchar	104	29·563	−·022	29·618	29·714	1st	29·416	17th	·298	80·3	90·9	+2·2	76·4	+0·3	83·7	+1·3	14·5	96·6	5th	72·3	1st	24·3
9	Brahmaputra	Sibsagar	333	29·315	−·041	29·604	29·478	2nd	29·187	22nd	·291	80·1	89·1	−0·6	75·5	?	82·3	?	13·6	94·2	8th	68·5	1st	25·7
		Dhubri	115	29·498	−·031	29·568	29·678	1st	29·285	20th	·393	80·4	86·8	+1·2	76·9	+0·5	81·9	+0·9	9·9	94·7	9th	71·7	23rd	23·0
	IV.—Bengal and Orissa.		...	...	−·024	...	...	...	...	...	...	...	90·6	−0·2	78·2	+0·1	84·4	0	12·4	...	...	...	...	24·8
6	East Bengal	Chittagong	87	29·560	−·038	29·594	29·680	2 days	29·425	16th	·255	82·1	87·5	+1·3	76·8	+0·3	82·2	+0·8	10·7	94·2	13th	72·1	1st	22·1
		Noakhally	43	29·594	?	29·584	29·723	1st	29·440	16th	·283	81·6	86·9	?	76·4	?	81·6	?	10·5	91·5	27th	70·8	23rd	20·7
		Comilla	36	29·600	?	29·584	29·756	1st	29·432	17th	·324	81·6	88·5	?	76·2	?	82·4	?	12·3	93·3	3 days	69·8	23rd	23·5
		Sirajganj	49	29·546	?	29·545	29·711	1st	29·349	17th	·362	80·5	88·5	?	76·8	?	82·7	?	11·7	94·3	14th	71·2	1st	23·1
		Narayanganj	26	29·597	−·022	29·571	29·760	1st	29·413	17th	·347	81·9	88·4	−0·6	78·2	−0·1	83·3	−0·4	10·2	93·6	13th	71·2	1st	22·4
		Barisal	13	29·607	−·019	29·565	29·761	1st	29·421	16th	·340	83·4	88·4	−0·6	78·5	+0·7	83·4	+0·1	9·9	93·3	27th	73·1	23rd	20·2
		Mymensingh	59	29·566	−·027	29·576	29·724	1st	29·381	17th	·343	81·1	87·8	+0·6	77·3	+0·8	82·6	+0·7	10·5	93·2	14th	72·5	23rd	20·7
10	Deltaic Bengal	Faridpur	46	29·581	?	29·575	29·741	1st	29·391	17th	·350	81·7	89·3	?	77·4	?	83·4	?	11·9	92·8	4 days	69·9	1st	22·9
		Jessore	33	29·569	−·022	29·548	29·719	1st	29·355	16th	·364	83·3	91·1	−0·5	78·4	−0·5	84·8	−0·5	12·7	97·0	23rd	71·2	2 days	25·8
		Calcutta	21	29·569	−·015	29·535	29·731	1st	29·327	16th	·404	83·2	90·9	−0·4	78·4	−0·4	84·7	−0·4	12·5	97·4	23rd	71·7	1st	25·7
		Saugor Island	25	29·550	−·032	29·519	29·705	1st	29·307	16th	·398	85·1	90·7	0	81·5	−0·6	86·1	−0·3	9·2	93·9	5 days	73·6	2nd	20·3
		Krishnagar	47	29·548	?	29·543	29·714	1st	29·333	17th	·381	83·5‡	92·2‡	?	77·6‡	?	84·9‡	?	14·6	96·2	15th	71·7	1st	24·5
		Midnapore	149	29·430	?	29·525	29·577	1st	29·224	16th	·353	84·0	93·9	?	79·0	?	86·5	?	14·9	101·8	5th	72·2	5th	29·6

* Mean of 29 days † Mean of 28 days. ‡ Mean of 17 days.

I.

stations in India, Burma, etc., in June, 1898.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 30th June 1898.	Normal rainfall for period, 1st to 30th June.	Variation from normal of period, 1st to 30th June.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28·64	27·47	+2·33	...	...	...	...	I.—Burma Coast and Bay Islands.		
...	...	...	...	...	...	...	...	2	4·3	?	?	88	·931	9·4	17	?	?	18·24	?	?	18·24	?	?	4·70	Car Nicobars ƒ	Tenasserim and Bay Islands.	1
...	...	...	...	...	2	14	13	1	12·6	10·0	+ 26	88	·957	8·7	21	?	?	16·70	18·79	−2·09	16·70	18·79	−2·09	3·11	Port Blair .		
21	...	...	...	...	3	4	1	1	1·1	1·9	− 42	92	·897	7·2	27	?	?	30·61	31·44	−0·83	30·61	31·44	−0·83	4·10	Mergui.		
22	...	..	...	...	...	8	...	...	0·9	?	?	92	·890	7·9	26	?	?	47·32	39·39	+7·93	47·32	39·39	+7·93	5·05	Tavoy.		
...	...	...	6	9	7	4	3	...	3·6	3·4	+ 6	92	·891	8·4	24	27·00	−3·00	33·66	35·72	−2·06	33·66	35·72	− 2·06	5·60	Moulmein.		
...	...	...	...	2	8	13	5	2	4·1	5·3	− 23	92	·930	8·3	21	23·27	−2·27	15·69	17·51	−1·82	15·69	17·51	− 1·82	2·20	Rangoon .	Lower Burma.	2
4	...	...	...	7	10	5	2	2	4·8	4·0	+ 20	92	·950	6·8	23	24·82	−1·82	32·24	22·56	+9·68	32·24	22·56	+ 9·68	10·75	Bassein.		
...	...	...	1	1	5	19	3	1	13·4	8·5	+ 65	81	·925	7·7	19	21·73	−2·73	22·61	23·20	−0·59	22·61	23·20	− 0·59	5·05	Diamond Island.		
...	1	2	12	6	5	4	...	...	4·9	3·9	+ 26	92	·989	8·5	23	23·09	−0·09	53·08	43·99	+9·09	53·08	43·99	+ 9·09	14·97	Akyab. .	Arakan.	5
2	...	...	3	15	9	1	...	...	4·9	4·8	+ 2	90	·931	8·4	20	20·91	−0·91	16·25	14·61	+1·64	16·25	14·61	+ 1·64	2·52	Toungoo .	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·01	8·35	−2·33	...	...	...	...	II.—Burma Inland.		
...	...	...	...	...	29	...	1	...	3·5	8·2	− 57	79	·869	9·2	12	15·00	−3·00	3·15	6·94	−3·79	3·15	6·94	− 3·79	0·37	Thayetmyo .	Central Burma.	3
1	...	...	1	23	5	...	...	...	17·0	?	?	79	·873	8·1	13	?	?	6·24	3·90	+2·34	6·24	3·90	+ 2·34	0·96	Minbu .	Upper Burma.	4
1	...	...	...	13	16	...	...	...	9·6	?	?	85	·879	4·8	8	?	?	8·05	4·50	+3·55	8·05	4·50	+ 3·55	2·85	Yamethin.		
...	1	2	1	8	12	6	...	...	7·3	?	?	73	·857	7·4	5	?	?	2·00	6·21	−4·21	2·00	6·21	− 4·21	0·80	Mandalay.		
17	...	...	...	3	4	1	3	2	2·2	?	?	89	·918	8·0	13	?	?	4·89	14·87	−9·98	4·89	14·87	− 9·98	0·91	Kindat.		
17	2	...	1	...	1	7	2	...	2·6	?	?	90	·881	8·5	21	?	?	11·75	13·66	−1·91	11·75	13·66	− 1·91	1·59	Bhamo.		
5	...	...	...	6	12	7	...	...	?	?	?	85	·621	9·8	12	?	?	6·77	14·63	−7·86	6·77	14·63	− 7·86	1·46	Taunggyi .	Burma Hill Stations.	4 (a)
			Not	recorde	d.				?	?	?	90	·730	8·8	13	?	?	11·57	10·24	+1·33	11·57	10·24	+ 1·33	3·45	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18·81	19·65	−0·84	...	...	...	...	III.—Assam.		
24	...	...	2	1	...	1	1	1	2·1	3·1	− 32	89	·934	8·8	20	21·33	−1·33	16·06	20·73	−4·67	16·06	20·73	− 4·67	2·50	Silchar .	Surma.	7
9	3	8	2	1	2	4	1	...	5·3	2·6	+104	92	·948	8·3	17	16·70	+0·30	12·01	13·69	−1·68	12·01	13·69	− 1·68	2·00	Sibsagar .	Brahmaputra.	9
2	2	7	8	1	4	4	1	1	5·2	4·9	+ 6	88	·919	6·8	18	17·87	+0·13	28·36	24·53	+3·83	28·36	24·53	+ 3·83	6·33	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15·29	13·26	+2·03	...	...	...	...	IV.—Bengal and Orissa.		
3	...	2	4	13	3	4	...	1	8·5	6·9	+ 23	86	·949	7·3	15	16·62	−1·62	27·58	22·69	+4·89	27·58	22·69	+4·89	5·36	Chittagong .	East Bengal.	6
...	...	1	7	15	3	4	...	...	4·9	?	?	89	·967	7·0	16	18·35	−2·35	27·32	24·19	+3·13	27·32	24·19	+3·13	7·64	Noakhali.		
1	...	4	3	12	10	..	...	...	5·8	?	?	82	·882	7·7	16	17·30	−1·30	16·54	17·65	−1·11	16·54	17·65	− 1·11	4·91	Comilla.		
6	...	1	5	7	9	1	...	1	3·2	?	?	91	·949	8·3	17	13·09	+3·91	15·70	11·12	+4·58	15·70	11·12	+ 4·58	2·65	Sirajganj.		
2	...	...	5	10	10	1	2	...	8·0	7·2	+ 11	89	·977	8·3	14	15·08	−1·08	12·23	13·06	−0·83	12·23	13·06	− 0·83	2·25	Narayanganj.		
18	...	1	1	4	4	2	...	...	1·9	?	?	86	·935	8·4	14	16·88	−2·88	10·97	16·02	−5·05	10·97	16·02	− 5·05	1·70	Barisal.		
7	...	...	10	11	1	1	...	...	2·3	?	?	87	·928	7·3	16	18·42	−2·42	23·36	6·01	+17·35	23·36	6·01	+17·35	4·25	Mymensingh.		
12	...	...	...	10	5	3	...	...	1·7	?	?	90	·984	6·5	14	14·12	−0·12	12·98	12·38	+0·60	12·98	12·38	+ 0·60	3·80	Faridpur .	Deltaic Bengal.	10
9	...	...	3	9	4	4	1	...	3·7	4·9	− 24	87	·996	8·2	14	14·54	−0·54	8·26	12·50	−4·24	8·26	12·50	− 4·24	2·12	Jessore.		
...	...	1	7	9	5	6	2	...	5·8	6·2	− 6	85	·974	7·7	13	12·77	+0·23	9·15	10·71	−1·56	9·15	10·71	− 1·56	3·31	Calcutta.		
...	...	2	2	6	9		...	1	17·5	14·6	+ 20	83	1·001	7·8	10	12·19	−2·19	7·76	9·84	−2·08	7·76	9·84	− 2·08	3·18	Sangor Island.		
...	...	...	7	9	9	2	3	...	5·9	?	?	84‡	·962‡	6·9	15	12·15	+2·85	15·33	9·33	+6·00	15·33	9·33	+ 6·00	4·21	Krishnagar.		
7	3	5	2	2	11	...	...	...	4·0	?	?	81	·933	3·6	12	11·35	+0·65	15·64	9·42	+6·22	15·64	9·42	+ 6·22	3·06	Midnapore.		

ƒ 28 Variables.

Table

Abstract of Observations taken at 8 A.M. at 215

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura	298	29·254?	?	29·499?	29·396	2nd	29·003	17th	·393	83·0	94·1	?	79·1	?	86·6	?	15·0	101·1	5th	69·6	1st	31·5
		Raniganj	334	29·240	?	29·520	29·403	1st	28·985	17th	·418	82·0	94·4	?	78·7	?	86·6	?	15·7	100·2	4 days	71·4	1st	28·8
		Burdwan	99	29·485	−·014	29·531	29·639	1st	29·246	17th	·393	83·1	92·9	−1·2	78·0	−1·5	85·6	−1·4	14·9	98·4	3 days	71·3	24th	27·1
		Naya Dumka	489	29·089	?	29·530	29·261	1st	28·876	17th	·385	83·8	93·4	?	77·7	?	85·6	?	15·7	99·5	23rd	68·4	1st	31·1
		Berhampore	67	29·522	−·019	29·537	29·699	1st	29·300	17th	·399	82·2	90·3	−2·3	77·8	−0·7	84·1	−1·5	12·5	95·7	23rd	71·3	1st	24·4
		Rampur Boalia.	70	29·522	?	29·541	29·699	1st	29·289	18th	·410	82·4	89·8	?	77·9	?	83·8	?	11·9	94·6	14th	70·1	1st	24·5
		Malda	72	29·510	?	29·534	29·698	1st	29·263	18th	·435	82·5	92·2	?	78·3	?	85·3	?	13·9	99·1	14th	70·5	1st	28·6
		Bogra	61	29·543	?	29·556	29·721	1st	29·321	19th	·400	81·3	89·2	−0·1	77·4	+0·4	83·3	+0·2	11·8	94·7	14th	70·2	1st	24·5
12	North Bengal	Dinajpur	123	29·476	−·024	29·553	29·664	1st	29·237	19th	·427	81·4	89·5	+0·3	77·3	+0·3	83·4	+0·3	12·2	94·8	28th	70·2	1st	24·6
		Rangpur	123	29·491	?	29·568	29·679	1st	29·270	19th	·409	81·6	88·9	?	76·7	?	82·8	?	12·2	98·2	5th	71·7	1st & 23rd	26·5
		Jalpaiguri	284	29·324	−·039	29·565	29·502	1st	29·145	21st	·357	79·9	88·2	+0·7	76·1	+1·3	82·2	+1·0	12·1	95·4	9th	72·1	6th	23·3
		Cooch Behar	156	29·456	?	29·567	29·641	1st	28·281	19th	·360	80·2	87·8	?	76·6	?	82·2	?	11·2	93·9	28th	72·6	2nd	21·3
17	North Bihar	Purnea	125	29·468	−·013	29·547	29·652	1st	29·286	18th	·366	81·9	91·9	−0·4	77·6	+0·7	84·8	+0·2	14·3	97·8	28th	70·7	1st	27·1
14	Orissa	Balasore	46	29·533	?	29·525	29·668	1st	29·342	15th	·326	85·0	93·1	+0·5	79·4	+0·8	86·3	+0·7	13·7	100·5	3 days	73·8	7th	26·7
		False Point.	21	29·572	−·025	29·534	29·700	1st	29·340	15th	·360	85·5	90·7	−0·1	80·2	0	85·5	−0·1	10·5	99·5	26th	73·1	3rd	26·4
		Cuttack	80	29·506	−·026	29·528	29·609	1st	29·263	15th	·346	84·7	95·8	−0·1	80·2	0	88·0	−0·1	15·6	103·4	2nd	75·2	19th	28·2
		Shortt's Island.	?	29·549	?	?	29·683	1st	29·332	15th	·351	84·6	91·1	?	81·0	?	86·1	?	10·1	97·6	26th	74·8	7th	22·8
		Puri	20	29·574	?	29·536	29·684	1st	29·347	15th	·337	84·9	89·6	?	80·7	?	85·1	?	8·9	96·7	27th	76·1	6th	20·6
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·022	...	...	...	...	...	...	...	97·4	−0·7	80·2	0	88·9	−0·4	17·3	...	...	...	...	31·5
15	Chota Nagpur	Hazaribagh.	2,007	27·584	−·026	29·509	27·725	2nd	27·433	17th	·292	80·8	92·1	−0·4	76·0	+0·1	84·1	−0·2	16·1	98·2	14th	68·8	1st	29·4
		Ranchi	2,128	27·482	?	29·526	27·613	2nd	27·341	17th	·272	79·7	90·9	−0·9	75·1	+0·4	83·0	−0·3	15·8	98·2	5th	69·4	1st	28·8
		Daltonganj	730?	28·838	?	29·508	28·978	2nd	28·721	15th	·257	83·3	100·8	?	82·2	?	91·5	?	18·6	108·1	5th & 7th.	74·0	29th	34·1
		Chaibassa	760	28·814	?	29·514	28·951	1st	28·640	16th	·311	84·3	96·0	−1·0	79·6	+0·1	87·8	−0·5	16·4	104·0	1st & 5th.	74·5	1st	29·5
8	South Bihar	Gaya	375	29·177	−·024	29·500	29·341	2nd	29·039	17th	·302	87·7	101·7	?	82·1	?	91·9	?	19·6	108·4	5th	75·8	1st	32·6
		Dehri*.	351	29·191	?	29·490	29·350	1st	29·069	17th	·281	88·8	100·8	?	82·4	?	91·6	?	18·4	108·4	5th	76·0	3 days	32·4
		Patna	183	29·385	−·019	29·518	29·576	2nd	29·226	22nd	·350	85·6	96·5	−0·1	80·4	+0·3	88·5	+0·1	16·1	103·0	28th	73·2	1st	29·8
		Arrah	190	29·356	?	29·495	29·542	2nd	29·207	21st	·335	86·2	98·1	?	80·7	?	89·4	?	17·4	103·4	5th	73·5	29th	29·9
		Buxar*	239	29·314	?	29·504	29·483	2nd	29·163	21st	320	86·8	98·8	?	80·7	?	89·8	?	18·1	106·0	5th	73·1	30th	32·9
17	North Bihar	Bhagalpur	160	29·414	?	29·526	29·601	2nd	29·236	17th	·365	84·2	93·9	?	78·8	?	86·4	?	15·1	101·3	12th	71·1	1st	30·2
		Darbhanga	166	29·411	−·022	29·530	29·613	1st	29·243	22nd	·370	83·0	91·7	−0·6	79·2	+0·2	85·5	−0·2	12·5	98·3	28th	72·0	1st	26·3
		Muzaffarpur	178	29·386	?	29·517	29·575	2nd	29·233	21st & 22nd	·342	82·8	92·7	?	78·7	?	85·7	?	14·0	100·2	28th	71·2	1st	29·0
		Motihari	224	29·358	?	29·538	29·555	2nd	29·172	21st	·383	82·1	91·4	?	77·1	?	84·3	?	14·3	98·0	28th	71·8	4 days	26·2
		Chapra	181	29·392	?	29·524	29·582	2nd	29·237	21st	·345	85·6	96·9	?	80·4	?	88·7	?	16·5	103·3	28th	73·1	1st	30·2
18	N.-W. Provinces (East).	Benares	267	29·285	−·011	29·503	29·463	2nd	29·171	22nd	·292	86·5	100·1	−0·9	81·6	−0·7	90·9	−0·8	18·5	109·3	5th	73·2	29th	36·1
		Allahabad	309	29·229	−·026	29·487	29·409	2nd	29·117	17th	·292	88·0	101·6	−0·8	82·1	−0·8	91·9	−0·8	19·5	109·6	5th	75·3	29th	34·3
23	N.-W. Provinces (East Sub-montane).	Gorakhpur	256	29·294	−·019	29·506	29·497	1st	29·104	21st	·393	84·9	101·5	?	79·6	−0·2	90·6	?	21·9	107·6	9th	73·7	1st	33·9
19	South Oudh	Lucknow	368	29·172	−·023	29·494	29·369	2nd	29·018	19th	·351	85·2	99·1	−2·4	81·4	−0·1	90·3	−1·3	17·7	108·8	29th	75·3	15th	33·5
20	North Oudh	Bahraich	403	29·142	?	29·501	29·350	2nd	28·951	21st	·399	85·6	97·6	?	79·4	?	88·4	?	18·2	107·5	23rd	72·5	4th	35·0
21	N.-W. Provinces (Central).	Cawnpore	416	29·116	−·027	29·479	29·301	2nd	28·974	19th	·327	87·6	101·3	+0·7	82·0	+0·5	91·7	+0·6	19·3	109·5	8th	76·0	14th & 30th.	33·5
		Mainpuri	516	29·004	?	29·466	29·192	2nd	28·860	19th	·332	89·6	103·8	?	83·9	?	93·9	?	19·9	112·2	7th	77·5	12th & 20th.	34·7

* Mean of 29 days.

I—*continued.*

stations in India, Burma, etc., in June, 1898—continued.

Wind Direction. Number of winds from									Wind Velocity.			Hygrometry 8 A.M.		Mean cloud amount.	Rainfall.									Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Mean velocity in miles per hour.	Normal.	Percentage variation.	Mean humidity.	Mean vapour tension.		Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 30th June 1898.	Normal rainfall for period, 1st to 30th June.	Variation from normal of period, 1st to 30th June.				
9	...	3	7	5	1	1	4	...	4·2	P	P	82	·927	6·3	10	12·08	−2·08	26·38	9·96	+16·42	26·38	9·96	+16·42	12·48	Bankura	Central Bengal.	11
9	...	2	7	5	4	3	...	...	3·3	P	P	84	·927	6·1	11	11·65	−0·65	18·48	9·27	+9·21	18·48	9·27	+9·21	5·25	Raniganj.		
22	1	...	2	2	...	3	...	...	P	4·9	P	84	·957	7·1	12	12·38	−0·38	18·92	8·92	+10·00	18·92	8·92	+10·00	5·07	Burdwan.		
1	1	2	10	6	4	1	3	2	2·6	P	P	79	·899	7·4	10	12·13	−2·13	11·80	9·22	+2·58	11·80	9·22	+2·58	3·50	Naya Dumka.		
10	...	1	4	5	8	2	...	...	4·3	5·5	−22	87	·963	7·2	15	11·88	+3·12	19·32	9·38	+9·94	19·32	9·38	+9·94	7·97	Berhampore.		
2	...	2	10	8	4	3	1	...	6·0	P	P	88	·981	6·9	12	12·15	−0·15	12·93	9·91	+3·02	12·93	9·91	+3·02	4·33	Rampore Boalia.		
...	...	2	7	13	6	1	...	1	2·9	P	P	85	·940	6·2	12	11·96	+0·04	7·25	10·34	−3·09	7·25	10·34	−3·09	3·94	Malda.		
			Not	re	cord	ed.			?	P	P	88	·944	6·9	16	14·23	+1·77	14·76	13·56	+1·20	14·76	13·56	+1·20	3·77	Bogra.		
...	...	1	12	10	5	...	2	...	4·3	P	P	87	·938	7·7	11	14·08	−3·08	14·36	15·49	−1·13	14·36	15·49	−1·13	4·53	Dinajpur	North Bengal.	12
3	...	2	11	2	11	...	1	...	2·4	P	P	88	·949	4·3	17	15·38	+1·62	18·70	18·62	+0·08	18·70	18·62	+0·08	3·14	Rangpur.		
1	2	4	4	11	5	1	1	1	2·2	P	P	89	·895	4·3	19	19·00	0	37·61	26·42	+11·19	37·61	26·42	+11·19	6·45	Jalpaiguri.		
12	...	5	4	4	4	...	...	1	1·9	P	P	89	·916	8·2	21	P	P	39·78	35·67	+4·11	39·78	35·67	+4·11	6·00	Cooch Behar		
2	2	6	11	7	1	...	...	1	5·1	3·3	+54	85	·930	7·1	9	11·48	−2·48	5·37	10·71	−5·34	5·37	10·71	−5·34	2·04	Purnea	North Bihar.	17
9	...	3	1	1	4	12	...	...	5·2	P	P	83	·999	4·9	10	10·81	−0·81	5·86	9·07	−3·21	5·86	9·07	−3·21	2·53	Balasore	Orissa.	14
2	...	...	3	2	5	8	9	1	10·7	11·5	− 7	81	·987	7·8	6	9·32	−3·32	2·31	9·37	−7·06	2·31	9·37	−7·06	0·82	False Point.		
6	1	5	1	...	3	6	6	2	3·9	4·0	− 3	78	·930	6·2	10	11·54	−1·54	7·56	11·53	−3·97	7·56	11·53	−3·97	2·43	Cuttack.		
...	...	1	3	2	6	15	1	2	18·6	P	P	81	·969	6·4	10	P	?	7·11	10·54	−3·43	7·11	10·54	−3·43	1·21	Shortt's Island.		
9	2	1	1	...	1	7	7	2	13·8	P	P	84	1·006	5·2	9	8·04	+0·96	2·72	8·06	−5·34	2·72	8·06	−5·34	0·63	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·98	6·58	−0·60	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
...	1	1	2	4	9	5	6	2	9·0	8·9	+1	73	·758	6·6	10	10·92	−0·92	12·99	7·63	+5·36	12·99	7·63	+5·36	4·34	Hazaribagh	Chota Nagpur.	15
1	2	1	4	6	5	7	2	2	10·0	P	P	77	·771	5·0	10	12·50	−2·50	13·37	8·48	+4·89	13·37	8·48	+4·89	6·52	Ranchi.		
8	...	...	7	1	5	4	5	...	7·8	P	P	61	·800	3·7	5	8·27	−3·27	4·71	6·03	−1·32	4·71	6·03	−1·32	2·25	Daltonganj.		
12	2	2	...	2	3	2	6	1	7·3	P	P	73	·846	2·6	6	11·46	−5·46	8·04	8·53	−0·49	8·04	8·53	−0·49	3·75	Chaibassa.		
5	...	7	5	7	1	2	2	1	9·2	3·4	+171	69	·897	4·8	8	8·04	−0·04	2·02	6·56	−4·54	2·02	6·56	−4·54	0·50	Gaya	South Bihar.	16
...	...	2	9	4	5	6	2	1	13·7	P	P	62	·827	3·4	6	7·92	−1·92	3·98	5·91	−1·93	3·98	5·91	−1·93	2·48	Dehri.*		
2	...	6	12	4	2	1	2	1	6·1	4·2	+45	74	·909	5·6	4	7·85	−3·85	3·60	7·34	−3·74	3·60	7·34	−3·74	1·40	Patna.		
2	2	1	11	7	4	1	1	1	5·3	P	P	73	·898	4·1	5	8·15	−3·15	5·82	6·14	−0·32	5·82	6·14	−0·32	2·18	Arrah.		
...	1	1	18	2	...	1	5	1	8·2	P	P	67	·846	3·9	7	7·88	−0·88	4·11	5·20	−1·09	4·11	5·20	−1·09	2·02	Buxar.*		
8	...	5	3	11	2	1	...	...	3·4	P	P	79	·922	6·6	9	9·69	−0·69	4·61	7·54	−2·93	4·61	7·54	−2·93	0·93	Bhagalpur.	North Bihar.	17
1	...	2	12	9	3	1	1	1	5·2	3·3	+58	82	·930	5·7	8	8·64	−0·64	6·01	7·56	−1·55	6·01	7·56	−1·55	1·15	Darbhanga.		
14	...	1	8	7	...	...	...	...	3·5	P	P	82	·928	4·0	6	8·00	−2·00	4·79	7·65	−2·86	4·79	7·65	−2·86	1·54	Muzaffarpur.		
...	...	8	14	4	1	2	1	...	6·7	P	P	86	·945	2·7	11	9·57	+1·43	6·99	9·18	−2·19	6·99	9·18	−2·19	1·69	Motihari.		
4	...	1	16	4	...	1	3	1	4·6	P	P	73	·887	4·3	7	7·42	−0·42	5·11	6·28	−1·17	5·11	6·28	−1·17	1·53	Chapra.		
3	1	2	8	5	1	5	5	...	6·1	5·1	+20	70	·885	4·7	6	4·64	+1·36	8·20	5·13	+3·07	8·20	5·13	+3·07	2·98	Benares	N.-W. Provinces (East).	18
1	2	1	11	1	...	6	6	2	9·9	6·9	+43	69	·884	4·7	6	4·73	+1·27	4·91	5·69	−0·78	4·91	5·69	−0·78	2·08	Allahabad.		
3	5	10	3	3	4	...	...	2	2·6	3·6	−28	78	·831	6·3	6	7·00	−1·00	5·80	9·68	−3·88	5·80	9·68	−3·88	1·75	Gorakhpur	N.-W. Provinces (East Submontane).	23
6	...	1	12	3	1	4	3	...	3·1	4·2	−26	70	·831	6·3	8	5·64	+2·36	7·77	5·43	+2·34	7·77	5·43	+2·34	3·15	Lucknow	South Oudh.	19
4	...	...	10	12	...	2	1	1	3·0	P	P	72	·888	3·4	9	P	P	4·19	5·64	−1·45	4·19	5·64	−1·45	1·10	Bahraich	North Oudh.	20
4	...	1	8	7	2	4	4	...	5·8	P	P	65	·827	2·9	8	4·30	+3·70	6·58	3·54	+3·04	6·58	3·54	+3·04	3·64	Cawnpore	N.-W. Provinces (Central).	21
1	...	...	15	2	5	...	6	1	5·0	P	P	62	·856	5·3	5	P	P	1·90	3·00	−1·10	1·90	3·00	−1·10	0·70	Mainpuri.		

Table

Abstract of Observations taken at 8 A.M. at 215

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas		...	...	−·040	...	...	...	...	...	...	...	104·2	+1·4	82·9	+3·4	93·6	+2·4	21·3	...	...	...	...	39·7
24	N.-W. Provinces (West Submontane).	Bareilly	568	28·369	−·019	29·493	29·179	2nd	28·790	20th	·389	85·0	97·7	−2·9	80·4	+0·4	89·1	−1·3	17·3	107·5	29th	74·1	11th	33·4
		Debra Dun	2,233	27·361	−·041	29·506	27·537	2nd	27·197	19th	·340	79·9	92·2	−1·3	75·4	+0·7	83·8	−0·3	16·8	100·0	8th	68·5	9th & 24th	31·5
		Roorkee	887	28·643	−·031	29·480	28·819	2nd	28·469	19th	·350	86·7	99·8	−1·6	80·8	+1·8	90·3	+0·1	19·0	107·7	29th	71·1	14th	36·6
22	N.-W. P. (West)	Meerut	738	28·787	−·029	29·475	28·964	2nd	28·624	19th	·340	88·4	100·8	−0·6	82·7	+1·9	91·8	+0·7	18·1	108·7	7th	75·9	16th	32·8
26	South-East Punjab.	Delhi	718	28·796	−·038	29·459	28·954	2nd	28·640	19th	·314	90·8	104·7	+0·4	86·0	+2·6	95·4	+1·5	18·7	112·2	7th	73·9	15th & 16th	38·3
28	Central Punjab.	Lahore	702	28·771	−·049	29·424	28·955	2nd	28·625	23rd	·330	91·3	107·7	+2·1	85·5	+5·6	96·6	+3·9	22·2	114·6	7th	74·1	12th	40·5
27	South Punjab	Sirsa	662	28·831	−·046	29·410	29·005	2nd	28·692	19th	·313	92·0	109·4	+2·8	86·2	+3·4	97·8	+3·1	23·2	115·3	6th	72·3	15th	43·0
		Patiala	818	28·689	?	29·452	28·870	1st	28·512	19th	·358	89·2	104·1	?	83·6	?	93·9	?	20·5	111·5	7th	69·9	15th	41·6
29	Punjab (Submontane).	Ludhiana	812	28·679	−·050	29·436	28·836	1st	28·509	19th	·327	91·3	107·9	+2·1	85·8	+5·7	96·9	+3·9	22·1	115·3	7th	71·6	15th	43·7
		Sialkot	830	28·654	−·044	29·428	28·837	2nd	28·481	19th	·356	93·2	110·8	+5·2	85·2	+5·1	98·0	+5·2	25·6	117·0	7th	73·1	30th	43·9
		Umballa	892	28·626	?	29·462	28·796	1st	28·457	19th	·339	87·3	105·1	?	82·2	?	93·7	?	22·9	115·4	9th	70·0	15th	45·4
31	North Punjab	Rawalpindi*	1,643	27·837	−·049	29·397	28·060	2nd	27·673	23rd	·387	91·9	110·4	+7·7	81·1	+6·4	95·8	+7·1	29·3	117·0	28th	71·2	30th	45·8
	VII.—Indus Valley and North-West Rajputana.		...	...	−·052	...	...	...	...	...	...	...	108·2	+2·8	84·1	+2·5	96·1	+2·7	24·1	...	...	...	...	36·0
31	North Punjab	Peshawar	1,110	28·379	−·064	29·388	28·677	2nd	28·215	23rd	·462	92·3	109·9	+4·5	79·3	+2·7	94·6	+3·6	30·6	117·5	29th	71·9	15th	45·6
32	West Punjab	Khushab	612	28·353	?	29·416	29·093	2nd	28·695	23rd	·398	93·7	110·6	?	?	?	?	?	?	116·4	8th	?	...	?
		Montgomery	558	28·905	?	29·411	29·105	2nd	28·767	21st	·338	95·0	112·4	+2·8	86·6	+3·2	99·5	+3·0	25·8	118·6	22nd	76·5	15th	42·1
		D. I. Khan	594	28·882	−·063	29·495	29·172	2nd	28·732	23rd	·440	92·8	109·7	?	83·3	+2·5	96·5	?	26·4	115·2	22nd & 24th	75·5	3rd	39·7
		Mooltan*	420	29·035	?	29·411	29·300	2nd	28·907	21st	·393	93·2	112·0	+5·3	87·8	?	99·9	?	24·2	117·5	5th	82·1	21st	35·4
47	Sind	Jacobabad	186	29·260	−·058	29·401	29·476	2nd	29·139	17th	·337	93·2	117·0	+5·1	86·9	+3·4	102·0	+4·3	30·1	122·0	3 days	83·0	3 days.	39·0
		Hyderabad	96	29·437	?	29·483	29·664	2nd	29·288	15th	·376	88·6	104·4	+1·2	83·0	+1·5	93·7	+1·4	21·4	114·2	17th	79·5	2nd	34·7
		Kurrachee	30	29·544	−·024	29·524	29·789	2nd	29·375	15th	·414	86·5	94·4	−0·3	82·5	+0·2	88·5	−0·1	11·9	98·4	14th	81·0	3 days.	17·4
51	West Rajputana	Bickaneer	771	28·752	?	29·472	28·928	2nd	28·624	17th	·304	91·3	109·3	+3·3	86·4	+3·9	97·8	+3·6	22·9	113·9	1st	75·0	14th & 15th.	38·9
		Pachpadra	380	29·194	?	29·524	29·385	2nd	29·038	17th	·347	87·6	107·2	?	82·4	?	94·8	?	24·8	113·0	3rd & 4th.	77·7	2nd	35·3
		Jodhpore	782	28·783	?	29·513	28·968	2nd	28·636	17th	·332	86·9	105·7	?	83·1	?	94·1	?	22·6	111·2	12th	79·8	22nd	31·4
	VIII.—East Rajputana, Central India and Gujarat.		...	...	−·026	...	...	...	...	...	...	...	100·2	+1·4	81·6	+1·8	90·9	+1·6	18·6	...	...	...	...	33·3
50	East Rajputana	Jeypore	1,431	28·151	−·031	29·509	28·312	2nd	28·029	17th	·283	88·9	105·0	+2·2	83·0	+2·9	94·0	+2·6	22·0	111·5	1st & 6th	75·9	14th & 15th	35·6
		Kotah	?				Not re	corded				90·6	107·0	?	86·4	?	96·7	?	20·6	113·1	3 days.	79·1	14th	34·0
		Sambhar	1,254	28·309	−·029	29·497	28·485	2nd	28·178	17th	·307	88·9	105·2	+3·8	84·8	+3·2	95·0	+3·4	20·4	110·0	8th	77·4	14th	32·6
		Ajmere	1,611	27·984	−·033	29·526	28·174	2nd	27·858	17th	·316	86·6	103·0	+2·7	83·3	+3·3	93·1	+3·0	19·7	107·9	12th	77·6	22nd	30·3
		Oodeypore	1,925	27·747	?	29·593	27·901	2nd	27·575	17th	·326	84·4	98·1	?	78·7	?	88·3	?	19·4	106·0	1st & 4th	73·5	15th	32·5
		Deesa	466	29·160	−·017	29·575	29·351	2nd	29·003	17th	·348	85·9	103·7	+2·1	81·0	+0·5	92·4	+1·3	22·7	110·5	4th	75·5	12th	35·0
46	Kathiawar and Cutch.	Bhuj	395	29·225	?	29·568	29·446	2nd	29·038	15th	·408	87·0	98·1	+0·9	81·0	+1·2	89·6	+1·1	17·1	104·3	17th	78·9	1st	25·4
		Rajkot	429	29·210	−·023	29·587	29·410	2nd	29·015	15th	·395	84·2	98·9	−1·0	78·2	+0·9	88·6	−0·1	20·7	107·9	3rd	70·8	1st	37·1
		Veraval	?	29·643	?	29·603	29·845	2nd	29·402	15th	·443	83·1	86·3	?	81·2	?	88·8	?	5·1	86·6	2nd & 9th	77·3	11th & 12th	11·3
		Bhavnagar Pára.	35	29·616	?	29·596	29·804	2nd	29·426	17th	·378	85·1	98·3	?	78·4	?	88·4	?	19·9	109·7	3rd	64·8	7th	44·9
49	Central India	Nowgong	757	28·800	−·033	29·500	28·964	2nd	28·682	17th	·282	87·7	101·8	−0·7	83·4	+0·7	92·6	0	18·4	113·0	4th	75·5	26th & 29th	37·5
		Indore	1,823	27·845	−·006	29·596	28·004	2nd	27·705	17th	·299	81·4	95·5	+1·3	76·4	+1·5	86·0	+1·4	19·1	107·5	3rd	71·1	10th	36·4
		Neemuch	1,630	28·011	+·001	29·574	29·191	2nd	27·865	17th	·326	83·9	109·0	+1·6	78·9	+1·9	89·1	+1·8	21·8	109·1	3rd & 5th	70·1	15th	39·0
45	Gujarat	Surat	39	29·638	−·030	29·619	29·818	2nd	29·440	14th	·378	83·5	92·6	?	79·1	?	85·9	?	13·5	104·2	3rd	75·5	11th	28·7
		Ahmedabad	164	29·489	?	29·599	29·667	2nd	29·323	15th	·344	85·7	99·6	?	80·3	?	90·0	?	19·3	109·3	3rd & 4th	73·1	11th	36·2
22	N.-W. P. (West)	Agra	555	28·961	−·046	29·460	29·134	2nd	28·831	17th	·303	92·4	105·4	+0·6	87·5	+2·7	96·5	+1·7	17·9	112·0	7th	81·4	30th	30·6
21	N.-W.P. (Central)	Jhansi	858	28·700	−·038	29·492	28·877	2nd	28·574	17th	·303	90·8	105·0	+1·8	85·9	+1·9	95·5	+1·9	19·1	114·2	7th	74·4	30th	39·8

I—*continued.*

stations in India, Burma, etc., in June 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 30th June 1898.	Normal rainfall for period, 1st to 30th June.	Variation from normal of period, 1st to 30th June.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·94	3·65	−0·78	...	...	...	...	VI.—Upper Sub-Himalayas.		
6	1	4	5	12	...	...	2	...	3·4	4·9	− 31	72	·857	5·1	6	4·91	+ 1·09	6·62	5·67	+0·95	6·62	5·67	+0·95	2·34	Bareilly .	N.-W. Provinces (West, Sub-montane).	24
12	3	1	2	2	3	4	1	2	1·6	1·6	0	73	·742	5·2	10	8·91	+ 1·09	8·35	9·25	−0·90	8·35	9·25	−0·90	2·44	Dehra Dun.		
7	...	2	...	18	1	...	...	2	4·2	3·9	+ 8	61	·748	3·5	4	5·64	− 1·64	3·27	4·71	−1·44	3·27	4·71	−1·44	2·07	Roorkee.		
7	...	...	6	11	...	3	3	...	3·1	2·6	+ 19	58	·767	3·6	2	3·64	− 1·64	2·03	2·44	−0·41	2·03	2·44	−0·41	1·22	Meerut. .	N.-W. P. (West).	12
2	1	1	7	6	...	...	8	5	6·5	4·9	+ 33	52	·730	2·8	3	4·00	− 1·00	0·50	3·35	−2·85	0·50	3·35	−2·85	0·25	Delhi . .	South-East Punjab.	26
5	...	...	5	7	4	3	4	2	3·4	3·5	− 3	50	·711	0·8	2	2·73	− 0·73	2·28	1·84	+0·44	2·28	1·84	+0·44	1·80	Lahore .	Central Punjab.	28
...	1	2	2	6	2	3	13	1	10·8	5·2	+108	48	·706	2·7	2	3·18	− 1·18	0·87	1·91	−1·04	0·87	1·91	−1·04	0·62	Sirsa .	South Punjab.	27
9	1	15	...	...	2	3	...	...	5·7‡	?	?	65	·885	2·5	2	?	?	3·67	?	?	3·67	?	?	2·62	Patiala.		
10	...	1	...	12	3	2	1	1	3·9	2·4	+ 63	52	·739	1·6	2	3·64	− 1·64	1·96	2·41	−0·45	1·96	2·41	−0·45	0·97	Ludhiana .	Punjab (Submontane).	29
6	3	4	8	6	2	1	...	...	3·6	2·4	+ 50	46	·676	1·3	3	3·73	− 0·73	1·62	3·08	−1·46	1·62	3·08	−1·46	0·97	Sialkot.		
12	...	...	11	5	...	...	2	...	2·8	?	?	66	·839	1·6	4	?	?	3·70	3·83	−0·13	3·70	3·83	−0·13	2·04	Umballa.		
20	1	...	4	1	1	...	1	1	2·8	2·6	+ 8	43	·629	2·5	2	3·55	− 1·55	0·44	1·71	−1·27	0·44	1·71	−1·27	0·30	Rawalpindi *	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·37	0·75	−0·38	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
16	3	1	...	2	2	1	...	5	3·6	4·3	− 16	39	·570	1·8	0	0·73	− 0·73	0·05	0·35	−0·30	0·05	0·35	−0·30	0·05	Peshawar .	North Punjab.	31
1	1	9	8	2	3	4	1	1	8·1	?	?	42	·658	2·2	4	1·20	+ 2·80	2·32	0·70	+1·62	2·32	0·70	+1·62	1·00	Khushab .	West Punjab.	32
2	...	2	2	2	7	13	2	...	11·2	?	?	40	·655	0·6	2	2·00	0	0·69	1·24	−0·55	0·69	1·24	−0·55	0·54	Montgomery.		
5	6	5	1	5	5	1	...	2	3·6	2·4	+ 50	58	·881	3·3	0	0·91	− 0·91	0	0·54	−0·54	0	0·54	−0·54	0	D. I. Khan.		
1	...	1	1	4	2	18	...	2	2·2	3·8	− 42	51	·771	0·6	1	1·45	− 0·45	0·17	0·59	−0·42	0·17	0·59	−0·42	0·17	Mooltan.*		
...	...	...	7	15	6	1	...	1	7·0	4·7	+ 49	58	·902	0·9	0	0·09	− 0·09	0	0·12	−0·12	0	0·12	−0·12	0	Jacobabad .	Sind.	47
...	...	...	...	...	4	24	2	...	24·0	15·2	+ 58	58	·778	6·2	0	0·45	− 0·45	0	0·33	−0·33	0	0·33	−0·33	0	Hyderabad.		
...	...	...	...	...	...	9	20	1	14·7	18·5	− 21	75	·948	5·6	0	0·18	− 0·18	0	0·52	−0·52	0	0·52	−0·52	0	Kurrachee.		
...	1	1	...	...	2	16	9	1	11·5	7·8	+ 46	56	·826	2·0	1	?	?	0·79	1·66	−0·87	0·79	1·66	−0·87	0·78	Bickaneer .	West Rajputana.	51
...	...	...	...	...	7	18	2	...	17·7†	12·0	+ 48	66	·866	4·5	0	?	?	0	0·69	−0·69	0	0·69	−0·69	0	Pachpadra.		
...	...	...	1	...	2	21	6	...	8·2	?	?	58	·753	3·6	0	?	?	0·08	1·52	−1·44	0·08	1·52	−1·44	0·06	Jodhpore.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·83	4·22	−0·57	...	...	...	...	VIII.—East Rajputana, Central India and Gujarat.		
2	...	1	3	...	1	7	16	...	7·3	7·3	0	54	·737	3·8	2	3·70	− 1·70	2·62	2·49	+0·13	2·62	2·49	+0·13	1·96	Jeypore .	East Rajputana	50
...	2	...	1	1	...	8	12	6	8·6	?	?	49	·684	3·6	6	?	?	3·18	3·57	−0·39	3·18	3·57	−0·39	1·45	Kotah.		
3	1	...	...	1	1	2	20	2	12·6	11·2	+ 13	54	·729	2·8	1	3·10	− 2·10	0·72	1·40	−0·68	0·72	1·40	−0·68	0·65	Sambhar.		
...	1	...	...	...	...	6	22	1	11·9	8·3	+ 43	58	·750	2·5	2	3·73	− 1·73	0·70	2·28	−1·58	0·70	2·28	−1·58	0·60	Ajmere.		
4	...	...	...	...	1	9	13	3	10·9	?	?	63	·732	3·2	3	?	?	1·33	?	?	1·33	?	?	0·91	Oodeypore.		
...	...	...	...	1	3	10	12	4	17·5	16·8	+ 4	68	·844	5·3	1	2·18	− 1·18	0·31	2·16	−1·85	0·31	2·16	−1·85	0·17	Deesa.		
...	1	1	1	...	2	9	13	3	19·6	16·1	+ 22	68	·868	5·2	2	?	?	0·67	1·94	−1·27	0·67	1·94	−1·27	0·57	Bhuj . .	Kathiawar and Cutch.	46
...	1	...	2	1	4	4	17	1	12·9	15·6	− 17	72	·842	5·8	3	5·27	− 2·27	3·13	4·73	−1·60	3·13	4·73	−1·60	1·10	Rajkot.		
1	...	1	1	1	1	11	13	1	10·8	?	?	85	·963	6·5	7	?	?	4·02	6·33	−2·31	4·02	6·33	−2·31	1·80	Veraval.		
...	1	1	1	3	1	17	3	3	13·8	?	?	71	·850	6·0	5	?	?	9·03	?	?	9·03	?	?	6·00	Bhavnagar Parr.		
4	...	1	7	...	2	3	12	1	5·3	4·4	+ 20	64	·810	5·3	9	5·91	+ 3·09	9·44	5·83	+3·61	9·44	5·83	+3·61	2·59	Nowgong .	Central India.	49
2	1	...	...	1	...	9	14	3	7·2	7·0	+ 3	74	·788	6·1	7	8·27	− 1·27	5·63	6·79	−1·16	5·63	6·79	−1·16	3·60	Indore.		
...	...	1	...	...	...	4	20	5	5·8	14·2	− 59	63	·793	4·0	5	5·09	− 0·09	2·95	4·27	−1·32	2·95	4·27	−1·32	1·57	Neemuch.		
1	...	...	...	4	5	11	3	6	8·4	15·6	− 46	79	·905	7·3	11	8·18	+ 2·82	12·39	10·12	+2·27	12·39	10·12	+2·27	2·54	Surat . .	Gujarat	45
1	...	1	...	3	4	12	5	4	7·9	?	?	72	·877	7·2	3	?	?	5·79	4·01	+1·78	5·79	4·01	+1·78	2·07	Ahmedabad.		
...	...	3	...	13	...	9	...	5	8·4	5·7	+ 47	58	·833	2·3	1	3·64	− 2·64	0·24	2·54	−2·30	0·24	2·54	−2·30	0·13	Agra . .	N.-W. P. (West).	22
1	...	...	2	...	1	15	6	5	6·0	5·8	+ 3	57	·804	3·0	5	6·09	− 1·09	2·97	4·89	−1·92	2·97	4·89	−1·92	1·00	Jhansi. .	N.-W.P. (Central)	21

* Observations for 29 days. † Mean of 27 days. ‡ Mean of 25 days.

Table

Abstract of Observations taken at 8 A.M. at 215 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan	...	...	...	−·016	...	...	...	...	...	...	...	95·8	+1·3	75·4	+1·2	86·1	+1·3	19·5	...	...	...	...	38·9
38	Bombay Deccan	Belgaum	2,556	27·245	?	29·728	27·349	1st	27·110	11th	·239	72·4	80·5	−0·2	67·5	?	74·0	?	13·0	92·7	2nd	64·8	15th	27·9
		Sholapur	1,590	28·148	−·019	29·674	28·252	1st	28·032	15th	·220	80·7	96·7	+2·4	74·9	+2·3	85·8	+2·4	21·8	109·2	3rd	70·0	29th	39·2
		Poona	1,840	27·899	−·013	29·673	28·033	1st	27·728	11th	·305	78·2	89·9	+1·4	72·8	+0·2	81·4	+0·8	17·1	104·0	3rd	69·9	24th & 27th	34·1
		Bijapur	1,946	27·815	?	29·693	27·905	27th	27·691	14th	·214	77·6	92·8	?	71·7	?	82·3	?	21·1	106·7	3rd	67·0	15th	39·7
40	Khandesh	Malegaon	1,430	28·248	−·033	29·614	28·383	2nd	28·095	15th	·288	82·7	95·6	+1·1	75·9	+1·2	85·8	+1·2	19·7	106·3	2nd & 3rd	72·1	26th	34·2
		Ahmednagar	2,152	27·587	?	29·659	27·715	2nd	27·422	11th	·293	78·9	92·2	?	71·9	?	82·1	?	20·3	105·3	2nd	65·4	26th	39·9
41	Berar	Akola	930	28·727?	?	29·596	28·848	2nd	28·603	15th	·245	84·1	98·3	+0·8	78·2	+0·9	88·3	+0·9	20·1	111·6	3rd	73·2	30th	38·4
		Amraoti	1,215	28·445	−·008	29·604	28·554	2nd	28·326	14th	·228	82·3	97·5	+0·8	77·2	+1·0	87·4	+0·9	20·3	113·0	3rd	71·8	30th	41·2
42	Central Provinces (West).	Khandwa	1,044	28·611	−·015	29·602	28·754	2nd	28·473	17th	·281	84·0	98·2	+0·9	80·0	+1·9	89·1	+1·4	18·2	111·2	3rd	74·1	10th	37·1
		Hoshangabad	1,006	28·618	−·017	29·569	28·757	2nd	28·490	17th	·267	85·4	100·0	+2·0	81·3	?	90·6	?	18·7	112·0	3rd & 4th	73·2	29th & 30th	38·8
		Nagpur	1,025	28·617	−·003	29·585	28·715	1st	28·509	14th	·206	83·8	98·7	?	78·2	?	88·5	?	20·5	114·1	5th	73·6	10th	40·5
43	Central Provinces (Central).	Chanda	634	29·039	?	29·612	29·138	25th	28·928	14th	·210	84·2	98·7	+1·0	79·3	0	89·0	+0·5	19·4	115·2	5th	72·2	30th	43·0
		Seoni	2,033	27·609	−·019	29·551	27·734	26th	27·505	17th	·229	81·8	95·3	+1·7	75·3	0	85·3	+0·9	20·0	110·1	1st & 6th	69·9	29th & 30th	40·2
		Jubbulpur	1,327	28·279	−·015	29·540	28·412	26th	28·174	15th	·238	84·9	98·8	?	78·8	+0·6	88·8	?	20·0	113·0	1st	70·6	29th	42·4
		Saugor	1,807	27·814	?	29·542	27·961	2nd	27·684	17th	·277	83·6	97·9	−0·6	78·0	+0·9	88·0	+0·2	19·9	110·4	7th	69·6	29th	40·8
49	Central India	Sutna	1,040	28·518	−·019	29·501	28·666	2nd	28·406	17th	·260	86·8	99·4	+0·6	82·1	+1·1	90·8	+0·9	17·3	111·1	6th	72·1	20th	39·0
44	Central Provinces (East).	Raipur	970	28·644	−·008	29·552	28·736	2nd	28·524	14th & 15th	·212	84·4	98·6	+1·9	79·2	+1·1	88·9	+1·5	19·4	112·5	5th	70·6	9th	41·9
		Sambalpur	488	29·109	−·020	29·538	29·210	1st	28·928	15th	·282	85·1	96·3	−1·0	80·5	?	88·4	?	15·8	107·1	5th & 7th	75·2	1st	31·9
39	Hyderabad (North).	Aurangabad	1,865	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Indur	?			Not re	corded.					83·1	97·6	?	78·4	?	88·0	?	19·2	110·5	5th	72·2	29th	38·3
		Bidar	2,165?	27·565	?	29·647	27·646	25th	27·453	15th	·193	78·7	93·5	?	68·8	?	81·1	?	24·7	100·3	4th	64·0	11th	36·3
53	Hyderabad (South).	Gulbarga	1,502	28·260?	?	29·706?	28·364	6th	28·138	15th	·226	78·9	96·0	?	73·0	?	84·5	?	23·0	108·5	3rd	56·6	16th	51·9
		Raichur	1,309	28·436	?	29·683	28·513	22nd & 25th	28·332	15th	·181	81·4	95·2	?	74·8	?	85·0	?	20·4	110·0	3rd	70·1	14th	39·9
		Hyderabad (Dn).	1,690	28·027	?	29·648	28·111	25th	27·916	15th	·195	80·5	95·3	+2·0	76·6	+2·6	86·0	+2·3	18·7	108·4	3rd	71·2	29th	37·2
		Secunderabad	1,787	27·937	?	29·654	28·016	25th	27·830	15th	·186	79·4	96·4	+3·1	75·9	+1·9	86·2	+2·5	20·5	108·3	3rd & 5th	70·5	12th & 29th	37·8
		Hanamconda*	?	28·798	?	28·734	28·877	1st	28·658	12th	·219	83·4	96·6	?	78·7	?	87·7	?	17·9	110·7	5th	70·3	16th	40·4
	X.—West Coast	...	...	...	−·013	...	...	...	...	...	...	...	85·5	+0·8	77·1	+1·0	81·3	+0·9	8·4	...	...	...	...	18·5
37	Konkan	Bombay	37	29·696	−·016	29·673	29·847	1st	29·498	15th	·349	82·7	87·8	+0·5	79·9	+0·6	83·9	+0·6	7·9	93·0	4th & 8th	75·0	27th	18·0
		Ratnagiri	110	29·648	−·013	29·696	29·759	1st	29·475	11th	·284	82·2	87·2	+1·0	78·7	+2·0	83·0	+1·5	8·5	93·9	2nd	73·9	13th	20·0
		Mormugao	60	29·744	?	29·739	29·831	1st	29·615	11th	·216	81·7	85·9	?	77·3	?	81·6	?	8·6	91·0	1st & 2nd	71·4	4th	19·6
		Goa	199	29·589	?	29·724	29·675	27th	29·462	11th	·213	81·3	84·2	?	78·2	?	81·2	?	6·0	90·0	4th	75·0	3 days	15·0
		Karwar	44	29·757	−·013	29·733	29·836	22nd	29·668	11th	·168	80·2	85·6	+0·7	76·7	+1·0	81·2	+0·9	8·9	92·3	2nd	73·5	3 days	18·8
33	Malabar	Cochin	10	29·858	−·019	29·796	29·932	20th	29·783	11th	·149	78·8	86·0	+1·5	75·6	+1·2	80·8	+1·4	10·4	90·5	2nd & 3rd	70·7	14th	19·8
		Calicut	27	29·833	−·010	29·789	29·924	21st	29·749	11th	·175	78·0	84·8	+0·9	75·0	+0·7	79·9	+0·8	9·8	93·4	2nd	73·0	16th	20·4
		Mangalore	65	29·779	−·008	29·776	29·851	25th	29·700	12th	·251	78·5	84·4	0	75·2	+0·4	79·8	+0·2	9·2	91·3	2nd	71·9	11th	19·4
		Trivandrum	198	29·676	?	29·807	29·745	21st	29·599	11th	·146	78·5	83·9	?	77·3	?	80·6	?	6·6	90·0	2nd	74·5	15th	15·5
	XI.—South India	...	...	...	−·010	...	...	...	...	...	...	...	93·7	+0·8	76·9	+0·6	85·4	+0·7	16·8	...	...	...	...	29·4
57	Madras (South).	Pamban	37	29·777	?	29·740	29·841	21st	29·723	11th	·118	85·3	90·5	?	80·4	?	85·5	?	10·1	93·3	2nd	78·2	13th & 19th	15·1
		Tinnevelly	168	29·662	?	29·758	29·725	19th	29·599	4th	·126	85·6	97·0	?	79·3	?	88·2	?	17·7	101·4	3 days	75·9	13th & 30th	25·5
		Madura	447	29·352	−·012	29·730	29·414	21st	29·290	5th	·124	85·1	97·5	?	78·0	+1·3	87·8	?	19·5	101·0	29th	74·0	30th	27·0

* Not reduced to sea level

I—*continued.*

in India, Burma, etc., in June, 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 30th June 1898.	Normal rainfall for period, from 1st to 30th June.	Variation from normal of period, 1st to 30th June.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·66	6·44	−0·70	...	...	...	...	IX.—Deccan.		
1	1	...	...	...	...	12	13	3	23·7	24·3	− 2	89	·702	8·2	20	12·27	+7·73	10·23	6·59	+3·64	10·23	6·59	+3·64	1·25	Belgaum	Bombay Deccan.	38
...	...	...	...	...	...	14	8	8	23·6	12·2	+93	59	·608	6·1	5	7·82	−2·82	6·48	5·01	+1·47	6·48	5·01	+1·47	2·92	Sholapur.		
...	1	...	...	...	...	11	15	3	18·0	16·0	+13	71	·683	7·1	8	7·18	+0·82	4·87	4·73	+0·14	4·87	4·73	+0·14	1·31	Poona.		
...	...	...	...	...	...	11	16	3	8·0	?	?	79	·762	6·1	4	6·30	−2·30	2·37	2·69	−0·32	2·37	2·69	−0·32	1·24	Bijapur.		
...	1	1	...	...	...	7	18	3	23·2	11·9	+95	64	·704	5·8	5	7·82	−2.82	3·79	4·72	−0·93	3·79	4·72	−0·93	2·03	Malegaon	Khandesh.	40
...	4	1	...	...	2	8	9	6	15·2	?	?	68	·658	6·6	7	?	?	2·62	4·79	−2·17	2·62	4·79	−2·17	0·80	Ahmednagar.		
1	...	...	...	...	...	6	15	8	9·3	8·9	+ 4	66	·748	6·4	8	8·55	−0·55	4·32	5·47	−1·15	4·32	5·47	−1·15	1·87	Akola	Berar.	41
...	1	...	...	...	...	6	17	6	12·0	7·4	+62	73	·782	6·3	11	10·36	+0·64	5·81	6·84	−1·03	5·81	6·84	−1·03	1·23	Amraoti.		
1	...	...	...	...	...	4	17	8	11·0	9·2	+20	65	·741	5·4	6	7·91	−1·91	3·73	6·05	−2·32	3 73	6·05	−2·32	1·09	Khandwa	Central Provinces (West).	42
5	...	1	...	...	2	9	11	2	5·5	4·6	+20	65	·755	6·3	8	10·09	−2·09	4·78	8·20	−3·42	4·78	8·20	−3·42	1·51	Hoshangabad		
2	1	...	...	...	2	8	11	6	10·1	10·0	+ 1	67	·746	6·9	14	12·73	+1·27	6·47	8·74	−2·27	6·47	8·74	−2·27	1·37	Nagpur.		
2	3	...	...	...	4	3	14	4	5·6	6·3	−11	64	·731	6·2	13	?	?	12·33	7·85	+4·48	12·33	7·85	+4·48	2·78	Chanda	Central Provinces (Central).	43
...	2	2	...	1	1	7	1	16	5·7	5·7	0	69	·706	6·3	9	13·00	−4·00	8·79	10·57	−1·78	8·79	10·57	−1·78	2·06	Seoni.		
1	2	1	...	2	3	8	8	5	5·8	5·3	+9	65	·736	5·4	9	11·18	−2·18	4·83	9·10	−4·27	4·83	9·10	−4·27	1·48	Jubbulpore.		
1	...	2	1	...	2	3	20	1	5·4	5·2	+ 4	69	·775	5·8	13	9·73	+3·27	12·52	7·40	+5·12	12·52	7·40	+5·12	3·31	Saugor.		
...	...	2	...	7	4	2	7	8	12·0	9·6	+25	67	·815	4 9	9	5·91	+3·09	6·82	6·54	+0·28	6·82	6·54	+0·28	1·86	Sutna	Central India.	49
4	...	...	...	1	2	19	3	1	11·4	8·7	+31	67	·754	5·4	5	11·55	−6·55	5·97	8·92	−2·95	5·97	8·92	−2·95	2·82	Raipur	Central Provinces (East).	44
...	2	4	2	3	3	15	1	...	5·6	3·4	+65	72	·855	5·2	7	?	?	4·88	11·13	−6·25	4·88	11·13	−6·25	1·96	Sambalpur.		
...	...	...	...	...	...	...	...	...	...	?	?	...	..	...	...	?	?	...	6·34	...	...	6·34	...	...	Aurangabad	Hyderabad (North).	30
...	1	...	...	...	...	7	14	8	11·0	?	?	72	·795	6·9	7	?	?	2·86	4·60	−1·74	2·86	4·60	−1·74	0·74	Indur.		
...	3	...	...	...	...	8	11	8	12·0	?	?	79	·782	5·2	7	?	?	2·75	6·30	−3·55	2·75	6·30	−3·55	0·82	Bidar.		
...	...	1	...	...	...	8	8	13	14·0	?	?	70	·677	5·8	11	?	?	8·63	4·82	+3·81	8·63	4·82	+3·81	4·70	Gulbarga	Hyderabad (South).	52
...	2	1	...	...	2	8	13	4	10·2	?	?	66	·707	5·8	8	?	?	3·84	3·90	−0·06	3·84	3·90	−0·06	1·50	Raichur.		
1	...	...	...	...	...	...	26	3	10·4	?	?	67	·691	6·2	3	?	?	3·61	4·85	−1·24	3·61	4·85	−1·24	2·88	Hyderabad (Deccan).		
...	...	...	...	...	...	10	14	6	12·7	12·3	+ 3	63	·625	6·1	3	?	?	4·70	4·85	−0·15	4·70	4·85	−0·15	3·80	Secunderabad		
1	...	...	...	...	6	1	16	6	12·6	?	?	62	·697	5·2	9	?	?	3·53	?	?	3·53	?	?	1·06	Hanamconda		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	31·78	27·73	+4·05	...	...	...	...	X.—West Coast.		
...	2	1	...	2	4	7	11	3	13·8	16·2	−15	82	·927	7·6	16	14·84	+1·16	25·47	19·37	+6·10	25·47	19·37	+6·10	5·28	Bombay	Konkan.	37
3	3	...	...	1	1	4	12	6	7·9	12·0	−34	82	·893	7·9	15	21·45	−6·45	45·18	31·26	+13·92	45·18	31·26	+13·92	8·33	Ratnagiri.		
...	4	...	...	...	1	2	5	17	12·3	?	?	87	·953	7·2	20	?	?	28·23	22·02	+6·21	28·23	22 02	+6·21	3·47	Mormugao.		
...	3	...	2	...	...	12	8	5	?	?	?	88	·942	9·0	24	?	?	32·70	30·09	+2·61	32·70	30·09	+2·61	5·00	Goa.		
1	4	...	1	...	1	14	4	5	6·8	?	?	84	·854	7·4	23	24·36	−1·36	40·94	37·24	+3·70	40·94	37·24	+3·70	6·16	Karwar.		
11	3	4	1	...	1	1	4	5	6·3	?	?	87	·870	8·0	24	24·80	−0·80	30·35	28·41	+1·94	30·35	28·41	+1·94	6·34	Cochin	Malabar.	33
11	3	2	3	6	...	...	1	4	8·0	?	?	90	·858	9·2	27	25·00	−2·00	33·47	33·22	+0·25	33·47	33·22	+0·25	3·74	Calicut.		
6	4	2	1	2	2	3	5	5	3·0	3·7	−19	89	·859	9·2	25	25·60	−0·60	37·53	35·03	+2·50	37·53	35·03	+2·50	3·94	Mangalore.		
1	10	2	4	...	...	1	3	9	7·0	?	?	86	·834	8·6	20	?	?	12·17	12·95	−0·78	12·17	12·95	−0·78	1·48	Trivandrum.		
...	...	...	...	..	..	...	...	...	...	...	...	...	...	...	...	...	...	2·55	2·81	−0·26	...	...	...	...	XI.—South India.		
...	...	...	...	...	2	20	8	...	16·9	?	?	75	·921	2·7	1	0·30	+0·70	0·32	0·04	+0·28	0·32	0·04	+0·28	0·32	Pamban	Madras (South)	57
...	2	...	...	1	...	4	12	11	6·2	?	?	64	·798	4·9	2	1·60	+0·40	1·12	0·71	+0·41	1·12	0·71	+0·41	0·67	Tinnevelly.		
1	3	...	...	1	1	10	4	10	4·9	4·8	+ 2	63	·765	4·1	0	2·00	−2·00	0·12	1·50	−1·38	0·12	1·50	−1·38	0·09	Madura.		

Table

Abstract of Observations taken at 8 A.M. at 214 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras, South Central.	Salem	940	28·890	−·013	29·766	28·967	21st	28·810	14th	·157	81·6	96·6	+2·3	75·6	+2·1	86·1	+2·2	21·0	100·4	6th	73·0	23rd&29th	27·4
		Coimbatore	1,348	28·468	−·011	29·758	28·534	21st	28·395	5th	·139	78·6	90·7	+0·9	72·7	+1·2	81·7	+1·1	18·0	98·4	2nd&3rd	70·8	3days	27·6
35	Coorg	Mercara	3,781	26·153	−·006	?	26·218	2nd	26·068	11th	·150	66·0	71·9	−0·2	64·0	+0·8	68·0	+0·3	7·9	83·0	2nd	61·7	3rd	21·3
36	Mysore	Chitaldroog	2,405	27·407	?	29·729	27·493	1st	27·316	15th	·177	74·2	85·4	?	69·5	?	77·5	?	15·9	95·1	3rd	65·4	5th	29·7
		Bangalore	3,021	26·844	−·015	29·755	26·906	2nd	26·760	11th	·146	72·0	84·5	−0·1	67·2	+0·6	75·9	+0·3	17·3	92·8	3rd	64·3	26th	28·5
		Hassan	3,091	26·786	?	29·777	26·855	2nd	26·705	11th	·150	71·8	78·6	?	66·0	?	72·3	?	12·6	90·2	3rd	62·9	26th	27·3
		Mysore	2,518	27·340	?	29·775	27·411	21st	27·259	11th	·152	74·5	85·6	?	68·3	?	77·0	?	17·3	95·9	3rd	65·5	26th	30·4
56	Madras, East Coast, South.	Negapatam	31	29·765	−·005	29·725	29·835	21st	29·699	5th	·136	85·8	99·7	+3·1	79·3	+0·4	89·5	+1·8	20·4	106·5	3rd	71·9	3rd	34·6
		Cuddalore	12	29·763	?	29·701	29·832	21st	29·686	15th	·146	85·3	98·7	?	78·1	?	88·4	?	20·6	102·3	4 days	70·2	3rd	32·1
		Trichinopoly	255	29·541	−·014	29·727	29·614	21st	29·471	14th	·143	85·0	100·8	+2·3	79·7	+1·7	90·3	+2·0	21·1	105·2	2nd	75·4	3rd	29·8
		Madras	22	29·739	−·011	29·691	29·814	2nd	29·660	5th	·154	86·3	98·6	+0·3	81·1	+0·8	89·9	+0·6	17·5	104·0	8th&23rd	71·5	3rd	32·5
55	Madras, East Coast, Central.	Nellore	71	29·660	?	29·663	29·763	3rd	29·570	5th	·193	88·1	101·1	?	82·2	?	91·7	?	18·9	108·3	3rd	73·1	3rd	35·2
		Masulipatam	15	29·684	−·002	29·634	29·805	1st	29·598	14th	·207	85·1	96·7	−0·8	79·1	−1·0	87·9	−0·9	17·6	107·2	6th	72·6	3rd	34·6
54	Madras, Central	Cuddapah	433	29·326	−·009	29·693	29·405	24th	29·232	15th	·173	86·3	100·6	+1·9	80·7	+0·7	90·7	+1·3	19·9	109·8	3rd	73·8	28th	36·0
		Kurnool	923	28·922	−·014	29·683	28·894	24th & 26th	28·709	15th	·185	81·8	96·9	+1·3	77·0	+0·8	87·0	+1·1	19·9	111·8	3rd	71·9	28th	39·9
		Bellary	1,475	28·293	−·010	29·704	28·371	24th	28·189	15th	·182	80·9	93·7	−1·0	76·3	+0·8	85·0	−0·1	17·4	106·2	3rd	72·7	8th	33·5
52	Madras, East Coast, North.	Rajahmundry	112	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Cocanada	26	29·646	−·002	29·607	29·804	1st	29·527	14th	·277	84·5	96·0	0	80·9	+0·1	87·9	+0·1	14·1	103·1	5th	76·0	6th & 8th	27·1
		Vizagapatam	31	29·608	−·013	29·576	29·788	1st	29·425	14th	·363	85·1	92·7	−0·6	80·8	−1·3	86·8	−1·0	11·9	102·2	7th	76·4	3rd& 14th	25·8
		Waltair	?			Not	recorded.					83·5	90·7	?	79·8	?	85·3	?	10·9	99·4	22nd	74·9	3rd	24·5
		Gopalpur	21	29·580	?	29·541	29·729	1st	29·354	14th	·375	84·3	90·6	?	79·9	?	85·3	?	10·7	100·8	26th	77·1	1st & 3rd	23·7
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·548	?	?	25·760	3rd	25·440	29th	·320	91·4	104·9	?	76·1	?	90·6	?	28·8	110·0	9th	71·0	24th	39·0
		Pishin	?				Not	recorded.				?	98·1	?	56·0	?	77·1	?	42·1	103·0	28th & 29th	46·9	22nd	56·1
		Quetta	5,502	24·471	−·006	?	24·647	3rd	24·371	15th	·276	76·1	92·2	+1·7	59·8	+0·6	76·0	+1·2	32·4	97·6	27th & 29th	51·4	22nd	46·2
		Kalat	?				Not	recorded.				79·8	94·0	?	51·8	?	72·9	?	42·2	100·7	13th	45·8	22nd	54·9
		Chaman	4,311	25·489	?	?	25·678	3rd	25·400	17th	·278	87·3	101·3	?	73·1	?	87·3	?	28·2	107·2	3 days	67·1	15th & 22nd.	40·1
30	Punjab	Leh	11,503	19·699	+·025	?	19·822	27th	19·570	15th	·252	55·7	77·1	+4·0	47·0	+2·9	62·1	+3·5	30·1	86·7	27th & 28th	41·1	4th	45·6
		Srinagar	5,204	24·700	?	?	24·938	1st	24·583	23rd & 24th	·355	71·1	89·2	?	59·5	?	74·4	?	29·7	96·9	29th & 30th	50·8	8th	46·1
		Gulmarg	?	21·793	?	?	21·976	1st	21·690	23rd	·286	63·5	72·4	?	46·0	?	59·2	?	26·4	83·5	29th	41·8	4th	41·7
		Skardu	?	22·755	?	?	22·948	3rd	22·590	15th	·358	70·2	85·5	?	58·5	?	72·0	?	27·0	95·6	27th	51·3	3rd	44·3
		Dras	?	20·743	?	?	20·890	1st	20·612	15th	·278	63·4	81·2	?	42·5	?	61·9	?	38·7	89·5	28th	36·1	4th	53·4
		Gilgit	?	24·707	?	?	25·210	3rd	24·723	30th	·487	81·4	92·2	?	70·4	?	81·3	?	21·8	101·8	29th	60·1	3rd	41·7
		Chitral	?	24·607*	?	?	24·900	1st & 2nd	24·500	10 days	·400	75·7	93·8	?	62·1	?	78·0	?	31·7	104·2	28th	53·0	3rd	51·2
		Kilta Drosh	?				Not	recorded.				77·0	92·5	?	70·3	?	81·5	?	22·2	104·0	29th	57·7	3rd	46·3
		Para Chinar	6,000	24·286	?	?	24·505	2nd	24·188	17th	·317	78·3	90·5	?	66·5	?	78·5	?	24·0	99·9	29th	55·5	2nd	44·4
		Cherat	?	25·469	?	?	25·672	2nd	25·330	23rd	·342	83·1	97·9	?	77·1	?	87·5	?	20·8	106·0	28th	65·1	30th	40·9
		Murree	6,233	23·787	−·012	?	23·861	2nd.	23·587	23rd	·274	76·1	87·1	+5·1	69·5	+5·0	78·3	+5·1	17·6	93·4	28th & 29th	54·9	1st	38·5
		Poot	?				Not	recorded.				?	81·8	?	58·7	?	70·3	?	23·1	88·6	29th	50·9	4th	37·7
		Simla	7,224	22·991	−·015	?	23·122	1st & 2nd	22·890	23rd	·232	66·5	74·8	−0·5	61·7	+1·1	68·3	+0·3	13·1	81·5	7th	51·4	2nd	30·1
25	N.-W. Provinces.	Chakrata	7,022	23·148	−·011	?	23·284	2nd	22·936	19th	·248	65·3	71·1	−3·8	60·1	+0·1	65·6	−1·9	11·0	81·3	21st	52·8	4th	28·5
		Mussooree	6,705	23·404	?	?	23·544	2nd	23·278	19th	·266	66·7	74·8	−1·1	62·2	+1·7	68·5	+0·3	12·6	82·3	7th	55·9	2nd	26·4

† Mean of 29 days. * Aneroid.

I—*continued.*

in India, Burma, etc., in June 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean Humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 30th June 1898.	Normal rainfall for period, 1st to 30th June.	Variation from normal of period, 1st to 30th June.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of Districts.
...	1	...	...	...	9	14	8	1	8·5	4·9	+73	71	·780	5·7	3	6·00	−3·00	0·80	3·68	−2·88	0·86	3·68	−2·88	0·35	Salem	Madras (South Central).	34
...	...	...	1	...	2	12	15	...	4·9	7·7	−36	77	·752	6·8	4	4·55	−0·55	0·78	1·43	−0·65	0·78	1·43	−0·65	0·34	Coimbatore.		
5	2	...	...	...	...	2	14	7	6·5	9·0	−28	95	·619	9·4	24	25·00	−1·00	25·52	25·71	−0·19	25·52	25·71	−0·19	3·11	Mercara	Coorg.	35
...	...	...	...	...	...	14	15	1	12·4	?	?	79	·675	9·6	3	?	?	1·53	3·10	−1·57	1·53	3·10	−1·57	0·58	Chitaldroog	Mysore	36
...	...	...	...	...	...	14	15	1	11·0	8·4	+31	81	·640	7·9	7	5·91	+1·09	2·10	3·45	−1·35	2·10	3·45	−1·35	0·53	Bangalore.		
...	...	...	...	...	1	7	18	4	4·9	?	?	82	·635	8·9	12	?	?	3·45	4·12	−0·67	3·48	4·12	−0·67	0·41	Hassan.		
...	...	...	...	...	1	13	15	1	14·6	?	?	77	·653	8·9	2	?	?	0·64	2·12	−1·48	0·64	2·12	−1·48	0·15	Mysore.		
...	...	1	...	...	3	16	7	3	10·3	8·3	+24	61	·760	5·1	3	3·09	−0·09	2·59	1·74	+0·85	2·59	1·74	+0·85	1·83	Negapatam	Madras, East Coast, South.	56
...	...	...	...	1	4	11	14	...	2·2	?	?	68	·826	3·5	6	3·30	+2·70	4·39	1·48	+2·91	4·39	1·48	+2·91	1·14	Cuddalore.		
1	...	1	...	1	...	8	17	2	8·7	9·2	−5	62	·743	6·1	0	2·00	−2·00	0·08	1·62	−1·54	0·08	1·62	−1·54	0·05	Trichinopoly.		
1	1	...	...	...	1	10	9	8	8·4	9·0	−7	63	·786	6·8	5	4·18	+0·82	2·09	2·11	−0·02	2·09	2·11	−0·02	1·13	Madras.		
1	...	...	...	2	2	1	11	13	10·0	?	?	59	·779	7·1	2	3·10	−1·10	0·76	1·50	−0·74	0·76	1·50	−0·74	0·61	Nellore	Madras, East-Coast, Central.	56
1	1	...	...	...	1	4	9	14	11·8	9·4	+26	76	·922	7·6	7	7·00	0	6·88	5·52	+1·36	6·88	5·52	+1·36	2·25	Masulipatam.		
...	1	...	1	1	1	8	12	6	?	?	?	68	·848	6·1	2	5·50	−3·50	1·11	4·11	−3·00	1·11	4·11	−3·00	0·66	Cuddapah	Madras, Central.	54
1	...	...	...	...	...	2	24	3	?	?	?	66	·714	7·5	7	5·50	+1·50	4·43	3·95	+0·48	4·43	3·95	+0·48	1·93	Kurnool.		
1	...	...	...	...	...	8	17	4	12·8	10·5	+22	51	·535	7·8	2	3·64	−1·64	1·31	1·85	−0·54	1·31	1·85	−0·54	0·76	Bellary.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Rajahmundry	Madras, East Coast, North.	
...	...	...	...	...	1	13	14	2	9·5	?	?	70	·832	6·6	4	6·00	−2·00	5·28	5·37	−0·09	5·28	5·37	−0·09	2·54	Cocanada.		
7	...	...	...	...	...	18	5	...	?	3·8	?	75	·894	7·6	7	6·64	+0·36	8·46	3·49	+4·97	8·46	3·49	+4·97	5·87	Vizagapatam.		
...	...	...	...	1	3	13	13	...	13·6	?	?	77	·886	7·9	...	...	...		No	Rain	Gauge.				Waltair.		
1	5	...	2	...	3	17	...	2	15·2	11·6	+31	82	·951	4·0	9	7·44	+1·56	5·35	6·09	−0·74	5·35	6·09	−0·74	1·33	Gopalpur.		
																									XII.—Hill Stations.		
8	15	1	2	1	1	...	1	1	7·1	?	?	29	·412	0·4	0	?	?	0	1·25	−1·25	0	1·25	−1·25	0	Sharigh	Baluchistan.	48
...			Not	rec	orde	d.			?	?	?	?	?	?	0	?	?	0	0·06	−0·06	0	0·06	−0·06	0	Pishin.		
28	...	...	...	...	1	...	...	...	2·1	4·7	−55	56	·510	0·8	0	0·36	−0·36	0	0·12	−0·12	0	0·12	−0·12	0	Quetta.		
...	2	...	7	...	10	...	11	...	?	?	?	40	·405	0·3	1	?	?	0·20	0·21	−0·01	0·20	0·21	−0·01	0·20	Kalat.		
...	1	...	2	1	3	14	3	6	10·7	?	?	31	·397	0·2	0	?	?	0	0·15	−0·15	0	0·15	−0·15	0	Chaman.		
...	...	1	...	...	...	1	24	4	4·4	2·4	+83	40	·174	3·1	0	?	?	0	0·22	−0·22	0	0·22	−0·22	0	Leh	Punjab.	30
12	2	1	1	3	6	1	2	2	5·7	?	?	81	·630	2·0	0	?	?	0·24	4·12	−3·88	0·24	4·12	−3·88	0·09	Srinagar.		
8	5	8	4	2	...	1	2	...	5·1	?	?	70	·406	2·6	5	?	?	1·50	?	?	1·50	?	?	0·39	Gulmarg.		
7	1	9	1	...	1	1	10	...	6·6	?	?	44	·323	2·6	0	?	?	0·01	0·54	−0·53	0·01	0·54	−0·53	0·01	Skardu.		
27	1	...	...	...	...	...	1	1	6·3	?	?	88	·523	3·1	2	?	?	0·42	?	?	0·42	?	?	0·22	Dras.		
27	...	2	...	...	...	...	1	...	2·6	?	?	34	·348	2·2	1	?	?	0·42	0·16	+0·26	0·42	0·16	+0·26	0·34	Gilgit.		
28	1	...	...	...	...	...	...	1	4·6	?	?	52	·463	0·7	2	?	?	0·37	?	?	0·37	?	?	025	Chitral		
6	...	...	5	...	...	...	12	...	?	?	?	33	·293	1·0	0	?	?	0·16	?	?	016	?	?	0·09	Killa Drosh.‡		
...	2	2	1	3	3	8	6	5	5·8	?	?	38	·352	2·0	3	?	?	1·59	?	?	1·59	?	?	0·71	Para Chinar.		
2	7	3	1	1	9	...	2	5	13·1	?	?	39	·425	1·8	1	?	?	0·33	0·48	−0·15	0·33	0·48	−0·15	0·08	Cherat.		
18	3	...	...	3	4	1	...	1	6·3	6·6	−5	43	·380	1·6	5	4·55	+0·45	2·22	2·87	−0·65	2·22	2·87	−0·65	1·44	Murree.		
1	3	4	4	...	...	...	5	12	?	?	?	?	?	3·7	0	?	?	0·04	0·27	−0·23	0·04	0·27	−0·23	0·04	Poo.		
11	6	4	...	...	6	2	...	1	3·9	2·3	+69	69	·440	4·7	13	10·00	+3·00	9·01	6·79	+2·22	9·01	6·79	+2·22	2·40	Simla.		
12	1	1	...	1	15	...	...	...	12·6	5·7	+121	76	·472	5·0	15	?	?	12·83	6·91	+5·92	12·83	6·91	+5·92	2·16	Chakrata	North-Western Provinces.	25
...	...	1	9	2	3	...	8	7	?	10·9	?	80	·522	5·4	12	10·20	+1·80	16·54	10·29	+6·25	16·54	10·29	+6·25	5·25	Mussooree.		

‡ Wind observations of 23 days.

Table

Abstract of Observations taken at 8 A.M. at 215 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	N.-W. Provinces—*contd.*	Ranikhet	6,069	23·952	−·004	?	24·112	2nd	23·811	20th	·301	67·8	77·8	−0·2	63·8	+0·7	70·8	+0·3	14·0	84·0	29th	56·0	4th	28·0
		Muktesar	?	22·728	?	?	22·878	2nd	22·603	20th	·275	62·7	72·9	?	58·4	?	65·7	?	14·5	79·8	29th	52·5	4th	27·3
13	Bengal	Yatung	10,480?				Not	recorded.				?	62·5	?	55·1	?	58·8	?	7·4	69·0	27th	49·9	1st & 5th	19·1
		Darjeeling	7,409	22·868	−·018	?	22·979	2nd	22·722	20th	·257	60·6	66·7	+1·5	56·3	+1·0	61·5	+1·3	10·4	73·7	30th	50·2	3 days	23·5
		Gantok	5,660	24·362	?	?	24·505	2nd	24·206	21st	·299	65·6	74·2	?	49·9	?	62·0	?	24·3	81·0	29th	43·4	1st	37·6
	Central India	Mount Abu.	3,945	25·844	−·024	?	26·037	2nd	25·718	17th	·319	71·7	83·6	+0·3	67·9	−0·1	75·8	+0·1	15·7	89·7	4th	64·8	22nd	24·9
		Pachmarhi	3,528	26·240	−·011	?	26·398	2nd	26·114	17th	·284	75·7	87·1	+1·5	72·1	+0·4	79·6	+1·0	15·0	99·2	6th	66·2	29th & 30th.	33·0
	South India	Wellington	6,200	24·171	−·022	?	24·241	2nd	24·098	14th	·143	65·0	73·1	+1·3	58·0	−0·2	65·6	+0·6	15·1	81·2	1st	52·7	8th	28·5
	XIII.—Extra India.																							
	Ceylon	Trincomalee	12	29·790	?	29·728	29·856	22nd	29·732	8th	·124	83·3	92·0	?	79·3	?	85·7	?	12·7	96·0	4th	78·0	11th & 12th.	18·0
		Colombo	40	29·846	−·018	29·812	29·907	20th	29·782	11th	·125	81·6	87·1	?	78·1	?	82·6	?	9·0	91·0	1st & 2nd	74·0	15th & 16th.	17·0
	Persia	Meshed	3,104				Not	recorded				78·0	Not re	corded	63·4	?	?	?	?	?	?	56·0	17th	?
		Resht	?	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Teheran*	?	25·800† / 25·237†	? / ?	? / ?	25·950 / 25·380	30th / 30th	25·695 / 25·140	21st / 4th	·255 / ·240	77·7	92·2	?	65·5	?	78·9	?	26·7	99·5	29th	56·8	5th	42·7
		Ispahan	?	24·258† / 24·596†	? / ?	? / ?	24·370 / 24·740	9th / 27th	24·110 / 24·460	16th / 16th	·260 / ·280	77·8	92·6	?	62·0	?	77·3	?	30·6	99·0	29th	56·1	1st	42·9
		Bushire	14	29·552	−·025	29·524	29·675	1st	29·382	15th	·293	84·6	89·4	−2·8	79·3	−1·0	84·4	−1·9	10·1	97·5	22nd	74·0	18th	23·5
		Jask	?	29·578	?	29·530	29·723	7th	29·408	15th	·315	86·8	93·6	?	81·5	?	87·6	?	12·1	100·8	10th	73·7	5th	27·1
	Arabia	Muscat	20	29·528	?	29·495	29·695	2nd	29·368	15th	·327	88·6	91·7	?	86·6	?	89·1	?	5·1	99·3	1st	79·3	5th	20·0
		Baghdad	220	29·539	−·040	29·726	29·687	1st	29·362	18th	·32[illegible]	84·5‡	1 5·3‡	+1·8‡	73·5‡	−2·8‡	89·4‡	−0·5	31·8	112·1	12th	62·8	24th	49·3
		Aden	94	29·616	−·045	29·641	29·697	28th	29·528	11th	·169	85·5	95·3	+1·3	83·2	+0·2	89·3	+0·8	12·1	99·3	12th	80·8	11th & 12th.	18·5
		Perim	?	29·589*	?	?	29·679	30th	29·529	17th	·150	87·0*	94·7*	?	83·8‖	?	89·0‖	?	10·9	102·5	17th	82·2	3 days	20·3
	Afghanistan	Kabul	?				Not re	corded.				74·8	90·0	?	59·6	?	74·3	?	30·4	99·1	28th	54·6	17th	44·5
	Central Asia	Kashgar*	?	25·399§	?	?	25·641	11th	25·243	6th	·398	80·3	92·9	?	65·8	?	79·4	?	27·1	102·1	27th	54·1	18th	48·0
	Arabian Sea Islands.	Amini Devi.	15	29·843	?	29·786	29·926	22nd	29·726	11th	·200	82·8	83·1	?	77·7	?	80·4	?	5·4	88·2	1st	72·1	5th	16·1
		Minicoy	10	29·827	?	29·762	29·890	21st	29·757	11th	·133	82·7	86·8	?	?	?	?	?	?	88·6	28th	?	?	?
	Africa	Zanzibar	73	30·064	−0·11	30·064	30·118	14th	29·983	1st	·135	75·9	82·8	?	74·9	?	78·9	?	7·9	85·0	3rd	70·9	29th	14·1
		Dunga (Zanzibar).	?				Not re	corded.				75·6	86·3	?	70·8	?	78·5	?	15·5	88·5	7th & 8th	67·3	30th	21·2

* Mean of 29 days.
† Aneroid uncorrected.
‡ Mean of 22 days.
§ Aneroid corrected.
‖ Mean of 26 days.

NOTE.—When a query is inserted against any reading or in the variation returns for any station, the data for

I—*concluded.*

in India, Burma, etc., in June 1898—concluded.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind velocity. Mean velocity in miles per hour.	Normal.	Percentage variations.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 30th June 1898.	Normal rainfall for period, 1st to 30th June.	Variation from normal of period, 1st to 30th June.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of Districts.
9	...	1	2	1	1	3	9	4	4·0	3·2	+25	81	·546	6·8	10	9·12	+0·88	5·64	5·94	−0·30	5·64	5·94	− 0·30	1·08	Ranikhet.	N.-W. Provinces—*concld.*	
...	...	2	...	7	1	3	3	14	1·0	?	?	86	·491	7·6¶	16	?	?	7·86	?	?	7·86	?	?	1·55	Muktesar.		
			Not recorded						?	?	?	?	?	?	12	?	?	3·45	?	?	3·45	?	?	0·90	Yatung .	Bengal.	13
3	3	7	7	3	1	1	4	1	5·1	4·7	+ 9	94	·505	8·3	19	21·04	−2·04	12·06	23·69	−11·63	12·06	23·69	−11·63	2·95	Darjeeling.		
20	1	1	...	2	2	2	...	2	2·7	?	?	91	·512	?	18	?	?	9·89	21·76	−11·87	9·89	21·76	−11·87	1·90	Gantok.		
...	...	2	...	...	3	20	4	1	13·0	10·1	+29	74	·562	5·0	6	6·70	−0·70	3·00	6·13	− 3·13	3·00	6·13	− 3·13	1·16	Mount Abu.	Central India.	
9	...	...	...	...	...	7	10	4	12·1	7·7	+57	74	·640	6·4	11	11·64	−0·64	7·66	9·80	− 2·14	7·66	9·80	− 2·14	2·69	Pachmarhi.		
8	4	...	...	...	2	15	1	...	4·9	5·1	− 4	71	·446	6·4	5	7·22	−2·22	1·12	3·73	− 2·61	1·12	3·73	− 2·61	0·27	Wellington .	South India.	
																									XIII.—Extra India.		
...	...	...	...	...	...	30	...	...	19·5	?	?	78	·902	2·8	0	?	?	0	2·05	− 2·05	0	2·05	− 2·05	0	Trincomalee	Ceylon.	
1	...	...	...	1	2	16	9	1	10·1	10·2	− 1	84	·915	7·3	15	?	?	10·94	7·24	+ 3·70	10·94	7·24	+ 3·70	3·32	Colombo .		
			Not recorded									48	·462	1·4	1	?	?	0·30	0·22	+ 0·08	0·30	0·22	+ 0·08	0·30	Meshed .	Persia.	
...	...	...	...	...	...	...	...	...	...	...	−	...	...	..	...	...	...	...	...	...	...	...	...	...	Resht .		
28	...	...	...	...	3	...	...	...	1·3	?	?	34	·318	1·0	0	?	?	0	0·01	− 0·01	0	0·01	− 0·01	0	Teheran.		
7	1	3	...	1	...	5	10	3	4·0	?	?	44	·417	0·3	0	?	?	0	0	0	0	0	0	0	Ispahan.		
...	10	2	1	1	...	1	2	13	11·7	10·3	+ 3	60	·714	0		?	?	0	?	?	0	?	?	0	Bushire.		
...	1	1	11	6	1	...	4	6	12·9	?	?	76	·980	1·1	1	?	?	0·77	0·04	+ 0·73	0·77	?	?	0·72	Jask.		
2	3	1	4	9	...	...	2	9	5·2	?	?	69	·923	·2	2	?	?	2·52	?	?	2·52	?	?	2·42	Muscat .	Arabia.	
3	4	...	...	...	...	...	5	20	4·4	?	?	31‡	·364‡	0·2	0	?	?	0	0·01	− 0·01	0	0·01	− 0·01	0	Baghdad.		
4	1	4	10	3	5	3	...	...	9·9*	7·6	+30	79	·971	5·2	0	?	?	0	0·01	− 0·01	0	0·01	− 0·01	0	Aden.		
...	...	...	...	...	1	11	12	5	14·3**	?	?	76*	·974*	5·7*	0	?	?	0	?	?	0	?	?	0	Perim.		
3	2	2	2	...	1	4	3	3	?	?	?	38	·325	0	1	?	?	0·10	0·37	− 0·27	0·10	0·37	− 0·27	0·10	Kabul .	Afghanistan.	
13	2	3	...	2	1	...	4	4	?	?	?	50	·524	1·6	0	?	?	0	0·53	− 0·53	0	0·53	− 0·53	0	Kashgar .	Central Asia.	
...	...	...	...	...	...	10	14	6	?	?	?	86	·964	7·8	18	?	?	13·20	?	?	13·20	?	?	4·85	Amini Devi .	Arabian Sea Islands.	
1	...	...	...	...	...	5	20	4	8·9	?	?	80	·894	?	12	?	?	4·74	?	?	4·74	?	?	0·61	Minicoy .		
...	...	...	...	...	21	9	...	...	9·6	?	?	80	·714	7·1	2	?	?	0·89	1·24	− 0·35	0·89	1·24	− 0·35	0·64	Zanzibar .	Africa.	
...	...	...	...	...	16	14	...	...	9·3	?	?	85	·752	?	4	?	?	1·69	?	?	1·69	?	?	0·74	Dunga (Zanzibar).		

that station are not utilized in calculating the provincial variations.

** Mean of 23 days. ¶ Mean of 28 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, wet-bulb. Mean minimum.	Mean 10 hours.	Mean 15 hours.	Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·752	29·678	·074	29·711	−·013	29·703	85·7	78·9†	6·8	90·0	73·4	16·6	83·9	83·1	81·2†	+0·4	75·9	79·7	79·1	78·2
	Rangoon	...	·734	·640	·094	·697	−·038	·675	86·8	76·6	10·2	93·1	73·7	19·4	82·0	82·1	79·7	+0·3	75·1	78·8	78·2	77·4
	Diamond Island	...	·727	·651	·076	·685	−·035	·661	86·3	78·2	8·1	90·4	73·3	17·1	83·8	82·7	80·8	+1·3	75·5	79·1	78·4	77·7
	Cocos Island	111	·666	·591	·075	·625	−·023	·667	87·6	77·5	10·1	93·3	72·8	20·5	84·9	83·8	81·1	+0·4	74·2	80·7	79·3	78·1
	Akyab	...	·684	·589	·095	·640	−·037	·602	86·8	78·3	8·5	93·7	74·1	19·6	83·0	84·2	81·6	+0·4	76·6	80·0	81·1	79·2
Assam.	Silchar	...	·565	·433	·132	·509	−·031	·563	91·0	76·3	14·7	96·5	72·5	24·0	84·0	89·1	82·8	+1·2	74·8	78·9	80·2	78·0
	Sibsagar	...	·319	·190	·129	·257	−·046	·540	89·1	75·6	13·5	94·1	68·7	25·4	83·2	87·0	81·2	−0·4	75·2	79·5	80·9	78·5
	Dhubri	...	·506	·389	·117	·457	−·043	·524	86·6	76·9	9·7	94·9	71·7	23·2	82·5	84·8	80·5	+0·8	75·8	78·4	79·2	77·8
Bengal and Orissa.	Chittagong	...	·563†	·474	·089	·524	−·043	·557†	87·6	76·8	10·8	94·4	72·3	22·1	83·6†	83·9	81·0	+0·5	75·4	79·1†	79·8	78·1
	Narayanganj	...	·599	·501	·098	·557	−·021	·531	88·5	78·2	10·3	93·6	71·3	22·3	84·3	85·1	82·8	−0·3	76·4	80·3	80·2	79·0
	Calcutta (Alipore)	...	·569	·476	·093	·529	−·018	·495	90·9	78·3	12·6	97·3	71·7	25·6	86·3	87·3	84·3	−0·2	76·8	80·4	80·4	79·2
	Saugor Island	...	·557	·469	·088	·519	−·031	·488	90·5	81·4	9·1	94·0	73·5	20·5	87·1	88·5	85·0	+0·3	78·5	81·8	81·9	80·7
	Burdwan	...	·488	·388	·100	·445	−·020	·490	92·8	78·3	14·5	98·4	71·2	27·2	87·4	89·0	83·9	−1·1	76·8	80·3	80·7	79·3
	Berhampore	...	·518	·422	·096	·477	−·014	·491	90·3	77·8	12·5	95·5	71·3	24·2	85·7	87·3	82·6	−2·0	75·8	80·6	80·7	79·0
	False Point	..	·576	·486	·090	·535	−·039	·497	90·6	80·2	10·4	99·3	73·3	26·0	88·3	86·9	84·0	+0·3	77·8	81·6	81·3	80·2
	Cuttack	...	·511	·416	·095	·473	−·028	·493	95·5	80·1	15·4	103·5	75·3	28·2	88·8	90·5	86·3	+0·6	77·3	80·0	80·1	79·1
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·592	27·500	·092	27·555	−·023	·456	91·8	76·0	15·8	98·0	68·8	29·2	84·9	88·4	82·7	+0·8	71·9	74·9	75·5	74·1
	Patna	...	29·389	29·271	·118	29·336	−·015	·466	96·7	80·4	16·3	102·8	73·2	29·6	89·9	93·4	86·7	−0·2	76·1	79·5	80·5	78·7
	Darbhanga	...	·421	·303	·118	·368	−·020	·485	91·7	79·2	12·5	98·1	72·0	26·1	86·4	90·6	84·2	−0·3	76·8	79·9	81·1	79·3
	Allahabad	...	·237	·122	·115	·181	−·022	·434	101·6	82·1	19·5	109·8	75·5	34·3	93·1	97·8	90·3	−0·3	75·7	81·1	82·1	79·6
	Lucknow	...	·178	·064	·114	·122	−·029	·438	99·1	81·4	17·7	109·1	75·3	33·8	90·8	94·7	89·6	−1·7	74·3	78·8	79·8	77·6
Upper Sub-Himalayan.	Denra Dun	...	27·368	27·272	·096	27·310	−·045	·437	91·6	75·4	16·2	100·1	68·7	31·4	83·7	88·8	83·0	−1·0	70·3	74·0	75·7	73·3
	Roorkee	...	28·649	28·534	·115	28·587	−·033	·408	99·5	80·7	18·8	108·1	71·1	37·0	90·9	98·2	90·0	+0·1	73·5	76·9	78·3	76·2
	Meerut	...	·796	·682	·114	·730	−·034	·406	100·8	82·7	18·1	108·5	76·1	32·4	93·7	98·6	91·4	+0·8	76·4	78·0	78·4	77·6
	Lahore	...	·777	·670	·107	·717	−·056	·353	107·2	85·5	21·7	114·8	74·3	40·5	97·3	106·6	95·8	+4·6	73·3	78·7	80·1	77·4
	Ludhiana	...	·688	·572	·116	·624	−·057	·365	107·4	85·7	21·7	115·4	71·7	43·7	96·8	105·5	95·9	+4·7	73·2	77·5	78·0	76·2
Indus Valley and N.-W. Rajputana.	Peshawar	...	·378	·270	·108	·318	−·069	·354	109·4	79·4	30·0	117·5	71·9	45·6	100·2	105·9	93·1	+3·2	65·8	74·2	75·2	71·7
	Mooltan	...	29·049‡	·943	·106	·990	−·048	·355‡	111·5	87·9†	23·6	117·5	82·1	35·4	100·4‡	109·4	99·0†	+4·4	75·0‡	80·3‡	82·9	79·4
	Jacobabad	...	·270	29·145	·125	29·201	−·058	·333	116·7	86·9	29·8	122·0	82·8	39·2	102·5	115·4	101·0	+3·9	75·7	83·4	85·5	81·6
	Kurrachee	...	·551	·474	·077	·513	−·023	·493	94·4	82·5	11·9	98·3	81·0	17·3	90·5	91·2	87·3	+0·5	78·6	81·5	82·1	80·8
E. Rajputana, Central India, and Gujarat.	Jeypore	...	28·159	28·051	·108	28·105	−·028	·436	104·6	82·9	21·7	111·5	75·9	35·6	94·5	102·7	93·2	+2·6	73·0	77·2	77·9	76·0
	Ajmere	...	27·990	27·883	·107	27·943	−·038	·453	102·7	83·2	19·5	107·9	77·6	30·3	92·5	100·8	91·7	+3·2	74·4	77·6	79·0	77·0
	Oodeypur	...	·719	·628	·091	·674	?	·488	97·7	78·6	19·1	106·0	73·3	32·7	89·3	94·4	87·3	?	71·5	76·0	77·4	75·0
	Deesa	...	29·155	29·031	·124	29·098	−·025	502	103·4	81·0	22·4	110·2	75·3	34·9	91·3	101·3	91·0	+1·2	74·6	78·1	78·2	77·0
	Nowgong	...	28·808	28·706	·102	28·761	−·017	·446	101·1	83·3	17·8	112·9	75·5	37·4	93·2	97·4	91·0	+0·1	74·8	78·4	78·4	77·2
	Agra	...	·967	·854	·113	·904	−·053	·394	105·3	87·6	17·7	112·1	81·4	30·7	97·7	101·7	95·8	+1·6	77·1	81·0	81·3	79·8
Deccan.	Belgaum	...	27·257	27·182	·075	27·223	−·023	·688	80·1	67·5	12·6	92·7	64·8	27·9	74·9	75·8	72·3	−0·3	66·1	70·9	70·7	69·2
	Sholapur	...	28·145	28·019	·126	28·092	−·022	·586	96·3	74.8	21·5	109·2	69·8	39·4	86·5	93·3	83·9	+2·0	69·0	71·7	72·3	71·0
	Poona	...	27·897	27·814	·083	27·862	−·013	·615	89·4	72·8	16·6	104·0	69·9	34·1	82·6	85·0	79·8	+0·5	69·1	72·2	72·4	71·3
	Akola	...	28·730	28·597	·133	28·668	−·021	·527	97·8	78·2	19·6	111·8	75·8	36·0	88·6	96·7	86·8	+1·2	71·5	75·7	76·1	74·5
	Buldana	2,132	27·570	27·463	·107	27·521	−·017	·539	92·5	73·7	18·8	105·0	70·0	35·0	83·9	90·1	81·6	+0·9	68·0	72·2	72·5	70·9
	Khandwa	...	28·613	28·496	·117	28·560	−·008	·532	97·6	80·0	17·6	111·2	74·1	37·1	89·1	94·6	87·9	+1·1	72·2	75·8	75·7	74·6

† Mean of 28 days. ‡ Mean of 29 days.

II.

86 stations in India, Burma, etc., for June, 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·858†	·962	·949	·923	+·007	87†	83	83	84	−2	8·7	8·9	8·8	+1·3	1	...	...	...	...	5	27	27	...	S. 62° W.	S. 43° W.	87	79	310	231	...	...	Port Blair	Burma Coast and Bay Islands.
·855	·946	·918	·906	+·004	93	87	84	88	−1	9·0	8·8	8·9	+0·2	...	2	...	1	3	19	24	10	1	S. 35° W.	S. 23° W.	72	71	104	123	...	...	Rangoon	
·848	·933	·916	·899	+·011	88	80	82	83	−3	7·9	8·4	8·2	+0·1	1	1	1	1	2	8	35	10	1	S. 46° W.	S. 35° W.	75	74	339*	216	...	...	Diamond Island, Cocos Island	
·804	·994	·944	·914	−·004	85	83	82	83	−3	7·0	7·9	7·5	−0·7	...	1	...	...	1	19	33	4	2	S. 35° W.	S. 34° W.	82	90	?	?	16·79	4·78		
·895	·990	1·026	·970	+·047	92	87	88	89	+2	8·0	7·5	7·8	+0·3	...	...	3	5	11	30	8	1	1	S. 11° E.	S. 3° E.	68	57	118	97	...	...	Akyab	
·847	·923	·914	·895	−·012	93	80	68	80	−5	8·1	7·1	7·6	−0·2	33	2	...	5	1	3	1	6	9	N. 64° W.	N. 41° E.	13	5	83*	69	...	...	Silchar	Assam.
·872	·958	·974	·935	+·012	98	85	77	87	+3	8·3	6·6	7·5	−0·6	17	8	15	1	2	2	11	1	1	N. 24° E.	S. 86° E.	15	14	154*	64	...	...	Sibsagar	
·878	·918	·923	·906	+·009	95	83	78	85	−2	6·9	7·3	7·1	−0·2	6	3	10	18	3	8	7	4	1	S. 76° E.	S. 85° E.	30	22	124*	136	...	...	Dhubri	
·869	·934†	·966	·923	+·054	94	82†	83	86	0	7·7	8·3	8·0	+0·4	8	...	...	...	14	14	17	3	2	S. 11° W.	S. 24° E.	61	60	201*	160	...	...	Chittagong	Bengal and Orissa.
·892	·983	·970	·948	−·015	92	84	81	86	0	8·3	8·0	8·2	+0·5	...	...	1	8	24	20	4	2	1	S. 28° E.	S. 16° E.	72	73	190	178	...	...	Narayanganj	
·904	·962	·947	·938	−·019	93	77	74	81	−2	7·2	8·1	7·7	+0·6	...	...	4	13	13	14	12	3	1	S. 25° E.	S. 3° E.	52	59	134	142	...	...	Calcutta (Alipore), Saugor Island	
·940	1·018	1·004	·987	−·032	87	79	74	80	−3	7·4	8·4	7·9	+0·2	...	...	1	4	19	18	16	1	1	S. 7° E.	S. 12° W.	70	68	418	372	...	...		
·907	·942	·937	·929	+·005	93	73	70	79	+2	6·8	7·0	6·9	−0·4	31	1	1	5	7	8	6	1	...	S. 19° E.	S. 16° E.	28	54	?	122	...	...	Burdwan	
·869	·976	·961	·935	−·001	91	79	75	82	0	6·9	7·6	7·3	−0·7	13	...	2	11	11	13	5	1	1	S. 39° E.	S. 37° E.	47	48	99*	127	...	...	Berhampore	
·925	·989	·996	·970	+·001	90	74	78	81	−2	7·8	7·7	7·8	+0·6	...	...	2	7	13	13	17	7	1	S. 4° W.	S. 37° W.	53	64	255*	303	...	...	False Point	
·903	·908	·890	·900	+·012	88	68	64	73	0	6·3	7·5	6·9	+0·3	5	1	6	3	3	7	15	14	6	S. 63° W.	S. 38° W.	37	42	93	97	...	...	Cuttack	
·732	·743	·721	·732	+·040	82	63	56	67	+1	7·7	8·4	8·1	+0·6	...	6	5	14	9	10	3	7	6	S. 67° E.	S. 38° W.	20	15	238	225	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·849	·870	·870	·863	−·009	82	62	57	67	−2	5·5	5·7	5·6	−0·4	2	1	16	21	6	3	1	6	4	N. 75° E.	N. 75° E.	47	48	155*	123	...	...	Patna	
·895	·924	·966	·922	+·010	90	75	65	77	+1	5·6	4·2	4·9	+0·2	...	3	5	21	18	4	4	3	2	S. 69° E.	S. 14° E.	53	6	129	148	...	...	Darbhanga	
·806	·901	·888	·865	+·096	74	60	52	62	+6	5·2	5·6	5·5	+0·8	1	4	12	13	2	2	5	15	6	N. 1° E.	N. 9° W.	16	15	271*	166	...	...	Allahabad	
·795	·829	·821	·803	+·042	72	60	53	62	+6	5·5	6·3	5·9	+1·2	26	3	1	15	3	3	...	9	...	S. 81° E.	N. 46° E.	15	16	77*	104	...	...	Lucknow	
·682	·723	·726	·710	+·060	78	64	55	68	+3	4·6	5·3	5·0	+0·6	4	5	3	4	12	14	7	5	6	S. 1° E.	S. 53° W.	27	16	36	40	...	...	Dehra Dun	Upper Sub-Himalayas.
·733	·739	·701	·724	+·068	70	53	40	54	+2	3·3	2·2	2·8	−0·5	16	...	1	4	28	2	3	1	5	S. 41° E.	S. 10° E.	43	17	102‡	95	...	...	Roorkee	
·827	·751	·703	·760	+·067	75	48	40	54	+2	2·8	1·7	2·3	−1·1	16	...	3	14	12	...	5	10	...	S. 48° E.	N. 16° W.	25	10	82*	64	...	...	Meerut	
·662	·737	·671	·690	+·073	55	43	30	43	+3	1·0	0·7	0·9	−2·1	3	4	4	9	6	7	11	11	5	S. 36° W.	N. 19° E.	18	6	84	88	...	...	Lahore	
·657	·685	·592	·645	−·009	54	41	28	41	−8	1·3	1·3	1·3	−1·9	16	...	1	...	17	2	9	2	13	S. 25° W.	S. 64° W.	20	8	94	64	...	...	Ludhiana	
·471	·525	·495	·497	−·022	48	29	23	33	−5	1·6	4·0	2·8	+0·6	16	14	10	5	1	3	3	2	6	N. 13° E.	N. 41° E.	33	31	88*	113	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·702†	·766‡	·771	·746	+·009	53†	40‡	31	41	−5	0·8	0·7	0·8	−0·1	7	...	2	...	10	5	35	...	...	S. 25° W.	S. 33 W.	66	32	59*	81	...	...	Mooltan	
·745	·885	·818	·816	+·157	59	44	28	43	+3	0·3	0·7	0·8	−0·1	12	1	...	4	26	12	2	2	1	S. 31° E.	S. 33° E.	59	45	174*	125	...	...	Jacobabad	
·930	·956	·976	·954	−·005	84	67	67	72	−3	4·8	3·6	4·2	−0·1	...	...	...	...	...	3	26	21	...	S. 67° W.	S. 62° W.	90	85	441*	423	...	...	Kurrachee	
·685	·720	·648	·684	+·017	61	45	32	46	−4	3·1	4·1	3·6	−0·9	1	2	5	1	1	1	20	27	2	S. 77° W.	N. 66° W.	63	45	178	165	...	...	Jeypore	E. Rajputana, Central India, and Gujarat.
·743	·764	·723	·743	+·043	66	50	38	51	−1	2·3	2·5	2·4	−1·0	...	1	4	...	2	2	13	33	5	S. 83° W.	S. 78° W.	70	66	283	216	...	...	Ajmere	
·690	·732	·731	·718	?	71	54	47	57	?	3·0	3·4	3·2	?	5	5	...	...	3	3	12	29	3	S. 80° W.	?	63	?	264	?	...	...	Oodeypore	
·773	·787	·657	·739	+·007	73	54	34	54	0	4·6	4·1	4·4	−0·6	...	...	...	...	2	7	15	28	8	S. 73° W.	S. 42° W.	75	70	422	397	...	...	Deesa	
·761	·778	·718	·749	+·029	68	54	47	56	+2	4·4	6·4	5·4	−0·5	2	7	1	8	...	2	6	24	10	N. 27° W.	N. 74° W.	47	50	112*	113	..	...	Nowgong	
·795	·838	·795	·809	+·129	61	48	41	50	+4	2·1	3·1	2·6	−1·1	...	...	7	...	13	...	17	...	22	W.	N. 60° W.	24	26	241*	146	...	...	Agra	
·685	·709	·691	·675	+·009	93	82	79	85	+3	8·4	7·5	8·0	+0·1	...	2	...	...	1	...	21	31	5	S. 78° W.	S. 62° W.	83	78	586	556	...	...	Belgaum	Deccan.
·640	·592	·535	·589	−·043	75	48	36	53	−7	6·8	8·6	7·7	+0·5	...	2	2	...	...	...	28	15	13	S. 79° W.	S. 86° W.	72	70	427*	316	...	...	Sholapur	
·668	·664	·639	·657	−·027	83	61	56	67	−3	7·6	7·6	7·6	+0·1	...	...	...	...	...	...	19	34	7	S. 81° W.	S. 80° W.	88	78	492*	360	...	...	Poona	
·686	·719	·627	·677	−·018	73	55	39	56	−2	6·5	7·0	6·8	+0·2	2	2	...	1	...	2	8	26	19	N. 80° W.	N. 68° W.	75	72	227*	223	...	...	Akola	
·615	·647	·582	·614	−·050	75	57	45	59	−6	6·6	5·3	6·0	−0·3	...	4	...	...	...	1	4	31	20	N. 72° W.	N. 73° W.	84	66	291*	253	4·42	1·55	Buldana	
·699	·725	·656	·693	−·021	70	55	45	57	−3	6·1	6·0	6·1	+0·1	...	2	4	1	...	2	6	21	24	N. 68° W.	N. 79° W.	68	72	268	234	...	...	Khandwa	

* Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S.L., and for gravity 45° Lat.	Temperature of air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—contd.	Hoshangabad	...	28·624	28·492	·132	28·563	−·019	29·497	99·2	81·2	18·0	112·2	73·2	39·0	90·1	96·5	89·4	+1·8	73·0	76·6	77·1	75·6
	Nagpur	...	·611	·491	·120	·556	−·007	·510	97·8	78·2	19·6	114·1	73·6	40·5	88·5	92·7	85·8	−0·2	71·8	76·3	76·9	75·0
	Do. (Sanitary Commr.'s Office).	...	·616	·495	·121	·561	?	·503	99·2	78·8	20·4	115·7	73·8	41·9	90·0	94·5	87·8	?	72·3	76·5	77·4	75·4
	Jubbulpore	...	·282	·168	·114	·230	−·014	·473	97·8	78·8	19·0	111·3	70·8	40·5	89·7	93·7	87·1	+0·5	71·0	76·1	76·8	74·6
	Saugor	...	27·822	27·717	·105	27·775	−·010	·475	96·9	78·0	18·9	110·4	69·4	41·0	88·6	92·8	86·2	+0·3	71·0	75·9†	77·0†	74·6
	Sutna	...	28·517	28·410	·107	28·468	−·024	·436	98·9	82·0	16·9	111·1	72·1	39·0	91·3	94·9	89·1	+0·2	73·6	79·1	79·1	77·3
	Raipur	...	·646	·530	·116	·593	−·011	·474	97·9	79·2	18·7	112·5	70·6	41·9	89·5	93·3	86·5	+0·8	72·4	76·1	76·2	74·9
	Hyderabad (Deccan.)	...	·029	27·906‡	·123	27·975	−·016	·562‡	95·1‡	76·6	18·5	108·2	71·2	37·0	85·7	93·6‡	85·5‡	+2·3	70·7	73·5	75·1‡	73·1
West Coast.	Bombay	...	29·701	29·621	·080	29·660	−·009	·626	87·5	79·8	7·7	92·8	75·2	17·6	84·4	84·9	83·2	0	76·0	79·4	79·5	78·3
	Ratnagiri	...	·657	·585	·072	·620	−·009	·666	87·0	78·5	8·5	93·8	73·9	19·9	84·6	83·9	82·2	+1·0	75·5	78·8	78·5	77·6
	Karwar	...	·773	·695	·078	·733	−·011	·709	85·2	76·3	8·9	92·3	73·4	18·9	82·2	82·8	80·4	+0·3	73·7	77·3	77·5	76·1
	Cochin	...	·874	·815	·059	·844	−·008	·780	85·9	75·7	10·2	90·7	70·5	20·2	81·3	82·4	80·1	+0·7	73·8	77·5	77·8	76·4
South India.	Salem	...	28·888	28·764	·124	28·839	−·023	·699	96·5	75·6	20·9	100·5	73·0	27·5	87·3	90·8	84·1	+1·4	73·3	76·4	76·9	75·5
	Mercara	...	26·166	26·107	·059	26·149	−·005	?	71·5	64·0	7·5	83·0	61·5	21·5	67·8	67·1	66·7	−0·2	63·0	66·2	65·9	65·0
	Chitaldroog	...	27·414	27·320	·094	27·376	+·002	·678	85·2	69·5	15·7	95·1	65·3	29·8	78·4	81·7	76·5	+0·3	67·0	70·7	71·0	69·6
	Bangalore	...	26·850	26·758	·092	26·815	−·007	·697	84·3	67·2	17·1	92·6	64·5	28·1	77·3	79·7	74·6	+0·4	65·4	69·3	69·8	68·2
	Hassan	...	·796	·729	·067	·774	+·006	·745	78·2	66·0	12·2	90·2	62·9	27·3	74·8	74·5	71·2	−0·1	64·8	68·8	68·5	67·4
	Mysore	...	27·353	27·269	·084	27·311	+·005	·725	85·4	68·3	17·1	95·7	65·3	30·4	79·0	79·6	75·4	+0·4	66·3	70·1	69·8	68·7
	Trichinopoly	...	29·547	29·411	·136	29·492	−·019	·672	100·6	79·8	20·8	105·4	75·6	29·8	92·0	97·3	88·8	+2·0	72·6	75·9	77·0	75·2
	Madras	...	·727	·619	·118	·688	−·012	·637	98·9	81·0	17·9	104·2	71·3	32·9	91·1	91·4	87·6	+0·3	?	77·4	79·5	77·6
	Bellary	...	28·303	28·182	·121	28·252	−·017	·641	93·4	76·3	17·1	106·2	72·9	33·3	85·4	90·3	83·2	+0·3	67·3	69·4	70·6	69·1
	Cocanada	...	29·643	29·535	·108	29·593	−·016	·564	94·6	80·9	13·7	102·9	75·8	27·1	88·8	92·1	87·1	+0·8	76·5	77·4	78·2	77·4
	Vizagapatam	...	·610	·510	·100	·564	−·029	·532	92·9	80·6	12·3	102·0	76·4	25·6	88·3	89·2	85·9	−1·3	76·9	80·0	80·0	79·0
Hill Station, Baluchistan.	Quetta	...	24·471	24·393	·078	24·425	−·012	?	92·4	59·7	32·7	97·7	51·3	46·4	84·8	90·0	75·5	+1·3	50·3	64·3	65·3	60·0
Hill Stations, Punjab.	Leh	...	19·690	19·587	·103	19·645	+·006	?	77·2	47·0	30·2	86·7	41·1	45·6	63·4	74·9	61·1	+5·2	38·6	46·2	51·5	45·4
	Srinagar	...	24·698	24·595	·103	24·640	−·049?	?	89·0	59·4	29·6	96·9	50·8	46·1	77·5	87·4	73·8	+3·3	?	71·1	78·2	?
	Murree	...	23·719	23·676	·043	23·691	−·017	?	86·6	69·5	17·1	93·3	54·9	38·4	79·2	83·3	77·7	+5·3	55·3	62·0	62·8	60·0
	Kailang	10,087	20·663	20·572	·091	20·630	?	?	76·8	?	?	85·2	?	?	66·8	72·9	?	?	46·0	53·1	53·7	50·9
	Simla (Ridge)	...	23·001	22·956	·045	22·972	−·018	?	74·4	61·5	12·9	81·5	51·4	30·1	69·5	71·9	67·8	−0·1	56·1	61·3	63·2	60·2
Hill Stations, N.-W.P.	Chakrata	...	·157	23·104	·053	23·124	−·032	?	70·9	59·8	11·1	81·5	52·7	28·8	67·5	68·2	65·2	−1·9	56·8§	62·0	62·8	60·5
	Ranikhet	...	·958	·891	·067	·913	−·024	?	77·5	63·8	13·7	84·1	56·0	28·1	71·3	74·8	70·5	0	61·2	65·1	66·3	64·2
	Muktesar	...	22·744	22·688	·056	22·716	?	?	72·4	58·4	14·0	80·0	52·5	27·5	65·1	68·4	64·4	?	56·8	61·0	62·5	60·1
Hill Station, Nepal.	Katmandu	4,388	25·422	25·340	·082	25·379	−·024	?	82·8	66·8	16·0	88·6	60·8	27·8	77·2	79·5	74·0	−0·7	65·5	75·3	77·0	72·6
Hill Station, Bengal.	Darjeeling	...	22·879	22·818¶	·061	22·847¶	−·022	?	66·9	56·3	10·6	73·6	50·2	23·4	62·7	63·8¶	60·6¶	+0·8	55·7	61·3	61·6¶	59·5
Hill Stations, Central India.	Mount Abu	...	25·858	25·795	·063	25·831	−·015	?	83·2	67·9	15·3	89·8	64·9	24·9	75·8	81·2	75·0	−0·2	63·3	68·1	69·5	67·0
	Pachmarhi	...	26·257	26·171	·086	26·219	−·013	?	86·3	72·1	14·2	99·5	66·2	33·3	79·0	84·9	78·7	+0·8	67·4	70·8	72·5	70·2
	Chikalda	3,642	·154	·073	·081	·118	−·010	?	83·1	69·1	14·0	97·4	64·8	32·6	75·6	81·9	75·6	+0·3	65·5	68·6	70·2	68·2

† Mean of 26 days. ‡ Mean of 29 days. § Mean of 23 days.

II—*continued.*

at 86 stations in India, Burma, etc., for June, 1898—continued.

Vapour Tension. From minimum.	Vapour Tension. Mean 10 hours.	Vapour Tension. Mean 16 hours.	Vapour Tension. Mean daily.	Vapour Tension. Variation from normal.	Humidity. From minimum.	Humidity. Mean 10 hours.	Humidity. Mean 16 hours.	Humidity. Mean daily.	Humidity. Variation from normal.	Cloud. Mean 10 hours.	Cloud. Mean 16 hours.	Cloud. Mean daily.	Cloud. Variation from normal.	Wind Direction. Number of winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Wind Stradiness. Average percentage.	Wind Stradiness. Normal percentage.	Wind Velocity. Mean velocity in miles per diem.	Wind Velocity. Normal.	Rainfall. Total rainfall for the month.	Rainfall. Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·712	·748	·693	·718	−·041	70	56	44	57	− 5	6·0	6·3	6·2	+0·2	14	...	1	...	1	2	20	13	9	S. 73° W.	S. 80° W.	57	69	131	116	...	...	Hoshangabad	Deccan—*contd.*
·705	·754	·730	·730	+·012	75	59	52	62	+ 2	7·1	7·4	7·3	+0·2	4	5	...	...	2	4	13	17	15	N. 89° W.	N. 83° W.	59	52	244	240	...	...	Nagpur	
·715	·744	·728	·729	?	75	57	49	60	?	6·2	6·7	6·5	?	4	8	1	1	2	9	18	15	2	S. 63° W.	?	48	?	65*	?	...	...	Do. (Sanitary Commr.'s Office).	
·663	·733	·710	·702	+·008	69	56	50	58	− 2	5·5	7·4	6·5	+0·1	...	3	1	...	2	5	16	19	14	S. 84° W.	N. 85° W.	65	55	139	122	...	...	Jubbulpore	
·677	·760†	·758†	·732	+·105	72	62†	56†	63	+10	5·1	7·1	6·1	+1·5	1	5	2	1	1	4	8	27	11	N. 84° W.	S. 83° W.	62	63	132§	141	...	...	Saugor	
·727	·845	·794	·789	+·141	68	60	52	60	+ 9	3·8	4·4	4·1	−0·6	1	11	3	7	2	6	10	16	4	N. 85° W.	N. 64° W.	27	49	247*	235	...	...	Sutna	
·706	·723	·679	·703	−·025	72	55	47	58	− 4	5·4	7·1	6·2	−0·4	9	2	2	...	2	3	29	8	5	S. 58° W.	S. 73° W.	57	68	270*	231	...	...	Raipur	
·681	·675	·644‡	·667	−·040	75	58	42‡	58	− 7	6·2	7·1‡	6·7	+0·8	3	2	2	...	1	...	...	47	4	N. 83° W.	N. 84° W.	81	70	247*	217	...	...	Hyderabad (Deccan).	
·849	·939	·937	·908	−·016	84	80	78	81	− 1	7·1	6·9	7·0	−0·8	...	1	...	...	2	10	17	23	7	S. 65° W.	S. 64° W.	73	65	337	376	...	...	Bombay	West Coast.
·845	·906	·905	·886	+·024	87	77	78	81	0	7·2	7·2	7·2	+0·4	...	3	...	...	1	2	24	22	8	S. 76° W.	S. 56° W.	75	62	268	268	...	...	Ratnagiri	
·798	·871	·875	·848	−·002	88	79	78	82	− 1	7·1	7·8	7·5	+0·4	1	5	...	...	...	2	30	11	11	S. 75° W.	S. 73° W.	69	74	161	128	...	...	Karwar	
·811	·895	·891	·866	+·010	91	84	81	85	− 2	7·8	8·6	8·2	+0·7	4	4	4	2	...	1	3	13	29	N. 52° W.	S. 87° W.	65	44	152	147	...	...	Cochin	
·792	·762	·740	·765	+·004	89	59	52	67	− 2	5·4	7·9	6·7	+0·7	2	...	1	1	1	7	33	10	5	S. 52° W.	S. 54° W.	73	76	204	113	...	...	Salem	South India.‖
·574	·630	·625	·610	+·006	95	92	94	94	+ 2	9·2	9·7	9·5	+0·3	3	1	...	...	...	...	14	31	11	S. 89° W.	N. 81° W.	82	63	159	193	...	...	Mercara	
·631	·654	·626	637	+·003	87	68	59	71	0	8·2	8·8	8·5	+0·5	...	...	...	...	...	3	25	25	7	S. 72° W.	S. 76° W.	84	77	337*	261	...	...	Chitaldroog	
·607	·623	·617	·616	−·003	91	67	62	73	0	7·3	8·1	7·7	+1·7	...	...	...	...	1	...	27	28	4	S. 71° W.	S. 72° W.	87	87	269*	209	...	...	Bangalore	
·601	·636	·628	·622	+·014	94	74	75	81	+ 2	8·7	9·1	8·9	+0·6	...	1	1	...	...	...	14	34	10	S. 89° W.	S. 80° W.	84	82	118*	125	...	...	Hassan	
·622	·626	·609	·619	−·009	90	63	62	72	− 2	8·8	9·2	9·0	+1·2	...	1	1	1	...	...	19	33	5	S. 81° W.	S. 75° W.	82	77	356*	365	...	...	Mysore	
·705	·680	·653	·679	−·028	69	45	37	50	− 6	4·9	6·0	5·5	−1·2	4	3	2	...	1	1	23	23	3	S. 74° W.	S. 88° W.	68	80	209	226	...	...	Trichinopoly	
?	·756	·846	·814	−·001	?	52	58	62	− 3	6·5	7·1	6·8	+0·5	...	...	1	4	12	6	8	22	7	S. 53° W.	S. 36° W.	40	61	206	212	...	...	Madras	
·556	·519	·503	·526	−·124	62	43	36	47	−11	8·1	8·9	8·5	+0·9	1	...	1	1	...	...	15	34	8	S. 85° W.	S. 86° W.	82	78	494*	251	...	...	Bellary	
·855	·789	·782	·809	−·041	80	59	53	64	− 4	5·3	6·8	6·1	+0·3	...	...	1	...	3	2	19	27	8	S. 75° W.	S. 62° W.	75	57	230*	209	...	...	Cocanada	
·877	·912	·904	·898	+·039	84	69	67	73	+ 6	7·7	8·1	7·9	+1·6	8	...	...	...	...	8	28	16	...	S. 52° W.	S. 56° W.	76	66	?	82	...	...	Vizagapatam	
·272	·394	·367	·344	−·012	52	33	27	37	− 3	0·7	1·8	1·3	+0·2	35	3	...	...	1	1	1	10	9	N. 67° W.	N. 75° W.	30	39	35*	84	...	...	Quetta	Hill Stations, Baluchistan.
·164	·164	·165	·164	−·008	50	29	19	33	− 5	4·0	3·9	4·0	−0·8	...	...	3	...	...	...	3	51	3	N. 88° W.	S. 81° W.	89	31	105	57	...	...	Leh	Hill Stations, Punjab.
?	·695	·868	?	?	?	74	67	?	?	1·6	3·0	2·3	−1·5	14	10	8	2	3	2	1	10	10	N. 24° W.	S. 69° E.	33	5	109*	86	...	...	Srinagar	
·295	·381	·359	·345	−·022	43	40	34	39	− 9	2·0	3·6	2·8	−1·2	32	...	1	...	6	15	1	1	4	S. 1° E.	S. 4° E.	27	20	150*	175	...	...	Murree	
?	·287	·249	?	?	?	43	31	?	?	3·7	6·0	4·9	−0·4	...	2	...	...	...	3	28	17	10	S. 73° W.	S. 63° W.	77	65	73**	49	0·33	0·19	Kailang	
·397	·458	·493	·449	+·041	73	65	64	68	+ 5	4·8	6·7‡	5·8	−0·1	14	16	5	...	...	10	7	4	4	N. 48° W.	S. 68° W	18	30	94	97	...	...	Simla (Ridge)	
·431§	·508	·522	·490	+·074	83§	76	77	79	+12	5·5	6·4	6·0	+0·9	5	1	1	...	5	48	...	...	...	S. 5° E.	S. 73° W.	84	52	296	153	...	...	Chakrata	Hill Stations, N.-W. P.
·516	·559	·559	·545	+·073	87	74	66	76	+10	6·9	5·5	6·2	+0·7	14	...	2	...	1	...	9	27	7	S. 89° W.	S. 67° W.	60	46	111*	84	...	...	Ranikhet	
·449	·496	·508	·484	?	91	81	74	82	?	7·6	6·9	7·3	?	...	1	3	2	15	3	8	7	21	S. 84° W.	?	22	?	22*	?	...	...	Muktesar	
·617	·861	·906	·795	+·165	93	92	90	92	+17	6·5	6·1	6·3	+0·1	...	1	...	24	4	1	3	17	10	N. 16° E.	N. 86° W.	3	23	28	31	8·02	1·64	Katmandu	Hill Station, Nepal.
·442	·530	¶ ·529	·500	+·008	97	93	¶ 89	93	− 1	?		?	?	3	2	9	6	7	2	13	10	2	S. 28° W.	S. 9° W.	12	8	125	124	...	...	Darjeeling	Hill Station, Bengal.
·536	·601	·590	·575	+·002	79	69	57	68	0	5·0	4·5	4·8	−0·4	1	1	4	2	2	4	38	5	3	S. 46° W.	S. 49° W.	64	67	308*	254	...	...	Mount Abu	Hill Stations, Central India.
·619	·663	656	·646	+·046	81	69	59	70	+ 4	5·9	6·1	6·0	−0·6	20	...	...	...	...	...	14	16	10	S. 85° W.	N. 80° W.	55	60	221*	206	...	...	Pachmarhi	
·591	·623	·609	·607	+·008	85	73	60	72	0	6·8	6·2	6·5	−0·4	15	15	...	...	...	...	1	4	25	N. 35° W.	N. 45° W.	65	60	298*	234	7·30	1·82	Chikalda	

* Corrected. ‖ Mean of 21 days. ¶ Mean of days. ** Mean of 28 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S.L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, S. India.	Wellington	...	24·179	24·119	·060	24·149	−·015	?	72·9	58·0	14·9	76·6	52·9	23·7	68·9	67·8	64·2	+0·4	53·7	61·0	60·2	58·0
Extra India.	Aden	...	29·643	29·530	·113	29·583	−·012	29·606	95·0	83·2	11·8	98·7	80·6	18·1	90·4	93·0	88·8	+0·7	74·6	81·4	79·2	78·4
	Perim	...	·598	·511?	·087	·550	?	?	94·6	83·8†	10·8	102·5	82·2	20·3	89·7	92·1	88·5†	−0·7	77·6‡	81·5	80·5	79·9
	Minicoy	...	·842	·767	·075	·801	?	·736	86·9	?	?	88·8	?	?	84·4	83·9	?	?	?	78·9	78·4	?
	Zanzibar	...	30·079	·963	·116	30·021	−·014	30·021	82·7	74·9	7·8	85·0	70·9	14·1	77·5	81·3	78·5	+1·0	70·0	72·2	71·7	71·3
	Port Victoria (Seychelles).	15	29·970	·897	·073	29·934	−·013	29·872	81·8	76·5	5·3	85·9	73·7	12·2	80·5	81·1	79·0	+0·3	71·8	74·5	74·7	73·7
	Mauritius	181	?	?	?	·969	−·015	30·089	?	?	?	80·4	52·3	28·1	?	?	68·7	−1·4	?	?	?	?

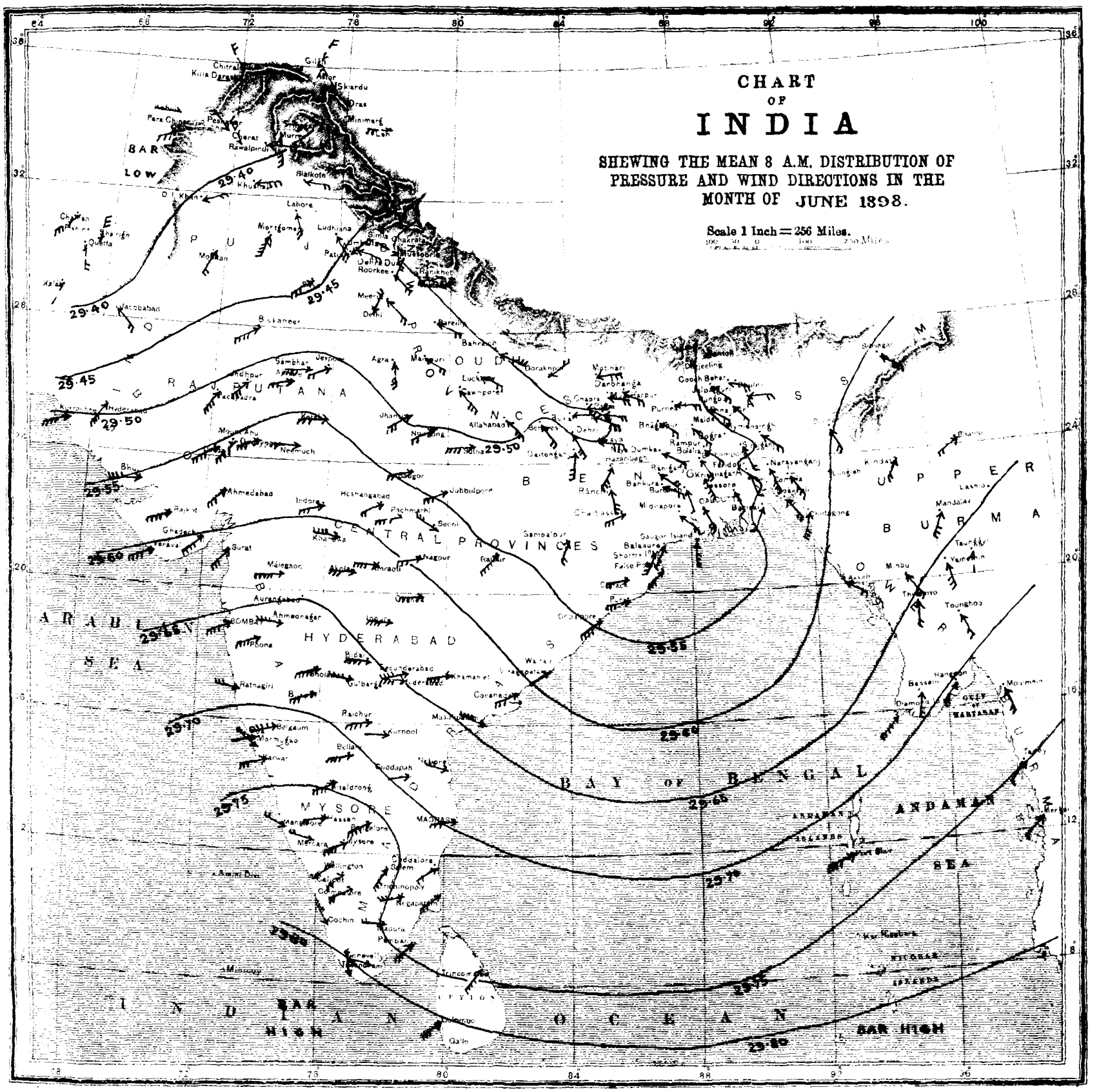
† Mean of 27 days. ‡ Mean of 29 days.

II—*concluded.*

at 86 stations in India, Burma, etc., for June, 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from										Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									°/₀	°/₀						
·372	·457	·445	·425	−·019	77	65	65	69	− 6	7·8	8·8	8·3	+0·8	2	4	...	...	6	2	31	8	7	S. 58° W.	S. 71° W.	60	52	116	111	...	...	Wellington.	Hill Station, S. India.
·742	·853	·814	·836	−·010	65	67	53	62	+ 3	2·0	2·8	2·4	+1·1	2	...	1	7	6	22	15	7	..	S. 9° W.	S.	62	55	271†	216	...	...	Aden.	Extra India.
·889‖	·954	·889	·911	+·067	76‖	69	60	68	+ 7	2·7	4·5	3·6	+1·8	...	...	2	2	...	3	14	20	19	N. 88° W.	N. 39° W.	67	42	352†	347	...	...	Perim.	
?	·914	·898	?	?	?	77	77	?	?	?	?	?	?	...	1	...	...	...	...	13	29	12	S. 86° W.	?	84	?	?	?	...	...	Minicoy.	
·673	·721	·652	·682	−·028	78	77	61	72	− 4	6·8	6·6	6·7	+2·2	...	...	...	...	16	38	6	...	...	S. 8° E.	S. 4° E.	90	86	233*	216	...	...	Zanzibar.	
·717	·776	·775	·756	+·006	79	75	73	76	0	7·0	6·8	6·9	−0·2	1	...	...	3	21	32	3	...	...	S. 18° E.	S. 21° E.	84	79	272	278	3·28	0·93	Port Victoria (Seychelles).	
?	?	?	·519	?	?	?	?	74	+ 1	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	269	274	1·11	0·31	Mauritius.	

* Corrected. ‖ Mean of 26 days.



Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2	miles	per	hour	...	one	feather	added	to the	wind	arrow
,, ,,	2 to 5	,,	,,	,,	...	two	feathers	,,	,,	,,	,,
,, ,,	5 to 10	,,	,,	,,	...	three	,,	,,	,,	,,	,,
,, ,,	10 to 20	,,	,,	,,	...	four	,,	,,	,,	,,	,,
	over 20	,,	,,	,,	...	five	,,	,,	,,	,,	,,

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

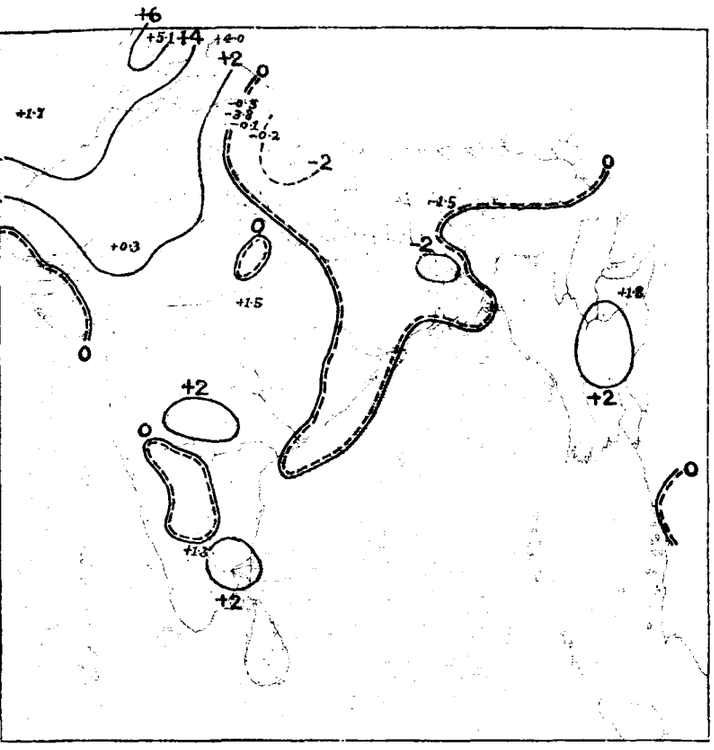
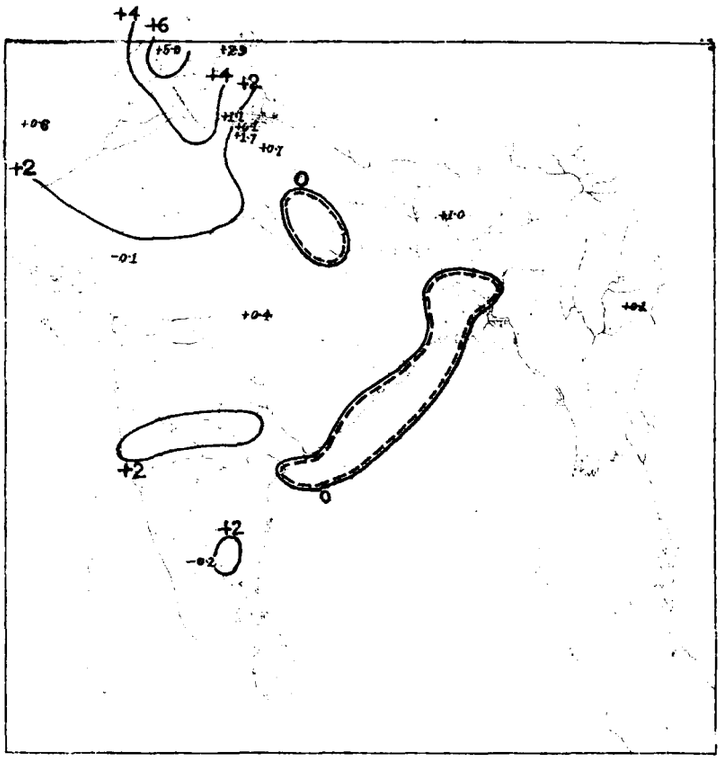


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

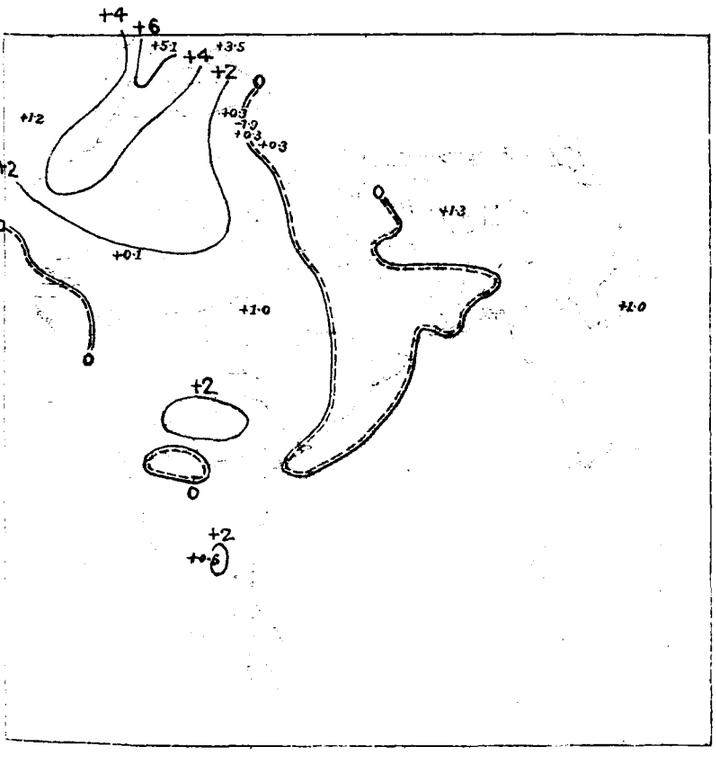
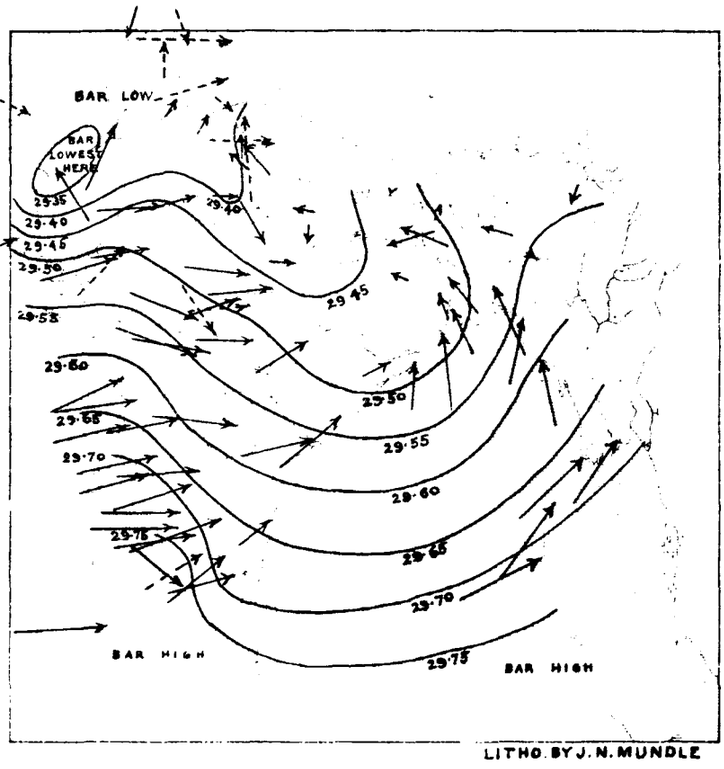


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF JUNE 1898.



LITHO. BY J. N. MUNDLE

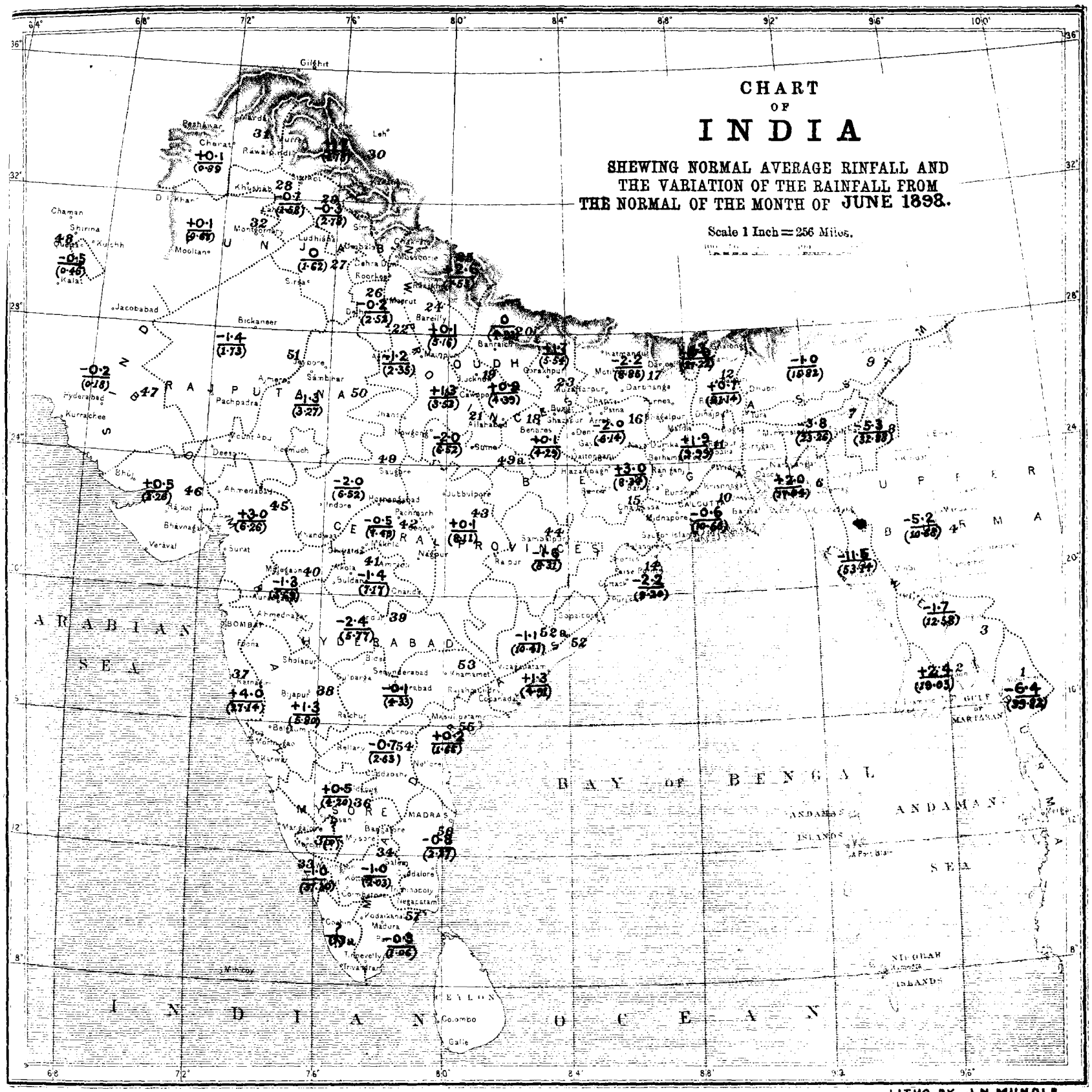
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of $\frac{1}{8}$th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The [illegible] used in the preparation of this Chart are the rainfall returns of all the observatories in India (182 in number) except those at the [illegible] stations over 5,000 feet in Elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Reg. No. 243, Wr., I.—June 99.—52,50.

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma, Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North Punjab
32. West do.
33. Malabar
33a. Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a. Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do. do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

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GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, JULY, 1898.

INTRODUCTION.

THIS review of the weather in India during the month of July 1898 is based on observations taken daily at 8 A.M. at 215 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 86 stations. In the rainfall summary the rainfall data of the meteorological observatories, the weekly rainfall telegrams received during the month from District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the publication of the review, are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of July, 1898.

The south-west monsoon circulation is usually fully established over nearly the whole of India before the end of June, and prevails with great steadiness during the whole of July. If the monsoon currents are feebler than usual, the rains may be considerably delayed in North-Western and Central India, and not be fully established until the middle or end of July.

The month is hence usually a period of frequent, and in some districts, of almost constant rainfall, and of comparative uniformity of temperature and of high humidity over the greater part of the country. The only areas in which the rainfall is small in amount, and in which hot weather conditions continue, though in a somewhat mitigated form, are Sind, North-West Rajputana and the West Punjab.

The distribution of rainfall during the month depends largely upon the relative strength of the two branches of the monsoon current. The Bombay branch advances usually in an easterly direction across the Peninsula, and in a north-easterly direction across Central India and Rajputana towards the East Punjab. The Bay of Bengal branch of the current in part advances over Burma and in part crosses the Bengal coast, and is deflected westwards up the Gangetic valley towards the Punjab. The goal of both branches of the monsoon current would hence appear to be the Punjab. But the greater part of the ascensional motion, which is the continuation of the horizontal movement, takes place in the Deccan, Central India and the Gangetic Plain, as well as in the coast districts, all of which receive more or less general and heavy rain during the month. It is only when at least one branch of the monsoon current is blowing strongly that humid winds advance into the Punjab and give fairly general rain, chiefly in the eastern districts.

Between the two areas in which the two branches of the monsoon circulation exclusively prevail, is a long narrow belt of country which forms a kind of debatable ground between the two currents and in which there is much interaction. In this belt pressure is somewhat lower than it is either further to the north or to the south, and hence it forms a trough of low pressure. The trough in July usually stretches from Orissa through Chota Nagpur to Upper Sind or the South-West Punjab.

An important feature of the meteorology of the month is the occasional formation of shallow cyclonic storms in the north of the Bay of Bengal or South Bengal. They usually advance in a west to west-north-west direction along the trough of low pressure. These cyclonic whirls draw into them the humid winds advancing across the coasts of India, and discharge their moisture as more or less heavy cyclonic rainfall over the areas they traverse. They hence tend to make the rainfall distribution of the month more irregular in Northern and Central India than it would otherwise be. On the other hand, their advance westwards is always accompanied with and followed by a strong influx of humid winds across the Bengal coast. Hence they give rise at the same time to more or less general rain over Northern or Central India.

The following is a summary of the chief features of the weather in India during the month of July 1898.

At the commencement of the month a moderately strong monsoon was blowing across the Bengal and Bombay coasts. The rainfall was light in the west coast districts, but was moderate in amount in Burma, Bengal, the Gangetic Plain and the East and North Punjab. No important change occurred on the 2nd and 3rd.

Temperature was during this period largely below the normal in the Punjab, as is shown by the following data:—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	1st July.	2nd July.	3rd July.	4th July.
	°	°	°	°
Punjab	—5·7	—6·0	—6·5	+0·6
North-Western Provinces and Oudh.	—2·3	—3·4	—0·8	+2·6

The rapid increase of temperature during the 24 hours preceding 8 A.M. of the 4th was due to the diversion of the monsoon current to a cyclonic storm which had formed in the north of the Bay on the 1st and 2nd and the consequent cessation of rainfall in North-Western India.

This storm formed at the head of the Bay and in South Bengal, and was central near Saugor Island on the 2nd when it was of slight intensity. It drifted slowly westwards during the next 24 hours, the centre lying near Chaibassa at 8 A.M. of the 3rd and in about Lat. 23½°N and Long. 83¼°E at the same hour of the 4th. It was unchanged in character on the 3rd and 4th, being a shallow depression of considerable extent and giving moderate rain to the greater part of North-Eastern India. The storm concentrated slightly during the next 24 hours and the centre at 8 A.M. of the 5th was nearly midway between Jubbulpore and Sutna.

Very heavy rain had fallen in the Seoni, Hoshangabad and Betul districts. The following large amounts were recorded at 8 A.M., *viz.*, 9·94 inches at Lakhnadon and 7·20 inches at Seoni (both in the Seoni district) and 5·91 inches at Pachmarhi. The storm advanced along a west by north track during the next 24 hours and was central in Lat. 24¼°N and Long. 77½°E at 8 A.M. of the 6th. Heavy rain had continued to fall in the western and central districts of the Central Provinces and moderately heavy rain was now falling in Central India and Rajputana. The following gives the heaviest downpours :—

PROVINCE.	District or state.	Station.	Rainfall during 24 hours preceding 8 A.M. of 6th July.
			Inches.
CENTRAL PROVINCES.	Hoshangabad . .	Hoshangabad . .	9·40
	„ . .	Seoni . . .	8·63
	Nimar . . .	Harsud . . .	4·44
	„ . . .	Khandwa . . .	4·21
CENTRAL INDIA STATES.	Bhopal . . .	Sehore . . .	6·50
	„ . . .	Bhopal . . .	4·21
	Kusalgarh . .	Kusalgarh . . .	5·12

The storm advanced into South-West Rajputana on the 7th, the centre being probably to the north-north-west of Mount Abu at 8 A.M. of that day. Moderate to heavy rain had fallen in South-West Rajputana. The indraught to the storm area gave heavy downpours to some districts of North Bombay, chiefly in Gujarat. The following gives the most noteworthy falls :—

DISTRICT OR STATE.	Station.	Rainfall during 24 hours preceding 8 A.M. of 7th July.
		Inches.
REWA KANTHA . .	Lunavada	9·95
PANCH MAHALS . .	Halol	7·30
AHMEDABAD . .	Modasa	6·65

The storm passed into Sind and broke up against the mountains in Southern Baluchistan during the next 24 hours. Lower Sind received light to moderate showers, and a few local showers fell in Baluchistan.

The storm hence passed from the head of the Bay to Sind in six days travelling at the average rate of about 200 miles per diem. It gave moderate to heavy rain to Bengal, Chota Nagpur, South Bihar, the Central Provinces, Central India, South-West Rajputana, North Bombay and Lower Sind. The rainfall was excessive in the Seoni and Hoshangabad districts of the Central Provinces and in Rewa Kantha, the Panch Mahals and Gujarat. The rainfall accompanying the storm caused a large reduction of temperature in the areas over which it passed, as is shown by the following data :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	4th July.	5th July.	6th July.	7th July.	8th July.	9th July.
	°	°	°	°	°	°
South Bengal . .	—1·7	—2·2	—2·5	—0·4	+1·3	+1·4
Orissa . . .	—0·8	+0·8	—0·5	+1·5	+0·9	—0·6
Chota Nagpur . .	—1·3	—1·8	—1·3	+1·2	+2·2	+1·3
North-Western Provinces and Oudh.	+2·6	+1·4	+1·3	+1·6	+3·0	—0·3
Central Provinces and Berar.	—1·0	—3·4	—4·9	—1·9	+1·3	+1·4
Central India . .	+2·2	+0·8	—1·5	—3·6	—2·8	—1·6
Rajputana . . .	+5·3	+6·7	+7·0	+3·6	—0·8	+0·4
Gujarat and Kathiawar.	+3·7	+4·2	+3·3	—7·4	—8·0	—0·6
Cutch and Sind . .	+1·8	+2·1	+2·1	+3·1	—2·2	—1·5

A noteworthy feature of this period was the excessive temperature which prevailed in the Punjab and Upper Sind. The following gives data in illustration :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	4th July.	5th July.	6th July.	7th July.	8th July.	9th July.
	°	°	°	°	°	°
Punjab . . .	+0·6	+3·3	+5·0	+5·0	+3·8	+5·0
Upper Sind . . .	+2·8	+3·3	+2·7	+8·8	+4·4	+3·9

This was the hottest period of the month in Upper India, and the highest maximum temperatures of the month were recorded in that area during this period. The following gives the most noteworthy :—

STATION.	Highest maximum temperature recorded in July 1898.	Date on which recorded.	Highest maximum temperature recorded in July previous to 1898.	Year in which recorded.
	°		°	
Jacobabad . . .	118·5	7th	119·5	1878
Mooltan . .	115·0	7th	116·8	1891
Montgomery . .	112·6	7th	120·4	1891
Bickaneer . . .	111·9	6th	114·3	1891
Hyderabad . . .	111·2	7th	113·1	1881
D. I. Khan . . .	111·2	7th	120·5	1891 and 1892
Peshawar . . .	111·0	10th	117·0	1892

These temperatures were not quite so high as have been previously recorded in July.

The Bombay current, after the breaking up of the preceding storm, advanced into the Punjab and gave light to heavy rain in the central, submontane and hill districts from the 10th to the 14th. Burma, Bengal, the Gangetic Plain, the Central Provinces and the West Coast districts also received moderate daily rain throughout this period. Little or no rain fell in the Deccan during this period, and hence temperature was generally above the normal in that area from the 10th to the 14th and below it in Northern and Central India, but the variations were generally small, except in the Punjab, for which data are given below :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	11th July.	12th July.	13th July.	14th July.	15th July.	16th July.
	°	°	°	°	°	°
Punjab . . .	—1·3	—6·0	—6·6	—3·6	—0·8	+0·9

Large pressure changes occurred on the 16th which shifted the trough of low pressure to the submontane districts of Northern India. Heavy rain fell in North Bengal and Bihar on the 13th, 14th and 15th. The following gives examples of this downpour :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
JALPAIGURI . .	Fallacotta . . .	13th July .	8·05
" . .	Jalpaiguri . . .	" . .	6·40
DARJEELING . .	Buxa	" . .	7·95
COOCH BEHAR .	Mickliganj . . .	" . .	7·32

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Dinajpur	Thakurgaon	13th July	6·15
Jalpaiguri	Jalpaiguri	14th ,,	6·08
Chittagong	Kodala	15th ,,	7·63
Rangpur	Rangpur	,, ,,	6·62

A shallow depression formed in this area of heavy rainfall during the 24 hours preceding 8 A.M. of the 16th. It drifted westwards into the eastern districts of the North-Western Provinces on the 17th, and the south western districts on the 18th, at 8 A.M. of which day it was central nearly midway between Jhansi and Mainpuri. The storm gave a moderately heavy burst of rain to the North-Western Provinces on the 17th and 18th. The rainfall was very heavy in the Benares, Jaunpur and Mirzapur districts on the 17th, as is shown by the following data:—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 17th July.
		Inches.
Jaunpur	Jaunpur	8·20
,,	Kerakat	6·48
,,	Kutahan	5·37
Mirzapur	Chakia	5·41
Benares	Benares	5·28

The storm drifted westwards through Rajputana on the 19th and 20th, the centre at 8 A.M. of the 19th being in about Lat. 27°N and Long. 74½°E and at the same hour on the 20th in Lat. 27¾°N and Long. 71½° E.

It gave general rain over nearly the whole of Rajputana. The rainfall was heavy in the western districts, more especially Jodhpore and Jeysulmere and in Jeypore. The following gives the largest falls:—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Jeypore	Jeypore	19th July	4·98
Jodhpore	Pachpadra	20th ,,	7·55
,,	Sheo	,, ,,	6·10
,,	Balmer	,, ,,	6·06
,,	Jasol	,, ,,	4·68
Jeysulmere	Davikot	,, ,,	4·00

The storm advanced into Sind and broke up against the Baluchistan hills during the next 24 hours.

Heavy local falls occurred in Sind and parts of Baluchistan on the 21st and 22nd, as is shown by the following data:—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Kurrachee	Shahbandar	21st July	5·90
Baluchistan	Shahrig	,, ,,	1·50
Kurrachee	Tatta	22nd ,,	7·60
Baluchistan	Temple Dera	,, ,,	1·30

The storm gave moderate to heavy general rain in Bihar, the North-Western Provinces and Rajputana, more especially the western states including Jeypore, Jodhpore and Jeysulmere. It also gave heavy local downpours (but not general rain), chiefly accompanying thunderstorms, in Lower Sind. The following table gives the variations of temperature from the normal in the areas through which the storm passed from the 16th to the 22nd:—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	16th July.	17th July.	18th July.	19th July.	20th July.	21st July.	22nd July.
	°	°	°	°	°	°	°
Bihar	−4·0	−2·4	−3·9	−1·7	−0·4	+0·7	+1·3
North-Western Provinces and Oudh.	−1·3	−1·2	−5·4	−4·6	−0·4	−0·4	+1·1
Baghelkhand	−4·4	−2·3	−5·3	−0·8	+1·6	+1·6	+2·0
Bundelkhand	−3·3	−4·9	−6·4	−4·6	+1·5	+0·3	+1·0
Sind and Rajputana	+1·9	+1·9	+2·1	−2·8	−4·3	−3·4	−1·0
Punjab	+0·9	−0·1	−3·8	−3·9	−4·6	−1·8	−0·8
Baluchistan (Quetta)	+0·2	−2·2	+3·2	−2·7	−0·4	−0·8	−0·7

The breaking up of this storm was followed by an advance of humid winds from the North Bombay coast to the Punjab. Moderate rain was received in Rajputana and the eastern districts of the Punjab on the 23rd and 24th. A depression began to form off the coast of Circars on the 21st. It developed slowly during the next three days and was of moderate intensity on the 24th. It was stationary during that period, but began to advance westwards on the 25th, and at the same time commenced to fill up—a somewhat unusual circumstance. The centre of the depression crossed the coast near Vizagapatam on the evening of the 25th, and passed westwards into the eastern districts of Hyderabad and of the Central Provinces

on the 26th, and filled up in that area during the next 24 hours. The indraught to the storm from the west coast gave moderate rain on the 24th, 25th and 26th, in the Deccan. Fine weather with light local showers, on the other hand, set in over Bengal and the Gangetic Plain. Temperature hence increased and was more or less above the normal in Northern India during the period, as is shown by the following data :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	22nd July.	23rd July.	24th July.	25th July.	26th July.
	°	°	°	°	°
Bengal	—0·2	+0·1	+2·6	+4·5	+3·7
Bihar	+1·3	+1·1	+3·2	+4·7	+4·9
Chota Nagpur	—0·3	—0·5	+0·1	+2·2	+3·6
North-Western Provinces and Oudh.	+1·1	—1·5	—1·2	+3·1	+5·6
Central India and Gujarat	+1·0	—0·5	—0·2	+3·2	+5·3
Sind and Rajputana	—1·0	+0·7	—0·3	+1·4	+4·1
Punjab	—0·8	—0·9	—5·5	—3·0	+1·4

The monsoon current in the east of the Arabian Sea increased considerably in strength on the 20th and 21st, and heavy rain fell in the west coast districts from the 21st to the 27th and moderate rain during the remainder of the month. The following gives examples of the heavy downpours which occurred during this burst of monsoon rain :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Kolaba	Matheran	21st July	12·35
"	Khalapur	22nd "	12·30
"	Karjat	" "	11·58
Poona	Lanoli	" "	10·13

Falls in 24 hours exceeding 5 inches were recorded at a large number of stations during the period.

The disappearance of the third storm of the month was followed by increasing winds and rain in Bengal on the 26th and 27th. Humid winds extended from the coast districts of Bengal and Bombay into the interior and rain fell over the greater part of Northern and Central India from the 29th to the 31st, causing a large reduction of temperature. The following gives variation data for this period illustrating this change:—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	27th July.	28th July.	29th July.	30th July.	31st July.
	°	°	°	°	°
Bengal	—0·4	+0·7	+1·0	—0·2	—1·3
Bihar	+2·9	+3·3	+2·7	—0·6	—1·5
Chota Nagpur	+1·3	+2·8	+2·6	+0·9	—1·0
Central Provinces and Berar	+3·4	+3·3	+1·7	—0·1	—0·7
North-Western Provinces and Oudh.	+5·2	+2·5	+2·7	+0·3	—1·8
Central India and Gujarat	+5·8	+4·8	+2·9	+0·7	0
Rajputana	+8·0	+8·0	+5·3	+3·4	+0·4
Punjab	+2·7	+1·9	+0·7	+0·3	—4·6

The rainfall on the 30th was heaviest in the eastern and central districts of the North-Western Provinces and a shallow depression formed in the south-eastern districts during the day. The Allahabad, Banda, Fatehpur, Cawnpore, and Etawah districts obtained heavy rain on the 31st, the largest amounts recorded being 6·26 inches at Narwal in the Cawnpore district, and 5·7 inches at Auraiya in the Etawah district.

Pressure.—The mean pressure of the Indian land area for the month was ·018′ below the normal. Pressure was in local excess in Northern India and Upper Burma and in defect in the Peninsula and Lower Burma. The excess in Northern India was generally small except in the Punjab where it ranged between ·02″ and ·043″. The deficiency in the Peninsula was largest in Malabar, South Madras and Ceylon, ranging between ·02″ at Madras and ·033″ at Colombo.

The vertical anomalies were generally positive and small in amount and, so far as can be judged, of little significance.

The following table gives the mean pressure variations and anomalies of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of July 1898.	Pressure anomaly, July 1898.
	″	″
Burma Coast and Bay Islands	—·027	—·009
Burma Inland	—·009	+·009
Assam	—·005	+·013
Bengal and Orissa	—·015	+·003
Gangetic Plain and Chota Nagpur	—·019	—·001

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of July 1898.	Pressure anomaly, July 1898.
	"	"
Upper Sub-Himalayas	+·005	+·023
Indus Valley and North-West Rajputana	+·002	+·020
East Rajputana, Central India and Gujarat	—·014	+·004
Deccan	—·023	—·005
West Coast	—·035	—·017
South India	—·036	—·018

Temperature.—The variations of the mean temperature conditions of the month from the normal were generally small. They were large only in Southern India, the South-West Punjab and Central and North-West Rajputana where temperature was above the normal in consequence of scanty rain, and in the East and North Punjab where the rainfall of the month was more continuous and heavier than usual.

The mean maximum temperature of the month was below the normal in the North, Central and East Punjab, the North-Western Provinces, Central India (East), the eastern half of the Central Provinces, Hyderabad, North Madras, Orissa, South and Central Bengal, and part of Burma. The deficiency was small except in a part of the Punjab represented by stations for which data are given below :—

PROVINCE.	STATION.	MEAN MAXIMUM TEMPERATURE.		
		Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
		°	°	°
PUNJAB	Ludhiana	92·6	97·9	—5·3
"	Lahore	93·9	98·6	—4·7
"	Peshawar	99·8	102·8	—3·0

The mean maximum temperature of the month was above the normal over the remainder of India, but the variations were less than 2° except in two areas, *viz.*, Central and East Rajputana and South Madras in which they ranged between 2° and 5°, the excess being absolutely greatest at Sambhar (+5°·0) and Negapatam (+4°·6).

The mean minimum temperature of the month was below the normal over the greater part of the Punjab, Upper Assam, South-West Bengal, the eastern and central districts of the Central Provinces, Orissa and North Madras. The variations in these areas were small, nowhere exceeding 2°. Over the remainder of India the night temperature was higher than usual, but the excess was small except in Central and North-West Rajputana and the South Punjab and also in a part of South Madras represented by the stations of Salem, Trichinopoly and Negapatam. The excess was absolutely greatest at Bickaneer (+4°·1), Mooltan and Salem (each +2°·5).

The mean temperature of the month was below the normal in the Punjab (excepting the south-western districts), the North-Western Provinces, Baghelkhand, Bundelkhand, the eastern and central districts of the Central Provinces, Hyderabad, North Madras, Orissa, South Bengal, Upper Burma and Upper Assam, and was more or less above it over the remainder of India and Burma. It was more than 2° above the normal in two areas for which comparative data are given below :—

AREA.	STATION.	MEAN DAILY TEMPERATURE.		
		Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
		°	°	°
FIRST AREA	Sambhar	88·4	84·9	+3·5
	Bickaneer	92·9	90·1	+2·8
	Ajmere	86·4	83·8	+2·6
	Mooltan	95·7	93·1	+2·6?
SECOND AREA	Negapatam	89·7	86·3	+3·4
	Salem	85·7	82·4	+3·3
	Cuddapah	88·2	85·6	+2·6
	Trichinopoly	89·3	87·1	+2·2

It was more than 2° below the average in the North and East Punjab as represented by the following stations :—Ludhiana (—2°·9), Lahore (—2°·3), Peshawar (—2°·3) and Sialkot (—2°·1).

The mean temperature was in slight defect at the hill stations in Upper India and normal at Mount Abu, Darjeeling, Pachmarhi and Wellington.

The following table gives variation data of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, July 1898.	Mean minimum temperature, July 1898.	Mean daily temperature, July 1898.
	°	°	°
Burma Coast and Bay Islands	—0·1	+0·5	+0·2
Burma Inland	+0·4	+0·5	+0·5
Assam	+0·1	+0·1	+0·1
Bengal and Orissa	+0·1	+0·2	+0·1
Gangetic Plain and Chota Nagpur	—0·2	+0·3	0

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, July 1898.	Mean minimum temperature. July 1898.	Mean daily temperature, July 1898.
	°	°	°
Upper Sub-Himalayas	—1·8	—0·4	—1·1
Indus Valley and North-West Rajputana.	—0·6	+0·6	0
East Rajputana, Central India and Gujarat.	+1·5	+0·9	+1·2
Deccan	—0·2	+0·1	0
West Coast	+0·4	+0·4	+0·4
South India	+1·5	+1·0	+1·3

Winds—Were apparently of normal strength on the mean of the month in the centre and north of the Bay. Winds were less westerly at Diamond Island, Akyab, False Point and Saugor Island, and more easterly at all stations in the interior of Bengal. Winds were steadier and stronger than usual in Bihar and the eastern districts of the North-Western Provinces. The mean position of the axis of the trough of low pressure was somewhat further south than usual, more especially in its eastern half. Winds were most variable at Hazaribagh, Sutna, Jeypore, Lahore and Mooltan. The mean velocity of the air movement of the month was below the normal on the Sind, Kathiawar and Konkan coasts and in the adjacent districts of the interior represented by Deesa, Akola and Belgaum. Winds were, on the other hand, considerably stronger at the hill stations of Mount Abu, Pachmarhi and Chikalda. The mean winds were also approximately normal in the East Deccan, Mysore and South India. Winds were somewhat more easterly than usual at Zanzibar and the Seychelles, and considerably more westerly than usual at Aden and Perim.

Humidity.—The variations of the mean humidity conditions of the month were generally small. The mean humidity for the month was generally in excess, but the variations were small and less than 5 except in the North and East Punjab, Baghelkhand, Bundelkhand and perhaps Hyderabad. The excess was 7 at Nowgong and Sutna and 6 at Hyderabad and Ludhiana. The variation for Lahore (+12) can not be accepted as correct. The air was slightly drier than usual in Bihar, Chota Nagpur, North Bengal, Central and East Rajputana and Southern India. The variations were small at all stations in these areas except at Trichinopoly (—7) and Salem and Jeypore each (—6). The following gives variation data for the ten meteorological provinces:—

METEOROLOGICAL PROVINCE.	VARITION FROM NORMAL OF	
	Mean aqueous vapour pressure, July 1898.	Mean humidity, July 1898.
	"	
Burma Coast and Bay Islands	+·007	+2
Assam	+·008	—1
Bengal and Orissa	—·002	0
Gangetic Plain and Chota Nagpur	+·008	—1
Upper Sub-Himalayas	+·006	+3
Indus Valley and North-West Rajputana	+·021	+1
East Rajputana, Central India and Gujarat	+·032	+1
Deccan	+·012	+2
West Coast	+·008	—1
South India	—·007	—2

Cloud.—In consequence of the prevalence of steady monsoon currents and favourable conditions for their extension to their extreme limits in the Punjab, cloud was on the mean of the month either normal in amount or in excess, except in Southern India and perhaps Bihar and Upper Assam. The deficiency was marked in Southern India as represented by Trichinopoly (—1·6). The positive variations were generally small in amount but exceeded 1·0 in Hyderabad, the Madras Deccan, East Mysore, the Circars, Upper Sind, Baluchistan and the Upper India hill districts and also in the Bay Islands and locally at Diamond Island and Ratnagiri. The excess was absolutely greatest at Vizagapatam (+1·9), Bangalore (+1·8), Leh (+1·7), Ratnagiri (+1·6) and Quetta (+1·5). The following gives comparative data for ten meteorological provinces:—

METEOROLOGICAL PROVINCE.	Variation from normal of mean cloud amount, July 1898.
Burma Coast and Bay Islands	+0·7
Assam	0
Bengal and Orissa	+0·2
Gangetic Plain and Chota Nagpur	+0·2
Upper Sub-Himalayas	+0·1
Indus Valley and North-West Rajputana	+0·4
East Rajputana, Central India and Gujarat	+0·5
Deccan	+0·7
West Coast	+0·6
South India	+0·7

Rainfall.—The rainfall of the month was on the average of the whole of India below the normal. It was normal (*i.e.*, less than 10 per cent. in defect or in excess) in 16 out of the 57 rainfall divisions. It was more than 33 per cent. in excess in the following divisions. Sind (large), Central Punjab (69 per cent.), Punjab North (67 per cent.), North-Western Provinces East (44 per cent.), West Punjab (43 per cent.), Madras East Coast North (40 per cent.), Baluchistan Hills (36 per cent.), Punjab South (34 per cent.) and Hyderabad.

It was in moderate to considerable defect in Upper Burma, Tenasserim, Central and North Bengal, the Assam Valley and Hills, Orissa, North Bihar, the South-East Punjab, the North-Western Provinces West, Punjab hills, Berar, Mysore and the greater part of Madras. It was more than 30 per cent. in defect in the following divisions:—

Madras South Central (64 per cent. in defect), Madras South (49 per cent. in defect), Upper Burma (45 per cent. in defect), Mysore (39 per cent. in defect), North-Western Provinces West (36 per cent. in defect), and Madras East Coast Central and Madras South, in which the actual amount of the deficiency was small, averaging less than an inch, but large expressed as a percentage.

The following table gives the rainfall data of the month for the eleven meteorological provinces:—

Meteorological Province.	Rainfall.		
	Average actual for July 1898.	Average normal for July.	Variation of actual from normal, July 1898.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	28·31	31·38	—0·72*
Burma Inland	7·74	8·15	—0·41
Assam	13·53	17·46	—3·93
Bengal and Orissa	11·99	14·48	—2·49
Gangetic Plain and Chota Nagpur	11·91	12·37	—0·47
Upper Sub-Himalayas	10·42	11·49	—0·72*
Indus Valley and North-West Rajputana.	3·72	2·86	+0·86
East Rajputana, Central India and Gujarat.	10·37	10·78	+0·05*
Deccan	14·49	11·18	+3·43*
West Coast	32·95	28·96	+3·99
South India	2·96	3·44	—0·48

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian land area for the month was ·018″ below the normal.

Pressure was in local excess, relatively to the general condition, over nearly the whole of Northern and Central India and Upper Burma. The positive anomalies were more than ·02″ in the Punjab at the stations for which data are given below:—

Station.	Variation from normal of mean 8 A.M. pressure of July 1898.	Pressure anomaly, July 1898.
	″	″
Sialkot	+·025	+·043
Rawalpindi	+·021	+·039
Montgomery	+·018	+·036
Lahore	+·013	+·031
D. I. Khan	+·008	+·026
Peshawar	+·004	+·022
Mooltan	+·003	+·021

Pressure was in defect over the remainder of India. The deficiency was moderate in amount slightly exceeding ·02″ in Malabar and South Madras and also in Ceylon, as is shown below:—

Province.	Station.	Variation from normal of mean 8 A.M. pressure of July 1898.	Pressure anomaly, July 1898.
		″	″
Bombay	Karwar	—·042	—·024
	Mangalore	—·040	—·022
	Calicut	—·040	—·022
Madras	Vizagapatam	—·046	—·028
	Trichinopoly	—·045	—·027
	Madura	—·045	—·027
	Negapatam	—·040	—·022
	Madras	—·038	—·020
Ceylon	Colombo	—·051	—·033

The mean pressure of the month at the hill stations in Northern India was generally in slight excess. The vertical pressure anomalies of the month were small in amount and were positive except at Wellington in

Southern India and at Leh, Darjeeling and Pachmarhi, as is shown below:—

HILL STATION.	Variation of actual from normal pressure, July 1898.	PLAIN STATION.	Variation of actual from normal pressure, July 1898.	Vertical pressure anomaly (Hill — Plain).
	"		"	"
Quetta	+·003	Jacobabad	—·012	+·015
Leh	+·010	Lahore	+·013	—·003
Murree	+·006	Peshawar	+·004	+·002
Simla	+·009	Ludhiana	+·002	+·007
Chakrata	+·021	Roorkee	—·004	+·025
Ranikhet	+·012	Bareilly	+·009	+·003
Darjeeling	—·002	Dhubri	0	—.002
Pachmarhi	—·023	Hoshangabad	—·020	—·003
Wellington	—·048	Coimbatore	—·032	—·016

The chief abnormal features of the pressure conditions of the month in India were—

1. Slightly general deficiency.

2. A slight local excess of pressure in Northern and Central India, greatest in the Punjab, where it averaged ·026."

3. A slight local deficiency in the Peninsula and Ceylon (and over the south of the Bay), greatest in Ceylon and South Madras, where it averaged ·025" in amount.

Barometric depressions and cyclonic storms of the month.

At the commencement of the month moderate to strong monsoon winds prevailed in the Arabian Sea. The trough of low pressure in Northern India lay further north than usual, the axis being defined by the stations of Hazaribagh, Allahabad, Mainpuri, Delhi and Sirsa. Fairly general rain was falling in the Gangetic Plain, the Central Provinces, the East Punjab and the West Coast districts. The only important feature in the pressure conditions was a deficiency of pressure at the head of the Bay, where a cyclonic storm was in process of formation. The following gives a history of this storm:—

Cyclonic storm of the 1st to the 8th July.—South-west monsoon winds of force 4 to 6 with fine weather prevailed generally on the 1st and following days in the south of the Bay. Weather was squally with much rain over the north of the Bay and winds had shifted to north at the Bengal and to west at the Orissa Coast stations. The following data taken from the logs of vessels indicate the weather prevailing at this time in the north of the Bay:—

NAME OF VESSEL.	8 A.M. POSITION		Barometer (corrected.)	WIND		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	"			
S.S. *Caithness*	16 45	83 58	29·580	WSW	6	Passing showers.
S.S. *City of Edinburgh.*	18 14	86 38	·562	W	3	Moderate sea and heavy squalls with rain.
S.S. *Commilla*	20 00	92 40	·532	...	...	Noon—heavy wind and rain squalls.
S.S. *Bancoora*	20 50	88 54	·489	W	4	Slight swell, cloudy. Noon—much rain.
F. L. V. *Hesperus*	Ridge.		·484	NNW	2	Ugly.
F. L. V. *Torch*	Mutlah		·483	N	2to5	Heavy thunder and lightning.
S.S. *Maharani*	21 03	88 30	·483	NNW	3	Dull and cloudy. 4 A.M. squally with heavy rain.

The data indicate that a shallow depression (which, however, was not yet shown as a closed area of low pressure) lay over the north of the Bay, and that winds were cyclonic in direction and weather squally with much rain in that area. Further to the south steady monsoon winds of normal strength obtained.

2nd July.—Pressure had given way briskly to rapidly in the north and north-west of the Bay and a closed low pressure area lay over the north-west angle at 8 A.M. The following gives 8 A.M. observations at the coast stations:—

STATION.	PRESSURE.			WIND		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Akyab	29·531	—·008	—·155	S	4	9	2·87	
Chittagong	·450	—·072	—·198	SSE	14	8	...	Strong wind.
Saugor Island.	·397	—·083	—·165	WNW	10	10	0·49	Wind variable.
False Point.	·435	—·092	—·136	W	12	10	0·05	
Gopalpur	·449	—·105	?	SW	13	4	1·01	

Weather was gloomy with moderate rain and light winds in South Bengal and Orissa. The character of the

weather in the north of the Bay is shown by the following data extracted from the logs of vessels :—

Name of Vessel.	8 A.M. Position. Lat. N.	Long. E.	Barometer (corrected).	Wind Direction.	Force.	Weather.
	° ′	° ′	″			
S.S. *Commilla* .	17 28	93 42	29·592	WSW	6	High sea, 8 P.M. hard squalls of rain and wind.
S.S. *Caithness* .	19 15	86 17	·430	WSW	5	Squally.
S.S. *Teenkai* .	19 29	89 27	·415	SW	5	Overcast.
S.S. *Purulia* .	19 33	89 56	·442	SW	5	High sea and squally.
S.S. *Naderi* .	20 43	87 57	·391	WSW	4	Moderate sea and overcast, 4 A.M. rainy.
F.L.V. *Hesperus*	Ridge.		·406	W	3	Drizzling.
F.L.V. *Torch* .	Mutlah.		·414	W	5	Light continuous rain.

The data indicate that west to south-west winds had extended northwards to the coast of the Sunderbunds, and that the centre of the depression was a little to the north-east of Saugor Island in about Lat. 21° 45′ N. and Long. 88° 30′ E. Weather was squally with more or less heavy rain at the head of the Bay. The storm was at this stage of slight intensity, the depression at the centre not exceeding ·2″.

3rd July.—Pressure had risen locally in East Bengal and Arakan and fallen briskly in Chota Nagpur and Orissa. The depression had been transferred about 20 miles westwards during the previous 24 hours and was at 8 A.M. of this day central near Chaibassa, as is shown by the following observations :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Wind Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	″	″	″				Inches.	
Sambalpur .	29·387	—·052	—·189	NW	5	9	0·31	
Balasore .	·372	—·051	—·179	WSW	2	4	0·10	Fine.
Bankura .	·361	—·047	?	W	4	8	0·18	Drizzling rain.
Chaibassa .	·364	—·044	?	Calm	8	7	1·20	Showery.
Hazaribagh	·352	—·080	—·206	E	9	10	1·17	Showery.
Dehri .	·402	—·026	—·138	N	8	10	0·24	Drizzling rain.

Pressure at the centre was, as on the 2nd, about two-tenths of an inch below the normal. The central depression covered a much larger area than on the previous day. Winds were of moderate strength in the depression area. Moderate to heavy rain had fallen in South-West Bengal and Chota Nagpur. The following were the heaviest reported falls :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 3rd July.
		Inches.
Midnapore	Midnapore . . .	3·07
"	Tamluk	2·10
Jessore	Jhenidah	2·84
Chittagong	Cox's Bazar . . .	2·15
Shahabad	Mohanea	2·60
Sonthal Parganas . . .	Madhupur . . .	2·14
Palamau	Chatterpore . . .	3·03
"	Ranka	2·81
"	Garhwa	2·04
Singhbhum	Chakardharpur . .	2·70
Manbhum	Jhalda	2·28

South-west winds with showery squally weather continued at the head of the Bay.

4th July.—Pressure had increased briskly to rapidly in Bengal and Burma, and had fallen briskly in the area represented by the stations of Jubbulpore and Sutna. The depression had marched westwards about 200 miles during the previous 24 hours, and lay over the western districts of Bihar, Chota Nagpur, Baghelkhand and the neighbouring districts of the Central Provinces and of the North-Western Provinces. The following data indicate its position :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Wind Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	″	″	″				Inches	
Sambalpur .	29·456	+·069	—·125	SW	6	10	0·45	
Hazaribagh	·438	+·086	—·125	E	12	10	0·73	Showery.
Daltonganj	·425	+·036	?	E	7	7	1·85	Dark, gloomy.
Dehri .	·427	+·025	—·107	E	9	6	0·55	Passing showers.

STATION.	PRESSURE. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	WIND. Direction at 8 A.M.	Average hourly velocity in miles past 24 hours.	Cloud.	Rainfall.	WEATHER.
	"	"	"				Inches	
Benares .	29·437	—·010	—·083	ESE	3	7	1·22	Showery.
Allahabad .	·428	—·032	—·090	ENE	6	10	0·69	Thunder-storm.
Sutna	·433	—·060	—·098	N	5	10	0·95	Showery.
Jubbulpore.	·460	—·060	—·114	WNW	7	10	2·20	Gale and heavy rain.

The centre at 8 A.M. was probably in about Lat. 23½° N. and Long. 83¼° E. Moderate to heavy rain had fallen in South-West Bengal, Chota Nagpur, Bihar, Baghelkhand and the eastern districts of the North-Western Provinces and in the Central Provinces during previous 24 hours. The following gives the largest falls:—

PROVINCE.	DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 4th July.
			Inches.
NORTH-WESTERN PROVINCES.	Mirzapur . .	Chunar . .	3·92
	" . .	Mirzapur . .	3·05
	Benares . .	Gangapur . .	3·68
	Sultanpur . .	Musafirkhana .	3·21
BENGAL . . .	Midnapore . .	Ghatal . .	2·47
	24-Parganas	Saugor Island .	2·37
CENTRAL INDIA STATES .	Rewah . .	Chandia . .	2·73
CENTRAL PROVINCES .	Narsinghpur .	Narsinghpur .	4·27
	Jubbulpore .	Bijeraghogarh .	3·14

The rainfall due to the storm was hence nowhere excessive. It was spread over a largish area and moderate in amount.

5th July.—Pressure had increased generally in India, the rise being largest in West Bengal and the north of the Bay. It had fallen briskly in the area represented by the stations of Seoni, Saugor and Jubbulpore. The depression had advanced westwards during the previous 24 hours about 190 miles, and was now central nearly midway between Sutna and Jubbulpore. The following 8 A.M. meteorological data fix the position of the storm at that hour:—

STATION.	PRESSURE. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	WIND. Direction at 8 A.M.	Average hourly velocity in miles during 24 hours.	Cloud.	Rainfall.	WEATHER.
	"	"	"				Inches	
Raipur .	29·482	—·001	—·102	SW	13	10	0·11	
Daltonganj .	·464	+·039	?	SSE	5	4	0·32	Dark, gloomy.
Benares .	·450	+·013	—·071	E	6	10	0·26	
Sutna .	·411	—·022	—·111	E	8	6	0·05	Fine.
Saugor .	·443	—·089	—·107	N	?	10	2·31	
Jubbulpore.	·407	—·053	—·153	NW	5	9	1·62	Continuous rain.

The depression was, as on the 3rd and 4th, large and shallow, pressure at the centre being about a sixth of an inch below the normal.

The centre was probably in Lat. 24°N. and Long. 80½°E.

Moderately heavy rain had fallen in the south-western districts of the North-Western Provinces and the Central Provinces, and light to moderate rain in Bundelkhand, Baghelkhand, Gwalior, Bengal, Burma and the West Coast districts. The following gives the heaviest falls in the storm area during the previous 24 hours:—

PROVINCE.	DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 5th July.
			Inches.
CENTRAL INDIA STATES	Gwalior . .	Manpur . .	6·25
	" . .	Dhar . .	5·42
	" . .	Jhabua . .	3·55
	" . .	Jaora . . .	3·20
NORTH-WESTERN PROVINCES.	Jhansi . .	Narhat . .	4·00
	Hamirpur . .	Bela Thal . .	3·29
	" . .	Kulpahar. . .	3·26
CENTRAL PROVINCES .	Seoni . .	Lakhnadon. .	9·94
	" . .	Seoni . . .	7·20
	Hoshangabad .	Pachmarhi . .	5·91
	Balaghat .	Balaghat . .	5·16
	Kalahandi State.	Bhowanipatna .	5·11

6th July.—Pressure had given way generally, but had risen locally in Bihar, Chota Nagpur, South-West Bengal and the eastern districts of the Central Provinces and the North-Western Provinces. The fall of pressure was greatest in the western states of Central India, to which

the storm had now drifted. The following observations show its position and character at 8 A.M. :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches.	
Hoshangabad.	29·414	—·066	—·171	SW	10	10	9·40	Continuous rain.
Saugor .	·412	—·031	—·142	SSE	5	10	1·29	
Jhansi .	·402	—·066	—·135	E	7	8	0·18	
Kotah .	?	—·110	?	E	6	8	0·98	
Oodeypore .	·433	—·107	?	NNW	6	10	0·56	
Indore	·452	—·090	—·152	SW	9	10	3·76	

The centre of the depression was in about Lat. 24°15′N. and Long. 77° 30′ E. The storm covered a smaller area than on the previous day, but the depression at the centre was as large as on the 4th and 5th. The storm was hence slightly more concentrated and heavy rain had fallen in Berar, the western districts of the Central Provinces and parts of Central India. The following gives the most noteworthy falls exceeding four inches during the previous 24 hours :—

Province.	District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 6th July.
			Inches.
Central Provinces	Hoshangabad .	Hoshangabad .	9·40
	" .	Seoni . .	8·63
	Nimar . . .	Harsud . .	4·44
	" . . .	Khandwa	4·21
Central India States.	Kushalgarh . .	Kushalgarh .	5·12
	Bhopal . . .	Sehore . .	6·50
	" . . .	Bhopal . .	4·21
Berar . . .	Ellichpur . .	Dharni . .	4·46

The rainfall was hence excessive in the Hoshangabad and Nimar districts of the Central Provinces, and in the Kushalgarh and Bhopal states of Central India.

7th July.—Pressure had increased rapidly in the area covered by the storm on the morning of the 6th, and had fallen slightly in West Rajputana, Cutch and Kathiawar. The depression had hence almost completely filled up. It lay at 8 A.M. over South-West Rajputana and was absorbed into the Sind permanent depression of the rains during the day. The following shows the position of the residual depression at 8 A.M :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches.	
Mount Abu	?	—·038	—·121	SW	11	10	2·16	Showery.
Deesa .	29·460	—·011	—·096	WNW	12	10	4·69	Continuous rain for upwards of 12 hours.
Oodeypore.	·452	+·019	?	SSW	5	10	0·87	Showery.
Pachmarhi.	?	+·084	—·067	Calm	14	10	0·27	
Jodhpore .	·398	—·012	?	E	3	9	...	Distant lightning.
Bickaneer .	·412	+·002	?	ESE	10	7	...	Fine.
Hyderabad (Sind).	·393	0	—·054	SW	16	10	...	
Kurrachee .	·424	—·019	—·083	WSW	15	10	...	Overcast.

The centre of the residual depression was probably about 50 miles to the north-west of Mount Abu in about Lat. 25° N. and Long. 72° E.

Strong west-south-west winds (force 4 to 6) now prevailed off the Cutch and Kathiawar coasts, and were giving heavy rain in Kathiawar and Gujarat. The winds at Kurrachee and Hyderabad were at 8 A.M. unaffected by the approach of the depression. Heavy rain had been received in South-West Rajputana, Cutch and Gujarat. The following gives the more remarkable cyclonic downpours during the previous 24 hours :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 7th July.
		Inches.
Oodeypore. . . .	Kherwara	3·30
Rutlam	Rutlam	3·15
Rewa Kantha . . .	Lunavada	9·95
Panch Mahals . . .	Halol	7·30
" " . . .	Kalol	5·58
" " . . .	Godhra	5·52
" " . . .	Jhalod	5·04
Ahmedabad . . .	Modasa	6·65
Mahi Kantha . . .	Bayad	5·44
Cutch	Rahpur	4·95
"	Anjar	2·76

8th July.—The depression had continued to advance westwards during the previous 24 hours, and had either broken up against the Baluchistan hills or had been absorbed into the Sind hot weather depression, as there was no trace of its existence on the morning of the 8th. Heavy rain had fallen in Cutch and light to moderate showers in Lower Sind and Baluchistan. The following gives the heaviest rainfalls during the previous 24 hours in these areas :—

DIVISION.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 8th July.
		Inches.
CUTCH	Mandvi	3·00
SIND	Hyderabad	0·96
BALUCHISTAN	Nuttal	0·60

The storm formed under ordinary conditions at the head of the Bay on the 1st and 2nd. It was throughout a storm of feeble intensity as measured by the barometric depression. It advanced along a track slightly to the north of west passing, through Chota Nagpur, and Central India into Rajputana and Sind. It gave moderate rain to the area passed over on the 3rd, 4th and 5th, that is, to South-West Bengal, Chota Nagpur, South Bihar, the eastern districts of the Central Provinces and the North-Western Provinces, Baghelkhand and Bundelkhand, and heavy rain on the 6th and 7th when passing through the north-western districts of the Central Provinces, the western states of Central India and South-West Rajputana. The Bombay current fed into the storm and hence the cyclonic circulation increased considerably in strength and the rainfall was of the usual heavy cyclonic character, downpours of 5 to 10 inches in 24 hours occurring at stations passed over by the central storm area.

The following gives the track and rate of motion of the storm centre from the 2nd to the 7th :—

DATE.	POSITION OF CENTRE AT 8 A.M.		Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.	Long. E.		
	° ′	° ′	Miles.	Miles.
2nd July	21 45	88 30	...	...
3rd "	22 55	85 45	205	9
4th "	23 35	83 15	190	8
5th "	24 0	80 30	190	8
6th "	24 15	77 30	205	9
7th "	25 0	72 0	360	15

Pressure on the 9th was in moderate to considerable defect in Burma, the south of the Bay, Ceylon and South Madras, and differed little from the normal over the remainder of India.

The Bombay current gave moderate to heavy rain in the Central Provinces, the North-Western Provinces and the East Punjab from the 10th to the 13th. The eastern extremity of the trough of low pressure lay over Chota Nagpur and Orissa, and hence slightly further south than usual in the rains, and there was a feeble tendency to the establishment of a shallow depression on the 11th, 12th and 13th on which day moderately heavy rain fell over the whole of Bengal.

Rain was very general on the 14th and 15th, the only areas which failed to obtain rain at this time being the West Punjab, Sind, Rajputana and parts of the Deccan and Madras. The rainfall was especially heavy at this time in the northern districts of Bengal and Bihar. The following gives the more noteworthy downpours :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
JALPAIGURI	Fallacotta	13th July	8·05
"	Jalpaiguri	" "	6·40
DARJEELING	Buxa	" "	7·95
"	Kalimpong	" "	5·10
COOCH BEHAR	Mickliganj	" "	7·32
"	Matabhanga	" "	5·29
DINAJPUR	Thakurgaon	" "	6·15
DARBHANGA	Bahera	" "	3·85
JALPAIGURI	Jalpaiguri	14th "	6·08
CHITTAGONG	Kodala	15th "	7·63
"	Chittagong	" "	5·21
"	Fenoa	" "	5·15
RANGPUR	Rangpur	" "	6·62

A depression began to form in this area of heavy rain which formed the chief feature of the weather of the next four or five days.

Land-formed depression and cyclonic storm of the 16th to 20th July.—This depression formed in Central Bihar during the 24 hours preceding 8 A.M. of the 16th in an area of heavy local rainfall. Pressure gave way briskly to rapidly in Northern India during the 24 hours preceding 8 A.M. of the 16th and the trough of low pressure was transferred to the submontane districts on the 16th and the low pressure area formed at its eastern

extremity in Central Bihar. The following data show its position at 8 A.M :—

STATION.	PRESSURE. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	WIND Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	WEATHER.
	"	"	"				Inches	
Hazaribagh	29·445	—·054	—·097	SW	7	10	1·37	Raining.
Gaya . .	·403	—·072	—·120	Calm	5	10	0·52	Showery.
Patna .	·398	—·077	—·131	NE	2	10	1·62	Showery.
Darbhanga.	·397	—·080	—·136	ESE	3	6	0·02	Fine.
Arrah .	·389	—·081	?	Calm	2	9	2·75	Passing showers.
Dehri .	·388	—·078	—·128	W	4	10	1·93	Passing showers.

The depression was hence central between Patna and Gaya. Heavy rain had fallen in North and Central Bengal and Bihar during the previous 24 hours. The following gives the more noteworthy falls :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 16th July.
		Inches.
RANGPUR . . .	Bhawaniganj (Gaibanda) . .	9·64
" . . .	Sunderganj	5·58
" . . .	Bagdogra	5·40
JALPAIGURI . . .	Debiganj	7·03
DARJEELING . . .	Darjeeling.	5·95
" . . .	Kurseong	5·70
GAYA	Aurungabad	6·44
MUZAFFARPUR . .	Muzaffarpur	5·61
HAZARIBAGH . . .	Chatra	5·85

17th July.—Pressure had changed irregularly and by considerable amounts over the greater part of India. It had risen briskly in the submontane districts of North Bengal and Assam, and had fallen slightly in the eastern districts of the North-Western Provinces to which the depression under discussion was now transferred. The following observations indicate its position at 8 A.M. :—

STATION.	PRESSURE. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	WIND Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	WEATHER.
	"	"	"				Inches	
Ranchi .	29·425	—·042	—·103	SSW	8	10	2·36	Continuous rain.
Gaya .	·381	—·022	—·140	Calm	5	10	0·35	Drizzling rain.
Patna .	·404	+·006	—·121	E	4	10	1·87	Showery.
Gorakhpur.	·400	—·013	—·109	NNW	1	10	0·64	Showery.
Benares .	·386	—·038	—·118	NW	3	10	5·58	Continuous rain.
Arrah .	·371	—·018	?	ENE	2	9	0·27	Passing showers.
Buxar .	·359	—·042	—·146	E	7	8	1·10	Passing showers.
Daltonganj	·410	—·043	?	SW	6	8	3·75	...
Dehri .	·368	—·020	—·144	SSW	5	10	...	...

The depression was central to the east of Benares, probably in about Lat. 25½° N. and Long. 84° E.

Heavy rain had fallen in the eastern districts of the North-Western Provinces, *i.e.*, in the advancing quadrant of the depression, and moderate to heavy rain in Bengal, Bihar and Chota Nagpur.

The following gives the heaviest downpours in the storm area during the previous 24 hours :—

PROVINCE.	DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 17th July.
			Inches.
BENGAL . .	Chittagong . .	Satkanya . .	7·25
	Darjeeling . .	Kurseong . .	6·40
	" . .	Darjeeling . .	5·16
	Burdwan . .	Mankur . .	5·15
BIHAR . . .	Gaya . . .	Sherghati . .	6·35
CHOTA NAGPUR .	Palamau . .	Husainabad . .	8·38
	" . .	Chatterpore . .	8·06
NORTH-WESTERN PROVINCES.	Jaunpur . .	Jaunpur . .	8·20
	" . .	Kerakat . .	6·48
	" . .	Kutahan . .	5·37
	Mirzapur . .	Chakia . . .	5·41
	Benares . .	Benares . .	5·28

The rainfall in the west coast districts was decreasing in amount, and little or no rain had fallen in the Deccan during the previous 24 hours.

18th July.—Pressure had increased more or less rapidly over nearly the whole of Northern India. It had fallen briskly in the western districts of the North-

Western Provinces, to which the storm had now advanced. The following data show its position at 8 A.M. :—

STATION.	PRESSURE.			WIND		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches.	
Jhansi .	29·470	+·008	—·052	SW	5	10	4·32	Continuous rain.
Nowgong .	·469	—·005	—·057	W	5	10	2·41	Do.
Cawnpore .	·441	+·006	—·052	SSE	4	10	1·35	Do.
Mainpuri .	·411	—·012	?	E	3	10	1·23	...
Bareilly .	·488	+·049	—·015	NE	3	10	0·15	Showery.
Agra . .	·422	—·003	—·074	NE	6	10	2·65	Continuous rain.

The depression was even more clearly marked than on the previous two days owing to the large rise of pressure in North-Eastern and Upper India.

The rainfall was not so heavy as on the previous day, but was very general in the area affected by the storm. Thus the Jhansi district had obtained an average of 1·4 inches, the Cawnpore district of 1·5 inches, the Agra district of 1·7 inches, the Muttra district of 1·9 inches and the Aligarh district of 1·8 inches.

The rainfall was also heavy in Jeypore and Ajmere, amounts exceeding 3 inches being recorded at several stations.

19th July.—Pressure had increased rapidly in the western half of the North-Western Provinces, and had fallen slightly in Rajputana. The depression covered the greater part of Rajputana, as is shown by the following data :—

STATION.	PRESSURE.			WIND		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches.	
Jodhpore	29·498	—·015	?	SW	4	10	0·90	Nor' Wester.
Ajmere .	·507	+·006	—·052	SW	9	10	1·80	...
Sambhar .	·464	—·038	—·047	WSW	11	10	2·41	...
Jeypore .	·498	—·025	—·035	SSW	7	10	4·98	...
Delhi .	·501	+·005	+·004	ESE	13	10	0·88	...
Sirsa .	·496	—·004	+·013	E	6	8	...	...
Bickaneer	·455	—·023	?	NNW	5	10	0·08	Duststorm with rain.

The centre of the disturbance was probably about 60 miles to the north-north-west of Ajmere in about Lat. 27°N. and Long. 74½°E. Moderate to heavy general rain had been received during the previous 24 hours in Rajputana, as is shown by the following data :—

DISTRICT OR STATE.	Average actual rainfall of 24 hours preceding 8 A.M. of 19th July.	Heaviest rainfall in district on 19th July.
	Inches.	Inches.
Ulwar	1·99	3·45
Jeypore	1·39	4·98
Ajmere	0·65	2·29
Jodhpore	0·87	3·40
Jeysulmere	0·53	1·58

The eastern districts of the Punjab had also received fairly general rain. Fine weather with light local showers now prevailed in Bengal.

20th July.—The depression had continued to advance westwards, and at 8 A.M. of this day lay ove West Rajputana and Upper Sind.

The following data give its position at that hour :—

STATION.	PRESSURE.			WIND		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Jodhpore .	29·463	—·035	?	SSW	...	10	2·81	Drizzling.
Pachpadra .	·533	+·021	?	SW	16	10	7·55	
Bickaneer .	·507	+·052	?	SE	9	10	0·42	Showery.
Jacobabad .	·475	—·021	+·047	ENE	3	3	...	
Hyderabad .	·532	+·002	+·072	WSW	4	10	0·07	Drizzling.

Pressure was normal or in slight excess in the low pressure area, and hence the depression had practically filled up. The chief feature of the previous 24 hours was the heavy rain received in the Jodhpore and Jeysulmere

states; the driest districts in Rajputana. The following gives the most noteworthy falls :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 20th July.
		Inches.
JODHPORE	Pachpadra	7·55
"	Sheo	6·10
"	Balmer	6·06
"	Jasol	4·68
JEYSULMERE	Davikot	4·00

The disturbance broke up during the next 24 hours. Light showers fell in Lower Sind, and numerous thundershowers occurred in Baluchistan, giving moderate local rain.

The following table gives the position and rate of advance of the centre of the storm from the 16th to the 20th :—

DATE.	POSITION OF CENTRE AT 8 A.M.				Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.		Long. E.			
	°	′	°	′	Miles.	Miles.
16th July	25	10	85	15	...	...
17th "	25	25	84	0	90	4
18th "	26	25	78	45	350	15
19th "	27	10	74	30	280	12
20th "	27	45	71	30	190	8

Whilst the previous storm was breaking up a third depression and storm began to form in the Bay. It was different in character from the two previous storms, forming much further south than usual in July and developing with abnormal slowness. The following gives an account of this depression :—

Depression of the 21st to the 26th July.—Pressure had increased considerably in Northern India relatively to Southern India on the 21st, and was in slight to moderate excess in Northern India and normal or in slight defect in the Peninsula. The trough of low pressure lay considerably further south than usual, its eastern extremity extending across the coast of Orissa and the North Circars into the adjacent part of the Bay. The first indications of the formation of a closed area of low pressure off the Circars were exhibited on the 20th and 21st. Fresh to strong monsoon winds with occasional rain prevailed in the south of the Bay. Winds were light to moderate in the centre and east of the Bay, and were light and unsteady in the north and north-west of the Bay. The following gives data for that area taken from the logs of ships :—

NAME OF VESSEL.	8 A.M. POSITION.				Barometer (corrected.)	WIND		WEATHER.
	Lat. N.		Long. E.			Direction.	Force.	
	°	′	°	′	″			
S.S. *Clan Macintosh.*	18	10	86	09	29·521	W	2	Smooth sea and rainy.
S.S. *Clan Robertson.*	19	14	86	37	·523	NE	2	Slight S. S. E. swell and fine.
S.S. *Clive Moor*	19	56	86	53	...	SSW	1	S swell and showery.
S.S. *Katoria*	Akyab*				·643	SE by S	4	Moderate sea and fine.
F. L. V. *Hesperus*	Ridge				·528	S	1	
F. L. V. *Torch*	Mutlah				·532	SE	3	Slight S swell and passing light rain squalls.
S.S. *Pongola*	Hooghly River.				...	Var.	2	Fine.

* Noon position.

22nd July.—Pressure gave way over the whole Indian area during the next 24 hours. A shallow closed low pressure area covered the north-west of the Bay in which the cyclonic circulation was more regular than on the 21st. The following gives data :—

NAME OF VESSEL.	8 A.M. POSITION.				Barometer. (corrected).	WIND		WEATHER.
	Lat. N.		Long. E.			Direction.	Force.	
	°	′	°	′	″			
S.S. *Olive Moor*	18	14	84	32	...	Var.	2	Strong S swell. 4 P.M. squally.
S.S. *Virawa*	19	08	89	22	29·511	SE	2	Heavy SW swell. 4 P.M. rain squalls.
S.S. *Katoria*	20	0	92	43	·569	S by E	4	Moderate sea.
F. L. V. *Hesperus*	Ridge				·517	SE	3	Moderate SE swell.
F. L. V. *Torch*	Mutlah				·487	E	5	Heavy quick S and SW cross swell and passing rain squalls.
S.S. *Maharani*	21	01	89	11	·513	SE	3	4 A.M. squally.

The data show that light winds prevailed generally in the north-west of the Bay. Weather was unsettled with occasional showers and squalls.

Winds had again strengthened on the West Coast, and rain was falling in large amounts in the coast districts and was increasing again in North-Western and Central India and the Deccan.

23rd July.—Pressure had increased briskly to rapidly in the Gangetic Plain and had fallen slightly to briskly in the Peninsula and the Bay. The depression off the Circars had also developed to some extent and was now well marked. The following gives data :—

Name of Vessel.	8 A.M. Position. Lat. N.	Long. E.	Barometer (corrected).	Wind. Direction.	Force.	Weather.
	° ′	° ′	″			
S.S. *Dictator* .	13 36	85 17	...	W by S	6	High cross sea. 8 P.M., squally.
S.S. *Olive Moor*.	16 08	82 20	...	W by N	6	Choppy sea. Noon, showery.
S.S. *Ellora* .	Cocanada*		29·478	W	5	Fine.
S.S. *Purulia* .	19 51	89 26	·491	SE by E	5	High sea. 4 P.M., showery.
F.L.V. *Hesperus*	Ridge		·515	SE	4	Moderate SE swell.
F.L.V. *Torch* .	Mutlah		·516	ESE	5 to 6	Heavy cross swell and passing rain squalls.
S.S. *Virawa* .	21 20	88 10	·510	E by S	6	4 P.M., passing squalls with heavy rain.

* Noon position.

The observations indicate that the south-west winds in the centre of the Bay were increasing in strength, and that weather was more squally than on the 21st. Weather was very disturbed in the east and south-east. The S. S. *Samoa*, in about Lat. 10½° N. and Long. 95¾° E. had a heavy squall of hurricane force with heavy continuous rain at 4 A.M. The S. S. *Nerbudda*, in Lat. 8° 15′ N. Long. 98° E., had frequent heavy squalls in the early morning, and the S. S. *Pundua*, in the North Andaman Sea, had continuous rain during the night.

Heavy rain had fallen in the West Coast districts and moderate rain in the Central Provinces, Central India, Rajputana and the East Punjab.

24th July.—Pressure had increased briskly to very rapidly in Upper India. It had fallen briskly to rapidly in the Bay off the Circars coast and the depression in the Bay had intensified considerably. The following gives 8 A.M. data taken from the logs of vessels, showing the character of the weather in the Bay :—

Name of Vessel.	8 A.M. Position. Lat. N.	Long. E.	Barometer. (corrected.)	Wind. Direction.	Force.	Weather.
	° ′	° ′	″			
S.S. *Miike Maru*	5 48	89 59	29·706	SW	5	High sea and cloudy.
S.S. *Pundua* .	10 23	97 22	·655	SSW	6	Moderating sea. 4 P.M., heavy squalls.
S.S. *Olive Moor* .	13 34	80 50	...	W by N	4	4 A.M., squally.
S.S. *Nowshera* .	14 06	94 50	·570	WSW	5	Frequent rain squalls.
S.S. *Dictator* .	17 24	87 13	...	SE	4	Slight S W sea. 4 P.M., squally and showery.
S.S. *Catherine Apcar*.	19 02	89 34	·501	Var.	4	Moderate sea and fine.
F.L.V. *Hesperus*.	Ridge.		·533	SE	3	Moderate S E swell.
F.L. V. *Torch* .	Mutlah.		·543	E	4	Quick cross swell, much lightning between N.-W., N. and E at night.

The following gives 8 A.M. data for the nearest coast stations :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Wind. Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	″	″	″				Inches	
Gopalpur .	29·461	+·021	?	E	29	2	0·57	Showery.
Vizagapatam	·348	—·106	—·242	N	...	9	3·29	Strong wind.
Cocanada .	·392	—·091	—·220	W	11	10	1·47	Sea slight.
Masulipatam	·461	—·090	—·10[illegible]	WNW	15	10	0·55	

As there was no vessel in the storm area on the morning of the 24th it is not possible to locate the position of the centre with certainty. It was probably in about Lat. 17½° N and Long. 84° E.

A very careful series of observations were recorded

at Vizagapatam and Cocanada during the storm. The following gives a summary of the observations taken during this day :—

Hour.	Vizagapatam.				Cocanada.			
	Barometer reduced to sea level and constant gravity at Lat. 45°.	Wind. Direction.	Wind. Velocity in miles per hour.	Rainfall.	Barometer reduced to sea level and constant gravity at Lat. 45°.	Wind. Direction.	Wind. Velocity in miles per hour.	Rainfall.
				Inch.	"			Inches.
2	29·350	N	16	0·26	29·382	W	9	0·21
4	·330	N	15	0·08	...	...	...	...
6	·334	N	25	0·02	...	...	...	...
8	·347	NNE	26	0·03	·392	W	10	1·03
10	·371	NE	42	0·04	·400	W	13	0·88
12	·379	ENE	40	...	·382	WNW	...	...
14	·331	NE	35	0·12	·340	WNW	13	0·18
16	·303	ENE	35	0·01	·318	WSW	7	0·26
18	·324	NE	39	...	·328	WSW	...	...
20	·364	NE	28	0·16	·372	WNW	10	0·38
22	·377	ENE	25	...	...	...	...	...
24	·369	NE	27	...	...	...	...	...

The Vizagapatam observations show that a gale of wind blew from 9 A.M. up to 7 P.M., when winds moderated to some extent.

25th July.—Pressure had decreased briskly to rapidly over the interior of India and had risen briskly to rapidly in Lower Burma. The depression in the Bay had commenced to fill up and covered practically the same area as on the preceding day. The following data show its position at 8 A.M. :—

Name of vessel.	8 A.M. position. Lat. N.	8 A.M. position. Long. E.	Barometer (corrected).	Wind. Direction.	Wind. Force.	Weather.
	° ′	° ′	"			
S. S. *Nurani* .	14 01	81 10	29·457	WSW	3	Clear. Midnight, light rain.
S. S. *Ellora* .	Cocanada.		·384	...	...	8 P.M., cloudy.
S. S. *Shahgada* .	21 11	90 28	·528	E by N	3	Passing rain squalls.

The observations are very scanty and do not indicate the exact position of the centre. Frequent observations were recorded at Vizagapatam and Cocanada during the day, of which the following gives a summary :—

Hour.	Vizagapatam.				Cocanada.			
	Barometer reduced to sea level and constant gravity at Lat. 45°.	Wind. Direction.	Wind. Velocity in miles per hour.	Rainfall.	Barometer reduced to sea level and constant gravity at Lat. 45°.	Wind. Direction.	Wind. Velocity in miles per hour.	Rainfall.
				Inch.	"			Inches.
2	29·356	ENE	26	0·10	29·346	WNW	9	0·30
4	·327	ENE	20	0·17	...	...	...	...
6	·359	ENE	23	0·06	...	...	...	...
8	·390	NE	25	0·05	·383	W	14	2·20
10	·409	NE	29	0·04	·420	W	11	0·24
12	·384	NE	29	...	·408	W	...	...
14	·355	NE	25	0·06	·390	WSW	7	0·79
16	·331	NE	25	...	·366	NW	7	0·05
18	·349	NE	24	...	...	...	...	...
20	·381	N	11	0·25	·450	WSW	5	0·04
22	·418	WSW	10	0·03	...	...	...	...
24	·429	WSW	12	...	...	...	...	...

These observations show very clearly the decreasing intensity of the storm. They also indicate that the storm centre crossed the coast late during the afternoon or in the evening of this day, probably near Vizagapatam. A noteworthy feature of the storm at this stage was the very slight intensity of the west-south-west winds which prevailed at Vizagapatam and Cocanada after the storm crossed the coast.

26th July.—Pressure had risen briskly to rapidly in the Bay, Burma and the Madras Coast districts. The depression which had crossed the Circars coast during the preceding day had almost completely filled up The following observations indicate the position of the residual depression at 8 A. M :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches.	
Cocanada .	29·527	+·144	—·094	SW	7	10	1·51	Sea falling.
Vizagapatam.	·498	+·108	—·100	SW	...	10	0·60	Strongwind.
Gopalpur .	·458	—·003	?	SSW	21	8	0·62	Strongwind.
Sambalpur .	·494	+·007	—·061	ENE	5	4	0·11	
Raipur .	·498	+·023	—·057	E	7	10	...	Gale of wind.
Hanamconda	?	+·071	?	Calm.	6	9	0·06	

The rainfall in the storm area during the preceding 24 hours was nowhere heavy in amount. The residual depression filled up and disappeared during the day.

The storm was an example of a class of occasional occurrence, *viz.*, storms which form in the Bay, gradually develop and attain moderate intensity and then decrease on approaching land and break up either before reaching the coast or very shortly after crossing the coast.

The Arabian Sea monsoon current was strong at this period, and giving heavy rain in the West Coast districts and moderate rain in the Central Provinces and parts of the Deccan. The Bay current was, on the other hand, weak as a precipitation current, and was only giving light to moderate showers in Burma and Bengal. On the 29th, pressure increased briskly to rapidly on the West Coast, and fell slightly in the Gangetic Plain. Rain extended on that day into the North-Western Provinces. The rainfall was heavy on the 30th, more especially in the central districts. Pressure decreased locally in that area during the next 24 hours, and a small depression was shown in the south-eastern districts. Heavy rain continued to fall in the Gangetic Plain, more especially in the north-western and hill districts of the North-Western Provinces. The rainfall had decreased considerably in amount in the West Coast districts, and a break had set in again over the Deccan. The chief features of the pressure distribution at the end of the month were normal pressure in the Peninsula and Upper India, and a considerable deficiency in the Gangetic Plain, greatest in amount in the shallow depression in the south-eastern districts of the North-Western Provinces where it was ·140".

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-West of India.

The following gives snowfall reports for the two months from the 15th of May to the 15th of July received from Kurram, Chitral, Chamba, Kulu and Kumaon :—

I.—AFGHAN MOUNTAIN DISTRICTS.

(1) *Kurram.*—The officer on special duty, Kurram, reports as follows :—

"There was no snowfall during the month of June. In the middle of July there was a very slight fall on the highest peaks of the Sufed-koh. The weather before this snowfall was hot, but it has been much cooler since."

II.—KASHMIR AND PUNJAB HIMALAYAS.

(1) *Chitral.*—The Medical Officer and Superintendent of the Observatory, Chitral, writes as follows on the 22nd July :—

"With reference to your letter No. 378-S., dated Simla, 11th July, I have the honour to report that, after making what enquiries I can, I cannot hear of any snow having fallen on the higher mountains near here in June or July up to the present date. Should I hear of any, I shall forward to you at once any information about it that I can."

(2) *Chamba.*—The Deputy Conservator of Forests, Chamba Division, notes as follows :—

"No heavy fall of snow occurred on the high ranges of the Chamba State during the month of July. On the 29th of July there was a slight fall which probably did not descend below 13,000 feet."

(3) *Kulu.*—The report of the Assistant Commissioner states that there was no snowfall during the months of June and July in Kulu.

III.—NORTH-WESTERN PROVINCES HIMALAYAS.

(1) *Kumaon.*—The Commissioner, Kumaon Division, has sent the following notes :—

"The Patwaris of Byans, Chaudans, Malla Danpur and Johar report as follows :—

Byans and Chaudans.—There was no snowfall during the months of June and July 1898, except on the higher summits, where it was about one foot in June and about 8 inches in July 1898.

Malla Danpur.—There was occasional rain but no snow during June and July. On the summits of Pindari, Kaphini and Kantela the snowfall was about 3 or 4 inches when clouds appeared.

Johar.—The snowfall was as follows :—

Uttam	Dhura from 15th May to 15th June		. 7	feet.
Ralam	do.	do.	do.	. 3½ "
Uttam	do. from 16th June to 15th July		. 3	"
Ralam	do.	do.	do.	. 1 foot.
Uttam	do. from 16th July to 31st July		. 3	feet.
Ralam	do.	do.	do.	. 1½ "

It is also noted that there has been no snowfall in the Garhwal district since the 15th May 1898.

Summary of Snowfall information.—The reports are few in number, but are of considerable interest, as they indicate clearly the character of the weather and the snow accumulation in the Western Himalayas during the past two months.

As only one report has been received from officers on the North-West Frontier, it is almost certain little or no snow has fallen on the higher elevations in Afghanistan or Baluchistan.

The report received from Chitral indicates that no snow has fallen on the adjacent high mountains during the past two months. The period was also unusually dry in Kashmir, and as the preceding winter was one of the driest

on record, the snow accumulation on the high mountain ranges in that state is probably much smaller than usual.

The reports for Chamba, Kulu and the appearance of the snowy ranges as seen from Simla indicate that little or no snow has fallen on the higher ranges in those districts, and that the snow accumulation is, as in Kashmir, of much less extent and thickness than usual in July and August.

Light snow showers were occasionally received on the higher elevations in Kumaon, but the total fall was small and of no importance.

No information has been received from Sikkim o Assam.

The information obtained hence indicates that the pas two months have been characterised by the absence o general snowfall on the higher ranges of the Wester Himalayas, and that, as a result of this, combined witl the scanty precipitation during the preceding winter, the extent of snow-clad surface is much less than usual, anc the snow line is probably 1,000 feet to 2,000 feet highei than usual.

Summary of special storm reports.

The following gives a statement of the chief local storms of which reports were received during the month:—

3rd.—Duststorm at Ajmere at 1-30 P. M.

Duststorm at Jodhpore. The storm came down from the north-east at 5-40 P. M.

4th.—Duststorm at Jodhpore at 5-32 P. M.

18th.—Duststorm at Jodhpore from 6-20 P.M. to 6-38 P.M.

The storm came from the north-east. Thunderstorm at Salem from 7-15 P. M. to 8 P. M.

Violent duststorm at Jacobabad between 4 P.M. and 5 P.M. The storm came down from the north. The total rainfall during the storm was 1·82 inches. 10·45 miles of wind were registered by the anemometer between 4 P.M. and 4-10 P.M. and 29·15 miles between 4 and 4-30 P.M.

21st.—Thunderstorm at Saugor (C. P.) from 4-10 P. M. to 4-40 P.M.

27th.—Thunderstorm at Jeypore from 4-18 P.M. to 4-33 P.M.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—A moderate to strong monsoon obtained generally over the Arabian Sea during the first eight days of the month. The air movement averaged 4·6 during this period and was strongest on the 2nd when the average strength of the monsoon current was 5·2 or 0·6 above the normal intensity in July. The monsoon current decreased in strength during the 8th and was slightly feebler than usual until the 18th. It was weakest during this period on the 14th, when its mean intensity as deduced from the data of 26 vessels was only 3·4 or 1·2 below the normal. The strongest winds recorded on this day were of force 7 in the neighbourhood of Socotra. Winds increased rapidly during the 18th and were on the morning of the 19th blowing with a mean force of 4·9 as compared with 4·1 on the 18th. Winds ranged in force between 2 and 10 on this day, and were strongest in the west, where they varied between 5 and 10. A fresh to strong and increasing monsoon obtained generally during the next two days. The mean air movement at 8 A.M. of the 21st was 5·0 or 0·4 above the normal. This increase was, however, only temporary, as winds again fell off in strength during the next 24 hours, and on the morning of the 22nd averaged 4·5. No change occurred during the next four days, the monsoon current remaining moderate to fresh in intensity. Winds were very unsteady and abnormal in direction during this period along the Kathiawar and Sind coasts. The monsoon current blew freshly on the 27th and 28th, but took off again on the 29th and was slightly below its normal strength on the last two days of the month.

Bay of Bengal.—At the beginning of the month ordinary monsoon winds (force 3 to 6) obtained generally over the Bay to the south of Lat. 18° N. Further north, winds were light to moderate in force, and exhibited a feeble tendency to cyclonic circulation. Weather was disturbed with squalls and much rain in the north, where a shallow depression and feeble cyclonic storm was forming, but was fine with occasional squalls over the remainder of the Bay. The mean intensity of the air movement as derived from the data of 20 vessels was 4·3 as compared with 4·0, the normal strength of the monsoon current in July over the Bay. The storm increased slightly in intensity during the next 48 hours, and, marching westwards, passed inland into Chota Nagpur and the eastern districts of the Central Provinces. Heavy rain squalls prevailed over the north of the Bay on the 2nd and 3rd, but the storm was too feeble to affect the winds and weather to any considerable extent, and hence the strongest winds experienced in the storm area did not exceed 5 in force. Except in the north of the Bay where winds were light and unsteady, a moderate

monsoon prevailed generally over the Bay from the 4th to the 6th. The current then began to fall off and was below its normal intensity during the period from the 7th to the 15th. The air movement during these nine days ranged between 3·2 and 3·9, and averaged 3·6 for the whole of the period.

There was a slight tendency on the 8th and 9th to the formation of a depression in the north-west angle of the Bay, but it failed to develop. Winds began to increase again in force during the 15th and on the morning of the 16th averaged 4·2 or 0·2 above the normal. Conditions remained practically unchanged on the 17th and 18th, but on the 19th, winds began to fall off in the north and north-west of the Bay. The mean air movement was 4·1 at 8 A.M. of the 20th. On the 21st fresh to strong monsoon winds obtained over the south of the Bay, light to moderate winds in the centre and east, and light unsteady winds in the north and north-west. The mean strength of the winds at 8 A.M. of this day, as determined from the data of 16 vessels, was only 3·3. On the 22nd a tendency was shown to the establishment of a cyclonic circulation over the region of light unsteady winds in the north and north-west of the Bay. The disturbance intensified slowly, though considerably, during the next three days. It began to march west-wards during the 25th, and passed inland across the Circars Coast late in the evening. The storm was a disturbance of moderate intensity and occasioned gales of wind on the Circars Coast and very disturbed weather over a large part of the Bay. The strongest winds actually experienced by vessels in the storm area were of force 6.

The mean intensity of the air movement during the existence of the storm over the sea increased from 3·5 on the 22nd to 4·7 on the 25th. With the advance inland of the storm, winds and weather moderated rapidly in the Bay, so that on the morning of the 26th, 25 vessels out of 27 reported fine weather. The mean force of the winds had decreased to 4·3 on this day. The monsoon current was slightly stronger than usual on the 27th and 28th but fell off very rapidly during the 28th and was very weak during the remainder of the month, its average strength on these days being only 3·4.

From the preceding account of the weather in the Indian seas it will be seen that the monsoon currents were, on the whole, steadier than usual, but were slightly weaker on the mean of the whole month in the Arabian Sea. The Bay current, on the other hand, although not so steady, was of normal strength.

Equatorial Belt.—Conditions were apparently normal in this area. South-east trade winds (force 2 to 6) obtaining steadily during the month. The rainfall returns for the Seychelles and Zanzibar show that there was much less precipitation during the month at these stations than during the corresponding period of 1897.

Temperature of the Air.

The variations of the mean temperature conditions of the month from the normal were mainly determined by the abnormal distribution of the rainfall of the month.

The mean maximum or day temperature of the month was below the normal over nearly the whole of the Punjab, the North-Western Provinces, Bundelkhand, Baghelkhand, the eastern half of the Central Provinces, Orissa, North Madras, Hyderabad, Upper Assam, and parts of Bengal and Burma. The variations were generally small in amount, except locally at the following stations :—

Province.	Station.	Mean maximum temperature.		
		Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
		°	°	°
Punjab	Ludhiana	92·6	97·9	−5·3
	Lahore	93·9	98·6	−4·7
	Peshawar	99·8	102·8	−3·0
	Sialkot	94·8	97·6	−2·8
Central India	Nowgong	87·8	90·0	−2·2

The mean maximum temperature of the month was above the normal over the remainder of India, but the variations were small and less than 2° except in two small areas for which comparative data are given below :—

Area.	Station.	Mean maximum temperature.		
		Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
		°	°	°
First area	Sambhar	97·0	92·0	+5·0
	Ajmere	93·9	90·9	+3·0
	Jeypore	94·5	91·7	+2·8
	Neemuch	89·0	86·9	+2·1
Second area	Negapatam	99·5	94·9	+4·6
	Salem	96·6	92·6	+4·0
	Cuddapah	97·3	93·9	+3·4
	Trichinopoly	99·3	97·0	+2·3

The day temperature was also locally in moderate excess at Silchar, where the mean maximum temperature of the month was 2°·6 above the normal.

The highest temperatures of the month were recorded in Central India, Rajputana, Upper Sind and the Punjab during the period from the 4th to the 8th and in the North-Western Provinces, the Central Provinces and Bengal from the 25th to the 27th.

The following gives data for the hottest stations :—

STATION.	Highest maximum temperature recorded in July 1898.	Date on which recorded.	Highest maximum temperature recorded in July previous to 1898.	Year in which recorded.
	°		°	
Jacobabad . . .	118·5	7th	119·5	1878
Mooltan . . .	115·0	7th	116·8	1891
Dera Ismail Khan . .	111·2	7th	120·5	1891 and 1892
Peshawar . . .	111·0	10th	117·0	1892
Rawalpindi . . .	108·0	7th	115·0	1897
Khushab . . .	109·4	7th	119·1	1891
Montgomery . . .	112·6	7th	120·4	1891
Sialkot	107·7	1st	119·5	1878
Sirsa	112·8	27th	118·4	1891
Bickaneer . . .	111·9	6th	114·3	1891

The data of the preceding table indicate that the maximum temperatures in July 1898 were not so high as have been experienced in previous years in Upper India.

The highest maximum temperatures of the month in Madras were registered during the period from the 3rd to the 8th. The following gives the most noteworthy :—

STATION.	Highest maximum temperature recorded in July 1898.	Date on which recorded.	Highest maximum temperature recorded in July previous to 1898.	Year in which recorded.
	°		°	
Madras . . .	104·5	3rd	105·7	1875
Trichinopoly . . .	104·6	8th	105·2	1896
Nellore . . .	105·3	8th	106·3	1897
Cuddalore . . .	102·3	4th	105·4	1895
Negapatam . . .	106·5	29th	104·2	1897
Cuddapah . . .	103·2	8th	105·2	1897

The mean minimum temperature of the month was below the normal over the greater part of the Punjab, Upper Assam, South-West Bengal, Orissa, North Madras, and the eastern and central districts of the Central Provinces. The variations were, however, slight in amount, and generally less than 1°. The mean minimum temperature of the month was above the normal over the remainder (and hence by far the greater part) of India. The departures from the normal were less than 2° except at stations in two areas, for which comparative data are given below :—

AREA.	STATION.	MEAN MINIMUM TEMPERATURE.		
		Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
		°	°	°
FIRST AREA	Bickaneer . . .	84·1	80·0	+4·1
	Mooltan . . .	85·5	83·0	+2·5
	Ajmere . . .	78·9	76·7	+2·2
	Sambhar . . .	79·8	77·8	+2·0
SECOND AREA	Salem	74·8	72·3	+2·5
	Negapatam . . .	79·9	77·8	+2·1
	Trichinopoly . .	79·3	77·3	+2·0

The variations of the mean temperature conditions of the month from the normal were generally small in amount. The mean temperature of the month was below the normal in Upper Burma, the Assam Valley, South Bengal, Orissa, North Madras, the Central Provinces, the North-Western Provinces and the Punjab (except the south-western districts). The variations were small in amount except in a part of the Punjab, for which comparative data are given below :—

STATION.	MEAN DAILY TEMPERATURE.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
	°	°	°
Ludhiana	86·1	89·0	—2·9
Lahore	87·2	89·5	—2·3
Peshawar	88·8	91·1	—2·3
Sialkot	86·4	88·5	— 2·1

The mean temperature of the month was above the normal over the remainder of the country. The positive variations were also small in amount except in parts of South Madras, the South-West Punjab and Central and North-West Rajputana, where they ranged between 2°·2 and 3°·5.

The mean temperature of the month was slightly below the normal at the hill stations in Upper India, but was normal at Ranikhet, Mussooree, Darjeeling, Mount Abu, Quetta, Pachmarhi and Wellington. The following

gives comparative data for the hill stations in Upper India :—

Station.	Variation from normal of		
	Mean maximum temperature, July 1898.	Mean minimum temperature, July 1898.	Mean temperature, July 1898.
	°	°	°
Leh	—3·1	+0·1	—1·5
Srinagar	—1·3	—0·2	—0·8
Murree	—3·6	—0·8	—2·2
Simla	—1·4	—0·8	—1·1
Kailang	—1·3	?	?
Chakrata	—1·8	—1·5	—1·7

The mean temperature conditions of the month in India hence varied very slightly from the normal. The chief features were :—

(1) Moderate deficiency in the East Punjab and neighbouring hill districts, somewhat more strongly marked in the day than the night temperature.

(2) Slight to moderate excess in Central and North-West Rajputana and the South-West Punjab, most marked at Sambhar. The excess was slightly more pronounced in the day than the night temperature.

(3) Slight to moderate excess in a portion of Southern India represented by the stations of Cuddapah, Salem, Trichinopoly and Negapatam.

The following table gives temperature data of the month for 56 meteorological divisions of India :—

Province.	Division.	Actual Temperature.					Variation from normal of month of		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	83·5	74·3	78·9	9·3	14·9	+0·1	+0·4	—0·3
	Lower Burma (Deltaic)	84·3	75·9	80·1	8·4	13·9	—0·5	+1·0	—1·5
	Central do.	88·2	75·9	82·1	12·3	19·0	+0·6	+0·4	+0·2
	Upper do.	90·5	76·5	83·5	14·0	26·4	+0·4	+0·4	0
	Arakan	84·4	77·5	81·0	6·9	14·1	—0·2	+0·1	—0·3
Bengal and Assam	Eastern Bengal	87·5	77·8	82·6	9·7	19·7	+0·4	+0·3	+0·1
	Assam (Surma)	92·6	77·3	85·0	15·3	26·3	+2·6	+0·2	+2·4
	Do. (Brahmaputra)	88·0	78·4	83·2	9·7	17·1	—1·1	0	—1·1
	Deltaic Bengal	88·4	78·7	83·6	9·7	17·3	—0·5	—0·3	—0·2
	Central do.	89·6	78·9	84·2	10·7	19·3	+0·2	+0·4	—0·2
	North do.	89·7	78·7	84·2	11·0	20·8	+0·9	+0·6	+0·3
	Bengal Hills	68·4	54·7	61·6	13·7	22·8	—0·5	+0·1	—0·6
	Orissa	87·8	78·8	83·3	9·0	18·6	—0·5	0	—0·5
	Chota Nagpur	86·8	75·6	81·2	11·2	19·9	—0·1	+0·5	—0·4
	South Bihar	91·1	79·3	85·2	11·8	21·9	+1·4	+0·4	+1·0
	North do.	90·8	79·5	85·2	11·2	21·1	+0·8	+0·6	+0·2
North-Western Provinces and Oudh.	North-Western Provinces (East)	90·0	79·4	84·7	10·6	22·2	—1·5	—0·1	—1·4
	Oudh (South)	90·8	79·3	85·1	11·5	24·0	—1·2	0	—1·2
	Do. (North)	91·1	79·1	85·1	12·0	24·4	?	?	?
	North-Western Provinces (Central)	91·5	79·0	85·3	12·5	25·5	—1·0	0	—1·0
	Do. do. (West)	93·7	80·4	87·1	13·3	27·5	+0·9	—0·5	+0·4
	Do. do. (East Submontane)	96·3?	79·4?	87·8?	16·9	28·4?	?	?	?
	Do. do. (West do.)	88·7	76·5	82·6	12·3	23·0	—0·9	—0·5	—0·4
	Do. do. (Hills)	69·7	60·0	65·0	9·8	20·1	—0·7	—0·5	—0·2
Punjab	Punjab (South-East)	94·0	80·6	87·3	13·4	26·8	0	+0·1	—0·1
	Do. (South)	95·6	79·5	87·5	16·1	34·4	—0·8	+0·1	—0·9
	Do. (Central)	93·9	80·5	87·2	13·4	34·5	—4·7	+0·1	—4·8
	Do. (Submontane)	93·3	78·3	85·8	15·1	31·9	—4·1	—0·9	—3·2
	Do. (Hills)	81·6	61·2	71·4	20·4	37·0	—2·7	—0·5	—2·2
	Do. (North)	97·7	76·8	87·3	21·0	41·2	—2·5	—1·2	—1·3
	Do. (West)	102·4	82·6	92·5	19·8	38·9	—1·3	—0·3	—1·0
Bombay and Malabar Coast Districts (Madras).	Malabar	83·1	74·8	79·0	8·3	14·8	+0·6	+0·2	+0·4
	Madras (South Central)	92·9	73·3	83·1	19·7	28·5	+2·6	+1·8	+0·8
	Coorg	68·7	63·0	65·9	5·7	11·8	0	+0·8	—0·8
	Mysore	81·3	67·0	74·2	14·3	21·2	+1·1	+1·0	+0·1
	Konkan	83·4	76·2	79·9	7·2	13·6	+0·3	+0·7	—0·4
	Bombay Deccan	83·4	70·2	76·8	13·2	20·6	0	+0·5	—0·5
	Hyderabad (North)	86·1	69·3	77·7	16·8	27·5	?	?	?
	Khandesh	86·0	72·2	79·2	13·8	24·3	+0·7	+0·4	+0·3
Central Provinces and Berar.	Berar	87·6	73·6	80·7	14·0	24·1	+0·2	+0·1	+0·1
	Central Provinces (West)	87·0	75·5	81·3	11·6	21·6	+0·7	+0·7	0
	Do. (Central)	84·7	73·4	79·0	11·3	21·7	—0·8	—0·7	—0·1
	Do. (East)	86·3	75·6	81·0	10·7	20·6	—0·4	—0·4	0

Province.	Division.	Actual temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of month of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Bombay (North)	Gujarat	89·5	78·0	83·8	11·6	22·9	?	?	?
	Kathiawar and Cutch	89·5	78·1	83·8	11·5	22·0	+1·2	+0·8	+0·4
	Sind	99·5	82·4	91·0	17·0	36·5	+0·4	+0·9	−0·5
	Baluchistan Hills	96·1	67·0	81·7	29·1	44·8	−0·1	+0·7	−0·8
Rajputana and Central India.	Central India (East)	87·3	75·8	81·5	11·5	24·6	+0·3	+0·6	−0·3
	Rajputana (East), Central India (West)	93·3	78·3	85·8	15·0	28·4	+2·9	+1·4	+1·5
	Do. (West)	99·0	81·4	90·2	17·6	33·1	+1·5	+4·1	−2·6
Madras	East Coast (North)	88·8	78·8	83·8	10·0	20·1	−1·2	0	−1·2
	Hyderabad (South)	86·8	72·3	79·6	14·6	24·9	−0·7	+0·6	−1·3
	Madras (Central)	92·9	76·0	84·5	16·9	27·9	+1·1	+0·7	+0·4
	East Coast (Central)	94·9	79·0	87·0	16·0	29·7	−0·7	−0·2	−0·5
	Do. (South)	98·4	78·7	88·6	19·7	31·1	+2·9	+1·4	+1·5
	Madras (South)	93·8	79·5	86·6	14·3	19·5	?	?	?

The following is a summary of the chief features and changes of condition of the air temperature in India during the month.

The variations of the temperature conditions from the normal in July are usually dependent upon the distribution and amount of the rainfall, heavy rain producing a larger reduction of temperature below the normal in the interior than in the coast districts.

At the commencement of the month temperature was very largely below the normal in the North and East Punjab, and in moderate to large defect in the North-Western Provinces, the Central Provinces, Bundelkhand and Baghelkhand. Elsewhere it was normal or in excess to a slight extent. It was in moderate excess in South India.

The following gives variation data for the 24 hours ending at 8 A.M. of the 1st :—

Political Province or Area.	Variation from normal of Mean maximum temperature, 1st July.	Mean minimum temperature, 1st July.	Mean temperature, 1st July.
	°	°	°
Burma	+0·4	+0·7	+0·6
Bengal and Assam	+0·7	−0·2	+0·3
N.-W. Provinces and Oudh	−3·1	−1·4	−2·3
Punjab	−6·0	−5·4	−5·7
Sind and Rajputana	+0·5	+1·7	+1·1
Central India and Gujarat	−1·2	+0·4	−0·4
Central Provinces and Berar	−2·6	−1·0	−1·8
Bombay	+2·7	+0·7	+1·7
Madras	+2·4	+1·6	+2·0

Conditions were practically unchanged during the next two days.

The following gives mean variation data for the Punjab and Madras from the 1st to the 4th :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 1st July.	2nd July.	3rd July.	4th July.
	°	°	°	°
Punjab	−5·7	−6·0	−6·5	+0·6
Madras	+2·0	+2·4	+2·0	+1·8

The low temperature in the Punjab from the 1st to the 3rd was associated with showery weather, and the sudden rise on the 4th accompanying the clearing of the skies is very characteristic of the meteorology of that area in the rains.

The temperature of the next four days was determined by the distribution of the rainfall accompanying the first cyclonic storm of the month, which passed westwards from the head of the Bay into Rajputana and Sind. The following gives the mean variations of the daily tempera-

ture in the areas through which the storm passed during the period from the 4th to the 9th :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	4th July.	5th July.	6th July.	7th July.	8th July.	9th July.
	°	°	°	°	°	°
South Bengal	—1·7	—2·2	—2·5	—0·4	+1·3	+1·4
Orissa	—0·8	+0·8	—0·5	+1·5	+0·9	—0·6
Chota Nagpur	—1·3	—1·8	—1·3	+1·2	+2·2	+1·3
Central Provinces and Berar.	—1·0	—3·4	—4·9	—1·9	+1·3	+1·4
Central India	+2·2	+0·8	—1·5	—3·6	—2·8	—1·6
Rajputana	+5·3	+6·7	+7·0	+3·6	—0·8	+0·4
Gujarat and Kathiawar	+3·7	+4·2	+3·3	—7·4	—8·0	—0·6
Cutch and Sind	+1·8	+2·1	+2·1	+3·1	—2·2	—1·5

A noteworthy feature of the period was the excessive temperature in the Punjab. The following gives the variations of temperature for two stations at which the excess was greatest on each day of the period :—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
4th July	Delhi	+ 3·1	+ 2·2	+ 2·7
,, ,,	Mooltan	+ 1·2	+ 5·8	+ 3·5
5th ,,	Sialkot	+ 6·7	+ 7·0	+ 6·9
,, ,,	Delhi	+ 6·6	+ 1·7	+ 4·2
6th ,,	Sialkot	+ 7·8	+ 9·5	+ 8·7
,, ,,	Mooltan	+ 9·0	+ 7·8	+ 8·4
7th ,,	Mooltan	+10·1	+11·3	+10·7
,, ,,	Montgomery	+ 7·9	+ 5·7	+ 6·8
8th ,,	Mooltan	+ 7·7	+ 9·3	+ 8·5
,, ,,	Rawalpindi	+ 2·3	+ 8·3	+ 5·3
9th ,,	Mooltan	+ 7·7	+ 7·5	+ 7·6
,, ,,	Delhi	+ 5·5	+ 6·9	+ 6·2

The highest maximum temperatures of the month were registered during this period in the Punjab, Upper Sind and West Rajputana. The following gives the more noteworthy :—

STATION.	Highest maximum temperature recorded in July 1898.	Date on which recorded.
	°	
Mooltan	115·0	7th
Dera Ismail Khan	111·2	7th
Peshawar	111·0	10th
Rawalpindi	108·0	7th
Khushab	109·4	7th
Montgomery	112·6	7th
Jacobabad	118·5	7th
Bickaneer	111·9	6th
Pachpadra	107·1	6th
Jodhpore	106·2	5th

The following table, giving variation data for the 24 hours preceding 8 A.M. of the 11th, illustrates the temperature conditions obtaining at the end of this period :—

POLITICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 11th July.	Mean minimum temperature, 11th July.	Mean temperature, 11th July.
	°	°	°
Burma	+0·5	+1·0	+0·8
Bengal and Assam	+0·7	+1·2	+1·0
North-Western Provinces and Oudh	—2·9	—1·2	—2·1
Punjab	0	—2·6	—1·3
Sind and Rajputana	+3·4	+1·5	+2·5
Central India and Gujarat	—0·9	+0·2	—0·4
Central Provinces and Berar	—1·9	+0·1	—0·9
Bombay	+1·4	+0·5	+1·0
Madras	+3·0	+0·1	+1·6

The dispersion of the first storm of the month was followed by an advance of humid winds into Upper India which gave fairly general rain from the 11th to the 14th and reduced temperature largely below the normal. As usual under these conditions, the rainfall was scanty in the Peninsula, and temperature was more or less in excess in the Deccan and Southern India. The following gives variation for the Punjab and Madras, in which these effects were most pronounced :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	11th July.	12th July.	13th July.	14th July.
	°	°	°	°
Punjab	—1·3	—6·0	—6·6	—3·5
Madras	+1·6	+2·6	+1·4	+0·4

A noteworthy feature of this period was the high temperature locally in East and Central Rajputana (represented by Ajmere, Sambhar and Jeypore), as is shown by the following data :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	11th July.	12th July.	13th July.	14th July.
	°	°	°	°
Ajmere	+3·8	+4·1	+1·2	+6·3
Sambhar	+5·3	+5·9	+3·9	+5·6
Jeypore	+4·3	+4·3	+3·7	+5·3

The following gives variation data for the 15th at the end of this period, when the temperature conditions were again approximately normal :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 15th July.	Mean minimum temperature, 15th July.	Mean temperature, 15th July.
	°	°	°
Burma	—2·8	—0·2	—1·5
Bengal and Assam	—1·1	—0·1	—0·6
N.-W. Provinces and Oudh	—3·2	—0·3	—1·8
Punjab	—3·2	+1·7	—0·8
Sind and Rajputana	+2·4	+1·5	+2·0
Central India and Gujarat	+0·6	+0·5	+0·6
Central Provinces and Berar	—1·7	0	—0·9
Bombay	—0·4	+0·3	—0·1
Madras	—0·6	+1·2	+0·3

A depression due to heavy local rain formed in Bihar on the 16th and advanced westwards through the North-Western Provinces, Bundelkhand, Baghelkhand and Rajputana into Sind. It gave very heavy rain, more especially in the western and central districts of Rajputana. The following table illustrates the reduction of temperature below the normal in the areas affected by the storm :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	16th July.	17th July.	18th July.	19th July.	20th July.	21st July.
	°	°	°	°	°	°
Bihar	—4·0	—2·4	—3·9	—1·7	—0·4	+0·7
North-Western Provinces and Oudh.	—1·3	—1·2	—5·4	—4·6	—0·4	—0·4
Baghelkhand	—4·4	—2·3	—5·3	—0·8	+1·6	+1·6
Bundelkhand	—3·3	—4·9	—6·4	—4·6	+1·5	+0·3
Sind and Rajputana	+1·9	+1·9	+2·1	—2·8	—4·3	—3·4
Punjab	+0·9	—0·1	—3·8	—3·9	—4·6	—1·8

The temperature conditions at the end of this period were approximately normal, as is shown by the variation data for the 22nd :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 22nd July.	Mean minimum temperature, 22nd July.	Mean temperature, 22nd July.
	°	°	°
Burma	+1·7	+1·1	+1·4
Bengal and Assam	—0·2	—0·1	—0·2
North-Western Provinces and Oudh	+1·5	+0·6	+1·1
Punjab	—1·6	0	—0·8
Sind and Rajputana	—3·0	+1·1	—1·0
Central India and Gujarat	+2·0	—0·1	+1·0
Central Provinces and Berar	+1·1	—0·6	+0·3
Bombay	—1·1	—0·1	—0·6
Madras	—2·2	—0·7	—1·5

During the next three or four days a depression lay off the coast of the Circars. It determined moderate rain to the greater part of the Deccan and North Madras. Little or no rain fell during this period in North-Eastern India. Temperature was in moderate to considerable defect over the greater part of the Peninsula from the 22nd to the 25th or 26th, whilst it was more or less in excess in North-Eastern India. At the end of the period temperature was in considerable to large excess over nearly the whole of Northern and Central India, as is shown by the following variation data for the 26th :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 26th July.	Mean Minimum temperature, 26th July.	Mean temperature, 26th July.
	°	°	°
Burma	+1·1	+0·5	+0·8
Bengal and Assam	+5·6	+1·2	+3·4
North-Western Provinces and Oudh	+7·2	+4·0	+5·6
Punjab	+0·5	+2·3	+1·4
Sind and Rajputana	+5·3	+2·8	+4·1
Central India and Gujarat	+7·2	+3·3	+5·3
Central Provinces and Berar	+6·4	+2·1	+4·3
Bombay	—2·7	—0·1	—1·4
Madras	—4·1	+0·3	—1·9

The highest temperatures of the month in Bengal, Bihar, Chota Nagpur, the North-Western Provinces and the Central Provinces were generally registered during this dry warm period of a partial break in the rains in Northern India.

The disappearance of the third depression and cyclonic storm of the month was followed by the recommencement of rain in Bengal and its extension over the interior of India. Temperature was in moderate to large excess in North-Western India on the 27th and 28th, but the extension of rain gradually reduced temperature, and at the end of the month it was more or less below the normal over the whole of Northern and Central India. The following variation data for the period from the 27th to the 31st show these changes :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	27th July.	28th July.	29th July.	30th July.	31st July.
	°	°	°	°	°
Bengal	—0·4	+0·7	+1·0	—0·2	—1·3
Bihar	+2·9	+3·3	+2·7	—0·6	—1·5
Chota Nagpur	+1·3	+2·8	+2·6	+0·9	—1·0
Central Provinces and Berar	+3·4	+3·3	+1·7	—0·1	—0·7
North-Western Provinces and Oudh.	+5·2	+2·5	+2·7	+0·3	—1·8
Central India and Gujarat	+5·8	+4·8	+2·9	+0·7	0
Rajputana	+8·0	+8·0	+5·3	+3·4	+0·4
Punjab	+2·7	+1·9	+0·7	+0·3	—4·6

The following table giving variation data for the 24 hours preceding 8 A.M. of the 31st illustrates the temperature conditions obtaining in the Indian area at the end of the month :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 31st July.	Mean minimum temperature, 31st July.	Mean temperature, 31st July.
	°	°	°
Burma	0	+0·3	+0·2
Bengal and Assam	—2·1	—0·5	—1·3
North-Western Provinces and Oudh	—2·4	—1·2	—1·8
Punjab	—6·0	—3·2	—4·6
Sind and Rajputana	+0·6	0	+0·3
Central India and Gujarat	—0·8	+0·8	0
Central Provinces and Berar	—1·2	—0·1	—0·7
Bombay	—0·1	+0·2	+0·1
Madras	+3·5	+1·5	+2·5

The following gives the variations from the normal of the mean temperature, week by week, during the month and for the whole month :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE FOR WEEK ENDING				
	9th July.	16th July.	23rd July.	30th July.	For whole month.
	°	°	°	°	°
Burma	+0·4	—0·3	0	+0·9	+0·3
Bengal and Assam	+0·7	—0·2	—1·3	+1·7	+0·2
North-Western Provinces and Oudh.	+1·3	—1·6	—1·8	+2·6	—0·4
Punjab	+2·3	—1·9	—2·3	—0·2	—1·4
Sind and Rajputana	+2·8	+1·9	—1·0	+3·6	+2·0
Central India and Gujarat	—1·3	—0·1	+0·4	+3·2	+0·6
Central Provinces and Berar	—1·3	—0·8	—0·7	+2·4	—0·2
Bombay	+1·0	+0·7	—0·1	—0·4	+0·4
Madras	+2·2	+1·3	—0·5	+0·3	+1·1

Winds.

The Bay current was of about normal strength at the head and in the centre of the Bay, as is established by the following data :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
Port Blair	246	268	—22
Diamond Island	293	240	+53
Akyab	102	98	+ 4
Saugor Island	388	357	+31
False Point	245	277	—32
Chittagong	245	165	+80

Winds were slightly below their normal strength in the interior of Bengal and Orissa and in Chota Nagpur, but were slightly stronger in Central and North Bihar and the eastern districts of the North-Western Provinces. The following gives comparative data of the strength of the winds in these areas in July 1898 :—

DIVISION.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
Bengal	210	189	+21	+11
Orissa	166	179	—13	— 7
Bihar	147	111	+36	+32
Chota Nagpur	171	210	—39	—19
North-Western Provinces East.	154	151	+ 3	+ 2

Hence the Bengal current, so far as is indicated by the strength of the winds in its usual area of extension in July, was on the mean of the month of about normal intensity. Winds were less westerly or more easterly than usual at Diamond Island and Akyab, but were more westerly at Port Blair and normal in their mean direction at Rangoon, as is shown by the following data:—

STATION.	MEAN WIND DIRECTION.		
	Actual, July 1898.	Normal, July.	Westerly deflection.
	°	°	°
Port Blair	S 64 W	S 47 W	+17
Diamond Island	S 13 W	S 42 W	—29
Rangoon	S 34 W	S 34 W	0
Akyab	S 8 E	S 1 E	— 7

Winds were less westerly or more easterly than usual in the interior of Bengal and at False Point in Orissa. This is fully shown by the following data:—

STATION.	MEAN WIND DIRECTION.		
	Actual, July 1898.	Normal, July.	Easterly deflection.
	°	°	°
False Point	S 42 W	S 53 W	+11
Saugor Island	S 9 E	S 21 W	+30
Narayanganj	S 30 E	S 18 E	+12
Calcutta	S 22 E	S 8 E	+14
Burdwan	S 49 E	S 19 E	+30
Berhampore	S 53 E	S 40 E	+13

Winds were much steadier than usual in Chota Nagpur, Bihar and the North-Western Provinces, as is shown by the following data:—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Actual percentage, July 1898.	Normal percentage, July.	Variation of actual from normal, July 1898.
Patna	160	101	+59	71	39	+32
Darbhanga	134	121	+13	85	56	+29
Hazaribagh	171	210	—39	42	14	+28
Allahabad	154	151	+ 3	35	7	+28
Roorkee	41	70	—29	53	33	+20
Lucknow	50	93	—43	52	15	+37
Meerut	49	57	— 8	35	21	+14

Winds were, on the mean of the month, even lighter and more unsteady than usual in the Punjab.

The axis of the monsoon trough of low pressure lay further south than usual on the mean of the month, more especially in its eastern half. The position of the axis was defined approximately by the stations for which data are given below:—

	STATION.	MEAN STEADINESS.			MEAN WIND DIRECTION.	
		Actual percentage, July 1898.	Normal percentage, July.	Variation of actual from normal, July 1898.	Actual, July 1898.	Normal, July.
					°	°
STATIONS NEAREST TO AXIS.	Hazaribagh	42	14	+28	S 47 E	S 9 E
	Allahabad	35	7	+28	N 43 E	N 71 E
	Sutna	23	45	—22	N 40 W	N 80 W
	Agra	6	4	+ 2	N 86 E	N 84 E
	Jeypore	13	28	—15	S 57 W	N 72 W
	Lahore	19	30	—11	N 77 E	S 77 E
	Mooltan	19	32	—13	S 82 E	S 23 W
STATIONS TO SOUTH OF AXIS.	Raipur	60	76	—16	S 44 W	S 69 W
	Jubbulpore	52	64	—12	S 87 W	S 89 W
	Ajmere	45	59	—14	S 79 W	S 77 W
STATIONS TO NORTH OF AXIS.	Darbhanga	85	56	+29	S 69 E	S 77 E
	Lucknow	52	15	+37	N 79 E	N 68 E
	Roorkee	53	33	+20	S 47 E	S 73 E

The Bombay current was, as indicated by the average strength of the winds, weaker than usual on the Konkan, Kathiawar and Sind coasts. The following gives data for three stations:—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Actual percentage, July 1898.	Normal percentage, July.	Variation of actual from normal, July 1898.
Kurrachee	324	415	— 91	78	85	—7
Bombay	388	450	— 62	87	85	+2
Ratnagiri	212	312	—100	82	79	+3

The data of the following inland stations at which the exposure of the anemometer is most favourable confirm

the inferences drawn from the data of the coast stations :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
Belgaum	568	647	—79	—12
Deesa	309	351	—42	—12
Akola	199	210	—11	— 5

Winds were, on the other hand, stronger than usual at the hill stations of Pachmarhi, Chikalda and Mount Abu, as is shown by the following data :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
Mount Abu	294	278	+16	+ 6
Pachmarhi	273	252	+21	+ 8
Chikalda	290	239	+51	+21

Whether this contrast between the strength of the winds at the sea level and at the level of the hill stations indicates that the monsoon currents were of greater depth than usual can only be surmised at present.

Winds were somewhat less westerly at Kurrachee and Mount Abu, but were more westerly at the Konkan stations and at Deesa, as is shown by the following data :—

STATION.	MEAN WIND DIRECTION.		
	Actual, July 1898.	Normal, July.	Westerly deflection.
	°	°	°
Kurrachee	S 48 W	S 68 W	—20
Mount Abu	S 48 W	S 54 W	— 6
Deesa	S 79 W	S 42 W	+37
Bombay	S 77 W	S 74 W	+ 3
Ratnagiri	S 76 W	S 61 W	+15

Winds were, on the whole, practically normal in steadiness in the Deccan, Mysore and Southern India generally, as is shown by the comparative data of six typical stations :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Actual percentage, July 1898.	Normal percentage, July.	Variation of actual from normal, July 1898.
Madras	170	191	— 21	61	67	— 6
Salem*	228	108	+120	82	78	+ 4
Bellary	317	282	+ 35	97	88	+ 9
Bangalore	276	217	+ 59	92	91	+ 1
Mercara	246	250	— 4	93	90	+ 3
Cochin	146	131	+ 15	63	51	+12

* The exposure of the anemometer at Salem has been recently altered and hence the comparison at present with past data is not valid.

Winds were generally weaker and more northerly than usual in the eastern and northern districts of the Central Provinces and in Central India. The following gives data for four stations in illustration :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN WIND DIRECTION.	
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Actual, July 1898.	Normal, July.
				°	°
Nowgong	62	104	—42	N 70 W	S 85 W
Sutna	158	227	—69	N 40 W	N 80 W
Saugor	119	139	—20	N 86 W	S 73 W
Jubbulpore	101	114	—13	S 87 W	S 89 W

The preceding remarks have shown that the Arabian Sea current was probably very slightly weaker than usual, whilst that in the Bay was of normal strength. The following gives a comparison based on the wind observations

recorded on board vessels in these sea areas in July 1898:—

AREA.	MEAN DAILY FORCE OF WIND. (Beaufort's notation).		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
Bay of Bengal	3·9	4·0	−0·1
Arabian Sea	4·4	4·6	−0·2

Winds were very approximately of normal strength, but slightly more easterly on the mean of the month at Zanzibar and the Seychelles. Winds were much more westerly and less steady than usual at Aden and Perim. The following gives data in illustration:—

STATION.	MEAN STEADINESS.			MEAN WIND DIRECTION.	
	Actual percentage, July 1898.	Normal percentage, July.	Variation of actual from normal, July 1898.	Actual, July 1898.	Normal, July.
				°	°
Seychelles	82	86	− 4	S 36 E	S 29 E
Zanzibar	90	83	+ 7	S 10 E	S 5 E
Aden	66	73	− 7	S 16 W	S 1 E
Perim	50	60	−10	S 87 W	N 56 W

Humidity and Cloud.

The amount of aqueous vapour present in the air differed very slightly from the normal over the greater part of India and the variations of the mean humidity of the month were mainly determined by the temperature conditions of the month. And as the variations of the mean temperature of the month were nowhere large, the humidity conditions differed little from the normal over nearly the whole area. The mean humidity of the month was above the normal over nearly the whole area, and the excess was most marked in the Punjab and adjacent hill districts as well as in Bundelkhand and Baghelkhand. The amount of aqueous vapour present in the air was practically normal in Burma, Assam and Bengal and in slight excess in Arakan and Orissa, and the variations of the mean relative humidity in these areas were small, as the temperature conditions differed little from the normal. The air was, as in June, drier than usual in Cachar and damper in Upper Assam. The following gives comparative data for those provinces:—

DIVISION.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
	"	"	"	%	%	
Burma	·885	·882	+ ·003	90	89	+ 1
Arakan	·940	·921	+ 019	92	89	+ 3
Assam	·951	·943	+ ·008	85	86	− 1
Bengal	·953	·960	− ·007	86	87	− 1
Orissa	·934	·918	+ ·016	85	82	+ 3

The mean pressure of aqueous vapour was greater than the normal in the Gangetic Plain, the Punjab, South-West Rajputana, Central India, Berar, the Central Provinces, the Deccan and Mysore, and the air was hence somewhat damper than usual over the greater part of that area. The following gives data in illustration:—

DIVISION.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Average actual, July 1898.	Average, normal, July.	Variation of actual from normal, July 1898.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
	"	"	"	%	%	
North-Western Provinces and Oudh.	·886	·884	+ ·002	78	78	0
Punjab	·851	·829	+ ·002	65	60	+ 5
South-West Rajputana	·868	·828	+ ·040	77	74	+ 3
Central India	·918	·857	+ ·061	86	79	+ 7
Berar	·749	·739	+ ·010	77	77	0
Cental Provinces	·811	·806	+ ·005	82	80	+ 2
Deccan	·695	·686	+ ·009	80	78	+ 2
Mysore	·622	·607	+ ·015	77	77	0

In the following table are given corresponding data

for the stations at which the mean humidity of the month was 5 or upwards above the normal :—

STATION.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
	"	"	"	%	%	
Lahore . . .	·904	·854	+·050	73	61	+12
Srinagar . . .	·705	·658	+·047	85	78	+ 7
Nowgong . . .	·936	·877	+·059	86	79	+ 7
Sutna . . .	·899	·837	+.062	85	78	+ 7
Ludhiana . . .	·891	·867	+·024	75	69	+ 6
Peshawar . . .	·745	·727	+·018	58	53	+ 5
Leh . . .	·267	·256	+·011	50	45	+ 5
Hyderabad (Deccan) .	·745	·713	+·032	79	73	+ 6

The mean humidity percentages of the month were hence above the normal to a moderate amount in the East and North Punjab, Bundelkhand, Baghelkhand and Hyderabad (Deccan).

The air was slightly drier in Bihar and Chota Nagpur, as is shown by the data given below for three second class stations in these two areas :—

STATION.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
	"	"	"	%	%	
Darbhanga . . .	·979	·968	+·011	81	83	— 2
Patna	·970	·958	+·012	82	82	0
Hazaribagh . . .	·801	·811	—·010	82	85	— 3

There was somewhat less vapour present in the air in Central Rajputana and the greater part of Southern India. The humidity variations were generally small in these districts but were 5 or upwards at the stations for which comparative data are given below :—

STATION.	MEAN ABSOLUTE HUMIDITY.			MEAN RELATIVE HUMIDITY.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
	"	"	"	%	%	
Trichinopoly . .	·638	·688	—·015	49	56	—7
Jeypore . . .	·803	·838	—·035	68	74	—6
Salem . . .	·731	·746	—·015	65	71	—6

The air was somewhat damper than usual at the hill stations in Northern India and at Mount Abu and Pachmarhi and considerably drier at Wellington in the Nilgiris, and at Chikalda in Berar.

The air was also drier at Aden, where the mean humidity of the month was 5 below the normal and at Zanzibar, where also it was 5 in defect.

The chief local features of the humidity conditions of the month were as follows :—

(1) Normal conditions in Burma.

(2) Slightly decreased humidity in Cachar, Bihar and Chota Nagpur.

(3) Increased humidity in the Punjab, Upper Sind, Central India, the North-Western Provinces, South Bengal, the Central Provinces and the Deccan, due in part to an excess of aqueous vapour, and in part to deficient temperature.

(4) Moderate deficiency in South India, greatest at Trichinopoly and Salem.

(5) Slightly increased humidity in Upper Assam, Arakan and Mysore, due chiefly to a moderate excess of aqueous vapour.

The variations of the mean cloud amount of the month from the normal differed considerably in character and distribution from those of the absolute and relative humidities.

There was somewhat more cloud than usual in the Bay Islands and Burma. The excess was greatest in absolute amount in that area at Port Blair (+1·4) and Diamond Island (+1·1). The following table gives comparative data :—

AREA.	MEAN CLOUD AMOUNT.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
Burma	9·0	8·6	+0·4
Bay Islands	9·0	7·6	+1·4

Cloud was in excess over the whole of India with the exception of South Madras, Upper Assam, North Bihar and locally (perhaps) at Kurrachee, Lahore, Delhi, Burdwan, Berhampore, Chittagong and Akyab, where it was practically normal. Cloud was locally in considerable excess at Quetta (+1·5) and Jacobabad (+1·1). The following gives comparative data for this large area of increased cloud in July 1898:—

Division.	Mean cloud amount.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
Bengal	8·3	8·2	+0·1
Bihar	6·8	7·3	—0·5
Chota Nagpur	9·8	9·3	+0·5
Orissa	8·7	8·0	+0·7
North-Western Provinces and Oudh	7·5	7·1	+0·4
Punjab	4·3	3·9	+0·4
Rajputana	7·7	7·2	+0·5
Sind	4·8	4·6	+0·2
Central India	8·1	7·7	+0·4
Berar	8·8	8·3	+0·5
Central Provinces	8·9	8·1	+0·8
Deccan	9·2	8·5	+0·7
Madras coast	8·2	6·9	+1·3
Bombay coast	8·7	8·1	+0·6

The excess in the Peninsula was more than one in amount in the areas represented by the stations for which data are given below:—

Station.	Mean cloud amount.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
Vizagapatam	9·1	7·2	+1·9
Bangalore	8·6	6·8	+1·8
Ratnagiri	9·5	7·9	+1·6
Cocanada	7·8	6·5	+1·3
Hyderabad (Deccan)	8·6	7·4	+1·2
Bellary	9·4	8·3	+1·1

Cloud was in moderate excess in Baluchistan, Kashmir and the Upper India hill districts generally, as is shown by the following data:—

Station.	Mean cloud amount.		
	Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
Quetta	3·1	1·6	+1·5
Srinagar	5·3	4·0	+1·3
Leh	6·8	5·1	+1·7
Kailang	7·5	6·4	+1·1
Simla	9·6	8·8	+0·8

The chief abnormal features of the mean distribution of cloud during the month were:—

(1) Slight to moderate excess over nearly the whole of India.

(2) Moderate excess in Baluchistan, Upper Sind, the hill districts in Upper India, including Kashmir, the Madras Deccan, Mysore, the Circars and the Andamans.

(3) Moderate local deficiency in South Madras, represented by Trichinopoly.

Rainfall.

The distribution of rainfall of the month is shown in Plate IV. It should be noted that the distribution there given is derived from the rainfall data of the meteorological stations in Table I, excluding those classified in that table as hill stations. It hence represents the distribution at the ordinary level of the plains of India and not of any of the hill districts, which it would not be possible to represent in such a chart. Plate V gives the variations of the rainfall of each of the 57 meteorological or rainfall divisions from the normal.

The Bombay current was fairly steady during the month. There were two periods when it gave moderate to heavy rain in the west coast districts. The first was from the 1st to the 7th when the current was of normal strength and gave moderately heavy rain. The rainfall was light in the Konkan from the 8th to the 12th. It then increased rapidly on the 13th and 14th and was heavy and almost continuous until the 23rd, when the current slackened off to some extent. It intensified slightly again on the 27th and 28th, more especially near the Sind and Kathiawar coasts. The rainfall in the districts in the interior of North-Western and Central India and the Deccan which receive rain from the Bombay current was in part determined by the depressions and cyclonic storms of the

month which formed in the north of the Bay of Bengal and in Bengal and advanced westwards across Northern and Central India. The periods of general and heavy rain determined by the three storms of the month were as follows:—

1st.—From the 2nd to the 8th. The rainfall during this period was due to a storm which formed at the head of the Bay on the 30th June and 1st of July and advanced along a west by north track through Chota Nagpur, Central India, Rajputana and Lower Sind. Bengal, Bihar and Chota Nagpur received moderate general rain from the 2nd to the 6th, the Central Provinces and Berar from the 3rd to the 6th, Rajputana from the 5th to the 7th and Sind on the 8th. The dispersion of this storm was followed by an advance of humid monsoon winds across Rajputana into the Punjab. These two areas and the North Western Provinces received moderate rain from the 10th to the 13th.

2nd.—From the 14th to the 22nd. The rainfall during this period preceded the formation of a depression in Central Bihar and accompanied its march across Bihar, the North-Western Provinces, Bundelkhand and Rajputana into Sind, where it broke up on the 21st. North Bengal received unusually heavy rain on the 13th, 14th and 15th before the inception of the storm. The storm gave moderate to heavy rain to Bihar on the 16th and 17th, to the North-Western Provinces on the 17th and 18th, to Rajputana on the 18th, 19th and 20th, and to Sind on the 21st and 22nd. As in the case of the previous storm, the dispersion of the present storm was followed by an advance of humid winds into the Punjab and parts of that area received moderate to heavy rain on the 23rd and 24th.

3rd.—From the 23rd to the 26th. The depression which gave rise to the cyclonic rainfall of the period formed off the coast of North Madras. The greater part of the Deccan, and North and Central Madras received moderate to heavy rain. This storm broke up on the 26th in the North Deccan and the monsoon winds in the Bay advanced into Bengal on the 27th and gave moderate to heavy rain in that area during the remainder of the month. The humid current extended to Bihar and the North-Western Provinces on the 29th and gave moderate to heavy rain. The Bombay current also strengthened slightly on the 27th and 28th, and the Central Provinces and the greater part of North-Western India obtained moderate rain during the remainder of the month.

The rainfall of the month was below the normal in the following areas:—

(1) Upper Burma, Tenasserim, Assam Surma and Assam Hills.
(2) Central, East and North Bengal, Orissa and North Bihar.
(3) North-Western Provinces, Central and West, the South-East Punjab and Punjab Hills.
(4) Berar.
(5) Central India and East Rajputana.
(6) Kathiawar.
(7) Madras Central and South and Mysore.

The deficiency was more than 25 per cent. in the following rainfall divisions:—Upper Burma, Central Bengal, the North-Western Provinces West, Madras South and Central and Mysore.

The rainfall of the month was normal or in excess over the remainder of India. The excess was more than 20 per cent. in the following rainfall divisions:—North-Western Provinces East, North Oudh, the South, Central, Submontane, North and West Punjab, Khandesh, Sind, Baluchistan, Madras East Coast North and South and North Hyderabad.

The following table gives mean actual, mean normal and variation data for the 57 meteorological divisions of the Empire:—

Province.	Division.	Number of Rainy days.		Rainfall.		
		Average actual, July 1898.	Average normal, July.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
				Inches.	Inches.	Inches.
Burma	Tenasserim*	?	?	37·42	47·18	—9·76
	Lower Burma (Deltaic)*	?	?	22·90	23·09	—0·19
	Central ditto*	?	?	14·64	13·36	+1·28
	Upper ditto*	?	?	5·31	9·73	—4·42
	Arakan*	?	?	51·61	48·35	+3·26

NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Province.	Division.	Number of rainy days. Average actual, July 1898.	Number of rainy days. Average normal, July.	Rainfall. Average actual, July 1898.	Rainfall. Average normal, July.	Rainfall. Variation of actual from normal, July 1898.
				Inches.	Inches.	Inches.
Bengal and Assam	Eastern Bengal	18·1	18·4	16·58	18·02	−1·44
	Assam (Surma)	20·1	20·5	14·47	19·00	−4·53
	Do. (Hills)	20·9	21·3	18·63	24·93	−6·30
	Do. (Brahmaputra)	18·0	17·5	16·86	16·03	+0·83
	Deltaic Bengal	17·8	16·4	11·85	11·81	+0·04
	Central do.	14·4	16·1	8·70	12·30	−3·60
	North do.	16·1	16·7	16·53	19·68	−3·15
	Bengal Hills	22·5	24·1	37·78	35·47	+2·31
	Orissa	15·7	14·2	9·91	11·67	−1·76
	Chota Nagpur	16·5	16·9	14·56	14·15	+0·41
	Bihar (South)	15·2	14·1	13·62	12·29	+1·33
	Do. (North)	13·8	14·4	11·31	13·60	−2·29
North-Western Provinces and Oudh.	North-Western Provinces (East)	16·6	13·3	17·01	11·83	+5·18
	Oudh (South)	13·4	12·3	11·91	10·75	+1·16
	Do. (North)	15·6	12·1	15·12	11·69	+3·43
	North-Western Provinces (Central)	13·0	12·3	11·23	11·95	−0·72
	Do. do. (West)	8·4	9·5	5·68	8·85	−3·17
	Do. do. (East Submontane)	15·5	13·2	14·02	12·50	+1·52
	Do. do. (West do.)	12·5	12·7	13·41	14·67	−1·26
	Do. do. (Hills)	19·1	18·4	18·90	17·03	+1·87
Punjab	Punjab (South-East)	8·0	7·8	5·87	7·72	−1·85
	Do. (South)	8·3	5·1	6·52	4·87	+1·65
	Do. (Central)	9·5	5·5	8·42	4·99	+3·43
	Do. (Submontane)	12·1	8·4	11·75	9·22	+2·53
	Do. (Hills)	14·5	15·1	14·64	16·68	−2·04
	Do. (North)	7·4	4·8	6·96	4·17	+2·79
	Do. (West)	3·9	3·0	3·68	2·57	+1·11
Bombay and Malabar Coast Districts (Madras).	Malabar	28·6	26·8	38·29	34·43	+3·86
	Travancore	15·6	?	13·99	?	?
	Madras (South Central)	2·1	3·9	0·85	2·36	−1·51
	Coorg	26·0	?	22·77	?	?
	Mysore*	?	?	4·56	7·43	−2·87
	Konkan	28·4	26·9	46·82	40·04	+6·78
	Bombay Deccan	13·1	12·2	9·44	9·39	+0·05
	Hyderabad (North)	15·7	?	12·33	8·46	+3·87
	Khandesh	14·3	11·1	9·79	7·67	+2·12
Central Provinces and Berar.	Berar	15·9	?	10·03	11·59	−1·56
	Central Provinces (West)	16·7	15·4	14·71	13·81	+0·90
	Do. (Central)	21·6	17·1	21·29	18·03	+3·26
	Do. (East)	19·9	15·0	17·46	16·07	+1·39
Bombay (North)	Gujarat	16·8	17·1	19·63	18·46	+1·17
	Kathiawar	12·0	11·5	10·50	11·27	−0·77
	Sind	5·1	?	4·58	1·86	+2·72
	Baluchistan Hills	2·6	?	1·40	1·03	+0·37
Rajputana and Central India.	Central India (East)	14·8	?	13·03	13·53	−0·50
	Rajputana (East), Central India (West)	9·7	?	8·29	9·09	−0·80
	Rajputana (West)	5·1	?	4·56	3·93	+0·63
Madras	East Coast (North)	12·1	9·9	9·51	6·78	+2·73
	Do. (do.) (a)	20·0	19·7	12·25	15·38	−3·13
	Hyderabad (South)	15·3	?	9·99	5·70	+4·29
	Madras (Central)	6.1	6·2	2·43	3·15	−0·72
	East Coast (Central)	4·5	4·9	1·67	2·45	−0·78
	Do. (South)	4·6	4·7	2·19	3·00	−0·81
	Madras (South)	1·2	2·1	0·55	1·08	−0·53

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Assam received moderate daily rain showers from the 1st to 21st. This was followed by a short break until the 26th or 27th. General rain recommenced on the 28th and continued during the remainder of the month. The daily falls were lighter than usual and hence although the number of rainy days was normal, the rainfall of the month was more or less in defect in Assam Surma and the Assam Hills. The rainfall of the month was considerably below the normal of the period in the hill districts. This is shown very clearly by the returns for Cherra Poonjee. It received a total of 66·65 inches or 47·93 inches less than the normal of the month. The largest fall at that station in 24 hours was 9·85 inches on the 15th. The rainfall of the month averaged 24 per cent. in defect in the Cachar or Surma division and was practically normal in the Brahmaputra division. The following table gives comparative data for the eight plains districts of the province:—

District.	Rainfall.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
	Inches.	Inches.	Inches.
Sylhet	15·02	19·98	—4·96
Cachar	14·10	17·86	—3·76
Goalpara	14·04	15·46	—1·42
Kamrup	14·62	13·41	+1·21
Darrang	16·93	13·19	+3·74
Nowgong	14·46	16·11	—1·65
Sibsagar	17·49	15·92	+1·57
Lakhimpur	21·98	19·00	+2·98

There were three periods of general rainfall in Bengal, *viz.*, from the 2nd to the 6th, the 13th to the 19th and the 26th to the 31st. The rainfall during the first two periods was associated with the first two cyclonic storms of the month. The rainfall during the third period was due to a burst of monsoon winds which advanced over Bengal and the Gangetic Plain after the dispersion of the third storm of the month.

The rainfall accompanying the formation and passage through the province of the first storm of the month was moderate to heavy and was characterised by the absence of cyclonic downpours.

This burst of rain was followed by showery weather over the province from the 7th to the 12th. The rainfall during this period was very light in South-West Bengal and was moderate in amount in Bihar and Chota Nagpur. Heavy local rain fell in North Bengal during this period. The rainfall in that area increased on the 12th and was excessive on the 13th, on which day the following large falls were recorded:—

District.	Station.	Rainfall during 24 hours preceding 8 A. M. of 13th July.
		Inches.
JALPAIGURI	Fallacotta	8·03
"	Jalpaiguri	6·40
DARJEELING	Buxa	7·95
"	Kalimpong	5·10
COOCH-BEHAR	Mickliganj	7·32
"	Matabhanga	5·29
DINAJPUR	Thakurgaon	6·15

A storm formed in Central Bihar during the next two days which drifted slowly westwards through the province. Heavy general rain was received over the whole province from the 15th to the 18th. The rainfall was heaviest in North Bengal, the south-eastern districts of East Bengal, and the northern districts of Bihar and Chota Nagpur. The following table gives rainfalls exceeding 5 inches recorded during this period, and shows the area of heaviest precipitation at this time:—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
JALPAIGURI	Jalpaiguri	14th July	6·08
CHITTAGONG	Kodala	15th "	7·63
"	Chittagong	" "	5·21
"	Fenoa	" "	5·15
RANGPUR	Rangpur	" "	6·62
"	Bhawaniganj	16th "	9·64
"	Sunderganj	" "	5·58
"	Bagdogra	" "	5·40
JALPAIGURI	Debiganj	" "	7·03
DARJEELING	Darjeeling	" "	5·95
"	Kurseong	" "	5·70
CHITTAGONG	Satkanya	" "	6·86
GAYA	Aurungabad	" "	6·44
MUZAFFARPUR	Muzaffarpur	" "	5·61

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
NOAKHALI	Harishpur	16th July	5·57
PALAMAU	Husainabad	17th "	8·38
"	Chatterpore	" "	8·06
CHITTAGONG	Satkanya	" "	7·25
GAYA	Sherghati	" "	6·35
DARJEELING	Kurseong	" "	6·40
"	Darjeeling	" "	5·16
BURDWAN	Mankur	" "	5·15
SINGHBHUM	Gailkura	18th "	5·56

Orissa received moderate rain from the 20th to the 27th during the existence of the third storm of the month. The rainfall was light and sporadic in Bengal and Bihar during this period, and a partial break in the rains obtained. The dispersion of this storm was followed by an advance of monsoon winds into North-Eastern India. East, North and South-West Bengal obtained moderate to heavy rain from the 27th to the end of the month, and Bihar and Chota Nagpur from the 29th to the 31st. Heavy downpours were recorded at several stations during this period. The following gives the more noteworthy falls (exceeding six inches) :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
DARJEELING	Kurseong	29th July	12·46
"	Mungpoo	" "	8·33
KHULNA	Khulna	30th "	6·85
BACKERGANJ	Pirojpur	" "	7·00

The following table gives comparative data for the nine rainfall divisions of the province. It shows that the rainfall of the month was practically normal in East and Deltaic Bengal, Chota Nagpur, Sikkim, and South Bihar, and was in moderate defect in North Bihar (17 per cent.), North Bengal (16 per cent.), Orissa (15 per cent.) and Central Bengal (29 per cent.) :—

Division.	Number of rainy days.			Rainfall.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Eastern Bengal	18·1	18·4	—0·3	16·58	18·02	—1·44	— 8
Deltaic "	17·8	16·4	+1·4	11·85	11·81	+0·04	0
Central "	14·4	16·1	—1·7	8·70	12·30	—3·60	—29
North "	16·1	16·7	—0·6	16·53	19·68	—3·15	—16
Bengal Hills	22·5	24·1	—1·6	37·78	35·47	+2·31	+ 7
Orissa	15·7	14·2	+1·5	9·91	11·67	—1·76	—15
Chota Nagpur	15·5	16·9	—0·4	14·56	14·15	+0·41	+ 3
South Bihar	15·2	14·1	+1·1	13·62	12·29	+1·33	+11
North "	13·8	14·4	— 0·6	11·31	13·60	—2·29	—17

The rainfall was more irregularly distributed than usual. The following gives comparative data for the districts in which it was 25 per cent. or more below the normal :—

District.	Rainfall.		
	Average actual, July 1898.	Average normal, July.	Percentage variation from normal.
	Inches.	Inches.	
Malda	5·36	12·28	—56
Chittagong Hill Tracts	9·26	18·58	—50
Bankura	6·96	12·67	—45
Hooghly	6·87	12·00	—43
Cooch Behar	14·95	24·49	—39
Rajshahi	7·83	12·02	—35
Darbhanga	8·23	12·34	—33
Champaran	10·08	14·17	—29
Pabna	8·00	11·13	—28
Bhagalpur	9·19	12·73	—28
Sonthal Parganas	9·72	13·44	—28
Burdwan	8·74	11·88	—25
Mymensingh	11·68	15·55	—25
Balasore	9·11	12·20	—25

The eastern and central districts of the North-Western Provinces obtained moderate to heavy rain during the first six days of the month. Light to moderate showers fell in the remainder of the province. A partial break set in on the 7th which continued until the 10th. The whole province received moderate to heavy rain from the 11th to the 20th. The rainfall was heavy in the eastern and southern districts, and in the hill districts. Heavy rain fell in the Dehra Dun and Naini Tal districts between the

9th and 12th. The following gives falls exceeding 5 inches in these districts during this period :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
NAINI TAL	Kathgodam	9th July	5·71
,,	Ramnagar	10th ,,	5·21
DEHRA DUN	Bhogpur	,, ,,	7·80
,,	Raipur	,, ,,	6·50
,,	Dehra (Leper Asylum)	,, ,,	6·05
,,	Dehra	,, ,,	5·92
,,	Rajpur	,, ,,	5·70
,,	Ambari	,, ,,	5·50
NAINI TAL	Satarganj	11th ,,	6·50
,,	Kilpuri	,, ,,	5·90
DEHRA DUN	Rajpur	12th ,,	6·12

Heavy downpours were received in the Jaunpur, Benares and Mirzapur districts of the North-Western Provinces and the Bara Banki, Sitapur and Lucknow districts of Oudh on the 17th and 18th. The following gives data of falls exceeding 5 inches in amount :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M of date.
			Inches.
JAUNPUR	Jaunpur	17th July	8·20
,,	Kerakat	,, ,,	6·48
,,	Kutahan	,, ,,	5·37
MIRZAPUR	Chakia	,, ,,	5·41
BENARES	Benares	,, ,,	5·28
SITAPUR	Biswan	18th ,,	5·10

Heavy rain was also received in the hill districts on the 22nd. The following gives the more noteworthy falls :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
DEHRA DUN	Mussooree	21st July	6·00
,,	Rajpur	22nd ,,	6·70
,,	Mussooree	,, ,,	5·75
,,	Raipur	,, ,,	5·00
ALMORA	Tanakpur	,, ,,	7·80

The hill districts received occasional rain from the 22nd to the 29th.

A general break occurred over the province from the 21st to the 29th, most marked in the western districts.

The dispersion of the third storm of the month was followed by a strong influx of humid winds over Bengal on the 27th and 28th, into Bihar and the North-Western Provinces on the 29th. The whole province received moderate to heavy rain on the 30th and 31st.

The rainfall of the month was above the normal over the greater part of the province, and was favourably distributed. The following gives comparative data for the eight rainfall divisions of the province :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
				Inches.	Inches.	Inches.
North-Western Provinces (East).	16·6	13·3	+3·3	17·01	11·83	+5·18
Oudh (South)	13·4	12·3	+1·1	11·91	10·75	+1·16
,, (North)	15·6	12·1	+3·5	15·12	11·69	+3·43
North-Western Provinces (Central).	13·0	12·3	+0·7	11·23	11·95	—0·72
North-Western Provinces (West).	8·4	9·5	—1·1	5·68	8·85	—3·17
North-Western Provinces (Sub-montane East).	15·5	13·2	+2·3	14·02	12·50	+1·52
North-Western Provinces (Sub-montane West).	12·5	12·7	—0·2	13·41	14·67	—1·26
North-Western Provinces (Hills).	19·1	18·4	+0·7	18·90	17·03	+1·87

The preceding data show that the rainfall of the month was in large excess in the eastern division and in North Oudh and was practically normal in South Oudh (11 per cent. in excess), the central, submontane and hill divisions, but was in large defect (36 per cent.) in the western division. The following gives details for the six districts in the area of largest defect :—

DISTRICT.	RAINFALL.			Percentage variation from normal.
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	
	Inches.	Inches.	Inches.	
Etah	6·57	9·62	—3·05	—32
Agra	6·30	9·74	—3·44	—35
Muttra	5·21	9·08	—3·87	—42
Aligarh	6·51	8·25	—1·74	—21
Bulandshahr	4·90	8·45	—3·55	—42
Meerut	5·36	8·63	—3·27	—38

There were five periods of rainfall in the Punjab. The first period was from the 1st to the 3rd. The rainfall was moderate in the eastern districts and light in the central and western districts. The second period was from the 9th to the 13th, when the Bombay humid current advanced in moderate strength to the province after the breaking up of the first cyclonic storm of the month. The rainfall during this period was heavy in the hill and submontane districts, moderate in the northern and central districts and irregularly distributed in the western and southern districts, *viz.*, Hissar, Montgomery, Rohtak and Delhi.

The following gives the heaviest falls, exceeding four inches, recorded during this period :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
KANGRA	Palampur	9th July	5·58
"	"	10th "	7·87
"	Dharmsala	" "	5·39
"	Dera	" "	4·81
SHAHPUR	Midh	" "	4·50
JULLUNDUR	Nawashahr	" "	4·40

The third period extended from the 17th to the 22nd. The rainfall during this period was heavy in the hill districts. It was moderate in amount over the remainder of the province except in the western and central districts which obtained little or no rain during this burst.

The fourth period included the 23rd and 24th when the northern, submontane and hill districts obtained general and heavy rain from an advance of humid winds after the breaking up of the second cyclonic storm of the month in Sind and Baluchistan. The following large amounts were recorded :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
KANGRA	Dharmsala	23rd July	10·10
"	Palampur	" "	9·15
GURDASPUR	Madhopur	" "	6·85
PATIALA	Gujran	24th "	5·12

Little or no rain fell during this burst in the western, central and southern districts (excepting Hissar).

The fifth period of rainfall commenced on the 28th and lasted until the 2nd of August. The rainfall in this period was heavy in the submontane, hill, central and southern districts and was small in amount in the western and northern districts.

The rainfall of the month was in moderate to considerable excess in five of the seven rainfall divisions. It was in moderate defect in the south-east division (24 per cent.) and in slight defect in the hill division (12 per cent.).

The following table gives comparative data for the 31 districts of the province and shows fully the distribution of the rainfall of the month over the province :—

DISTRICT.	RAINFALL.			
	Average actual, July 1898.	Average normal, July.	Variation of actual, from normal, July 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Hissar	5·03	4·73	+0·30	+6
Ferozepore	6·01	5·03	+0·38	+19
Montogomery	2·11	2·95	—0·84	—28
Gurgaon	4·73	8·29	—3·56	—43
Rohtak	6·23	6·74	—0·51	—8
Delhi	6·14	7·80	—1·66	—21
Karnal	7·92	7·92	0	0
Lahore	9·19	4·86	+4·33	+89
Umballa	8·79	10·22	—1·43	—14
Ludhiana	10·85	8·06	+2·79	+35
Jullundur	10·33	8·27	+2·06	+25
Hoshiarpur	13·09	9·75	+3·34	+34
Gurdaspur	14·73	12·39	+2·34	+19
Amritsar	11·66	6·35	+5·31	+84
Simla	8·18	12·89	—4·71	—37
Kangra	18·95	19·20	—0·25	—1
Gujranwala	7·76	5·15	+2·61	+51
Sialkot	12·79	8·23	+4·56	+55
Gujrat	8·21	6·23	+1·98	+32
Jhelum	7·93	4·17	+2·76	+66
Rawalpindi	10·05	6·82	+3·23	+47
Peshawar	5·39	2·16	+3·23	+150
Hazara	9·14	6·47	+2·67	+41
Kohat	5·16	3·63	+1·53	+42
Bannu	6·90	1·94	+4·96	+256
Shahpur	6·88	3·31	+3·57	+108
Jhang	4·06	3·03	+1·03	+34
Dera Ismail Khan	2·24	2·29	—0·05	—2
Dera Ghazi Khan	2·91	1·96	+0·95	+48
Muzzafargarh	2·11	2·31	—0·20	—9
Mooltan	1·57	1·53	+0·04	+3

British Baluchistan received local showers during two periods, *viz.*, the 12th to the 14th and the 18th to the 24th. The rain chiefly occurred during thunderstorms and was hence very irregularly distributed. Moderately heavy falls were received at several stations on the 23rd and 24th. The following gives the more noteworthy :—

PROVINCE.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
BALUCHISTAN	Mushkof	23rd July	1·90
,,	Loralai	,, ,,	1·82
,,	Bellput	24th ,,	2·00
,,	Mittri	,, ,,	1·90

The total fall of the month was on the average of the whole area slightly greater than the normal.

The following gives comparative data :—

PROVINCE.	RAINFALL.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
	Inches.	Inches.	Inch.
Baluchistan Hills	1·40	1·03	+0·37

In Kashmir rain was received chiefly from the 9th to the 13th and the 19th to the 24th. The rainfall of the first period was fairly general and moderately heavy, but that of the second period occurred as local and sporadic showers and was very irregularly distributed. The rainfall was probably below the normal in the valley.

The rainfall of the month was below the normal over nearly the whole of Rajputana. It occurred during the passage of the first and second cyclonic storms of the month through that area. The first storm gave moderate to heavy rain to Kotah, Ajmere, Oodeypore, Sirohee, Partabgarh, Banswara and Kusalgarh from the 5th to the 10th, and light showers in the remaining states. The eastern and northern states obtained moderate rain on the 10th, 11th and 12th in the interval between the two storms when the monsoon currents advanced to East and North Rajputana.

The second storm of the month gave moderate to heavy rain from the 18th to the 20th to the whole of Rajputana. The rainfall was very heavy in the central and western states. The following gives a statement of falls of 4 inches and upwards :—

STATE.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
TONK	Tonk	18th July	5·14
AJMERE	Harmara	,,	4·77
,,	Pisangan	,,	4·75
JEYPORE	Khetri	,,	4·14
,,	Jeypore	19th July	4·98
JODHPORE	Pachpadra	20th July	7·55
,,	Balmer	,,	6·06
,,	Sheo	,,	6·10
,,	Jasol	,,	4·68
BHURTPORE	Biana	,,	4·60
JEYSULMERE	Davikot	,,	4·00

Light local showers were received, chiefly in the eastern states, between the 21st and 28th. Moderate rain fell in the eastern, southern and central states during the last three days of the month.

The following gives a comparative statement of the rainfall data of the month for the larger states :—

STATE.	RAINFALL.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Jodhpore	4·75	4·14	+0·61	+15
Jeypore	7·83	8·08	—0·25	— 3
Ulwar	6·98	9·62	—2·64	—27
Bhurtpore	8·52	8·92	—0·40	— 4
Dholpur	11·42	?	?	?
Kotah	9·78	9·57	+0·21	+ 2
Ajmere	5·60	7·05	—1·45	—21
Oodeypore	7·58	9·76	—2·18	—22
Sirohee	10·58	15·73	—5·15	—33

The rainfall of the month was in slight excess in Jodhpore due to the heavy rainfall of the 18th to the 20th, normal in average amount in Jeypore, Bhurtpore and Kotah, in moderate defect in Ajmere and Oodeypore, and in largish defect in Ulwar and Sirohee.

Central India obtained favourable rain during the month. The chief periods of rainfall during which rain fell daily

over the whole or the greater part of the area were the 1st to the 6th, the 11th to the 21st, and the 29th to the 31st. Heavy falls were received in Gwalior and Bhopal on the 5th and 6th of which the following were the most noteworthy :—

STATE.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
GWALIOR	Manpur	5th July	6·25
"	Dhar	"	5·42
BHOPAL	Sehore	6th July	6·50

The rainfall during the third period was heavy in Rewah and Bundelkhand. The most noteworthy falls were :—

STATE.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
REWAH	Chandia	29th July	3·87
BUNDELKHAND	Bijawar	"	5·02
"	Chhatarpur	30th July	6·28
"	Kadaura	31st "	5·27

The following gives comparative data for the larger states and divisions :—

STATE.	RAINFALL.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Indore	16·46	9·67	+6·79	+70
Rutlam	16·57	11·05	+5·52	+50
Bhopal Agency	12·03	16·60	—4·57	—28
Gwalior	9·61	10·57	—0·96	— 9
Nagode	18·71	16·36	+2·35	+14
Maihar	17·27	14·74	+2·53	+17
Rewah	18·62	15·33	+3·29	+21
Bundelkhand	18·99	14·96	+4·03	+27

The statement shows that the rainfall of the month was in large excess in Indore and Rutlam, and was normal or in moderate excess in Rewah, Bundelkhand, Maihar, Nagode and Gwalior. It was, on the other hand, in moderate defect in Bhopal (—28 per cent.).

The rainfall of the month was unusually abundant in the Central Provinces.

Heavy and general rain was received between the 1st and the 6th. This rain was in part due to the passage across the central and northern districts of the first cyclonic storm of the month. The storm gave cyclonic downpours in the Seoni, Hoshangabad and neighbouring districts The following gives the largest amounts received :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
SEONI	Lakhnadon	5th July	9·94
"	Seoni	"	7·20
HOSHANGABAD	Pachmarhi	"	5·91
"	Hoshangabad	6th July	9·40
"	Seoni	"	8·63

Light local showers were received during the next three days.

General rain recommenced on the 9th and held steadily until the 15th.

Light showers were received in the northern and western districts from the 16th to the 23rd and moderate daily rain in the eastern districts. This was followed by a partial break from the 24th to the 26th. Light to moderate daily rain fell during the remainder of the month. The rainfall of the month was in general excess, but the amount of the excess varied very considerably and was greatest in those districts which received heavy rain from the first cyclonic storm of the month. The following gives comparative data for the eighteen districts of the province :—

DISTRICT.	RAINFALL.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
	Inches.	Inches.	Inches.
Sambalpur	19·28	17·94	+1·34
Bilaspur	15·04	15·82	—0·78
Raipur	19·26	14·58	+4·68
Chanda	20·19	17·30	+2·89
Bhandara	18·50	18·15	+0·35
Balaghat	19·07	22·96	—3·89

District.	Rainfall. Average Actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
	Inches.	Inches.	Inches.
Seoni	25·56	16·74	+8·82
Mandla	23·24	18·93	+4·31
Narsinghpur	21·40	17·29	+4·11
Saugor	21·62	16·19	+5·43
Damoh	20·05	17·24	+2·81
Jubbulpore	23·61	18·94	+4·67
Wardha	10·68	12·58	—1·90
Nagpur	15·85	13·58	+2·27
Chhindwara	12·99	11·17	+1·82
Hoshangabad	18·08	15·51	+2·57
Betul	13·88	12 82	+1·06
Nimar	10·72	9·48	+1·24

Moderate rain fell in the Konkan from the 1st to the 7th and light showers from the 8th to the 12th. The monsoon winds strengthened on the 13th and heavy rain fell from that day to the 23rd. Light to heavy showers were received during the remainder of the month.

The following gives the mean total and average daily rainfalls during the period from the 13th to the 23rd :—

Date.	Average actual rainfall during 24 hours preceding 8 A.M. of date, in North Kanara.	Savantvadi.	Ratnagiri.	Kolaba.	Thana.
	Inches.	Inches.	Inches.	Inches.	Inches.
13th July	0·80	1·25	0·61	3·34	2·45
14th "	0·74	1·56	3·67	4·50	2·55
15th "	0·60	3·28	2·35	2·25	0·86
16th "	0·48	0·96	1·54	2·21	1·55
17th "	0·94	1·09	1·08	2·01	1·04
18th "	1·74	1·81	1·16	1·59	0·82
19th "	1·16	1·18	0·77	1·97	0·97
20th "	0·88	2·99	2·12	2·74	0·53
21st "	1·36	4·10	4·35	5·26	2·91
22nd "	0·64	2·12	4·97	7·18	4·41
23rd "	0·76	4·87	4·35	4·53	4·91
Total of period 13th to 23rd July.	10·10	25·21	26·97	37·58	23·00

The following gives rainfalls in 24 hours exceeding 8 inches received during that period :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Kolaba	Matheran	13th July	8·18
"	"	21st "	12·35
"	Karjat	" "	8·91
"	Khalapur	" "	8·15
"	"	22nd "	12·30
"	Karjat	" "	11·58
"	Panvel	" "	9·26
Ratnagiri	Sangameshvar	" "	8·65
"	Mandangad	" "	8·64
Poona	Lanoli	" "	10·13
Satara	Malcolmpeth	" "	9·50
Thana	Thana	23rd "	9·10

The total rainfall of the month averaged 46·82 inches in the Konkan, and was 6·78 inches or 17 per cent. above the normal of the month.

The periods of general rain in the Deccan corresponded with the periods of moderate to heavy rain in the Konkan. The rainfall was general from the 1st to the 8th and the 14th to the end of the month in the districts of Dharwar, Belgaum, Poona, Satara and Kolhapur, and to the 27th in the Bijapur, Sholapur and the North Deccan or Khandesh districts. The rainfall was deficient in the Bijapur, Belgaum, and Satara districts and normal or in excess in the remaining districts of this area. The following gives comparative data for each district :—

District.	Rainfall. Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Dharwar	4·86	4·85	+0·01	0
Bijapur	2·11	3·16	—1·05	—33
Belgaum	11·66	15·53	—3·87	—25
Kolhapur and other Southern Maratha States.	8·80	9·03	—0·23	— 3
Satara	9·77	12·92	—3·15	—24
Sholapur	4·55	3·67	+0·88	+24
Poona	8·49	9·02	—0·53	— 6
Ahmednagar	3·63	3·60	+0·03	+ 1
Nasik	15·33	11·19	+4·14	+37
Khandesh	9·33	5·05	+4·28	+85

Light local showers fell in Gujarat, Kathiawar and Cutch from the 1st to the 5th. Very heavy rain, due to

the indraught from the north-east of the Arabian Sea to the first cyclonic storm of the month when passing through Rajputana, occurred in Gujarat and Kathiawar on the 6th and 7th. The following amounts in 24 hours exceeding 5 inches were recorded :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
MAHI KANTHA	Ahmednagar	6th July	5·20
REWA KANTHA	Lunavada	7th "	9·95
PANCH MAHALS	Halol	" "	7·30
"	Kalol	" "	5·58
"	Godhra	" "	5·52
"	Jhalod	" "	5·04
AHMEDABAD	Modasa	" "	6·65
MAHI KANTHA	Bayad	" "	5·44

Light to moderate showers were received from the 8th to the 18th in Gujarat and Kathiawar. The 11th and 13th were the days of most general rain in this period. Practically no rain fell in Cutch and Sind between the 10th and 18th. The passage of the second storm of the month gave moderate general rain in Gujarat and Kathiawar from the 19th to the 24th. The most noteworthy falls of 24 hours during this period are given below :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
KURRACHEE	Shahbandar	21st July	5·90
SURAT AGENCY	Dharampur	" "	5·16
AHMEDABAD	Gogha	" "	5·16
BROACH	Amod	" "	5·15
KURRACHEE	Tatta	22nd "	7·60
SURAT	Valod	23rd "	8·32
"	Bardoli	" "	8·00
SURAT AGENCY	Sachin	" "	7·90
"	Bansda	" "	7·90
KAIRA	Dakor	" "	5·60
BROACH	Hansot	" "	5·30

Light local showers of little importance were received between the 25th and 28th. The monsoon currents strengthened on the Sind and Kathiawar coasts on the 28th and 29th, and gave heavy rain in Gujarat and Kathiawar on the 30th and 31st. The following falls exceeding 5 inches were reported during the period :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
AHMEDABAD	Parantij	30th July	7·45
SURAT	Valod	31st "	11·15
SURAT AGENCY	Bansda	" "	8·80
"	Dharampur	" "	7·00
REWA KANTHA	Baria	" "	9·48
PANCH MAHALS	Halol	" "	7·12
KAIRA	Borsad	" "	6·10
KATHIAWAR	Veraval	" "	6·10

The rainfall was on the average of the month in very slight excess (6 per cent.) in Gujarat, and in very slight defect (7 per cent.) in Cutch and Kathiawar and was hence practically normal. It was in large percentage excess in Sind due to the heavy rain accompanying the passage of the second storm of the month through that area. The rainfall was, however, very unequally distributed in that area, as is shown by the following data :—

DISTRICT.	Station.	RAINFALL.		
		Actual, July 1898.	Normal, July.	Variation of actual from normal, July 1898.
		Inches.	Inches.	Inches.
KURRACHEE	Kurrachee	2·67	2·90	—0·23
"	Tatta	10·53	3·73	+6·80
"	Shahbandar	10·85	3·00	+7·85
"	Sehwan	2·00	1·90	+0·10

The following table gives comparative data of the rainfall of the month in the six divisions of the Bombay Presidency :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
				Inches.	Inches.	Inches.
Konkan	28·4	26·9	+1·5	46·82	40·04	+6·78
Bombay Deccan	13·1	12·2	+0·9	9·44	9·39	+0·05
Khandesh	14·3	11·1	+3·2	9·79	7·67	+2·12
Gujarat	16·8	17·1	—0·3	19·63	18·46	+1·17
Kathiawar	12·0	11·5	+0·5	10·50	11·27	—0·77
Sind	5·1	?	?	4·58	1·86	+2·72

The Malabar districts of Madras received daily rain throughout the month which gave a total slightly exceeding the normal of the month. There were two periods of very heavy rain, *viz.*, the 3rd to the 6th and the 24th to the 29th, as is shown by the following statement giving the average daily rainfall during these two periods in Malabar, South Canara, Travancore and Coorg :—

	Date.	Average actual rainfall during 24 hours preceding 8 A.M. of date in			
		Malabar.	South Canara.	Travancore State.	Coorg.
		Inches.	Inches.	Inches.	Inches.
First period	3rd July	1·13	1·42	0·75	0·61
	4th ,,	2·15	3·12	0·79	0·83
	5th ,,	1·60	1·79	0·68	0·59
	6th ,,	0·55	0·76	0·50	0·37
Second period	24th ,,	1·54	1·12	0·64	1·60
	25th ,,	1·88	2·40	1·06	2·14
	26th ,,	2·38	3·18	1·16	2·39
	27th ,,	2·78	5·17	1·05	2·52
	28th ,,	3·75	2·13	0·94	1·28
	29th ,,	1·23	0·89	0·29	0·61

The heaviest fall was only 7·00 inches at Hosdrug in South Canara on the 27th. The rainfall in the Malabar district averaged 32·29 inches or 3·27 inches or 11 per cent. above the normal, and in the South Canara district, 48·94 inches, or 6·71 inches or 16 per cent. in excess.

The rainfall in the south and south-central divisions was very scanty and restricted to occasional local showers of little importance or value. The following gives comparative data for the districts in these two divisions :—

District.	Rainfall.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
	Inch.	Inches.	Inches.	
Tinnevelly	0·27	0·69	—0·42	—61
Madura	0·78	1·37	—0·59	—43
Salem	0·95	2·97	—2·02	—68
Coimbatore	0·71	1·64	—0·93	—57

The rainfall was also more or less in defect in the east coast districts from Tanjore northwards to Nellore except locally in Chingleput. It occurred chiefly as light local showers. These were fairly general and moderate in the South Arcot, North Arcot, Chingleput and Nellore districts from the 18th to the 21st. The following gives comparative data for these districts :—

District.	Rainfall.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Tanjore	1·37	2·53	—1·16	—46
Trichinopoly	0·68	2·35	—1·67	—71
South Arcot	2·57	3·37	—0·80	—24
North Arcot	2·17	3·06	—0·89	—29
Chingleput	3·91	3·70	+0·21	+ 6
Nellore	1·67	2·45	—0·78	—32

The northern coast districts of Madras from Kistna to Ganjam received favourable rain throughout the month. The chief periods were the 1st to the 4th, the 8th to the 10th, the 14th to the 19th, and the 22nd to the 26th. The heaviest and most general rain was received during the fourth of these periods, when a cyclonic storm formed and intensified and finally passed across the coast into the western districts of Hyderabad. The following gives the average daily rainfalls during the period in these districts :—

District.	Average actual rainfall during 24 hours preceding 8 A.M. of					Total rainfall of period 22nd to 26th July 1898.
	22nd July.	23rd July.	24th July.	25th July.	26th July.	
	Inch.	Inches.	Inches.	Inches.	Inches.	Inches.
Ganjam	0·58	1·65	1·76	0·77	0·97	5·73
Vizagapatam	0·58	0·55	1·91	0·51	1·02	4·57
Godavari	0·13	0·06	1·57	2·52	1·26	5·54
Kistna	0·39	0·18	0·92	0·91	0·60	3·00

Falls exceeding 5 inches in 24 hours were recorded at the following stations :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
GANJAM	Sompet	23rd July	5·20
GODAVARI	Bhadrachalam	24th ,,	6·55
KISTNA	Tiruvur	,,	6·02
VIZAGAPATAM	Kuppili	25th ,,	5·20
GODAVARI	Bhadrachalam	,,	5·55
	Coringa	,,	5·01

The following gives comparative data of the month for these districts :—

DISTRICT.	RAINFALL.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Ganjam	11·13	7·06	+4·07	+58
Vizagapatam	9·21	8·58	+0·63	+ 7
Godavari	10·38	6·13	+4·25	+69
Kistna	7·45	5·42	+2·03	+37

The Deccan districts received light but fairly general rain from the 18th to the 26th, and light occasional showers during the first fortnight of the month. The rainfall of the month was practically normal in Bellary and Kurnool, but was in large defect in Cuddapah and Anantapur, as is shown by the following data :—

DISTRICT.	RAINFALL.			
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Cuddapah	1·70	2·95	−1·25	−42
Anantapur	0·84	2·32	−1·48	−64
Bellary	2·73	2·62	+0·11	+4
Kurnool	4·49	4·92	−0·43	−9

The following gives data for the eight rainfall divisions of the Presidency :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
				Inches.	Inches.	Inches.
Malabar	28·6	26·8	+1·8	38·29	34·43	+3·86
Madras (South-Central)	2·1	3·9	−1·8	0·85	2·36	−1·51
,, East Coast (North)	12·1	9·9	+2·2	9·51	6·78	+2·73
,, East Coast (North) (a)	20·0	19·7	+0·3	12·25	15·38	−3·13
,, (Central)	6·1	6·2	−0·1	2·43	3·15	−0·72
,, East Coast (Central)	4·5	4·9	−0·4	1·67	2·45	−0·78
,, East Coast (South)	4·6	4·7	−0·1	2·19	3·00	−0·81
,, South	1·2	2·1	−0·9	0·55	1·08	−0·53

The following gives comparative rainfall data of the month for the 22 Collectorates of the Presidency :—

DISTRICT.	NUMBER OF RAINY DAYS.		RAINFALL.		
	Average Actual, July 1898.	Average normal, July.	Average actual, July 1898.	Average normal, July.	Variation of actual from normal, July 1898.
			Inches.	Inches.	Inches.
Ganjam	13·6	10·1	11·13	7·06	+4·07
Vizagapatam	13·3	12·3	9·21	8·58	+0·63
Godavari	11·0	8·9	10·38	6·13	+4·25
Kistna	10·9	8·5	7·45	5·42	+2·03
Nellore	4·5	4·9	1·67	2·45	−0·78
Chingleput	7·6	6·3	3·91	3·70	+0·21
Madras	10·0	6·9	3·40	3·78	−0·38
North Arcot	5·2	5·1	2·17	3·06	−0·89
South ,,	4·8	5·0	2·57	3·37	−0·80
Tanjore	3·2	3·9	1·37	2·53	−1·16
Trichinopoly	1·4	2·9	0·68	2·35	−1·67
Madura	1·5	2·4	0·78	1·37	−0·59
Tinnevelly	0·9	1·6	0·27	0·69	−0·42
Malabar	27·6	25·6	32·29	29·02	+3·27
South Canara	30·1	28·4	48·94	42·23	+6·71
Salem	2·2	4·5	0·95	2·97	−2·02
Coimbatore	1·8	3·3	0·71	1·64	−0·93
Nilgiris	15·0	16·1	12·95	13·56	−0·61
Cuddapah	4·8	5·6	1·70	2·95	−1·25
Anantapur	3·0	4·9	0·84	2·32	−1·48
Bellary	7·4	6·4	2·73	2·62	+0·11
Kurnool	9·2	7·2	4·49	4·92	−0·43

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Abstract of Observations taken at 8 A.M. at 215 Statio

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range
	I.—Burma Coast and Bay Islands.		...	...	−·027	...	...	...	...	...	...	...	84·6	−0·1	75·3	+0·5	80·2	+0·2	8·8	...	...	...	...	15
1	Tenasserim and Bay Islands.	Car Nicobars	25	29·806	?	29·759	29·868	15th	29·716	22nd	·152	86·8	86·3*	?	77·7	?	82·0*	?	8·6	90·2	7th	73·8	18th	16
		Port Blair	61	29·742	−·026	29·734	29·832	15th	29·612	24th	·220	80·2	84·7	?	77·1†	?	80·8†	?	7·6	87·1	12th	72·2	18th	11
		Mergui	96	29·744	−·023	29·772	29·834	15th	29·634	23rd	·200	77·3	84·4	+0·2	74·3	?	79·4	?	10·1	87·7	4 days	72·9	2 days	14
		Tavoy	26	29·801	−·043	29·758	29·864	14th	29·643	24th	·221	76·4	83·0	−0·3	74·2	+0·3	78·6	0	8·8	86·7	4 days	72·0	8th & 17th	14
		Moulmein*	94	29·699	−·031	29·731	29·765	14th	29·540	24th	·225	76·5	83·2	+0·5	74·3	+0·4	78·8	+0·5	8·9	87·5	23rd	72·3	18th	15
2	Lower Burma	Rangoon	41	29·735	−·025	29·713	29·818	15th	29·577	24th	·241	78·0	84·6	−0·4	75·1	?	79·9	?	9·5	88·2	9th	72·9	20th	15
		Bassein	27	29·734	−·023	29·696	29·834	15th	29·599	24th	·235	78·1	84·4	−0·4	76·1	+0·4	80·3	0	8·3	88·7	24th	74·1	11th	14
		Diamond Island	41	29·726	−·025	29·702	29·818	15th	29·578	24th	·240	80·3	83·9	−0·6	76·5	+1·5	80·2	+0·5	7·4	86·1	6th	74·4	5 days	11
5	Arakan	Akyab	20	29·672	−·021	29·635	29·737	5th & 15th	29·568	2nd	·169	78·8	84·4	−0·2	77·5	+0·1	81·0	−0·1	6·9	89·4	24th	75·3	7th & 18th	14
3	Central Burma	Toungoo	183	29·573	−·021	29·699	29·643	15th	29·446	24th	·197	78·0	87·0	+0·6	75·1	+0·2	81·1	+0·4	11·9	92·2	22nd	73·2	2 days	19
	II.—Burma Inland		...	...	−·009	...	...	...	...	...	...	...	90·3	+0·4	76·5	+0·5	83·5	+0·5	13·8	...	...	...	...	25
3	Central Burma	Thayetmyo	134	29·601	−·012	29·677	29·681	5th	29·521	2nd	·160	80·2	89·3	+0·5	76·7	+0·6	83·0	+0·6	12·6	93·1	3 days	74·1	25th	19
4	Upper Burma	Minbu	165	29·546	−·014	29·655	29·615	5th	29·468	2nd	·147	79·9	90·7	−0·4	77·2	+0·2	84·0	−0·1	13·5	96·6	10th	75·1	18th	21
		Yamethin	657	29·079	−·003	29·685	29·155	15th	29·004	25th	·151	78·6	89·1	−1·2	74·4	+0·1	81·8	−0·6	14·7	97·0	25th	72·2	16th	24
		Mandalay	250	29·452	−·007	29·652	29·518	2 days	29·371	3rd	·147	83·2	94·9	+0·9	78·4	+0·2	86·7	+0·6	16·5	106·1	25th	73·2	2nd	32
		Kindat	377	29·259?	?	29·589?	29·364	23rd	29·188	3rd	·176	79·8	88·1	?	76·4	?	82·3	?	11·7	96·3	25th	71·0	20th	25
		Bhamo	381	29·323	?	29·657	29·389	18th	29·233	3rd	·156	78·1	89·8	+2·4	76·0	+1·2	82·9	+1·8	13·8	100·1	28th	72·8	18th	27
4(a)	Burma Hill Stations.	Taunggyi	?			Not	recorde	d.				67·8	75·4	?	63·6	?	69·5	?	11·8	80·2	2 days	61·0	18th	19
		Lashio	?	27·004	+·019	?	27·070	18th	26·911	3rd	·159	72·6	84·5	+1·3	69·3	+0·2	76·9	+0·8	15·2	92·0	25th	68·5	23rd	23
	III.—Assam		...	...	−·005	...	...	...	...	...	...	...	89·5	+0·1	78·0	+0·1	83·8	+0·1	11·5	...	...	...	...	20
7	Surma	Silchar	104	29·564	−·003	29·619	29·631	20th	29·454	2nd	·177	81·6	92·6	+2·6	77·3	+0·2	85·0	+1·4	15·3	101·6	25th	75·3	18th	26
8	Brahmaputra	Sibsagar	333	29·329	−·012	29·618	29·408	5th	29·242	3rd	·166	80·2	88·9	−1·9	77·4	−0·7	83·2	−1·3	11·5	95·7	26th	74·5	3rd	21
		Dhubri	115	29·507	0	29·575	29·584	20th	29·405	16th	·179	81·6	87·1	−0·3	79·3	+0·7	83·2	+0·2	7·8	90·7	9th	76·8	15th	13
	IV.—Bengal and Orissa		...	...	−·015	...	...	...	...	...	...	...	88·6	+0·1	78·6	+0·2	83·6	+0·1	10·1	...	...	...	...	18
6	East Bengal	Chittagong	87	29·556	−·026	29·591	29·626	27th	29·415	2nd	·211	80·7	86·2	+0·7	76·5	+0·1	81·3	+0·4	9·7	93·7	25th	72·6	25th	21
		Noakhali	43	29·591	?	29·581	29·665	27th	29·446	2nd	·219	80·7	85·5	?	76·4	?	81·0	?	9·1	91·5	25th	72·8	18th	18
		Comilla	36	29·598	?	29·582	29·661	5th	29·461	2nd	·200	81·2	88·5	?	76·7	?	82·6	?	11·8	95·8	25th	73·8	27th	22
		Sirajganj	49	29·541	?	29·540	29·628	20th	29·441	3rd	·187	81·5	88·7	?	78·8	?	83·8	?	9·9	99·3	25th	76·2	17th	23
		Narayanganj	26	29·589	−·013	29·568	29·668	20th	29·443	2nd	·225	81·7	87·8	−0·5	79·0	−0·2	83·4	−0·4	8·8	94·1	26th	76·7	17th	17
		Barisal	13	29·597	−·007	29·555	29·664	20th	29·469	2nd	·195	82·1	87·3	+0·7	78·6	+0·5	82·9	+0·6	8·7	93·3	2 days	75·6	2 days	17
		Mymensingh	59	29·565	−·009	29·576	29·647	20th	29·462	2nd	·185	82·0	88·3	+0·8	78·7	+0·7	85·5	+0·8	9·6	94·2	2 days	76·6	2 days	17
10	Deltaic Bengal	Faridpur	46	29·571	?	29·566	29·660	20th	29·439	2nd	·221	81·7	87·9	?	78·6	?	83·3	?	9·3	94·3	26th	75·9	18th	18
		Jessore	33	29·557	−·019	29·537	29·635	20th	29·429	2nd	·206	82·8	89·1	−0·3	78·9	−0·2	84·0	−0·3	10·2	94·5	25th	77·2	5 days	17
		Calcutta	21	29·557	−·014	29·524	29·637	20th	29·424	3rd	·213	81·6	87·1	−0·9	78·0	−0·4	82·6	−0·7	9·1	91·9	26th	75·2	17th	16
		Saugor Island	25	29·537	−·028	29·506	29·598	7th	29·390	3rd	·208	82·9	87·6	−0·2	80·2	−0·2	84·0	−0·2	7·4	91·4	2 days	77·6	4th & 17th	13
		Krishnagar	47	29·538	?	29·533	29·626	20th	29·411	3rd	·215	82·4	89·4	?	78·3	?	83·9	?	11·1	94·3	26th	76·2	6th	18
		Midnapore	149	29·417	?	29·512	29·491	20th	29·274	3rd	·217	82·1	89·2	?	78·2	?	83·7	?	11·0	94·3	2nd	75·1	17th	19

* Mean of 30 days.
† " 29 "

I.

in India, Burma, etc., in July 1898.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st July 1898.	Normal rainfall for period, 1st June to 31st July.	Variation from normal of period, 1st June to 31st July.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28·31	31·38	−0·72	...	...	...	...	**I.—Burma Coast and Bay Islands.**		
...	...	...	...	...	...	...	...	...	3·8	?	?	88	·928	9·6	14	?	?	7·15	?	?	25·39	?	?	1·78	Car Nicobars.‡	TENASSERIM AND BAY ISLANDS.	1
...	...	...	...	1	4	10	15	1	10·4	11·0	− 5	91	·935	8·8	23	?	?	25·19	15·98	+ 9·21	41·89	34·77	+ 7·12	5·05	Port Blair .		
22	...	...	...	...	2	2	3	2	1·0	1·8	− 44	94	·870	8·1	26	?	?	28·83	31·99	− 3·16	59·44	63·86	− 4·42	4·55	Mergui.		
28	...	...	...	...	...	3	...	...	0·6	?	?	93	·852	9·2	30	?	?	38·86	46·34	− 7·48	86·18	82·55	+ 3·63	4·63	Tavoy.		
...	...	...	5	10	7	1	4	3	3·0	3·8	− 21	94	·853	8·9	27	27·75	−0·75	36·78	45·82	− 9·04	70·44	81·54	−11·10	4·07	Moulmein.		
...	1	1	...	...	8	14	6	1	2·8	5·5	− 49	94	·908	9·5	28	25·36	+2·44	21·89	21·68	+ 0·21	37·58	39·19	− 1·61	1·94	Rangoon .	LOWER BURMA.	2
3	...	...	...	8	11	7	2	...	5·1	4·0	+ 28	94	·912	7·3	29	27·00	+2·00	24·63	24·88	− 0·25	56·87	47·44	+ 9·43	2·42	Bassein.		
2	2	...	1	2	7	13	3	1	11·8	8·9	+ 33	86	·900	9·2	24	24·00	0	20·66	26·28	− 5·62	43·27	49·48	− 6·21	2·94	Diamond Island.		
...	1	3	5	9	10	3	...	...	4·2	3·8	+ 39	93	·951	8·3	27	27·55	−0·55	62·47	51·54	+10·93	115·55	95·53	+20·02	8·54	Akyab .	ARAKAN.	5
3	...	...	2	16	10	...	...	...	4·4	4·8	− 8	92	·896	9·4	23	25·09	−2·09	16·66	17·91	− 1·25	32·91	32·52	+ 0·39	2·47	Toungoo .	CENTRAL BURMA.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7·74	8·15	−0·41	...	...	...	...	**II.—Burma Inland.**		
...	...	...	1	3	26	...	1	...	3·2	6·7	− 52	82	·868	9·7	17	15·91	+1·09	7·09	6·83	+ 0·26	10·24	13·77	− 3·53	0·70	Thayetmyo.	CENTRAL BURMA.	3
...	1	...	2	21	6	...	...	1	17·5	?	?	84	·863	8·4	13	?	?	6·44	3·38	+ 3·06	12·68	8·37	+ 4·31	1·45	Minbu .	UPPER BURMA.	4
1	2	...	...	18	10	...	...	...	8·9	?	?	88	·864	5·9	10	?	?	3·52	4·36	− 0·84	11·57	7·28	+ 4·29	0·73	Yamethin.		
...	1	...	1	8	13	8	...	...	3·5	?	?	72	·821	7·8	5	?	?	1·18	3·17	− 1·99	3·18	8·96	− 5·78	0·41	Mandalay.		
17	3	2	...	5	2	1	...	1	1·2	?	?	92	·946	8·6	18	?	?	9·81	12·25	− 2·44	14·70	27·12	−12·42	1·05	Kindat.		
24	3	2	1	...	...	...	1	...	1·3	?	?	93	·897	8·8	19	?	?	18·42	18·91	− 0·49	30·17	32·43	− 2·26	2·41	Bhamo.		
2	1	1	...	5	11	10	1	...	?	?	?	89	·610	10·0	22	?	?	13·95	10·66	+ 3·29	20·72	21·13	− 0·41	2·63	Taunggyi.	BURMA HILL STATIONS.	4(a)
				Not recorded.					?	?	?	92	·734	9·8	17	?	?	10·75	12·79	− 2·04	22·32	23·01	− 0·69	1·91	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13·53	17·46	−3·93	...	...	...	...	**III.—Assam.**		
23	...	1	2	...	...	...	...	...	2·2	3·1	− 29	89	·970	8·6	18	22·79	−4·79	11·26	19·10	− 7·84	27·32	39·83	−12·51	1·58	Silchar .	SURMA.	7
10	2	1	3	4	1	4	5	1	4·1	2·8	+ 46	94	·976	9·3	24	19·04	+4·96	17·41	17·19	+ 0·31	29·42	30·79	− 1·37	1·78	Sibsagar .	BRAHMAPUTRA.	9
4	...	6	12	4	1	4	...	...	4·6	3·9	+ 18	87	·948	7·5	13	16·13	−3·12	11·92	16·17	− 4·25	40·28	40·70	− 0·42	5·08	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11·99	14·48	−2·49	...	...	...	...	**IV.—Bengal and Orissa.**		
5	...	...	2	15	6	3	...	...	10·3	7·2	+ 43	87	·903	7·6	14	19·81	−5·81	20·15	23·20	− 3·05	47·65	45·89	+ 1·76	4·72	Chittagong	EAST BENGAL.	6
...	1	2	7	15	2	3	...	1	7·2	?	?	90	·942	7·1	20	20·12	−0·12	29·13	23·74	+ 5·39	56·45	47·93	+ 8·52	4·58	Noakhali.		
...	...	3	5	20	3	...	...	...	6·8	?	?	85	·906	8·0	15	19·22	−4·22	10·61	16·38	− 5·77	27·15	34·03	− 6·88	3·10	Comilla.		
2	2	3	12	7	5	...	...	...	2·3	?	?	92	·937	8·3	17	14·23	+2·77	8·58	11·50	− 2·92	24·28	22·62	+ 1·66	2·06	Sirajganj.		
...	...	1	6	17	5	1	1	...	9·8	7·3	+ 34	91	·934	8·7	19	18·31	+0·69	13·91	13·78	+ 0·13	26·11	26·84	− 0·73	4·10	Narayanganj		
5	...	2	3	8	9	4	...	...	3·2	?	?	87	·956	8·5	19	20·50	−1·50	13·02	15·76	− 2·74	23·99	31·78	− 7·79	1·85	Barisal.		
5	...	...	8	14	3	1	...	...	?	?	?	88	·964	7·1	20	19·27	+ 0·73	12·45	15·56	− 3·11	35·81	33·74	+ 2·07	4·02	Mymensingh.		
8	...	...	2	15	6	...	...	...	1·3	?	?	91	·992	7·3	19	17·16	+1·84	9·45	12·21	− 2·76	22·43	24·59	− 2·16	1·49	Faridpur .	DELTAIC BENGAL.	10
10	...	1	1	12	...	7	...	...	3·6	4·6	− 22	89	·999	8·6	20	17·39	+2·61	15·18	11·21	+ 3·97	23·44	23·71	− 0·27	3·20	Jessore.		
...	...	2	8	10	3	8	...	...	4·2	5·3	− 21	91	·975	8·6	22	18·04	+3·96	12·75	12·46	+ 0·29	21·90	23·20	− 1·30	2·80	Calcutta.		
...	2	6	2	3	7	8	2	1	15·7	14·2	+ 11	88	·992	8·9	19	17·00	+2·00	15·54	15·34	+ 0·20	23·30	25·18	− 1·88	3·34	Saugor Island.		
...	...	1	8	9	8	3	1	1	5·3	?	?	83	·979	7·5	18	15·92	+2·08	8·72	10·62	− 1·90	24·05	19·95	+ 4·10	1·60	Krishnagar.		
8	2	7	...	4	8	1	1	...	1·8	?	?	87	·961	5·1	16	15·65	+0·35	12·42	14·63	+ 0·79	28·06	21·05	+ 7·01	2·95	Midnapore.		

‡ 31 variables.

Tabl

Abstract of Observations taken at 8 A.M. at 215 Station

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura	298	29·242	?	29·489	29·329	20th	29·116	3rd	·213	81·6	89·6	?	78·5	?	84·1	P	11·1	96·1	26th	75·6	6th	20·5
		Raniganj	334	29·230	?	29·510	29·320	20th	29·104	3rd	·216	80·9	89·4	?	78·4	?	83·9	P	11·0	94·2	8th & 26th	75·9	6th & 18th	18·3
		Burdwan	99	29·477	−·013	29·524	29·562	20th	29·346	3rd	·216	82·0	89·5	−0·7	79·2	−0·2	84·4	−0·5	10·3	94·9	26th	76·3	6th	18·6
		Naya Dumka	489	29·081	?	29·524	29·182	20th	28·957	3rd	·225	81·4	89·0	?	77·4	P	83·3	P	11·6	95·5	26th	75·8	3 days	19·7
		Berhampore	67	29·516	−·013	29·531	29·611	20th	29·392	3rd	·219	82·0	89·3	−0·1	79·2	+0·5	84·3	+0·2	10·1	95·7	26th	77·3	3 days	18·4
		Rampur Boalia.	70	29·518	?	29·536	29·615	20th	29·402	3rd	·213	82·9	89·1	P	79·4*	P	84·2*	P	9·7	95·1	26th	77·1	18th	18·0
		Malda	72	29·511	?	29·534	29·608	20th	29·404	3rd	·204	82·6	91·0	P	79·6	P	85·3	P	11·4	98·1	26th	77·0	17th & 26th	21·1
		Bogra	61	29·539	?	29·551	29·626	20th	29·441	3rd	·185	82·2	89·8	+1·3	79·1	+0·9	84·4	+1·1	10·7	96·2	26th	76·2	16th	20·0
12	North Bengal	Dinajpur	123	29·478	−·005	29·554	29·569	20th	29·379	16th	·190	82·0	89·9	+0·8	78·8	−0·1	84·4	+0·4	11·1	97·8	26th	76·2	17th	21·6
		Rangpur	123	29·491	?	29·567	29·573	20th	29·387	16th	·186	82·8	89·9	P	79·1	P	84·5	P	10·8	97·2	26th	76·7	16th	20·5
		Jalpaiguri	284	29·394	−·001	29·574	29·409	2 days	29·226	16th	·183	81·1	89·3	+1·0	77·9	+1·3	83·6	+1·2	11·4	96·4	2 days	75·1	2 days	21·3
		Cooch Behar	156	29·461	P	29·571	29·567	18th	29·368	2nd	·199	82·0	89·7	P	78·9	P	84·2	P	10·8	96·4	25th & 26th	76·6	9th	19·8
17	North Bihar	Purnea	125	29·466	−·001	29·544	29·566	20th	29·363	3rd	·203	82·5	90·5	+0·3	79·2	+0·7	84·9	+0·5	11·3	96·7	2 days	76·2	26th	20·5
14	Orissa	Balasore	46	29·522	P	29·514	29·590	20th	29·380	3rd	·210	82·0	88·5	+0·1	78·2	−0·1	83·3	0	10·3	92·4	5 days	74·3	17th	18·1
		False Point	21	29·554	−·035	29·517	29·622	15th	29·421	3rd	·201	82·2	86·8	−0·8	78·6	+0·2	82·7	−0·3	8·2	91·5	2nd	73·2	17th	18·3
		Cuttack	80	29·493	−·028	29·515	29·555	15th	29·353	3rd	·202	81·2	88·9	−0·9	78·4	−0·1	83·7	−0·5	10·5	94·4	29th	73·2	17th	21·2
		Shortt's Island	P	29·532	P	P	29·613	7th	29·383	3rd	·230	82·2	87·3	?	79·5	P	83·4	P	7·8	91·2	9th & 29th	73·0	29th	18·2
		Puri	20	29·561	P	29·524	29·635	15th	29·418	3rd	·217	82·7	87·4	P	79·5	?	83·5	P	7·9	90·2	15th	76·1	22nd	14·1
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·019	...	...	...	...	...	...	...	90·1	−0·2	78·6	+0·3	84·4	0	11·5	...	...	...	...	22·0
15	Chota Nagpur	Hazaribagh	2,007	27·563	−·035	29·503	27·652	23rd	27·412	3rd	·240	76·7	84·8	+0·3	74·3	+0·8	79·6	+0·6	10·5	90·7	26th	71·8	18th	18·9
		Ranchi	2,128	27·456	P	29·512	27·532	23rd	27·316	3rd	·216	76·0	83·7	·0	73·2	+0·7	78·4	+0·4	10·5	87·7	8th	70·4	18th	17·3
		Daltonganj	730?	28·819	P	29·499	28·901	23rd & 24th	28·724	17th	·177	81·4	89·9	P	77·6	P	83·8	?	12·3	96·6	26th	73·5	18th	23·1
		Chaibassa	760	28·793?	P	29·497?	28·871	7th	28·666	3rd	·205	80·7	88·7	−0·5	77·4	+0·1	83·1	−0·2	11·3	94·4	8th	74·0	18th & 19th	20·4
16	South Bihar	Gaya	375	29·162	−·038	29·488	29·260	23rd	29·053	17th	·207	82·8	93·3	+1·9	78·9	+0·3	86·1	+1·1	14·4	99·9	26th	75·8	2 days	24·1
		Dehri	351	29·182	P	29·485	29·287	23rd	29·063	17th	·224	82·7	89·7	?	79·3	P	84·5	?	10·4	96·3	26th	75·0	17th	21·3
		Patna	183	29·369	−·028	29·503	29·488	23rd	29·263	16th	·225	83·5	91·1	+0·8	80·2	+0·5	85·7	+0·7	10·9	97·0	26th	75·2	18th	21·8
		Arrah	190	29·345	P	29·485	29·460	23rd	29·230	17th	·230	83·4	91·2	?	79·2	?	85·2	?	12·0	96·9	26th	75·0	18th	21·9
		Buxar	239	29·295	P	29·486	29·398	24th	29·168	17th	·230	82·8	90·3	?	78·9	?	84·6	?	11·4	95·5	3 days	75·1	3rd	20·4
7	North Bihar	Bhagalpur	160	29·407	P	29·518	29·515	20th	29·294	3rd	·221	83·4	91·0	?	79·7	?	85·4	?	11·3	98·2	26th	76·6	5th & 26th	21·6
		Darbhanga	166	29·401	−·018	29·520	29·511	23rd	29·280	16th	·231	82·8	90·5	+1·2	80·2	+0·4	85·4	+0·8	10·3	97·3	26th	77·0	1st	20·3
		Muzaffarpur	178	29·374	?	29·504	29·486	23rd	29·262	16th	·224	83·0	90·8	?	79·6	?	85·2	?	11·2	97·2	26th	75·7	16th	21·5
		Motihari	224	29·346	?	29·526	29·470	23rd	29·235	16th	·235	82·8	90·5	?	78·8	?	84·7	?	11·7	96·0	26th	75·4	16th	20·6
		Chapra	181	29·378	?	29·510	29·491	23rd	29·269	17th	·222	83·3	91·2	?	79·6	?	85·4	?	11·6	97·3	26th	75·1	18th	22·2
18	N.-W. Provinces East.	Benares	267	29·276	−·011	29·497	29·383	23rd & 24th	29·163	17th	·220	82·2	89·8	−1·7	79·0	−0·6	84·4	−1·2	10·8	96·3	26th	74·2	18th	22·1
		Allahabad	309	29·224	−·020	29·486	29·337	24th	29·119	31st	·218	83·1	90·1	−1·3	79·7	+0·4	84·9	−0·5	10·4	97·1	26th & 27th	74·8	18th	22·3
23	N.-W. Provinces (East Sub-montane).	Gorakhpur	256	29·293	−·009	29·505	29·416	23rd	29·188	17th	·228	82·8	96·3?	P	79·4	−0·1	87·8	P	16·9?	104·1	26th	75·7	18th & 19th	28·4
19	South Oudh	Lucknow	368	29·173	−·012	29·497	29·295	24th	29·080	16th	·215	82·5	90·8	−1·2	79·3	0	85·1	−0·6	11·5	97·8	26th	73·8	18th	24·9
20	North Oudh	Bahraich	403	29·151	P	29·511	29·264	23rd	29·036	16th	·228	83·2	91·1	P	79·1	P	85·1	?	12·0	99·4	26th	75·0	16th	24·4
21	N.-W. Provinces (Central).	Cawnpore	416	29·125	+·002	29·492	29·235	24th	29·043	31st	·192	83·5	91·2	−1·6	79·2	0	85·2	−0·8	12·0	98·9	27th	74·0	17th & 18th	24·9
		Mainpuri	516	29·022	P	29·491	29·140	24th	28·933	16th	·207	83·4	92·2	P	79·4	?	86·3	P	13·8	101·3	4th	75·0	18th	26·3

* Mean of 30 days.

I.—*continued.*

in India, Burma, etc., in July 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st July 1898.	Normal rainfall for period, 1st June to 31st July.	Variation from normal of period, 1st June to 31st July.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
14	...	...	12	3	1	...	1	...	3·8	?	?	92	·992	7·4	13	17·23	− 4·23	5·96	12·68	− 6·72	32·34	22·64	+ 9·70	1·31	Bankura	Central Bengal	11
13	...	3	6	5	2	2	...	...	1·4	?	?	90	·953	7·1	16	16·46	− 0·46	9·64	13·22	− 3·58	28·12	22·49	+ 5·63	1·56	Raniganj.		
		Untrustworthy.							?	4·3	?	88	·967	8·3	13	16·27	− 3·27	8·31	11·71	− 3·40	27·23	20·63	+ 6·60	2·06	Burdwan.		
3	...	...	8	13	5	2	...	...	2·1	?	?	88	·942	8·9	19	18·66	+ 0·34	14·52	13·71	+ 0·81	26·32	22·93	+ 3·39	2·17	Naya Dumka		
5	...	...	10	8	8	...	...	...	3·2	5·0	−36	90	·986	8·8	4	16·71	− 2·71	8·17	10·71	− 2·54	27·49	20·09	+ 7·40	1·34	Berhampore.		
8	...	...	12	8	2	1	...	...	5·3	?	?	89	1·009	7·5	15	15·03	− 0·03	6·65	11·59	− 4·94	19·58	21·50	− 1·92	0·95	Rampur Boalia.		
...	3	2	8	10	7	...	...	1	2·6	?	?	88	·979	7·4	13	15·73	− 2·73	4·75	11·95	− 7·20	12·00	22·29	−10·29	0·90	Malda.		
		Not recorded.							?	?	?	88	·978	7·7	14	15·84	− 1·84	10·39	13·49	− 3·10	25·15	27·05	− 1·90	3·46	Bogra.		
1	...	2	13	13	1	1	...	...	4·9	?	?	88	·962	8·2	17	16·26	+ 0·74	13·35	14·38	− 1·03	27·71	29·87	− 2·16	2·89	Dinajpur	North Bengal.	12
9	...	2	10	5	5	...	...	...	1·8	?	?	87	·981	7·0	16	15·19	+ 0·81	17·15	16·30	+ 0·85	35·85	34·92	+ 0·93	6·62	Rangpur.		
...	4	10	10	5	...	1	...	1	1·9	?	?	90	·952	4·7	19	20·07	− 1·07	31·71	29·24	+ 2·47	69·32	55·66	+13·66	7·38	Jalpaiguri.		
8	...	2	7	7	7	...	...	...	2·3	?	?	89	·968	9·6	19	?	?	12·81	22·94	−10·13	52·59	58·61	− 6·02	4·27	Cooch Behar		
1	1	3	21	5	...	...	...	...	4·9	2·9	+69	89	·982	8·1	14	17·00	− 3·00	9·07	15·12	− 6·05	14·44	26·08	−11·64	2·11	Purnea	North Bihar.	17
5	...	4	3	1	3	14	1	...	4·7	?	?	84	·964	6·6	13	15·08	− 2·08	4·63	13·04	− 8·41	10·49	22·11	−11·62	1·40	Balasore	Orissa.	14
...	1	1	4	...	1	11	10	3	10·1	10·5	− 4	89	·978	8·9	15	14·77	+ 0·23	11·28	13·41	− 2·13	13·59	22·78	− 9·19	3·26	False Point.		
5	1	2	2	1	1	10	8	1	3·6	3·2	+13	86	·919	7·8	17	16·35	+ 0·65	5·95	12·91	− 6·96	13·51	24·44	−10·93	1·41	Cuttack.		
...	2	2	4	1	2	13	6	1	18·5	?	?	86	·947	8·1	13	?	?	6·13	9·37	− 3·24	13·24	19·91	− 6·67	1·37	Shortt's Island.		
6	1	3	1	1	1	6	9	3	13·7	?	?	86	·964	7·4	14	13·04	+ 0·96	9·34	9·80	− 0·46	12·06	17·86	− 5·80	2·04	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11·91	12·37	−0·47	...	...	...	...	V.—Gangetic Plain and Chota Nagpur.		
1	2	...	7	6	7	5	1	2	7·1	8·4	−15	87	·804	9·6	16	18·88	− 2·88	9·87	14·16	−4·29	22·86	21·79	+ 1·07	2·12	Hazaribagh.	Chota Nagpur	15
3	2	2	7	1	7	3	3	2	8·3	?	?	91	·815	8·1	21	19·34	+ 1·66	16·48	14·30	+ 2·18	29·85	22·78	+ 7·07	2·44	Ranchi.		
11	...	...	7	2	5	3	2	1	5·0	?	?	83	·887	5·7	15	16·57	− 1·57	13·28	12·92	+ 0·36	17·99	18·95	− 0·96	3·75	Daltonganj.		
19	...	...	2	1	...	2	6	1	8·1	?	?	86	·901	4·1	12	16·76	− 4·76	12·24	13·48	− 1·24	20·28	22·01	− 1·73	1·90	Chaibassa.		
14	...	7	5	4	1	...	...	...	6·0	2·9	+107	85	·954	6·8	19	15·69	+ 3·31	9·22	13·10	− 3·88	11·24	19·66	− 8·42	2·53	Gaya	South Bihar.	16
1	1	...	10	9	6	1	1	2	8·5‡	?	?	86	·958	6·7	15	14·62	+ 0·38	15·30	11·73	+ 3·57	19·28	17·64	+ 1·64	4·28	Dehri.		
1	...	5	16	7	...	1	...	1	6·7	3·6	+86	87	1·002	8·1	15	13·96	+ 1·04	14·38	11·75	+ 2·63	17·98	19·09	− 1·11	1·87	Patna.		
7	1	1	11	7	2	1	...	1	2·7	?	?	88	1·004	5·7	16	15·03	+ 0·97	14·97	12·11	+ 2·86	20·79	18·25	+ 2·54	2·75	Arrah.		
1	1	...	24	3	...	...	...	2	4·5	?	?	87	·975	7·1	16	14·07	+ 1·93	10·29	11·68	− 1·39	14·40	16·88	− 2·48	2·45	Buxar.		
9	...	3	6	13	...	...	...	...	2·8	?	?	86	·984	8·5	13	15·61	− 2·61	8·62	12·73	− 4·11	13·23	20·27	− 7·04	2·61	Bhagalpur.	North Bihar.	17
...	...	2	14	12	2	1	...	...	5·6	5·0	+12	88	·989	6·5	16	14·20	+ 1·80	7·62	12·39	− 4·77	13·63	19·95	− 6·32	1·60	Darbhanga.		
8	...	2	12	8	1	...	...	...	4·5	?	?	87	·986	5·0	15	14·34	+ 0·66	12·71	12·46	+ 0·25	17·50	20·11	− 2·61	6·66	Muzaffarpur		
...	...	7	23	1	...	...	...	...	6·9	?	?	88	·988	3·5	16	12·60	+ 3·40	8·37	13·39	− 5·02	15·36	22·57	− 7·21	2·35	Motihari.		
9	...	2	13	7	...	...	...	...	2·0	?	?	88	·999	7·6	17	14·15	+ 2·85	16·81	12·06	+ 4·75	21·92	18·34	+ 3·58	4·53	Chapra.		
10	2	3	6	6	...	2	...	2	3·1	4·8	−35	88	·979	7·8	16	14·27	+ 1·73	18·28	10·74	+ 7·54	26·48	15·87	+10·61	5·58	Benares	N.-W. Provinces East.	18
1	3	4	13	2	1	...	3	4	6·4	6·3	+ 1	87	·978	8·3	13	14·18	− 1·18	14·69	12·33	+ 2·36	19·60	18·02	+ 1·58	2·83	Allahabad.		
1	5	16	7	...	...	...	...	2	2·2	2·8	−21	88	·981	8·0	16	13·91	+ 2·09	10·47	13·67	− 3·20	16·27	25·35	− 7·08	2·07	Gorakhpur	N.-W. Provinces (East Sub-montane).	23
10	...	2	16	1	...	1	1	...	2·1	3·9	−46	88	·974	6·8	14	13·64	+ 0·36	8·86	11·25	− 2·39	16·63	16·68	− 0·05	3·82	Lucknow	South Oudh.	19
1	3	2	12	13	...	...	...	...	3·6	?	?	84	·958	4·8	10	?	?	7·42	12·49	− 5·07	11·61	18·13	− 6·52	1·84	Bahraich	North Oudh.	20
11	1	3	10	1	2	1	2	...	2·6	?	?	85	·982	6·0	12	12·10	− 0·10	9·89	10·05	− 0·16	16·47	13·59	+ 2·88	2·90	Cawnpore	N.-W. Provinces (Central).	21
9	...	1	9	4	4	...	4	...	2·8	?	?	83	·949	7·4	11	?	?	10·37	11·07	− 0·75	12·22	14·07	− 1·85	2·70	Mainpuri.		

‡ Mean of 29 days.

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas.		...	...	+·005	...	...	...	...	...	...	...	92·8	−1·8	78·3	−0·4	85·6	−1·1	14·5	...	...	...	...	30·3
24	N.-W. Provinces, West (Sub-montane).	Bareilly	568	28·988	+·009	29·516	29·100	24th	28·852	16th	·248	82·3	90·0	−1·7	78·8	+0·2	84·4	−0·8	11·2	96·4	4th & 27th.	75·1	24th	21·3
		Dehra Dun	2,233	27·378	−·003	29·541	27·500	24th	27·248	16th	·252	75·9	85·2	−0·1	73·3	−0·9	79·3	−0·5	11·9	91·0	26th & 27th.	68·0	2nd	23·0
		Roorkee	887	28·668	−·004	29·515	28·794	24th	28·529	16th	·265	81·6	90·9	−1·1	77·3	−0·8	84·1	−1·0	13·6	97·7	27th	73·1	2nd	24·6
22	N.-W. P., West.	Meerut	738	28·807	+·002	29·502	28·937	24th	28·669	16th	·268	84·1	92·9	0	79·3	−0·3	86·1	−0·2	13·6	101·7	6th	73·9	13th	27·8
26	South-East Punjab.	Delhi	718	28·816	−·007	29·489	28·948	24th	28·715	16th	·233	84·2	94·0	0	80·6	+0·1	87·3	+0·1	13·4	102·2	6th	75·4	3rd	26·8
28	Central Punjab.	Lahore	702	28·623	+·013	29·487	28·992	24th	28·698	16th	·294	84·2	93·9	−4·7	80·5	+0·1	87·2	−2·3	13·4	106·6	10th	72·1	1st	34·5
27	South Punjab	Sirsa	662	28·854	−·004	29·470	28·990	24th	28·763	16th	·227	86·9	99·2	−0·8	81·4	+0·1	90·3	−0·4	17·8	112·8	27th	73·3	24th	39·5
		Patiala	818	28·722	?	29·499	28·857	24th	28·581	16th	·276	82·7	91·9	?	77·5	?	84·7	?	14·4	99·2	5th	69·9	11th	29·3
29	Punjab (Sub-montane).	Ludhiana	812	28·726	+·002	29·499	28·875	24th	28·592	16th	·283	83·0	92·6	−5·3	79·5	−0·5	86·1	−2·9	13·1	102·0	5th & 6th	71·6	11th	30·4
		Sialkot	830	28·715	+·025	29·507	28·873	24th	28·568	16th	·305	83·3	94·8	−2·8	77·9	−1·3	86·4	−2·1	16·9	107·7	1st	72·6	3 days	35·1
		Umballa	892	28·657	?	29·504	28·793	24th	28·515	16th	·278	81·3	92·6	?	77·4	?	85·0	?	15·2	104·0	30th	71·0	11th & 12th.	33·0
31	North Punjab	Rawalpindi	1,643	27·882	+·021	29·476	28·044	24th	27·736	30th	·308	82·2	95·6	−1·9	75·8	−0·9	85·7	−1·4	19·8	108·0	7th	69·2	30th	38·8
	VII.—Indus Valley and North-West Rajputana.		...	...	+·002	...	...	...	...	...	...	...	100·4	−0·6	81·8	+0·6	91·1	0	18·7	...	...	...	...	37·1
31	North Punjab	Peshawar	1,110	28·420	+·004	29·444	28·601	24th	28·298	16th	·303	85·4	99·8	−3·0	77·7	−1·5	88·8	−2·3	22·1	111·0	10th	67·4	12th	43·6
32	West Punjab	Khushab	612	28·911	?	29·485	29·078	24th	28·772	16th	·306	86·0	99·2	?	79·7	?	89·5	?	19·5	109·4	7th	69·8	12th	39·6
		Montgomery	558	28·942	+·018	29·455	29·113	24th	28·808	30th	·305	89·9	103·3	−1·0	82·8	−0·4	93·1	−0·7	20·5	112·6	7th	79·5	2nd	42·1
		D. I. Khan	594	28·931	+·008	29·461	29·119	24th	28·794	10th	·325	88·0	101·2	−1·6	82·2	−0·1	91·7	−0·9	19·0	111·2	7th	74·5	1st	36·7
		Mooltan	420	29·067	+·003	29·446	29·235	24th	28·932	30th	·303	90·8	106·0	?	85·5	+2·5	95·8	?	20·5	115·0	7th	78·0	2nd	37·0
47	Sind	Jacobabad	186	29·273	−·012	29·415	29·450	24th	29·122	17th	·328	90·6	108·0	+0·6	85·4	+1·6	96·7	+1·1	22·6	118·5	7th	74·1	24th	44·4
		Hyderabad	96	29·417	?	29·464	29·544	24th	29·320	17th	·224	85·6	98·5	?	81·2	+0·7	89·9	?	17·3	111·2	7th	72·0	28th	38·2
		Kurrachee	20	29·518	−·012	29·498	29·601	19th	29·443	7th	158	84·5	91·9	+0·2	80·7	+0·1	86·3	+0·2	11·2	101·9	26th	75·0	28th	26·9
51	West Rajputana	Bickaneer	771	28·746	?	29·469	28·861	24th	28·670	30th	·191	88·6	101·6	+1·5	84·1	+4·1	92·9	+2·8	17·5	111·9	6th	76·5	20th	35·4
		Pachpadra	380	29·164	?	29·495	29·222	15th & 24th	29·072	7th	·150	84·3	98·5	?	79·9	?	89·2	?	18·6	107·1	6th	75·0	20th	32·1
		Jodhpur	782	28·759	?	29·492	28·864	24th	28·671	7th	·193	83·5	96·9	?	80·1	?	88·5	?	16·8	106·2	5th	74·3	20th	31·9
	VIII.—East Rajputana, Central India and Gujarat.		...	...	−·014	...	...	...	...	...	...	..	90·8	+1·5	77·8	+0·9	84·4	+1·2	13·0	...	...	...	...	25·5
50	East Rajputana	Jeypore	1,431	28·145	−·004	29·517	28·243	24th	28·060	30th	·183	83·1	94·5	+2·8	77·9	+1·0	86·2	+1·9	16·6	100·5	28th	72·0	19th	28·5
		Kotah	?			Not	recorded					81·4	93·6	?	80·1	?	86·9	?	13·5	102·0	2nd & 3rd.	74·1	19th	27·9
		Sambhar	1,254	28·300	−·006	29·497	28·400	24th	28·229	30th	·171	84·2	97·0	+5·0	79·8	+2·0	88·4	+3·5	17·2	104·5	5th	73·4	19th	31·1
		Ajmere	1,611	27·964	−·017	29·518	28·054	24th	27·894	7th & 30th.	·160	82·1	93·9	+3·0	78·9	+2·2	86·4	+2·6	15·0	100·4	5th	72·6	19th	27·8
		Oodeypore	1,925	27·682	?	29·541	27·803	16th	27·579	6th	·224	79·0	88·4	?	75·2	?	81·8	?	13·2	97·5	4th	71·5	8th	26·0
		Deesa	466	29·114	−·017	29·533	29·189	15th	29·038	7th	·153	81·5	92·2	+0·8	77·9	+0·4	85·1	+0·6	14·3	102·9	5th	74·1	7th	28·8
46	Kathiawar and Cutch.	Bhuj	395	29·193	−·003	29·539	29·270	15th	29·094	28th	·176	82·3	90·6	+0·5	78·4	+0·4	84·5	+0·5	12·2	97·8	5th	75·4	22nd	22·4
		Rajkot	429	29·176	−·020	29·555	29·255	15th	29·042	28th	·213	81·3	91·9	+1·8	76·6	+1·1	84·3	+1·5	15·3	98·9	3 days	71·3	9th	27·6
		Veraval	?	29·612	?	29·572	29·698	15th	29·467	28th	·231	81·2	84·1	?	79·3	?	81·7	?	4·8	87·1	27th	75·3	8th	11·8
		Bhavnagar Para	35	29·581	?	29·561	29·660	15th	29·457	28th	·203	82·2	91·5	?	77·9	?	84·7	?	13·6	100·6	5th	74·3	8th	26·3
49	Central India	Nowgong	757	28·798	−·016	29·508	28·886	24th	28·711	6th	·175	80·5	87·8	−2·2	78·2	+0·1	83·0	−1·1	9·6	96·0	27th	73·0	18th	23·0
		Indore	1,823	27·809	−·009	29·575	27·874	15th	27·673	6th	·201	76·1	85·7	+1·7	72·9	+0·6	79·3	+1·2	12·8	95·2	4th	70·1	7th	25·1
		Neemuch	1,630	27·985	?	29·562	28·027	15th	27·859	6th	·168	78·8	89·0	+2·1	74·5	+0·7	81·8	+1·4	14·5	100·3	4th	71·1	7th	29·2
45	Gujarat	Surat	39	29·597	−·038	29·579	29·673	15th	29·505	27th	·168	81·5	88·0	?	77·8	?	82·9	?	10·2	93·2	4th	74·0	23rd	19·2
		Ahmedabad	164	29·447	?	29·558	29·526	15th	29·366	7th	·160	81·7	91·0	?	78·1	?	84·6	?	12·9	99·2	5th	72·6	7th	26·6
22	N.-W. P., West	Agra	555	28·981	−·011	29·489	29·101	24th	28·900	16th	·201	85·6	94·5	+1·7	81·5	+1·3	88·1	+1·5	13·0	102·5	4th	75·4	18th	27·1
21	N.-W.P., Central	Jhansi	858	28·701	−·013	29·509	28·792	24th	28·596	6th	·196	81·6	90·2	−0·4	78·4	0	84·3	−0·2	11·8	98·6	4th	73·4	18th & 30th	25·2

I—*continued.*

in India, Burma, etc., in July 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st July 1898.	Normal rainfall for period, 1st June to 31st July.	Variation from normal of period 1st June to 31st July.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10·42	11·49	−0·72	...	...	...	...	VI.—Upper Sub-Himalayas.		
15	1	5	2	8	...	...	...	...	1·7	4·1	−59	87	·957	7·3	15	13·45	+1·55	8·89	16·18	−7·29	15·51	21·85	−6·34	1·95	Bareilly	N.-W. Provinces, West (Sub-Montane).	26
28	1	...	2	3	2	...	...	3	1·0	1·2	−17	88	·797	8·7	18	21·27	−3·27	30·03	29·25	+0·78	38·38	38·50	−0·12	5·93	Dehra Dun		
18	...	...	1	11	...	...	...	1	2·0	2·9	−31	81	·864	6·5	12	11·82	+0·18	12·32	12·45	−0·13	15·59	17·16	−1·57	3·22	Roorkee.		
12	1	...	11	5	...	...	1	1	1·7	2·3	−26	75	·872	6·0	7	10·18	−3·18	3·97	9·54	−5·57	6·00	11·98	−5·98	1·18	Meerut	N.-W. Provinces, West.	28
2	1	3	6	12	1	2	2	2	5·8	4·5	+29	76	·885	7·0	11	8·64	+2·36	5·96	9·22	−3·26	6·46	12·57	−6·11	1·07	Delhi	South-East Punjab.	26
6	...	1	8	11	1	1	1	...	2·5	3·3	−24	79	·917	5·1	12	6·45	+6·55	10·49	6·67	+3·82	12·77	8·51	+4·26	2·09	Lahore	Central Punjab	28
3	...	...	5	13	...	2	7	1	8·1	4·8	+69	68	·881	5·5	5	5·55	−0·55	4·01	4·58	−0·57	4·88	6·49	−1·61	2·75	Sirsa	South Punjab.	27
7	2	10	...	...	1	11	...	...	5·2	?	?	85	·945	6·3	9	?	?	6·67	?	?	10·34	?	?	1·45	Patiala.		
12	1	1	1	12	3	...	...	1	3·1	2·0	+55	79	·885	6·5	14	9·36	+4·64	12·11	10·33	+1·78	14·07	12·74	+1·33	2·95	Ludhiana	Punjab (Sub-Montane).	29
10	1	5	8	4	1	...	1	1	1·8	2·5	−28	80	·902	4·1	10	8·45	+1·55	12·59	8·52	+4·07	14·21	11·60	+2·61	2·34	Sialkot.		
23	...	...	6	...	...	...	1	1	0·9	?	?	87	·933	6·2	8	?	?	7·56	10·86	−3·30	11·28	14·69	−3·43	2·15	Umballa.		
22	1	1	5	1	...	...	1	2	2·4	2·1	+14	75	·818	5·2	14	8·64	+5·36	10·48	8·75	+1·73	10·92	10·46	+0·46	3·34	Rawalpindi	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·72	2·86	+0·86	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
14	8	1	1	...	1	...	3	3	2·9	4·4	−34	67	·818	3·0	3	1·91	+1·09	4·22	1·79	+2·43	4·27	2·14	+2·13	2·40	Peshawar	North Punjab.	31
3	3	13	8	2	1	...	1	...	9·3	?	?	68	·853	4·1	6	3·20	+2·80	6·03	2·86	+3·17	8·35	3·56	+4·79	2·05	Khushab	West Punjab.	32
5	...	5	7	7	4	3	...	...	8·5	?	?	60	·820	3·2	3	3·60	−0·60	1·52	3·27	−1·75	2·21	4·51	−2·30	0·97	Montgomery		
4	3	13	...	5	4	1	1	...	3·7	2·4	+54	72	·947	4·3	2	2·64	−1·64	0·58	2·87	−2·29	0·58	3·41	−2·83	0·24	D. I. Khan		
5	...	7	...	12	1	6	...	...	0	3·4	−100	62	·887	2·3	3	2·82	+0·18	1·07	2·94	−1·87	1·24	3·53	−2·29	0·47	Mooltan.		
2	...	1	10	13	4	...	...	1	5·9	5·3	+11	65	·927	3·7	3	1·45	+1·55	2·90	1·28	+1·62	2·90	1·40	+1·50	0·54	Jacobabad	Sind.	47
2	1	1	...	...	1	20	6	...	16·5	13·9	+19	69	·829	8·9	6	3·18	+2·82	3·20	2·67	+0·53	3·20	3·00	+0·20	1·06	Hyderabad.		
1	...	2	1	...	...	2	23	2	13·5	17·8	−24	78	·919	6·7	4	3·64	+0·36	2·17	3·47	−1·30	2·17	3·99	−1·82	0·80	Kurrachee.		
...	1	...	3	3	3	14	6	1	8·1	6·7	+21	68	·919	6·1	6	?	?	2·37	3·67	−1·30	3·16	5·33	−2·17	1·11	Bickaneer	West Rajputana	51
...	...	...	...	1	9	17	2	2	16·4	9·8	+67	79	·927	7·5	6	?	?	10·67	2·64	+8·03	10·67	3·33	+7·34	7·55	Pachpadra.		
...	...	...	3	1	2	21	4	...	5·8	?	?	73	·838	7·2	5	?	?	6·20	4·03	+2·17	6·28	5·62	+0·66	2·81	Jodhpur.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10·37	10·78	+0·05	...	...	...	...	VIII.—East Rajputana Central India and Gujarat		
1	...	5	6	...	2	6	8	3	4·5	6·2	−27	73	·833	7·3	9	12·90	−3·90	11·43	9·37	+2·06	14·05	11·86	+2·19	4·98	Jeypore	East Rajputana	50
1	3	...	4	2	...	10	8	3	5·6	?	?	72	·847	5·6	14	?	?	5·69	9·85	−4·16	8·87	13·42	−4·55	0·18	Kotah.		
3	...	1	4	2	1	2	15	2	7·7	9·1	−15	69	·806	6·6	7	10·20	−3·20	7·37	7·83	−0·46	8·09	9·23	−1·14	2·41	Sambhar.		
2	...	2	3	1	1	1	21	...	7·7	6·9	+12	79	·860	6·5	7	10·27	−3·27	6·80	7·29	−0·49	7·50	9·57	−2·07	2·10	Ajmere.		
2	2	1	1	1	3	5	13	3	7·0	?	?	78	·771	7·3	9	?	?	5·33	?	?	6·69	?	?	1·10	Oodeypore.		
...	1	1	...	2	2	9	12	3	12·6	14·5	−13	85	·900	8·4	13	10·73	−3·73	12·72	10·99	+1·73	13·03	13·15	−0·12	4·69	Deesa.		
...	...	2	2	1	...	3	20	3	19·8	16·6	+19	81	·892	8·7	9	?	?	9·66	6·94	+2·72	10·33	8·88	+1·45	4·19	Bhuj	Kathiawar and Cutch.	46
1	...	...	4	...	1	2	23	...	13·3	14·5	− 8	81	·859	7·3	7	12·91	−5·91	4·92	13·46	−8·54	8·05	18·19	−10·14	2·01	Rajkot		
...	...	...	...	3	1	4	23	...	11·8	?	?	89	·939	8·5	9	?	?	3·39	8·95	−5·56	7·41	15·28	−7·87	0·68	Veraval.		
...	...	...	...	2	3	20	6	...	13·6	?	?	81	·887	7·8	14	?	?	8·46	?	?	17·49	?	?	1·29	Bhavnagar Para.		
5	...	...	7	...	1	3	14	1	2·9	4·2	−31	91	·945	8·5	17	15·73	+1·27	23·08	14·41	+8·67	32·52	20·24	+12·28	4·08	Nowgong	Central India.	49
3	2	1	...	...	...	4	18	3	5·5	6·8	−19	87	·794	9·0	14	13·73	+0·27	16·46	8·51	+7·95	22·09	15·30	+6·79	3·76	Indore.		
1	...	1	2	1	...	7	18	1	4·8	12·2	−61	81	·800	7·0	13	11·73	+1·27	8·39	9·89	−1·50	11·24	14·16	−2·82	1·37	Neemuch.		
4	...	...	...	...	6	8	12	1	6·3	15·7	−60	86	·923	8·5	14	16·45	−2·45	12·08	18·28	−6·20	24·47	28·40	−3·93	4·18	Surat	Gujarat.	45
1	...	1	1	2	6	13	6	1	4·8	?	?	84	·903	8·9	14	?	?	15·63	11·90	+3·73	21·42	15·91	+5·51	3·16	Ahmedabad		
4	...	3	...	15	...	6	...	3	7·2	5·0	+44	79	·959	6·5	12	12·00	−1·00	7·46	11·50	−4·04	7·70	14·04	−6·34	2·65	Agra	N.-W. P., West	22
4	...	1	6	2	...	7	8	3	3·7	4·1	−10		·909	6·3	18	14·3	+3·64	17·45	12·60	+4·85	28·42	17·49	+2·93	4·32	Jhansi	N.-W. P. Central.	21

Table

Abstract of Observations taken at 8 A.M. at 215 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan		...	...	−·023	...	...	...	...	...	...	...	85·8	−0·2	72·8	+0·1	79·4	0	13·0	...	...	...	...	22·8
38	Bombay, Deccan	Belgaum	2,556	27·228	?	29·721	27·298	15th	27·106	25th	·192	70·1	75·6	0	67·0	+0·1	71·3	+0·1	8·6	79·7	10th	65·3	21st	14·4
		Sholapur†	1,590	28·126	−·034	29·663	28·200	15th	28·005	25th	·195	76·8	88·8	−0·1	72·6	+1·2	80·7	+0·6	16·2	96·3	7th	70·0	22nd	26·3
		Poona	1,840	27·871	−·025	29·656	27·946	15th	27·769	25th	·177	74·4	81·9	+0·1	71·0	+0·3	76·5	+0·2	10·9	87·0	5th	68·4	22nd	18·6
		Bijapur	1,946	27·792	?	29·678	27·863	15th	27·665	25th	·198	74·8	87·2	?	70·2	?	78·7	?	17·0	91·7	8th & 10th.	68·5	23rd & 31st.	23·2
40	Khandesh	Malegaon	1,430	28·223	−·029	29·601	28·289	15th	28·132	6th	·157	77·8	87·4	+0·7	73·4	+0·4	80·4	+0·6	14·0	94·4	4th	70·7	23rd	23·7
		Ahmednagar	2,152	27·562	?	29·648	27·628	16th	27·471	26th	·157	75·0	84·6	?	71·0	?	77·9	?	13·6	91·3	9th	66·4	18th	24·9
41	Berar	Akola	930	28·708	−·026	29·586	28·779	15th	28·612	25th	·167	78·7	88·7	+0·6	74·1	+0·1	81·4	+0·4	14·6	96·4	3rd	71·7	6th & 17th.	24·7
		Amraoti	1,215	28·423	−·015	29·596	28·485	15th	28·342	25th	·143	76·1	86·5	−0·3	73·1	0	79·9	−0·2	13·4	93·2	3rd & 26th.	69·8	6th	23·4
42	Central Provinces, West.	Khandwa	1,044	28·582	−·018	29·581	28·644	15th	28·463	6th	·181	78·9	87·7	+0·7	75·6	+0·7	81·7	+0·7	12·1	94·2	3rd & 4th.	72·6	6th	21·6
		Hoshangabad	1,006	28·590	−·020	29·555	28·653	19th	28·449	6th	·204	77·5	86·7	+0·6	75·7	+0·7	81·2	+0·7	11·0	94·3	27th	72·2	5th	22·1
		Nagpur	1,025	28·583	−·025	29·562	28·641	15th & 19th	28·519	25th	·122	77·9	86·7	?	75·2	?	81·0	?	11·5	91·6	26th	72·1	6th	19·5
43	Central Provinces, Central.	Chanda	634	29·016	−·006	29·595	29·088	15th	28·910	25th	·178	78·7	87·2	−0·4	75·0	−0·5	81·1	−0·5	12·2	94·2	8th & 9th.	71·7	20th	22·5
		Seoni	2,033	27·576	−·032	29·543	27·641	15th	27·469	5th	·172	74·7	82·5	−1·0	71·4	−1·1	77·0	−1·1	11·1	90·0	27th	68·4	5th	21·6
		Jubbulpore	1,327	28·252	−·021	29·531	28·329	19th	28·135	5th	·194	77·4	84·4	−1·2	73·8	−0·8	79·1	−1·0	10·6	92·4	27th	71·6	2nd & 6th.	20·8
		Saugor*	1,807	27·793	?	29·542	27·851	19th	27·665	6th	·186	77·2	84·5	−0·6	73·2	−0·3	78·9	−0·5	11·3	92·3	27th	70·6	2nd & 4th.	21·7
49	Central India	Sutna	1,040	28·504	−·019	29·498	28·592	24th	28·424	5th	·168	80·0	86·5	−0·3	77·5	+0·8	82·0	+0·3	9·0	94·5	27th	73·6	18th	20·9
44	Central Provinces, East.	Raipur	970	28·615	−·024	29·535	28·682	7th	28·545	3rd	·137	77·5	85·8	−0·3	74·5	−0·1	80·2	−0·2	11·3	92·8	8th	71·6	16th & 17th.	21·2
		Sambalpur	486	29·090	−·028	29·524	29·163	7th	28·956	3rd	·207	79·8	86·8	−0·5	76·7	−0·7	81·8	−0·6	10·1	93·1	9th	73·2	3 days	19·9
39	Hyderabad (North).	Aurangabad	1,865	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Indur	?			Not	recorded					76·9	86·2	?	73·2	?	79·7	?	13·0	93·8	9th	68·5	20th	25·3
		Bidar	2,165?	27·547	?	29·645	27·634	2nd	27·425	25th	·209	74·5	85·9	?	65·4	?	75·6	?	20·5	92·0	9th	62·4	23rd	29·6
53	Hyderabad (South).	Gulbarga	1,502	28·245?	?	29·701?	28·314	15th	28·112	25th	·202	75·3	87·9	?	71·3	?	79·6	?	16·6	95·4	7th	69·0	31st	26·4
		Raichur	1,309	28·421	?	29·679	28·499	15th	28·276	25th	·223	76·8	88·9	?	72·3	?	80·6	?	16·6	95·1	14th	69·6	20th	25·5
		Hyderabad (Deccan).	1,690	28·012	−·016	29·650	28·086	16th	27·862	25th	·224	74·9	85·0	−1·1	72·0	+0·8	78·5	−0·2	13·0	90·4	3rd & 4th.	69·2	22nd	21·2
		Secunderabad	1,787	27·919	−·035	29·654 (a)	27·989	15th	27·769	25th	·220	73·9	85·8	−0·3	71·6	+0·4	78·7	+0·1	14·2	91·6	1st & 3rd	68·0	3rd	23·6
		Hanamconda	?	28·788	?	28·724	28·876	15th	28·634	25th	·242	78·7	86·6	?	74·1	?	80·4	?	12·5	95·0	3rd	67·3	6th & 7th.	27·7
	X.—West Coast		...	...	−·035	...	...	...	...	...	...	...	83·3	+0·4	75·6	+0·4	79·5	+0·4	7·7	...	...	...	...	14·1
	Konkan	Bombay	37	29·666	−·035	29·643	29·745	15th	29·538	27th	·207	80·7	84·3	+0·1	77·7	+0·4	81·0	+0·3	6·6	86·5	5 days	74·5	23rd	12·0
		Ratnagiri	110	29·634	−·028	29·382	29·713	15th	29·495	26th	·218	79·6	83·4	?	75·8	+0·5	79·6	?	7·6	86·9	10th	72·4	22nd	14·5
		Mormugao	60	29·736	?	29·731	29·803	15th	29·599	25th	·204	79·3	83·8	?	75·9	?	79·9	?	7·9	87·0	16th	72·4	21st	14·6
		Goa	199	29·579	−·023	29·715	29·660	1st	29·442	25th	·218	79·3	82·3	?	76·3	?	79·3	?	6·0	85·0	12th & 13th.	73·0	3rd	12·0
		Karwar	44	29·743	−·042	29·719	29·810	15th	29·600	25th	·210	78·9	83·4	+0·4	75·5	+0·9	79·5	+0·7	7·9	86·2	8th & 12th.	71·5	21st	14·7
35	Malabar	Cochin	10	29·862	−·036	29·800	29·921	1st	29·761	25th	·160	77·2	84·0	+0·7	74·1	+0·2	79·1	+0·5	9·9	88·5	1st	72·1	9th	16·4
		Calicut	27	29·829	−·040	29·785	29·889	29th	29·721	25th	·168	76·7	82·8	+0·7	73·9	+0·4	78·4	+0·6	8·9	86·8	17th	71·5	21st	15·3
		Mangalore	65	29·773	−·040	29·771	29·839	15th	29·686	25th	·153	76·5	83·0	+0·3	74·0	−0·1	78·5	+0·1	9·0	88·8	1st	71·4	21st	17·4
		Trivandrum	198	29·667	?	29·797	29·724	1st	29·569	25th	·155	77·8	82·7	?	77·3	?	80·0	?	5·4	85·0	16th	75·0	3 days	10·0
	XI.—South India		...	...	−·036	...	...	...	...	...	...	...	91·2	+1·5	75·7	+1·0	83·5	+1·3	15·5	...	...	...	...	25·2
37	Madras (South).	Pamban	37	29·766	?	29·729	29·821	15th	29·683	25th	·138	85·0	90·9	?	79·0	?	85·0	?	11·9	92·3	5 days	77·2	25th	15·1
		Tinnevelly	168	29·638	?	29·735	29·701	21st	29·517	25th	·184	85·4	96·6	?	79·9	?	88·2	?	16·7	100·8	8th	76·9	23rd	23·9
		Madura	447	29·336	−·045	29·715	29·406	15th	29·203	25th	·203	84·4	97·9	+0·6	77·6?	+1·5?	87·8?	+1·1	20·3	102·0	17th & 31st.	70·5?	27th	31·5

(a) Not reduced to sea-level. * Observation of 30 days. † Observation of 28 days.

I—*continued.*

in India, Burma, etc., in July 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st July 1898.	Normal rainfall for period, 1st June to 31st July.	Variation from normal of period, 1st June to 31st July.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14·49	11·18	+3·43	...	...	...	...	IX.—Deccan.		
...	...	...	...	...	...	18	13	...	24·1	27·9	−14	94	·691	9·8	23	22·91	+0·09	17·17	15·37	+ 1·80	27·40	21·96	+5·44	4·23	Belgaum	Bombay Deccan.	38
...	...	...	...	...	...	16	11	1	18·4	12·3	+50	71	·656	8·7	8	9·45	−1·45	6·44	4·29	+ 2·15	12·92	9·30	+ 3·62	2·60	Sholapur.		
...	...	...	...	...	...	12	16	3	15·2	16·9	−10	84	·715	9·2	15	12·73	+2·27	7·98	6·87	+ 1·11	12·85	11·60	+ 1·25	1·85	Poona.		
...	...	...	...	...	...	13	17	1	9·6	?	?	83	·719	7·3	4	6·40	−2·40	1·27	1·51	− 0·24	3·64	4·20	−0·56	0·60	Bijapur.		
4	...	...	...	...	...	9	16	2	21·7	11·8	+84	78	·740	8·2	9	8·55	+0·45	4·54	4·75	− 0·21	8·33	9·47	− 1·14	1·02	Malegaon	Khandesh.	40
1	1	...	...	...	...	9	18	2	23·2	?	?	80	·694	8·2	7	?	?	2·96	3·09	− 0·13	5·58	7·88	− 2·30	1·07	Ahmednagar.		
3	...	...	...	...	...	8	14	6	8·2	8·4	− 2	82	·800	8·8	18	13·18	+4·82	8·77	10·81	− 2·04	13·09	16·28	− 3·19	2·14	Akola	Berar.	41
..	...	...	2	...	...	7	16	6	12·2	7·6	+61	91	·820	8·5	17	12·73	+4·27	7·92	10·62	−	13·73	17·46	− 3·73	1·15	Amraoti.		
1	...	...	...	...	...	4	22	4	10·0	8·4	+19	82	·800	7·9	10	11·91	−1·91	8·72	8·82	− 0·10	12·45	14·87	− 2·42	4·21	Khandwa	Central Provinces, West.	42
8	...	2	...	...	...	16	5	...	3·4	4·5	−24	92	·861	9·3	16	17·27	−1·27	26·90	17·59	+ 9·31	31·68	25·79	+ 5·89	9·40	Hoshangabad.		
6	...	1	1	...	...	8	12	3	9·6	10·1	− 5	87	·830	9·1	17	17·61	−0·64	19·92	14·73	+ 5·19	26·39	23·47	+ 2·92	8·63	Nagpur.		
...	...	1	1	...	3	7	19	...	6·3	6·2	+ 2	85	·836	8·7	22	?	?	30·69	18·88	+11·81	43·02	26·73	+16·29	5·35	Chanda	Central Provinces, Central.	43
...	2	5	2	...	...	8	7	7	5·6	6·2	−10	92	·792	8·6	26	18·64	+7·36	20·47	18·15	+ 2·32	29·26	28·72	+ 0·54	7·20	Seoni.		
2	2	1	1	1	1	7	12	4	4·1	5·0	−18	91	·851	8·5	27	19·27	+7·73	27·31	20·80	+ 6·51	32·14	29·90	+ 2·24	4	Jubbulpore.		
...	1	...	2	3	1	1	2	20	?	5·1	?	87	·813	8·1	21	15·64	+5·36	25·43	15·10	+10·33	37·95	22·50	+15·45	3·0 3	Saugor.		
...	6	4	2	3	2	4	4	6	7·7	9·4	−18	87	·881	7·5	16	15·73	+0·27	17·96	15·17	+ 2·79	24·78	21·71	+ 3·07	3·83	Sutna	Central India.	46
1	1	2	1	...	4	18	3	1	11·2	11·6	− 3	89	·838	8·7	20	16·36	+3·64	18·22	16·47	+ 1·75	24·19	25·39	− 1·20	3·20	Raipur	Central Provinces, East.	44
...	1	4	1	3	...	17	3	2	5·9	3·6	+64	86	·872	8·1	22	?	?	23·29	22·16	+ 1·13	28·17	33·29	− 5·12	3·75	Sambalpur.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	?	?	...	7·37	...	...	13·71	...	...	Aurangabad	Hyderabad (North).	39
...	...	...	...	...	...	7	21	3	12·8	?	?	84	·781	8·9	23	?	?	21·61	10·64	+10·97	24·47	15·24	+ 9·23	6·20	Indur.		
...	...	...	...	...	...	10	20	1	11·8	?	?	86	·734	7·0	18	?	?	15·09	9·29	+ 5·80	17·84	15·59	+ 2·25	2·80	Bidar.		
...	1	...	...	...	...	6	15	9	16·5	?	?	82	·717	8·7	16	?	?	8·31	4·89	+ 3·42	16·94	9·71	+ 7·23	1·68	Gulbarga	Hyderabad (South).	53
...	...	...	...	...	1	12	17	1	8·9	?	?	79	·730	7·3	14	?	?	7·24	4·45	+ 2·79	11·08	8·35	+ 2·73	1·31	Raichur.		
1	..	...	...	...	...	...	30	...	9·1	?	?	84	·723	9·2	19	?	?	9·89	6·90	+ 2·99	13·50	11·75	+ 1·75	1·51	Hyderabad (Deccan).		
...	...	...	...	...	...	1	28	2	12·0	13·3	−10	78	·665	8·7	17	?	?	12·56	6·90	+ 5·66	17·26	11·75	+ 5·51	2·15	Secunderabad.		
2	1	...	...	...	1	5	18	4	11·8	?	?	79	·779	6·7	13	?	?	11·60	?	?	15·13	?	?	2·96	Hanamconda.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	32·95	28·96	+3·99	...	...	...	...	X.—West Coast.		
...	...	...	1	1	3	6	19	1	15·8	19·1	−17	88	·930	8·9	26	21·91	+4·09	22·20	27·17	− 4·97	47·67	46·54	+ 1·13	3·56	Bombay.	Konkan.	37
1	1	...	...	...	...	6	20	3	8·1	13·7	−41	89	·890	9·5	29	26·36	+2·64	45·40	35·51	+ 9·89	90·58	66·77	+23·81	4·30	Ratnagiri.		
...	2	...	2	...	...	...	3	24	13·2	?	?	90	·917	7·5	28	?	?	41·87	31·28	+10·59	70·10	53·30	+16·80	5·47	Mormugao.		
1	1	2	...	...	...	8	17	2	?	?	?	90	·902	9·8	30	?	?	39·70	33·70	+ 6·00	72·40	63·79	+ 8·61	5·20	Goa.		
...	6	...	...	...	...	14	8	3	5·3	?	?	85	·829	8·3	30	27·45	+2·55	43·11	38·97	+ 4·14	84·05	76·21	+ 7·84	6·20	Karwar.		
3	7	6	1	3	1	2	3	5	6·3	?	?	89	·835	8·6	25	23·91	+1·09	24·45	21·51	+ 2·94	54·80	49·92	+ 4·88	2·22	Cochin	Malabar	3
11	4	3	1	1	1	2	4	4	8·0	?	?	92	·832	8·8	30	26·63	+3·37	36·65	29·35	+ 7·30	70·12	62·57	+ 7·55	4·64	Calicut.		
11	3	2	3	...	1	1	5	5	3·0	3·2	− 6	91	·844	9·5	31	28·10	+2·90	35·09	36·09	− 1·00	72·62	71·12	+ 1·50	3·52	Mangalore.		
...	15	4	...	...	...	1	3	8	9·2	?	?	85	·809	8·4	11	?	?	8·09	7·08	+ 1·01	20·26	20·03	+ 0·23	2·25	Trivandrum.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·96	3·44	−0·48	...	...	...	...	XI.—South India.		
1	...	1	...	...	2	14	12	1	13·5	?	?	75	·913	2·5	0	1·30	−1·30	0	0·71	− 0·71	0·32	0·75	− 0·43	0	Pamban	Madras (South)	57
...	...	...	...	...	...	5	11	15	10·4	?	?	57	·700	5·9	0	0·90	−0·90	0	0·33	− 0·33	1·12	1·04	+ 0·08	0	Tinnevelly.		
1	13	...	...	...	...	1	1	15	4·0	4·6	−13	63	·755	4·9	2	1·45	+0·55	2·06	2·28	− 0·22	2·18	3·78	− 1·60	1·76	Madura.		

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras, South Central.	Salem	940	28·878	−·038	29·756	28·952	15th	28·739	25th	·213	80·1	96·6	+4·0	74·8	+2·5	85·7	+3·3	21·8	101·4	8th	72·0	11th	29·4
		Coimbatore	1,348	28·460	−·032	29·756	28·521	15th	28·337	25th	·184	76·1	89·2	+1·2	71·7	+1·1	80·5	+1·2	17·5	96·4	31st	68·8	21st	27·6
35	Coorg	Mercara	3,781	26·139	−·031	?	26·190	1st	26·006	25th	·184	64·5	68·7	0	63·0	+0·8	65·9	+0·4	5·7	72·5	8th	60·7	21st	11·8
36	Mysore	Chitaldroog	2,405	27·392	?	29·722	27·455	15th	27·243	25th	·212	72·2	81·4	?	68·6	?	75·0	?	12·8	86·6	13th	66·9	21st	19·7
		Bangalore	3,021	26·827	−·036	29·745	26·906	15th	26·682	25th	·224	70·4	82·9	+1·1	66·6	+1·0	74·8	+1·1	16·3	88·8	8th	64·8	12th & 31st.	24·0
		Hassan	3,091	26·771	?	29·768	26·820	1st	26·643	25th	·177	70·4	77·2	?	65·5	?	71·4	?	11·7	81·2	8th	64·0	21st	17·2
		Mysore	2,518	27·339	?	29·773	27·403	15th	27·200	25th	·203	72·8	83·5	?	67·2	?	75·4	?	16·3	88·4	8th	65·5	21st	23·9
56	Madras, East Coast, South.	Negapatam	31	29·747	−·040	29·706	29·807	15th	29·625	25th	·182	85·5	99·5	+4·6	79·9	+2·1	86·7	+3·4	19·6	106·5	29th	75·9	12th & 18th.	30·6
		Cuddalore	12	29·749	?	29·690	29·829	15th	29·593	25th	·236	84·0	97·3	?	77·2	?	87·3	?	20·1	102·3	4th	70·2	18th	32·1
		Trichinopoly	255	29·526	−·045	29·714	29·604	15th	29·403	25th	·201	83·8	99·3	+2·3	79·3	+2·0	89·3	+2·2	20·0	104·6	8th	76·4	21st	28·2
		Madras	22	29·730	−·038	29·682	29·809	15th	29·574	25th	·235	84·5	97·4	+1·8	78·5	0	88·0	+0·9	18·9	104·5	3rd	71·0	14th	33·5
55	Madras, East Coast, Central.	Nellore	71	29·648	?	29·651	29·722	15th	29·493	25th	·229	85·4	98·4	?	80·2	?	89·3	?	18·2	105·3	8th	72·1	23rd	33·2
		Masulipatam	15	29·673	−·029	29·623	29·758	15th	29·500	25th	·258	81·8	91·4	−0·7	77·7	−0·2	84·6	−0·5	13·7	98·7	8th	73·6	20th	26·1
54	Madras, Central	Cuddapah	433	29·313	−·036	29·683	29·391	15th	29·162	25th	·229	83·7	97·3	+3·4	79·1	+1·7	88·2	+2·6	18·2	103·2	8th	73·8	20th & 24th.	29·4
		Kurnool	923	28·804	−·037	29·672	28·877	15th	28·658	25th	·219	78·1	90·6	+0·2	73·7	−0·5	82·2	−0·2	16·9	99·2	16th	69·4	20th	29·8
		Bellary	1,475	28·279	−·030	29·694	28·347	15th	28·127	25th	·220	79·1	90·7	−0·2	75·2	+0·9	83·0	+0·4	15·5	97·2	18th	72·7	25th & 31st.	24·5
52	Madras, East Coast, North.	Rajahmundry	112	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Cocanada	26	29·626	−·026	29·587	29·728	15th	29·422	25th	·306	80·7	88·5	?	78·1	−0·8	83·4	?	10·4	97·1	8th	73·0	9th & 18th.	24·1
		Vizagapatam	31	29·580	−·046	29·548	29·665	15th	29·379	24th	·286	83·0	90·1	−1·2	79·5	0	84·8	−0·6	10·6	96·2	30th	75·4	21st & 24th.	20·8
		Waltair	?			Not r	ecorded.					82·1	88·8	?	78·7	?	83·8	?	10·1	94·3	3rd	75·1	5th	19·2
		Gopalpur	21	29·559	?	29·520	29·634	15th	29·416	3rd	·218	82·8	87·7	?	78·9	?	83·3	?	8·8	91·3	8th	75·1	31st	16·2
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·543	?	?	25·650	24th	25·400	17th	·250	84·4	96·1	?	73·0	?	84·6	?	23·1	105·0	7th	64·0	22nd	41·0
		Pishin	?			Not r	ecorded.					?	97·7	?	62·4	?	80·1	?	35·3	103·9	10th	49·9	21st	54·0
		Quetta	5,502	24·428	+·003	?	245·11	24th	24·344	11th	·167	77·4	92·4	−0·1	66·0	+0·7	79·3	+0·3	26·4	98·6	10th	57·8	2nd	40·8
		Kalat (a)	?			Not r	ecorded.					78·6	93·2	?	57·2	?	75·3	?	36·0	100·9	6th	50·2	2nd	50·7
		Chaman	4,311	25·427	?	?	25·503	26th	25·297	17th	·206	86·1	101·3	?	76·5	?	89·0	?	24·8	107·7	10th	70·1	4th	37·6
30	Punjab	Leh	11,503	19·653	+·010	?	19·767	20th	19·532	17th	·235	58·0	76·0	−3·1	50·7	+0·1	63·3	−1·5	25·3	84·7	23rd & 28th.	46·0	21st	38·7
		Srinagar	5,204	24·676	?	?	24·806	20th	24·542	17th	·264	69·5	83·1	?	63·8	?	73·5	?	19·3	93·9	7th & 8th.	56·8	3rd	37·1
		Skardu	?	22·676	?	?	22·786	20th	22·522	29th	·264	69·9	83·6	?	62·1	?	72·9	?	21·5	96·1	8th	53·3	16th	42·8
		Dras	?	20·701	?	?	20·860	20th	20·604	1st	·256	64·0	78·6	?	48·0	?	63·3	?	30·6	87·0	10th	39·1	15th	47·9
		Gilgit	?	24·893	?	?	25·030	18th	24·722	10th	·308	78·8	89·7	?	71·9	?	80·8	?	17·8	100·5	10th	61·3	14th	39·2
		Chitral	?	24·471	?	?	24·600	6th	24·300	17th & 30th	·300	73·7	97·5	?	61·0	?	79·3	?	36·5	103·2	4 days	56·0	31st	47·2
		Killa Drosh	?			Not r	ecorded.					78·5	93·7	?	72·7	?	83·2	?	21·0	102·4	9th	62·7	13th & 14th.	39·7
		Para Chinar	6,000	24·279	?	?	24·387	24th	24·158	30th	·229	74·4	84·9	?	64·3	?	74·6	?	20·6	91·5	10th	53·8	4th	37·7
		Cherat	?	25·482	?	?	25·602	24th	25·372	30th	·230	74·5	86·6	?	69·2	?	77·9	?	17·4	99·0	7th	59·6	13th	39·4
		Murree	6,333	23·702	+·006	?	23·798	24th	23·592	30th	·206	65·7	73·6	−3·6	62·0	−0·8	67·8	−2·2	11·6	85·3	7th	55·4	17th	29·9
		Gulmarg	?	21·766	?	?	21·860	20th & 24th.	21·669	30th	·191	59·2	66·5	?	49·5	?	58·0	?	17·0	76·9	9th	41·3	3rd	35·6
		Poo	?			Not r	ecorded.					?	79·6	?	59·6*	?	69·6*	?	20·0	86·2	6th & 8th.	55·4	12th	30·8
		Simla	7,224	22·982	+·009	?	23·100	24th	22·886	16th	·214	62·4	67·9	−1·4	59·8	−0·8	63·9	−1·1	8·1	72·1	4th	56·6	24th	15·5
25	N.-W. Provinces	Chakrata	7,022	23·153	+·021	?	23·273	24th	23·050	16th	·223	62·7	68·1	−1·8	58·6	−1·5	63·4	−1·7	9·5	73·7	26th & 27th.	54·8	2nd	18·9
		Mussooree	6,705	23·403	?	?	23·524	24th	23·300	16th	·224	63·7	69·9	0	60·5	+0·1	65·2	+0·1	9·4	75·3	27th	57·9	3 days	17·4
		Ranikhet	6,069	23·952	+·012	?	24·073	24th	23·832	16th	·241	66·7	73·5	−0·2	62·8	0	68·2	−0·1	10·7	79·0	4th & 6th.	59·0	24th	20·0
		Muktesar	?	22·730	?	?	22·833	24th	22·624	16th	·209	61·4	67·9	?	58·2	?	63·1	?	9·7	78·8	6th	54·6	2nd	24·2

* Mean of 80 days. (a) Observation of 30 days.

1—continued.

in India, Burma, etc., in July 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st July 1898.	Normal rainfall for period, 1st June to 31st July.	Variation from normal of period, 1st June to 31st July.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
1	...	...	...	...	5	13	7	...	9·5	4·7	+102	74	·778	6·7	3	6·91	−3·91	1·25	3·96	− 2·71	20·5	7·64	− 5·59	0·66	Salem	MADRAS, SOUTH CENTRAL.	34
...	...	...	...	...	12	14	5	...	5·6	8·2	−32	86	·784	6·5	1	4·36	−3·36	0·47	1·23	− 0·76	1·25	2·66	− 1·41	0·15	Coimbatore		
1	...	...	...	...	...	2	20	8	10·2	11·3	−10	97	·597	9·9	30	29·30	+0·70	33·30	42·50	− 9·20	58·82	68·21	− 9·39	3·45	Mercara	COORG.	35
...	...	...	...	...	...	14	16	1	13·0	?	?	84	·671	9·9	8	?	?	2·69	2·77	− 0·08	4·22	5·87	− 1·65	0·66	Chitaldroog.	MYSORE.	36
...	...	...	...	...	...	20	11	...	11·6	8·6	+35	83	·625	8·1	4	9·00	−5·00	2·57	4·59	− 2·02	4·67	8·04	− 3·37	1·67	Bangalore.		
...	...	...	...	...	...	8	19	4	4·8	?	?	85	·633	9·5	13	?	?	3·06	5·02	− 1·96	6·51	9·14	− 2·63	0·35	Hassan.		
...	...	...	...	...	...	17	14	...	14·1	?	?	80	·635	9·2	5	?	?	2·41	2·32	+ 0·09	3·05	4·44	− 1·39	1·22	Mysore.		
...	...	...	...	...	2	11	17	1	9·4	7·1	+32	66	·815	4·5	3	3·64	−0·64	0·93	2·27	− 1·34	2·52	4·01	− 0·49	0·62	Negapatam	MADRAS, EAST COAST, SOUTH.	56
...	...	...	2	1	4	11	12	1	1·7	?	?	70	·823	3·8	6	5·60	+0·40	2·65	2·67	− 0·02	7·04	4·15	+ 2·89	1·62	Cuddalore.		
1	...	...	...	...	...	7	20	3	9·5	9·9	−4	60	·692	6·9	1	2·18	−1·18	0·28	1·50	− 1·22	0·36	3·12	− 2·76	0·25	Trichinopoly		
...	...	...	...	...	4	6	17	4	7·0	8·3	−16	68	·803	8·1	10	7·00	+3·00	3·40	3·87	− 0·47	5·49	5·98	− 0·49	0·89	Madras.		
4	...	...	...	...	...	1	13	13	10·5	?	?	64	·778	9·1	4	4·70	−0·70	1·35	2·50	− 1·15	2·11	4·00	− 1·89	0·51	Nellore	MADRAS, EAST COAST, CENTRAL.	55
1	1	...	...	...	...	2	13	14	11·0	9·7	+13	80	·866	8·8	12	9·36	+2·64	7·47	5·71	+ 1·76	14·35	11·23	+ 3·12	1·60	Masulipatam.		
...	...	...	...	...	...	13	12	6	?	?	?	65	·752	8·2	4	6·00	−2·00	1·33	3·90	− 2·57	2·44	8·01	− 5·57	0·41	Cuddapah.	MADRAS, CENTRAL.	54
...	...	...	...	...	...	5	24	2	?	?	?	75	·723	8·7	11	9·83	+1·17	7·28	4·91	+ 2·37	11·71	8·86	+ 2·85	1·56	Kurnool.		
...	...	...	...	...	...	...	29	2	12·5	11·6	+8	57	·565	9·0	3	3·91	−0·91	0·87	1·98	− 1·11	2·18	3·83	− 1·65	0·28	Bellary.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Rajahmundry.	MADRAS, EAST COAST, NORTH.	52
...	...	...	...	...	...	14	17	...	8·4	?	?	78	·806	8·2	10	10·00	0	11·02	6·67	+ 4·35	16·30	12·04	+ 4·26	4·20	Cocanada.		
1	2	...	...	...	...	20	8	...	?	4·0	?	77	·867	9·1	5	10·18	−5·18	5·25	5·09	+ 0·16	13·71	85·8	+ 5·13	3·29	Vizagapatam.		
...	1	1	...	...	1	15	12	...	14·5	?	?	78	·876	9·1	...			No	rain g	auge					Waltair.		
2	3	1	2	...	1	18	2	2	15·1	11·3	+34	83	·919	4·4	10	11·33	−1·33	5·86	7·90	− 2·04	11·21	13·99	− 2·78	1·60	Gopalpur.		
																									XII.—Hill Stations.		
11	4	1	2	9	2	1	1	...	2·4	?	?	61	·706	3·3	8	?	?	4·78	2·55	+ 2·23	4·78	3·80	+ 0·98	1·07	Sharigh.	BALUCHISTAN	48
					Not	recorded.			?	?	?	?	?	?	...	...	...	...	...	...	(b) 0		...	...	Pishin.		
27	...	..	...	2	1	...	1	...	3·1	5·1	−39	63	·592	2·0	1	1·36	−0·36	0·52	1·21	− 0·69	0·52	1·33	− 0·81	0·45	Quetta.		
...	1	...	7	...	6	1	15	...	?	?	?	44	·432	2·1	0	?	?	0·09	0·52	− 0·43	0·29	0·73	− 0·44	0·07	Kalat.		
...	...	1	...	5	5	15	4	1	11·3	?	?	43	·544	0·6	0	?	?	0	0·27	− 0·27	0	0·42	− 0·42	0	Chaman.		
...	...	...	2	2	1	1	22	3	2·6	1·9	+37	56	·268	6·3	1	?	?	0·40	0·48	− 0·08	0·40	0·70	−0·30	0·15	Leh	PUNJAB.	30
4	3	2	3	8	3	2	3	3	6·3	?	?	86	·625	5·8	3	?	?	2·77	7·69	− 4·92	3·01	11·81	− 8·80	1·35	Srinagar.		
13	...	7	...	...	2	1	7	1	7·6	?	?	58	·414	4·0	1	?	?	0·58	0·25	+ 0·33	0·59	0·79	−0·20	0·24	Skardu.		
21	1	3	1	..	1	2	...	2	7·0	?	?	79	·474	5·4	2	?	?	1·77	0·34	+ 1·43	2·19	?	?	1·46	Dras.		
23	...	...	5	2	...	...	1	...	3·3	?	?	47	·444	6·0	2	?	?	0·74	0·94	− 0·20	1·16	1·10	+ 0·06	0·28	Gilgit.		
22	3	1	...	...	1	2	1	1	8·3	?	?	62	·512	1·5	1	?	?	0·30	?	?	0·67	?	?	0·30	Chitral.		
14	...	...	1	...	...	...	8	...	?	?	?	49	·469	2·1	1	?	?	0·55	?	?	0·71	?	?	0·43	Killa Drosh.‡		
...	3	5	5	7	4	4	2	1	5·2	?	?	60	·503	2·1	12	?	?	6·09	?	?	7·68	?	?	1·16	Para Chinar.		
6	5	1	...	6	10	2	...	1	12·2	?	?	76	·634	4·3	7	?	?	7·15	4·78	+ 2·37	7·48	5·29	+ 2·19	2·97	Cherat.		
15	1	1	2	5	6	...	...	1	6·2	5·7	+ 9	81	·514	2·6	17	12·00	+5·00	16·21	11·25	+ 4·96	18·43	14·12	+ 4·31	3·70	Murree.		
10	3	3	5	2	2	4	2	...	1·8	?	?	82	·415	6·3	16	?	?	5·68	?	?	7·18	?	?	1·02	Gulmarg.		
3	3	2	1	2	...	3	10	7	?	?	?	?	?	6·1	2	?	?	0·38	1·14	− 0·76	0·42	1·41	− 0·99	0·17	Poo.		
18	3	1	2	1	4	2	...	1	2·2	1·6	+38	91	·516	8·3	17	19·27	−2·27	10·44	17·55	− 7·11	19·45	24·34	− 4·89	1·56	Simla.		
19	2	2	...	1	7	...	...	...	8·4	4·6	+83	93	·530	8·6	16	?	?	21·08	19·42	+ 1·66	33·91	26·33	+ 7·58	3·68	Chakrata	N.-W. PROVINCES.	25
...	1	4	12	2	...	1	4	7	?	8·7	?	95	·562	7·9	22	21·91	+0·09	38·31	30·28	+ 8·53	55·35	40·57	+14·78	6·30	Mussoorie		
17	1	3	2	2	3	...	1	2	2·0	2·1	− 5	90	·589	8·5	22	19·18	+2·82	17·24	13·28	+ 3·96	22·88	19·22	+ 3·66	2·15	Ranikhet.		
...	...	1	3	16	2	1	2	6	0·3	?	?	93	·505	9·0	23	?	?	14·95	?	?	22·81	?	?	2·32	Muktesar		

Wind observations of 30 days. † Mean of 30 days. (b) For June only. ‡ 8 variables.

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bat-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
18	Bengal	Yatung	10,480?			Not recorded.						?	64·0	?	55·5	?	59·8	?	8·5	70·0	4th	50·9	17th	19·1
		Darjeeling	7,409	22·875	−·002	?	22·950	24th	22·779	16th	·171	61·4	66·3	0·5	57·5	+0·1	61·9	−0·2	8·8	71·2	26th	55·2	2 days	16·0
		Gantok	5,660	24·370	?	?	24·438	24th	24·265	16th	·173	66·5	75·0	?	51·1	?	63·0	?	23·9	81·8	26th	48·4	2nd	33·4
	Central India	Mount Abu	3,945	25·793	−·029	?	25·839	4th	25·762	7th	·137	68·0	74·4	−0·2	66·1	+0·5	70·3	+0·2	8·3	82·2	5th & 21th.	63·4	3 days	18·8
		Pachmarhi	3,528	26·196	−·023	?	26·247	3rd & 19th.	26·078	6th	·169	69·5	75·0	−0·4	67·7	−0·1	71·4	−0·3	7·3	82·7	26th & 27th.	65·2	2nd & 3rd	17·5
	South India	Wellington	6,200	24·148	−·048	?	24·205	15th	24·041	25th	·164	64·0	71·3	+0·5	57·5	−0·6	64·4	−0·1	13·8	75·2	7th	54·1	8th	21·1
	XIII.—Extra India.																							
	Ceylon	Trincomalee	12	29·772	?	29·710	29·846	15th	29·664	25th	·182	84·8	92·4	?	78·0	?	85·2	?	14·4	96·5	30th	73·5	14th	23·0
		Colombo	40	29·828	−·051	29·794	29·886	1st	29·753	25th	·133	81·2	86·6	?	78·0	?	82·3	?	8·6	89·0	25th	72·5	9th	16·5
	Persia	Meshed	3,104			Not recorded.						82·6	Not recorded	?	66·2	?	?	?	?	?	?	60·8	2nd	?
		Teheran*	?	25·788 a 25·247 a	? ?	? ?	25·910 25·360	21st 20th & 21st.	25·640 25·100	3rd 3rd	·270 ·260	82·8	97·3	?	72·1	?	84·7	?	25·2	104·7	17th	66·7	8th	38·0
		Isphahan	?	24·256 a 24·592 b	? ?	? ?	24·370 24·720	20th 25th, & 26th 21st	24·100 24·450	2nd & 3rd 1st to 3rd	·270 ·270	80·8	97·4	?	63·9	?	80·7	?	33·5	102·8	18th	57·3	24th	45·5
		Bushire†	14	29·457	−·023	29·430	29·546	5th	29·390	31st	·156	90·3	96·0	+0·6	84·2	+0·3	90·1	+0·5	11·8	107·0	15th	77·9	3rd	29·1
		Jask	?	29·545	?	29·497	29·619	16th	29·454	11th	·165	88·3	93·6	?	84·9	?	89·3	?	8·7	99·3	13th	81·2	6th	18·1
	Arabia	Muscat	20	29·492	?	29·459	29·593	20th.	29·413	11th	·180	87·0	88·8	?	85·6	?	87·2	?	3·2	93·2	1st	81·9	27th	11·3
		Baghdad*	220	29·392	−·054	29·577	29·495	5th	29·214	13th	·281	92·4	111·6	+4·9	82·4	+3·7	97·0	+4·3	29·2	118·6	24th	76·5	4th & 5th	42·1
		Aden	94	29·570	−·056	29·594	29·661	5th	29·472	18th	·189	85·5	93·7	+1·1	83·3	+2·0	88·5	+1·6	10·4	97·8	10th	77·8	29th & 31st	20·0
		Perim	?	29·492	?	?	29·645	2nd	29·374	29th	·271	89·2	97·2	?	84·9¶	?	90·8¶	?	12·3	106·8	17th	80·2	22nd.	26·6
	Afghanistan	Kabul	?			Not recorded.						76·2	92·3	?	61·1	?	76·8	?	31·2	98·1	10th	54·4	2nd	43·7
	Central Asia	Kashgar	?	(b) 25·420	?	?	25·732	21st	25·240	11th	·492	77·7	91·6	?	68·3	?	80·1	?	23·5	101·3	9th	59·1	1st	42·2
	Arabian Sea Islands.	Amini Devi	15	29·841	?	29·784	29·895	29th	29·724	25th	·171	81·7	81·9	?	77·2	?	79·6	?	4·7	84·2	3rd	74·4	10th	9·8
		Minicoy	10	29·825	?	29·760	29·882	1st	29·742	25th	·140	82·5	86·5	?	?	?	?	?	?	88·7	4th	?	?	?
	Africa	Zanzibar	73	30·070	?	30·071	30·136	5th	30·021	17th	·115	74·6	80·7	?	73·3	?	77·0	?	7·4	82·8	11th	70·0	1st	12·8
		Dunga (Zanzibar).	?			Not recorded.						74·0	83·4	?	68·7	?	76·1	?	14·7	86·6	11th	62·9	17th	23·7

* Observations of 30 days.
† " " 29 "

NOTE.—When a query is inserted against any reading or in the variation returns for any station the
a Anerold uncorrected.
b " corrected.
¶ Mean of 29 days

I—*concluded.*

in India, Burma, etc., in July 1898—concluded.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st July 1898.	Normal rainfall for period, 1st June to 31st July.	Variation from normal of period, 1st June to 31st July.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
Not recorded.									?	?	?	?	?	?	21	?	?	9·30	7·88	+ 1·42	12·75	?	?	2·26	Yatung	BENGAL.	
4	...	7	8	6	1	3	1	1	3·5	2·6	+35	97	·529	8·3	24	26·15	−2·15	43·57	32·45	+11·12	55·63	56·14	−0·51	5·95	Darjeeling.		
28	...	...	...	...	...	1	...	2	2·3	?	?	92	·599	?	27	?	?	28·21	22·34	+ 5·87	38·10	44·10	−6·00	3·48	Gantok		
1	...	3	1	...	1	17	7	1	12·5	10·5	+19	95	·645	8·9	22	16·73	+5·27	19·45	24·42	−4·97	22·45	30·55	−8·10	3·53	Mount Abu	CENTRAL INDIA.	
10	...	1	2	...	...	3	11	4	15·0	9·5	+58	94	·684	8·9	25	23·09	+1·91	26·41	26·69	−0·28	34·07	36·49	−2·42	4·70	Pachmarhi.		
10	...	...	...	3	1	14	3	...	4·6	5·3	−21	70	·422	8·0	9	6·75	+2·25	3·87	3·75	+0·12	4·99	7·48	−2·49	0·94	Wellington.	SOUTH INDIA.	
																									XIII.—Extra India.		
...	...	...	...	...	...	31	...	...	15·5	?	?	79	·850	1·8	3	?	?	3·34	2·63	+0·71	3·34	4·68	−1·34	1·98	Trincomalee	CEYLON.	
...	...	...	...	...	1	10	17	3	9·6	9·0	+7	82	·870	6·3	6	?	?	6·15	5·55	+0·60	17·09	12·79	+4·30	1·79	Colombo		
Not recorded.									?	?	?	41	·462	0·4	0	?	?	0	0·03	−0·03	0·30	0·25	+0·05	0	Meshed	PERSIA.	
22	...	...	...	...	2	2	4	...	1·5	?	?	35	·386	1·0	0	?	?	0	0·51	−0·51	0	0·52	−0·52	0	Teheran*		
8	1	3	0	4	...	3	8	4	4·1	?	?	49	·520	0·6	0	?	?	0	0·10	−0·10	0	0·10	−0·10	0	Isphahan		
2	3	3	3	4	2	2	3	7	8·8	9·2	−4	65	·928	0·6	0	?	?	0	?	?	0	?	?	0	Bushire†		
...	...	...	18	12	...	...	1	...	13·4	?	?	77	1·054	2·0	0	?	?	0	0·03	−0·03	0·77	?	?	0	Jask		
6	...	1	5	12	...	...	1	6	5·1	?	?	81	1·048	5·5	0	?	?	0	0·08	−0·08	2·52	?	?	0	Muscat	ARABIA.	
3	7	...	...	...	...	...	1	19	4·9 (c)	?	?	28	·420	0	0	?	?	0	0	0	0	0·01	−0·01	0	Baghdad		
8	...	3	4	2	5	8	1	...	11·2	9·4	+19	73	·903	5·3	0	?	?	0	0	0	0	0·01	−0·01	0	Aden		
3	...	1	1	1	1	22	2	...	17·1	?	?	64	·866	0·5	0	?	?	0·18	0·02	+0·16	0·18	?	?	0·08	Perim.		
15	...	3	2	1	...	3	6	1	?	?	?	33	·345	0	0	?	?	0	0·39	−0·39	0·10	0·76	−0·66	0	Kabul	AFGHANISTAN.	
13	1	2	6	...	2	...	7	...	?	?	?	44	·404	2·0	1	?	?	0·13	0·45	−0·32	0·13	0·98	−0·85	0·12	Kashgar	CENTRAL ASIA.	
...	...	...	...	...	...	9	19	3	?	?	?	86	·928	6·8	15	?	?	7·97	?	?	21·17	?	?	1·56	Amini Devi.	ARABIAN SEA ISLAND.	
1	...	...	...	...	...	2	23	5	11·5	?	?	79	·879	6·0	9	?	?	5·99	?	?	10·73	?	?	2·88	Minicoy		
...	...	...	...	...	24	7	...	...	8·8	?	?	83	·710	7·3	4	?	?	2·65	2·12	+0·53	4·34	3·36	+0·98	1·85	Zanzibar	AFRICA.	
...	...	...	...	1	17	12	1	...	8·3	?	?	85	·713	?	7	?	?	2·52	?	?	4·21	?	?	0·92	Dunga (Zanzibar.		

data for that station are not utilised in calculating the provincial variations. (c) Mean of 30 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·755	29·677	·078	29·723	−·020	29·715	84·5	77·1†	7·4	87·1	72·2	14·9	82·1	81·8	79·7†	−0·6	75·1	78·6	78·4	77·4
	Rangoon	...	·745	·663	·082	·710	−·023	·688	84·5	75·1	9·4	88·0	73·1	14·9	79·9	79·0	77·8	−0·5	74·0	77·7	76·8	76·2
	Diamond Island	...	·739	·660	·079	·707	−·025	·683	83·9	76·5	7·4	85·9	74·5	11·4	81·7	81·6	79·1	+0·6	74·6	78·3	77·9	76·9
	Cocos Island	111	·665	·594	·071	·637	−·015	·679	85·2	77·3	7·9	89·4	74·3	15·1	82·4	81·6	79·8	−0·7	74·9	79·4	78·3	77·5
	Akyab	...	·691	·606	·085	·652	−·017	·611§	83·9§	77·6§	6·3	89·6	75·3	14·3	80·4§	81·8§	79·9§	−0·1	76·0§	78·5	79·8§	78·1
Assam.	Silchar	...	·563	·433	·130	·508	−·014	·561	92·5	77·3	15·2	101·6	75·3	26·3	85·9	88·7	83·7	+1·5	75·6	80·4	81·2	79·1
	Sibsagar	...	·333	·203	·130	·270	−·007	·554	88·8	77·4	11·4	95·8	74·5	21·3	82·9	87·9	82·3	−0·9	76·6	80·0	82·2	79·6
	Dhubri	...	·508	·397	·111	·461	−·017	·529	86·9	79·3	7·6	90·5	76·7	13·8	83·3	85·4	82·1	+0·9	77·3	79·5	80·3	79·0
Bengal and Orissa.	Chittagong	...	·563§	·473	·090	·525§	−·031	·561§	86·1	76·3	9·8	93·7	72·7	21·0	82·4§	83·5	80·2	+0·2	75·2	78·4§	79·1	77·6
	Narayangan)	...	·594	·497	·097	·555	−·010	·528	87·8	79·0	8·8	94·4	76·9	17·5	83·8	85·4	83·0	−0·2	76·9	80·4	80·7	79·3
	Calcutta (Alipore)	...	·561	·473	·088	·523	−·014	·490	87·0	78·1	8·9	92·1	75·4	16·7	83·7	84·0	82·4	−0·7	77·1	80·0	80·1	79·0
	Saugor Island	...	·547	·463	·084	·511	−·025	·479	87·7	80·2	7·5	91·6	77·4	14·2	84·6	85·4	82·9	+0·1	78·0‡	80·7	80·8	79·8
	Burdwan	...	·483	·383	·100	·440	−·014	·485	89·4	79·2	10·2	95·2	76·1	19·1	85·1	86·4	83·0	−0·7	77·9	80·1	80·4	79·5
	Berhampore	...	·516	·420	·096	·475	−·012	·488	89·1	79·2	9·9	95·7	77·1	18·6	85·2	86·6	83·0	−0·3	77·2	80·8	81·2	79·7
	False Point	...	·566	·482	·084	·529	−·035	·491	86·8	78·6	8·2	91·5	73·1	18·4	84·2	84·7	81·7	−0·1	76·9	80·0	80·3	79·1
	Cuttack	...	·505	·419	·086	·471	−·027	·492	88·8	78·4	10·4	94·2	73·3	20·9	83·7	84·1	81·6	−0·9	76·6	78·8	79·2	78·2
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·571	27·487	·084	27·537	−·031	·459	84·7	74·3	10·4	90·7	72·0	18·7	79·6	81·7	78·5	+0·4	72·3	75·0	75·9	74·4
	Patna	...	29·375	29·270	·105	29·329	−·023	·461	90·9	80·2	10·7	97·0	75·2	21·8	86·4	87·1	83·9	−0·1	78·2	81·1	81·0	80·1
	Darbhanga	...	·406	·301	·105	·360	−·018	·477	90·4	80·2	10·2	97·3	77·0	20·3	86·4	88·6	84·2	+0·5	78·3	81·1	81·9	80·4
	Allahabad	...	·234	·136	·098	·187	−·020	·446	90·1	79·7	10·4	97·3	74·6	22·7	85·8	86·7	83·8	−0·9	77·9	80·9	80·9	79·9
	Lucknow	...	·186	·087	·099	·140	−·011	·459	91·2	79·3	11·9	98·0	73·8	24·2	86·0	86·0	83·7	−1·8	?	80·3	80·1	?
Upper Sub-Himalayas.	Dehra Dun	...	27·395	27·306	·089	27·344	−·002	·499	84·5	73·3	11·6	91·1	67·9	23·2	79·0	81·0	77·8	−1·6	71·5	74·8	75·9	74·0
	Roorkee	...	28·680	28·576	·104	28·625	+·006	·462	90·4	77·2	13·2	98·0	73·3	24·7	84·2	88·1	83·0	−1·6	74·9	77·8	78·6	77·1
	Meerut	...	·821	·719	·102	·767	+·002	·455	92·6	79·3	13·3	101·6	74·1	27·5	87·4	89·9	85·3	−0·2	77·3	78·6	78·6	78·2
	Lahore	...	·835	·740	·095	·786	+·015	·441	93·3	80·5	12·8	106·6	72·1	34·5	86·6	92·5	86·3	−2·0	77·0	79·4	81·1	79·1
	Ludhiana	...	·740	·640	·100	·688	+·009	·451	92·8	79·5	13·3	102·0	71·7	30·3	85·6	91·0	85·3	−1·4	76·4	78·8	80·6	78·6
Indus Valley and N.-W. Rajputana.	Peshawar	...	·421	·301	·120	·360	−·001	·414	100·0	77·6	22·4	111·0	67·4	43·6	91·0	97·8	87·9	−1·7	72·2	77·9	77·7	75·9
	Mooltan	...	29·080	·972	·108	29·025	+·002	·396	106·2	85·6	20·6	115·0	78·0	37·0	96·2	102·9	94·7	?	77·2	81·7	83·5	80·8
	Jacobabad	...	·284	29·166	·118	·224	−·010	·359	108·0	85·3	22·7	118·8	74·1	44·7	97·5	105·6	95·6	+0·9	77·7	82·9	84·7	81·8
	Kurrachee	...	·528	·448	·080	·493	−·011	·473	91·8	80·8	11·0	101·8	74·9	26·9	87·5	88·2	84·9	+0·9	77·2	80·1	80·4	79·2
E. Rajputana, C. India and Gujarat.	Jeypore	...	28·154	28·056	·098	28·106	−·011	·463	94·1	77·9	16·2	100·3	72·1	28·2	87·0	90·4	84·5	+0·6	74·5	77·2	77·5	76·4
	Ajmere	...	27·972	27·874	·098	27·918	−·031	·449	93·6	78·9	14·7	100·6	72·8	27·8	86·4	91·3	84·7	+2·6	74·9	78·5	79·7	77·7
	Oodeypore	...	·687	·601	·086	·644	?	·488	88·1	75·2	12·9	97·6	71·7	25·9	82·6	84·3	80·7	?	72·4	75·3	75·8	74·5
	Deesa	...	29·118	29·014	·104	29·068	−·028	·480	92·0	77·8	14·2	103·1	73·9	29·2	84·7	88·7	84·1	+0·3	75·4	78·6	79·0	77·6
	Nowgong	...	28·810	28·723	·087	28·768	−·009	·470	87·7	78·1	9·6	95·8	73·0	22·8	83·3	85·3	81·8	−1·0	76·5	79·6	79·8	78·6
	Agra	...	·931	·889	·102	·938	−·019	·441	94·1	81·7	12·4	102·8	75·2	27·6	89·0	90·2	87·6	+0·6	78·1	81·4	81·2	80·2
Deccan.	Belgaum	...	27·242	27·177	·065	27·209	−·040	·689	75·4	67·0	8·4	79·5	65·1	14·4	71·9	71·9	70·1	0	66·3	69·9	69·5	68·6
	Sholapur(a)	...	28·128	28·022	·106	28·084	−·034	·600	88·7	72·6	16·1	96·3	70·2	26·1	81·0	83·8	78·4	+0·2	69·5	71·3	71·9	70·9
	Poona	...	27·876	27·811	·065	27·845	−·028	·618	81·6	70·8	10·8	87·1	68·3	18·8	77·6	77·9	75·1	0	68·9	72·6	71·7	70·9
	Akola	...	28·711	28·600	·111	28·655	−·034	·528	88·4	74·1	14·3	96·5	71·5	25·0	82·8	85·1	80·4	−0·1	72·5	76·1	76·3	74·9
	Buldana	2,132	27·543	27·449	·094	27·496	−·031	·541	83·7	71·0	12·7	90·9	68·7	22·2	78·5	80·6	76·6	+0·3	68·7	72·3	73·1	71·4

(a) Observations recorded only on 28 days. † Mean of 29 days. ‡ Mean of 30 days. § Mean of 28 days. ‖ Mean of 25 days.

II.

at 86 Stations in India, Burma, etc., in July 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·842†	·933	·929†	·901	+·003	90†	85	85	87	+ 2	8·8	9·2	9·0	+1·4	...	...	...	...	1	6	25	28	2	S 64° W	S 47° W	84	87	246	268	...	...	Port Blair	Burma Coast and Bay Islands.
·826	·921	·893	·880	−·006	95	90	90	92	+ 2	9·5	9·8	9·7	+0·7	...	1	...	1	2	21	22	9	2	S 34° W	S 34° W	75	74	73	129	...	...	Rangoon	
·833	·924	·909	·889	+·012	91	85	84	87	0	9·4	9·2	9·3	+1·1	3	1	...	...	6	16	29	7	...	S 13° W	S 42° W	66	80	293*	240	...	...	Diamond Island	
·835	·966	·927	·909	−·002	89	87	86	87	− 1	8·0	8·8	8·4	0	...	...	...	...	1	18	33	9	1	S 38° W	S 34° W	84	91	?	?	13·83	2·09	Cocos Island.	
·876§	·954†	·991†	·940	+·019	92†	92§	91	92	+ 3	8·2	8·0	8·1	−0·6	...	...	2	3	11	38	6	...	2	S 8° E	S 1° E	77	67	102	98	...	...	Akyab	
·866	·965	·965	·932	0	92	78	73	81	− 4	8·2	8·4	8·3	+0·3	36	3	2	8	1	1	2	7	2	N 5° E	N 60° W	5	3	93*	67	...	...	Silchar	Assam.
·908	·990	1·026	·975	+·019	97	88	78	88	+ 4	8·9	8·2	7·6	−0·6	17	6	5	6	5	...	12	9	2	S 78° W	S 18° W	10	20	121*	66	...	...	Sibsagar	
·911	·960	·968	·946	+·006	91	84	80	85	− 2	7·3	7·8	7·6	+0·2	8	...	11	20	3	8	9	3	...	S 67° E	S 65° E	35	20	114*	109	...	...	Dhubri	
·862	·922§	·939	·908	−·006	95	83§	82	87	0	7·0§	7·6	7·3	−0·6	3	...	...	2	18	15	17	2	2	S 1° W	S 30° E	64	66	245*	165	...	...	Chittagong	Bengal and Orissa.
·897	·993	·987	·959	−·014	90	86	81	86	− 1	8·6	8·3	8·5	+0·6	...	...	...	7	31	16	5	1	2	S 30° E	S 18° E	74	79	238	182	...	...	Narayanganj	
·918	·973	·976	·956	−·006	95	84	83	88	+ 1	8·5	9·0	8·8	+0·5	...	...	4	11	17	13	16	1	...	S 22° E	S 8° E	58	63	100	122	...	...	Calcutta (Alipore).	
·832‡	·996	·990	·973	−·024	90‡	84	81	85	− 1	8·5	8·9	8·7	+0·5	...	1	3	6	16	18	15	2	1	S 9° E	S 21° W	60	60	388	357	...	...	Saugor Island.	
·939	·962	·960	·954	+·004	94	80	77	84	+ 1	7·9	8·4	8·2	−0·2			Untr		wort	hy.				S 49° E	S 19° E	13	48	?	103	...	...	Burdwan	
·906	·994	·995	·965	+·002	91	82	79	84	− 3	7·8	8·6	8·2	−0·5	6	1	...	20	22	11	1	...	1	S °53 E	S 40° E	69	50	78*	117	...	...	Berhampore	
·903	·971	·978	·951	+·013	92	83	82	86	+ 1	8·8	8·5	8·7	+0·5	...	...	...	10	2	10	21	16	3	S 42° W	S 53° W	52	63	245*	277	...	...	False Point	
·891	·921	·937	·916	+·019	91	80	80	84	+ 4	8·2	8·9	8·6	+0·9	2	2	5	3	3	5	26	13	3	S 55° W	S 49° W	50	42	87	81	...	...	Cuttack	
·767	·812	·824	·801	−·010	90	81	76	82	− 3	9·7	9·8	9·8	+0·5	4	1	2	19	12	11	6	2	5	S 47° E	S 9° E	42	14	171*	210	...	...	Hazaribagh	Ganges Plain and Central Provinces.
·939	·989	·981	·970	+·012	91	79	77	82	0	7·5	8·0	7·8	−0·4	1	...	10	33	9	5	1	1	2	S 85° E	N 89° E	71	39	160*	101	...	...	Patna	
·943	·992	1·002	·979	+·011	91	79	74	81	− 2	5·9	5·5	5·7	−0·6	...	...	2	31	26	1	1	1	...	S 69° E	S 77° E	85	56	134	121	...	...	Darbhanga	
·933	·993	·977	·968	+·017	92	80	78	83	+ 2	8·5	8·7	8·6	+0·8	3	7	15	15	3	3	3	5	8	N 43° E	N 71° E	35	7	176*	151	...	...	Allahabad	
?	·957	·949	?	?	?	77	77	?	?	8·0	8·5	8·3	+0·7	22	4	3	29	2	...	...	...	2	N 79° E	N 68° E	52	15	50*	93	...	...	Lucknow	
·750	·803	·831	·795	−·008	91	82	79	84	0	7·2	7·8	7·5	−0·2	8	3	2	7	14	8	9	6	4	S 13° E	S 12° W	27	13	23	26	...	...	Dehra Dun	
·835	·871	·851	·852	−·020	89	75	65	76	0	7·0	6·5	6·8	+0·4	15	1	2	4	32	2	3	...	3	S 47° E	S 37° E	53	33	41	70	...	...	Roorkee	Upper Sub-Himalayas.
·914	·863	·829	·869	−·018	91	68	61	73	− 1	6·5	6·4	6·5	−0·2	27	1	...	20	9	...	...	3	2	S 80° E	S 69° E	35	21	49*	57	...	...	Meerut	
·886	·914	·911	·904	+·050	85	73	61	73	+12	4·9	3·0	4·0	−0·3	17	8	5	16	8	4	...	3	1	N 77° E	S 77° E	19	20	58	80	...	...	Lahore	
·872	·896	·906	·891	+·024	87	74	63	75	+ 6	7·2	6·3	6·8	+0·8	20	...	10	2	21	2	2	1	4	S 66° E	S 40° E	32	23	72	52	...	...	Ludhiana	
·733	·793	·699	·742	+·015	77	56	40	58	+ 5	2·7	4·3	3·5	+0·6	17	14	12	4	2	8	2	2	1	N 87° E	N 49° E	16	47	66*	107	...	...	Peshawar	Indus Valley and N.-W. Provinces.
·828	·885	·883	·865	−·004	68	52	44	55	− 3	2·2	3·5	2·9	+0·6	19	...	17	...	13	1	8	1	3	S 82° E	S 23° W	19	32	?	72	...	...	Mooltan	
·849	·932	·916	·899	+·083	76	53	41	55	+ 3	2·5	4·2	3·4	+1·1	11	3	2	9	27	7	1	1	1	S 51° E	S 44° E	56	59	149*	133	...	...	Jacobabad	
·836	·933	·937	·918	−·011	84	72	70	76	− 2	6·6	5·7	6·2	−0·7	1	2	1	1	...	3	20	33	1	S 48° W	S 68° W	78	85	324	415	...	...	Kurrachee	
·813	·813	·782	·803	−·035	85	64	56	68	− 6	7·5	7·7	7·6	+0·2	...	3	9	8	6	6	10	15	5	S 57° W	N 72° W	13	28	110	133	...	·2	Jeypore	
·816	·879	·873	·856	+·056	83	70	61	71	− 1	6·8	7·1	7·0	+0·9	...	3	4	3	5	5	11	24	7	S 79° W	S 77° W	45	59	186	185	...	...	Ajmere	E. Rajputana, C. India and Guzerat.
·763	·790	·787	·780	?	87	71	68	75	?	7·1	7·3	7·2	?	3	...	1	2	4	3	16	27	6	S 72° W	?	63	?	169	?	...	...	Oodeypore	
·847	·896	·862	·868	+·040	89	76	66	77	+ 3	8·3	8·4	8·4	+0·3	...	1	2	1	2	6	12	30	8	S 79° W	S 42° W	66	73	209	351	...	...	Deesa	
·893	·967	·948	·936	+·051	93	85	79	86	+ 7	8·5	8·6	8·6	+0·2	3	8	2	13	...	1	3	31	1	N 70° W	S 85° W	34	46	62*	104	...	...	Nowgong	
·817	·972	·946	·945	+·040	85	72	68	75	+ 1	7·3‡	7·5	7·4	+0·7	...	1	14	...	19	...	12	...	16	N 86° E	N 84° E	6	4	202*	123	...	...	Agra	
·640	·706	·694	·680	+·011	97	90	89	92	+ 2	9·3	9·2	9·3	+0·2	...	...	...	...	...	2	38	18	...	S 57° W	S 68° W	92	87	568	647	...	...	Belgaum	Deccan.
·684	·646	·634	·655	−·009	85	61	57	68	0	9·0	9·6	9·3	+0·8	...	...	...	...	...	...	28	22	6	S 71° W	S 76° W	84	33	338*	336	...	...	Sholapur	
·686	·715	·702	·701	+·003	91	76	74	80	0	9·2	9·4	9·3	+0·4	...	1	...	...	...	...	20	39	2	S 78° W	S 81° W	91	90	411*	386	...	...	Poona	
·779	·811	·788	·792	+·025	93	73	66	77	+ 2	8·6	8·3	8·5	0	1	1	1	...	1	1	11	25	21	N 81° W	N 74° W	75	73	199*	210			Akola	
·675	·717	·722	·704	−·005	89	74	70	77	− 2	9·1	9·1	9·1	+1·0	...	2	3	...	...	...	9	29	19	N 77° W	N 79° W	77	74	232*	219	8·59	1·81	Buldana.	

* Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—*continued.*	Khandwa	...	28·587	28·486	·101	28·537	−·023	29·524	87·6	75·7	11·9	94·2	72·6	21·6	82·0	85·3	80·6	+0·7	72·8	75·5	76·4	74·9
	Hoshangabad	...	·601	·495	·106	·548	−·026	·502	86·4	75·7	11·7	94·3	72·4	21·9	80·6	84·1	80·3	+0·4	73·7	77·0	78·1	76·3
	Nagpur	...	·590	·491	·099	·541	−·020	·510	86·7	75·0	11·7	91·6	72·3	19·3	81·3	82·9	79·9	−0·3	73·1	76·2	76·6	75·3
	Do. (Sanitary Commr.'s Office)	...	·593	·492	·101	·543	?	·501	87·4	74·8	12·6	92·8	72·2	20·6	82·2	83·6	80·1	?	73·1	76·7	77·1	75·6
	Jubbulpore	...	·259	·167	·092	·213	−·020	·482	84·5	73·8	10·7	92·6	71·6	21·0	79·8	81·2	77·9	−1·3	70·6	76·1	77·0	74·6
	Saugor	...	27·807	27·713	·094	27·760	−·003	·495	84·2	73·2	11·0	92·3	70·5	21·8	79·2	81·5	77·6	−0·4	71·6	75·1	75·7	74·1
	Sutna	...	28·505	28·414	·091	28·461	−·025	·448	86·5	77·4	9·1	94·5	73·6	20·9	82·9	83·4	80·9	−0·7	75·4	78·3	78·6	77·4
	Raipur	...	·627	·529	·098	·578	−·023	·478	85·7	74·5	11·2	92·8	71·6	21·2	80·6	82·8	79·4	−0·2	72·5	76·1	77·1	75·2
	Hyderabad (Deccan).	...	·015	27·911	·104	27·968	−·032	·585	84·9	72·0§	12·9	90·5	69·2	21·3	78·3	83·1	77·9§	−1·6	70·1§	72·9	75·2	72·7
West Coast.	Bombay	...	29·674	29·605	·069	29·638	−·031	·614	84·2	77·6	6·6	86·7	73·7	13·0	81·4	81·9	80·9	0	74·3	78·2	78·2	76·9
	Ratnagiri	...	·645	·584	·061	·612	−·031	·660	83·3	75·7	·7·6	86·9	72·2	14·7	80·3	79·8	79·1	−0·5	73·9	77·3	76·9	76·0
	Karwar	...	·759	·694	·065	·724	−·040	·700	83·3	75·3	8·0	86·4	71·4	15·0	80·7	80·9	79·2	+0·5	72·9	76·3	76·3	75·1
	Cochin	...	·872	·814	·058	·841	−·031	·778	84·0	74·1	9·9	87·4	72·0	15·4	80·0	80·8	78·8	+0·3	72·9	76·1	76·5	75·2
South India.	Salem	...	28·875	28·748	·127	28·824	−·053	·683	96·6	74·8	21·8	101·2	72·1	29·1	86·4	91·8	83·7	+3·0	72·3	75·4	76·4	74·7
	Mercara	...	26·153	26·092	·061	26·135	−·028	?	68·8	62·9	5·9	72·3	60·6	11·7	65·8	65·4	65·0	+0·2	61·9	65·0	64·6	63·8
	Chitaldroog	...	27·400	27·321	·079	27·370	−·032	·686	81·4	68·6	12·8	86·5	66·9	19·6	75·8	77·4	74·0	+0·5	66·6	70·1	70·5	69·1
	Bangalore	...	26·834	26·743	·091	26·800	−·034	·687	83·0	66·6	16·4	89·0	64·6	24·4	75·5	79·1	73·9	+1·6	65·0	68·5	69·1	67·5
	Hassan	...	·782	·719	·063	·762	−·032	·738	77·2	65·5	11·7	81·2	64·0	17·2	73·8	73·3	70·4	+0·9	64·4	68·4	68·0	66·9
	Mysore	...	27·342	27·263	·079	27·303	−·032	·722	83·4	67·2	16·2	89·6	65·3	24·3	77·8	78·1	74·0	+0·7	65·9	69·4	69·4	68·2
	Trichinopoly	...	29·534	29·405	·129	29·482	−·045	·662	98·3	79·3	20·0	104·7	76·2	28·5	91·6	96·0	87·7	+2·1	72·1	74·4	75·4	74·0
	Madras	...	·731	·608	·123	·680	−·042	·629	97·4	78·8	18·6	104·2	72·3	31·9	88·8	91·1	86·0	+0·8	?	77·1	78·9	77·3
	Bellary	...	28·289	28·183	·106	28·245	−·037	·642	90·6	75·1	15·5	97·2	72·6	24·6	83·4	86·5	80·8	+0·3	67·4	69·5	70·4	69·1
	Cocanada	...	29·632	29·539	·093	29·592	−·025	·554	88·4	78·2	10·2	97·1	72·8	24·3	83·6	86·8	82·9	−1·3	75·2	76·0	77·0	76·1
	Vizagapatam	...	·589	·503	·086	·552	−·039	·520	89·9	79·4	10·5	96·2	75·5	20·7	86·1	86·9	84·0	−0·7	76·1	78·3	78·8	77·7
Hill Station, Baluchistan.	Quetta	...	24·427	24·345	·082	24·384	−·002	?	92·2	66·0	26·2	98·6	57·9	40·7	84·3	88·1	78·1	+0·3	58·5	66·6	66·7	63·9
Hill Stations, Punjab.	Leh	...	19·641	19·550	·091	19·604	+·008	?	76·1	50·7	25·4	84·7	46·0	38·7	64·8	71·6	61·1	−0·5	44·9	51·6	55·0	50·5?
	Srinagar	...	24·686	24·601?	·085	24·641	+·010	?	83·2	63·8	19·4	93·9	56·6	37·3	74·4?	81·0?	72·9	−1·3	62·4	69·9?	76·6?	69·6?
	Murree	...	23·709	23·667	·042	23·686	+·003	?	73·7	61·8	11·9	85·4	55·6	29·8	67·9	71·6	67·4	−1·6	58·1	63·5	66·2	62·6
	Kailang	10,087	20·661	20·583	·078	20·626	?	?	72·9	?	?	83·8	?	?	63·7	68·0	?	?	48·2	55·9	56·0	53·4
	Simla (Ridge)	...	22·995	22·940	·055	22·966	0	?	68·0	59·8	8·2	72·1	56·6	15·5	64·1	66·0	63·6	−1·3	58·0‡	61·8	63·5	61·0
Hill Stations, N.-W.P.	Chakrata	...	23·167	23·114	·053	23·139	+·011	?	68·0	58·7	9·3	73·7	54·8	18·9	65·0	65·5	62·9	−1·7	?	63·1	63·5	?
	Ranikhet	...	·962	·893	·069	·920	−·002	?	73·1	62·8	10·3	79·0	59·2	19·8	68·8	70·1	67·4	−0·8	61·7	65·4	66·3	64·5
	Muktesar	...	22·741	22·679	·062	22·710	?	?	67·6	58·2	9·4	74·3	54·6	19·7	63·1	64·4	62·1	?	57·2	61·2	62·4	60·3
Hill Station, Nepal.	Katmandu	4,388	25·375?	25·298?	·077	25·339?	?	?	83·9	68·6	15·3	87·4	65·9	21·5	78·2	78·9	75·0	−0·5	67·2	?	?	?
Hill Station, Bengal.	Darjeeling	...	22·389	22·333‡	·056	22·362	−·006	?	66·1	57·5	8·6	71·4	55·3	16·1	63·2	63·5‡	61·2‡	+0·1	57·0	62·1	62·4‡	60·5
Hill Stations, Central India.	Mount Abu	...	25·807	25·744	·063	25·777	−·031	?	74·2	66·1	8·1	82·2	63·4	18·8	69·8	72·7	69·8	+0·4	65·0	68·0	69·5	67·5
	Pachmarhi	...	26·210	26·138	·072	26·174	−·024	?	74·9	67·7	7·2	82·7	65·2	17·5	71·1	73·3	71·4	−0·4	67·4	69·3	70·7	69·1
	Chikalda	3,642	·111	·035	·076	·073	−·027	?	73·8	66·0	7·8	81·8	62·9	18·9	69·4	72·6	70·1	+0·1	65·6	67·9	69·9	67·8

‡ Mean of 29 days. § Mean of 30 days.

II—*continued.*

in India, Burma, etc., in July 1898—continued.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from										Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·774	·801	·799	·791	+·010	87	74	67	76	− 1	8·7	8·3	8·5	+0·6	...	4	...	1	2	...	6	29	20	N 75° W	N 85° W	76	82	241	217	...	...	Khandwa	Deccan—*excluded.*
·806	·886	·890	·861	+·022	91	85	77	84	+ 1	9·2	8·6	8·9	+0·6	14	...	6	...	...	2	27	13	...	S 59° W	S 72° W	52	77	81	113	...	...	Hoshangabad	
·794	·840	·840	·825	+·012	91	79	75	82	+ 2	9·2	9·3	9·3	+0·6	3	2	3	3	1	2	12	23	13	N 86° W	S 88° W	56	69	235	243	...	...	Nagpur	
·796	·851	·848	·832	?	92	77	74	81	?	8·6	9·2	8·9	?	6	2	4	1	2	7	22	16	2	S 57° W	?	53	?	52*	?	...	...	Do. (Sanitary Commr.'s Office)	
·709	·854	·876	·813	−·006	85	85	83	84	+ 2	9·0	9·0	9·0	+0·4	5	3	3	1	2	4	13	20	11	S 87° W	S 89° W	52	64	101	114	...	...	Jubbulpore	
·758	·821	·819	·799	+·013	93	83	77	84	+ 4	8·3	8·6	8·5	+1·8	1	2	3	7	1	1	8	31	8	N 86° W	S 73° W	53	69	119*	139	...	...	Saugor	
·859	·915	·922	·899	+·062	91	82	81	85	+ 7	7·3	7·7	7·5	+0·5	1	10	6	8	3	5	8	10	11	N 40° W	N 80° W	23	45	158*	227	...	...	Sutna	
·775	·844	·856	·825	−·002	91	81	77	83	+ 1	9·1	8·8	9·0	+0·6	9	1	4	1	1	6	33	7	...	S 44° W	S 69° W	60	76	273*	278	...	...	Raipur	
·714§	·745	·777	·745	+·032	91§	77	69	79	+ 6	9·0	8·1	8·6	+1·2	2	1	...	...	...	...	...	59	...	N 89° W	N 86° W	95	90	247	249	...	...	Hyderabad (Deccan).	
·804	·922	·919	·882	−·025	85	86	84	85	− 2	9·2	9·2	9·2	+0·1	...	...	...	...	1	3	15	40	3	S 77° W	S 74° W	87	85	388	450	...	...	Bombay	West Coast.
·814	·897	·886	·866	+·002	92	87	87	89	+ 3	9·3	9·7	9·5	+1·6	2	2	...	...	...	1	23	30	4	S 76° W	S 61° W	82	79	212‡	312	...	...	Ratnagiri	
·778	·847	·847	·824	−·008	89	81	80	83	− 3	7·6	8·3	8·0	+0·2	1	10	...	...	...	1	23	15	12	N 73° W	S 73° W	67	75	126	123	...	...	Karwar	
·794	·849	·855	·833	−·001	94	83	81	86	− 2	7·5	8·4	8·0	+0·5	6	8	7	...	...	...	3	15	23	N 46° W	N 83° W	63	51	146	131	...	...	Cochin	
·760	·734	·699	·731	−·015	88	59	47	65	− 6	6·6	8·3	7·5	+1·1	1	1	...	..	...	4	36	15	5	S 61° W	S 55° W	82	78	228	108	...	...	Salem	South India.
·543	·610	·602	·585	+·006	94	96	95	95	0	9·6	10·0	9·9	+0·2	...	1	...	...	...	...	1	49	11	N 82° W	N 61° W	93	90	246	250	...	...	Mercara	
·629	·666	·663	·653	+·030	90	75	71	79	+ 3	9·5	9·5	9·5	+0·4	...	...	...	...	...	1	30	29	2	S 68° W	S 78° W	90	87	266*	291	...	...	Chitaldroog	
·599	·615	·594	·603	−·006	91	70	61	74	− 3	8·2	9·0	8·6	+1·8	...	...	...	...	...	...	21	38	3	S 77° W	S 73° W	92	91	276*	217	...	...	Bangalore	
·593	·631	·623	·616	+·027	94	76	76	82	+ 1	9·5	9·4	9·5	+0·3	...	...	...	...	...	..	14	40	8	S 86° W	S 89° W	90	90	116*	125	...	...	Hassan	
·622	·614	·613	·616	+·008	93	65	64	74	− 1	9·3	9·6	9·5	+0·6	...	...	...	...	...	...	22	38	2	S 76° W	S 77° W	92	91	336*	368	...	...	Mysore	
·692	·619	·602	·638	−·050	69	42	36	49	− 7	5·0	6·5	5·8	−1·6	...	...	...	...	...	...	21	37	4	S 78° W	W	90	82	227	243	...	...	Trichinopoly	
?	·775	·820	·822	+·029	?	57	59	67	0	7·6	7·9	7·8	+0·6	...	2	...	3	4	5	8	32	8	S 81° W	S 48° W	61	67	170	191	..	...	Madras	
·574	·546	·541	·554	−·104	66	48	44	53	−10	9·3	9·4	9·4	+1·1	...	...	...	...	...	...	1	57	4	N 88° W	S 87° W	97	88	317*	282	...	...	Bellary	
·838	·800	·798	·812	−·033	87	70	64	74	0	7·7	7·8	7·8	+1·3	...	...	...	...	1	...	23	33	5	S 76° W	S 81° W	87	75	202*	212	...		Cocanada	
·856	·866	·879	·867	+·030	85	70	70	75	+ 4	9·2	9·0	9·1	+1·9	2	3	1	...	...	1	45	10	...	S 55° W	S 71° W	80	75	?	86	...	...	Vizagapatam	
·420	·469	·433	·441	+·002	65	40	34	46	− 1	1·6	4·5	3·1	+1·5	34	2	...	2	3	2	7	8	4	S 70° W	S 85° W	19	30	56*	91	...	...	Quetta	Hill Station, Baluchistan.
·251	·268	·281	·267	+·011	68	45	38	50	+ 5	6·9	6·7	6·8	+1·7	...	...	...	1	7	1	3	44	6	S 85° W	S 73° W	72	38	63	47	...	...	Leh	Hill Stations, Punjab.
·553	·684	·879	·705	+·047	93	80	82	85	+ 7	4·7	5·8	5·3	+1·3	8	7	3	1	6	8	1	14	14	N 70° W	N 20° W	29	11	112*	93	...	...	Srinagar	
·451	·543	·592	·529	+·003	81	80	77	79	+ 4	1·8	3·1	2·5	−3·9	32	2	...	1	7	15	3	...	2	S 7° E	S 19° E	31	20	153*	155	...	...	Murree	
?	·383	·347	?	?	?	65	52	?	?	7·5	7·5	7·5	+1·1	...	1	...	...	1	6	18	19	17	S 81° W	S 81° W	71	65	52	49	3·01	0·76	Kailang	
·467‡	·530	·563	·518	−·015	91‡	88	88	89	+ 1	9·4	9·7	9·6	+0·8	33	6	8	1	...	11	3	...	...	S 73° E	S 80° W	8	14	53	86	...	...	Simla (Ridge).	
?	·561	·566	?	?	?	90	90	?	?	8·2	7·8	8·0	−0·4	17	3	1	1	4	36	...	...	...	S 7° E	S 75° W	58	45	201	131	...	...	Chakrata	Hill Stations, N.-W. P.
·541	·594	·610	·582	+·001	95	85	83	88	+ 2	9·2	9·1	9·2	+0·7	33	...	3	1	1	4	3	14	3	S 80° W	S 62° W	24	25	50*	59	...	...	Ranikhet	
·459	·524	·548	·510	?	95	91	91	92	?	9·2	8·9	9·1	?	...	...	1	3	31	1	2	3	21	S 36° E	?	18	?	7*	?	...	...	Muktesar	
·654	?	?	?	?	93	?	?	?	?	5·5	6·8	6·2	−0·6	1	1	...	23	4	1	6	21	5	S 40° W	S 67° W	8	10	24	21	16·95	2·55	Katmandu	Hill Station, Nepal.
·462	·548	·556‡	·522	+·003	97	94	95‡	95	0	?	?	?	?	8	5	8	16	8	3	4	3	5	N 81° E	S 75° E	30	32	86	91	...	...	Darjeeling	Hill Station, Bengal.
·607	·669	·686	·654	+·018	94	92	86	91	+ 2	8·2	7·9	8·1	−0·5	...	1	6	3	...	2	43	6	1	S 48° W	S 54° W	64	67	294*	278	...	...	Mount Abu	Hill Stations, Central India.
·668	·698	·723	·696	+·025	98	93	89	93	+ 5	8·7	7·9	8·3	−0·5	26	..	1	3	...	..	9	18	5	S 85° W	N 87° W	39	76	273*	252	...	...	Pachmarhi	
·627	·669	·701	·665	+·010	98	93	88	83	− 9	9·2	8·2	8·7	−0·3	17	16	...	...	...	...	4	4	21	N 39° W	N 55° W	57	68	290*	239	17·06	3·88	Chikalda	

* Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, South India.	Wellington	...	24·160	24·102	·058	24·131	−·038	?	71·2	57·6	13·6	75·0	54·1	20·9	66·9	66·6	63·2	+0·2	53·7	59·5	59·2	57·5
Extra India.	Aden	...	29·594	29·463	·131	29·526	−·034	29·549	93·5	83·2	10·3	97·8	77·7	20·1	89·3	91·5	88·1	+1·8	74·8	79·6	78·0	77·5
	Perim	...	·496	·403	·093	·447	−·022	?	95·6	84·9†	10·7	102·9	80·2	22·7	91·7	92·5	89·5†	−0·5	78·2†	80·9	81·3	80·1
	Minicoy	...	·837	·763	·074	·807	?	·742	86·6	?	?	88·3	?	?	84·6	83·6	?	?	?	78·2	77·8	?
	Zanzibar	...	30·084	·979	·105	30·032	−·038	30·031	80·7	73·3	7·4	82·8	70·0	12·8	76·2	79·5	76·7	+0·5	69·1	71·6	71·3	70·9
	Port Victoria (Seychelles)	15	29·988	·917	·071	29·953	−·040	29·891	80·0	74·6	5·4	81·0	70·9	10·1	78·6	79·4	77·1	−0·6	69·9	72·5	72·8	71·7
	Mauritius	181	?	?	?	·990	−·032	30·121	?	?	?	81·9	52·8	29·1	?	?	68·7	0	?	?	?	?

† Mean of 29 days. ‡ Mean of 28 days.

II—*concluded.*

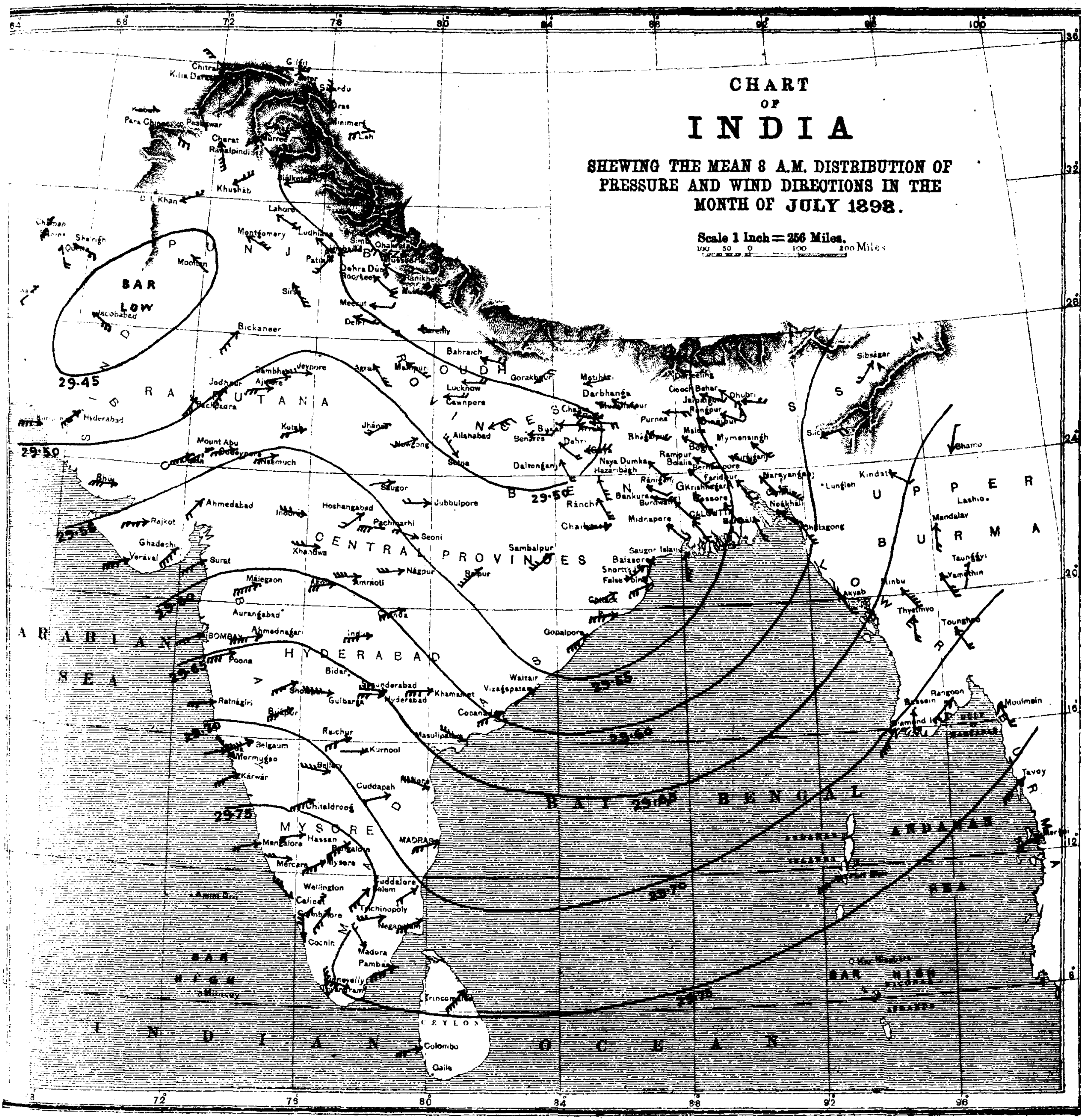
in India, Burma, etc., in July 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·374	·427	·429	·410	−·014	79	66	66	70	−4	9·2	9·6	9·4	+1·4	6	3	...	...	...	4	41	2	6	S 54° W	S 79° W	71	66	107	124	...	...	Wellington	HILL STATION, SOUTH INDIA.
·751	·879	·780	·803	0	66	64	53	61	−4	3·4	3·7	3·6	+1·5	...	...	2	4	5	25	19	6	1	S 16° W	S 1° E	66	73	264†	261	...	...	Aden	EXTRA INDIA.
·874‡	·911	·920	·902	+·115	73‡	62	61	65	+9	4·5	6·6	5·6	+3·1	...	2	1	7	1	...	22	12	17	S 87° W	N 56° W	50	60	419	386	...	...	Perim	
?	·878	·875	?	?	?	74	76	?	?	6·1	5·9	6·0	?	...	2	...	...	...	...	4	35	21	N 75° W	?	89	?	277*	?	...	...	Minicoy	
·658	·714	·660	·677	−·013	80	74	65	73	−5	6·8	6·2	6·5	+1·9	...	...	...	...	18	39	5	...	...	S 10° E	S 5° E	90	83	211*	207	...	...	Zanzibar	
·671	·720	·725	·705	0	78	74	72	75	+1	6·0	6·4	6·2	+0·6	...	1	...	...	46	11	1	...	3	S 36° E	S 29° E	82	86	275	287	0·62	0·37	Port Victoria (Seychelles).	
?	?	?	·501	?	?	?	?	72	−1	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	295	283	1·72	0·39	Mauritius	

G. I. C. P. O. No.—54 Meteo.—22-11-98.—385.

* Corrected.

† Mean of 30 days.



LITHO. BY J.N. MUNDLE.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2	miles per hour	...	one feather added to the wind arrow
,, ,,	2 to 5	,, ,, ,,	...	two feathers ,, ,, ,, ,,
,, ,,	5 to 10	,, ,, ,,	...	three ,, ,, ,, ,, ,,
,, ,,	10 to 20	,, ,, ,,	...	four ,, ,, ,, ,, ,,
	over 20	,, ,, ,,	...	five ,, ,, ,, ,, ,,

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

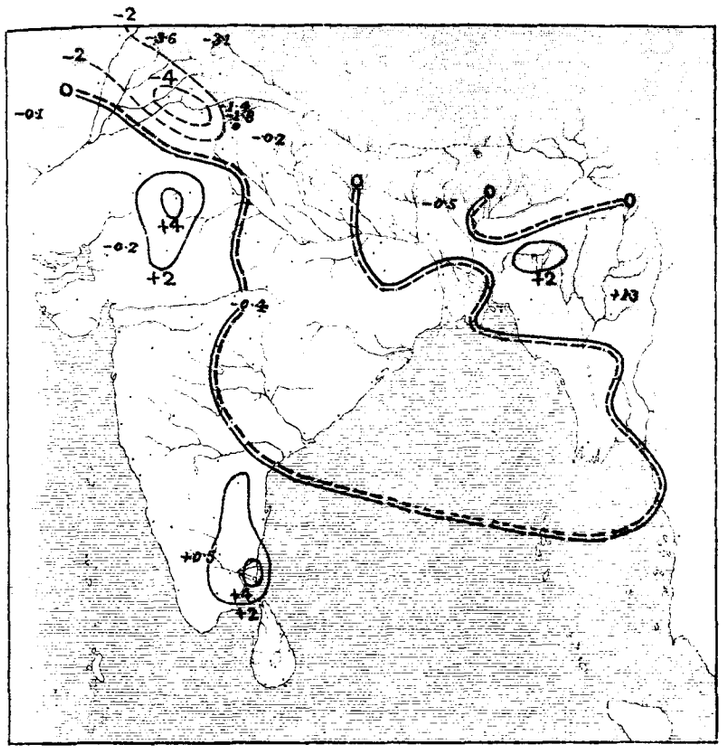
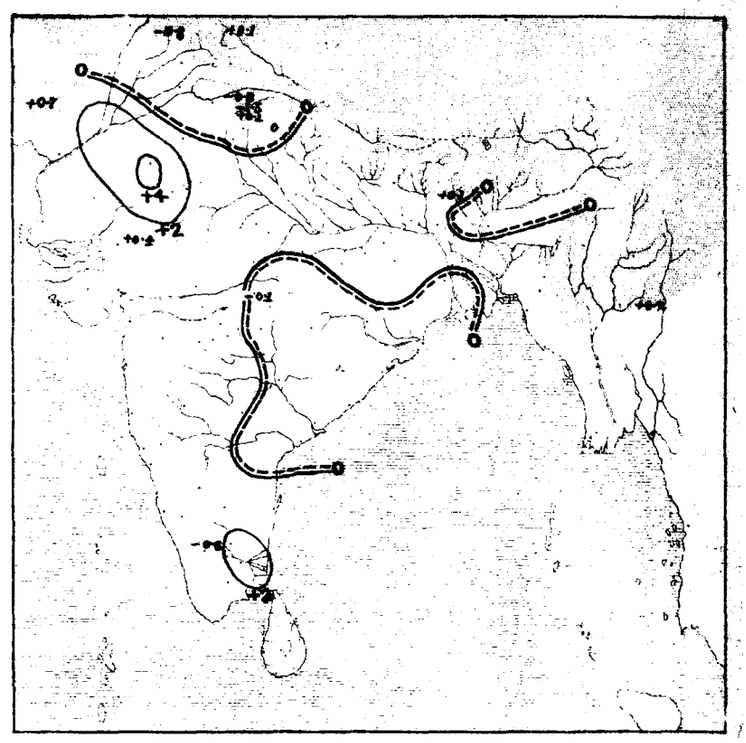


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

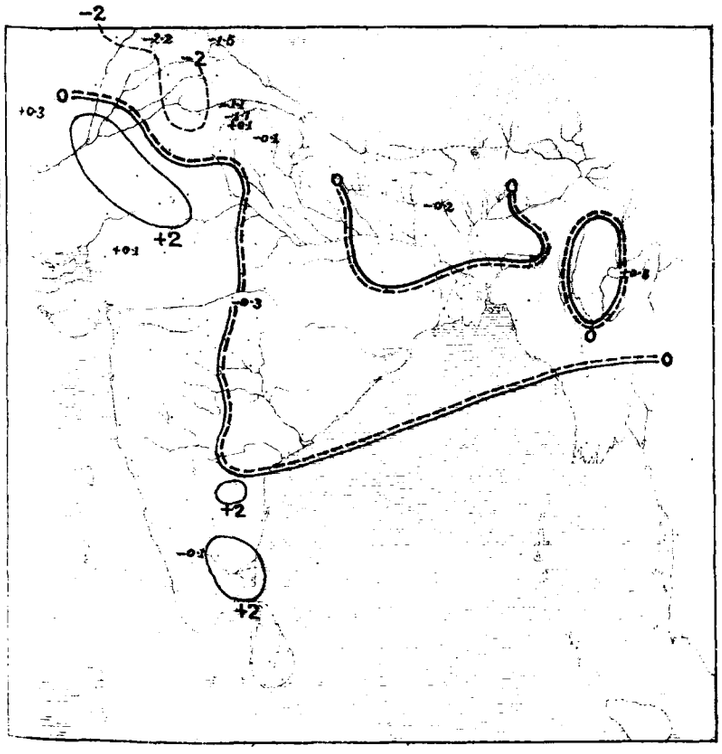
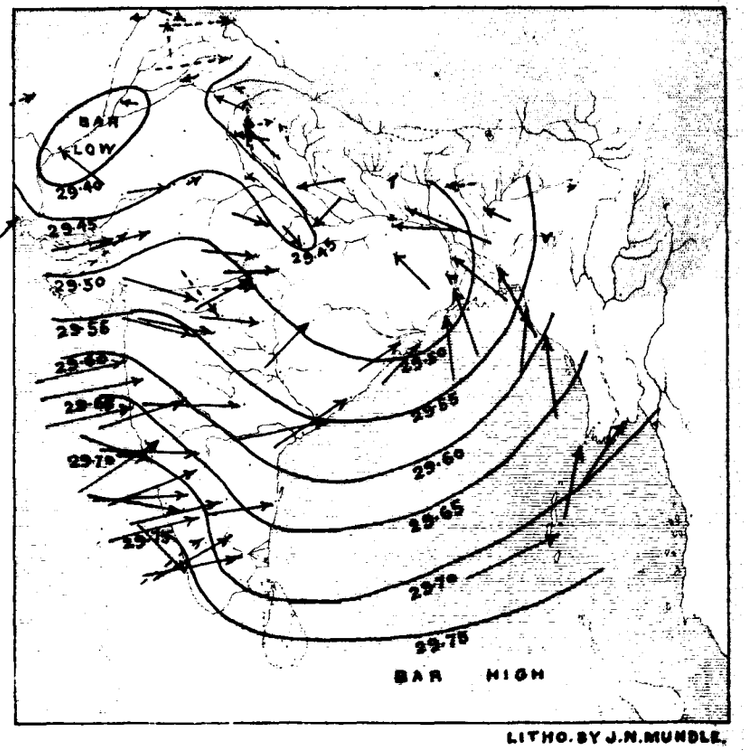


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF JULY 1898.



LITHO. BY J.N. MUNDLE.

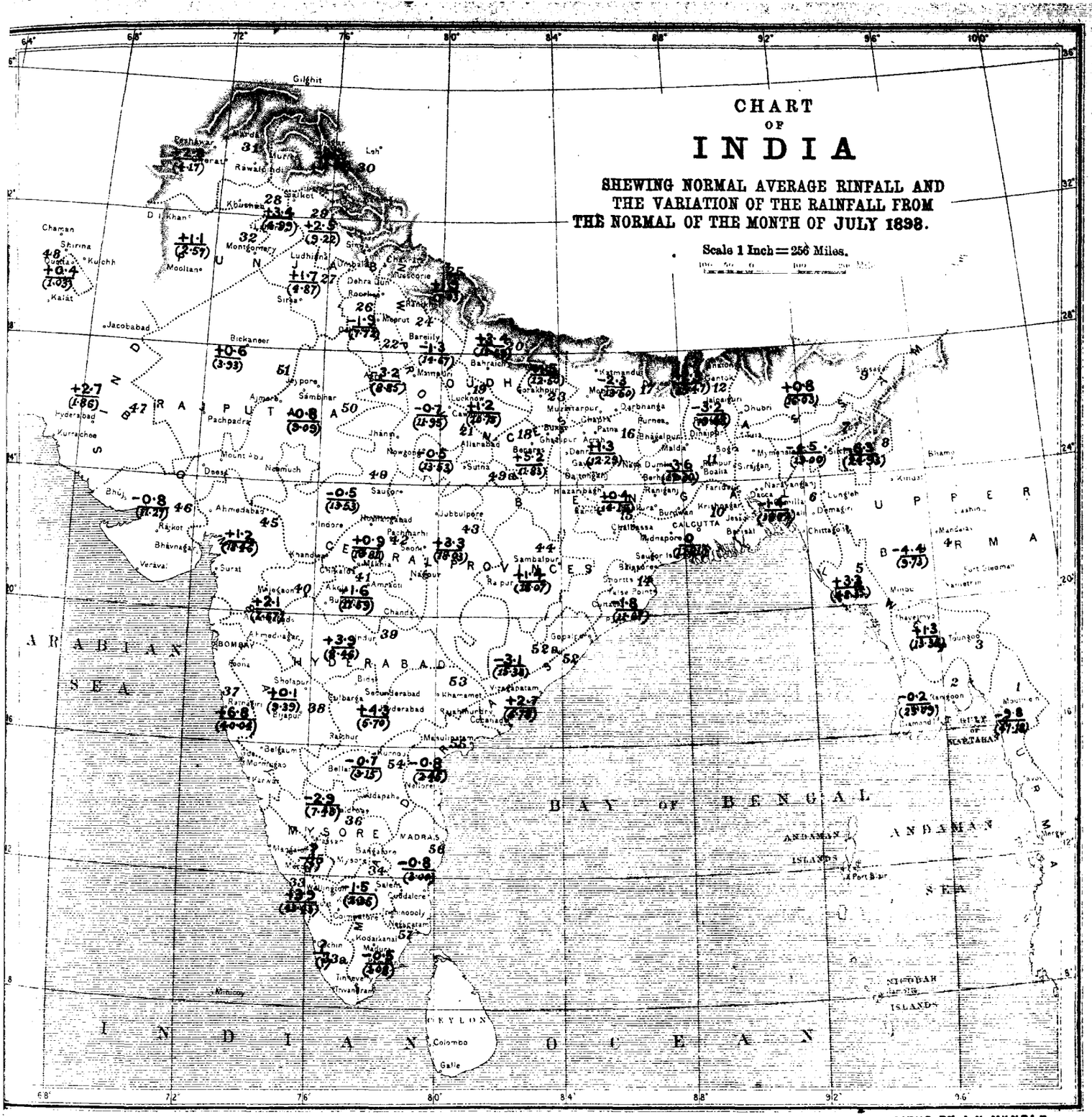
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of ⅕th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this Chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in Elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



No. 513, Wr. L.—June 98.—52,50.

LITHO. BY J. N. MUKHERJEE, Calcutta.

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma, Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North Punjab
32. West do.
33. Malabar
33a. Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a. Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do. do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

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GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, AUGUST, 1898.

INTRODUCTION.

THIS Review of the weather in India during the month of August 1898 is based on observations taken daily at 8 A.M. at 215 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 86 stations. In the rainfall summary, the rainfall data of the meteorological observatories and the weekly rainfall telegrams received during the month from District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the publication of the review are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of August 1898.

The meteorological conditions of the month of August are very similar to those of July.

The monsoon currents usually prevail with considerable steadiness throughout the month, and give general rain in practically all districts. August is the month of the greatest extension of the monsoon currents and some parts of Upper India usually obtain more rain in August than in July. On the whole, the monsoon currents in August are generally not so strong as in July, and there are also more frequent breaks in the rains in August. Hence the rainfall in India is usually smaller in amount in August than in July.

The variations in the rainfall of August in different years are in part due to variations in the strength of the current from year to year, and in part to the occurrence and line of advance of small cyclonic storms which generally form in the Bay of Bengal, and then march west-north-westwards towards Central and Upper India. These small storms usually pass along the trough of low pressure, which is an important feature in the meteorolo y of the south-west monsoon period. This trough of low pressure in August generally runs from Orissa in a west-north-westerly direction towards the South-West Punjab or Sind, but its position varies from year to year, and hence the direction of advance of these cyclonic storms also varies.

The following gives a summary of the chief features of the meteorology of the month.

At the commencement of the month pressure was below the normal over the whole of the Indian area. The deficiency was generally small to moderate in amount, but was considerable to large in the central districts of the North-Western Provinces, where a shallow depression was giving moderate to heavy rain. Temperature was in moderate defect in Northern and Central India, normal in the centre of the Peninsula and in moderate excess in Madras. The depression moved slightly westwards during the next 24 hours, at the same time filling up. Light to moderate rain fell over the greater part of India on the 3rd, 4th and 5th. Pressure decreased in Northern India on the 5th and 6th ano was in large defect over that area and steepish gradients for monsoon winds hence prevailed.

The rainfall during this period was heaviest in the Central Provinces, North-Western Provinces and Bengal. On the 6th, a shallow depression formed in Bihar and passed westwards into the North-Western Provinces on the 7th, and filled up in that area on the following day. General and moderately heavy rain fell in Bihar, Chota Nagpur and the North-Western Provinces on the 6th and 7th.

A depression appeared in the north-west of the Bay on the 7th. It intensified slowly on the 8th and 9th on which days it was of moderate intensity. Weather on the 9th was stormy at the head of the Bay with hard squalls and much rain. The storm drifted in a north-westerly direction through South-West Bengal on the 10th, Chota Nagpur and South Bihar on the 11th, and filled up in North Bihar on the 12th.

The storm gave a moderate to heavy burst of rain in South-West Bengal, Orissa, Chota Nagpur, Bihar and the eastern districts of the North-Western Provinces. The trough of low pressure which had been displaced northwards on the 5th and 6th occupied the submontane and central districts of the Gangetic Plain on the 8th and subsequent days. In consequence of this change the Bombay current was diverted from Upper India across Central India, and dry weather with higher temperature than usual prevailed from the 8th to the 13th in the Punjab and Rajputana. The following gives comparative data in illustration :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	8th August.	9th August.	10th August.	11th August.	12th August.	13th August.
	°	°	°	°	°	°
Punjab . . .	+2·7	+3·5	+4·9	+5·6	+5·0	+3·4
Rajputana . . .	+2·3	+1·7	+2·1	+2·4	+3·0	+2·9

Temperature was during this period most excessive at Rawalpindi, Sialkot and Murree. The following gives variation data for these stations for the same period :—

Station.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	8th August.	9th August.	10th August.	11th August.	12th August.	13th August.
	°	°	°	°	°	°
Rawalpindi . . .	+4·6	+3·4	+7·5	+10·8	+9·6	+4·0
Sialkot . . .	+5·5	?	?	?	?	?
Murree . . .	—0·3	+0·1	+5·2	+5·7	+0·7	—0·2

Temperature was also in moderate excess in Southern India during this period due to scanty rainfall.

The Naini Tal district received a very heavy downpour during the period from the 10th to the 13th. The following gives examples :—

Station.	Actual rainfall in 24 hours preceding 8 A.M. of				Total rainfall of period 10th to 13th August 1898.
	10th August.	11th August.	12th August.	13th August.	
	Inches.	Inches.	Inches.	Inches.	Inches.
Naini Tal . . .	9·14	5·50	7·84	8·70	31·18
Kathgodam . .	7·16	5·87	4·20	6·23	23·46
Haldwani . . .	1·12	4·16	4·50	6·57	16·35

The rainfall in the West Coast districts had been much lighter than usual during the first fortnight of the month and was very light from the 14th to the 25th. Practically no rain fell in the Malabar district and Travancore during this period. The Bay of Bengal current was both strong and steady and East and Central Bengal had very heavy rain on the 13th and 14th, when the previous depression was breaking up. A depression formed in Central Bengal on the 14th. It drifted across the Sonthal Parganas into Central Bihar on the 15th, and into the south-eastern districts of the North-Western Provinces on the 16th, and filled up during the next thirty-six hours.

East and Central Bengal received very heavy rain on the 14th, Bihar moderately heavy rain on the 15th, and the eastern districts of the North-Western Provinces moderate rain on the 16th.

No rain fell during this period in North-Western and Central India and the Deccan, and temperature was in moderate to considerable or large excess during this period in Upper India and Southern India, as shown below :—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of			
	14th August.	15th August.	16th August.	17th August.
	°	°	°	°
Punjab . . .	+3·8	+3·9	+3·4	+4·5
Sind and Rajputana .	+1·8	+1·4	+0·7	+1·9
Mysore . . .	+2·2	+0·3	—0·1	+1·4
Madras Coast . .	+3·7	+2·1	+2·1	—0·3
Madras South . .	+4·3	+3·3	+2·8	+2·1

Rawalpindi was, as in the preceding week, characterized

by the largest excess of temperature. The following gives variation data for that station and for Murree :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF.			
	14th August.	15th August.	16th August.	17th August.
	°	°	°	°
Rawalpindi . . .	+4·7	+6·0	+8·9	+9·4
Murree . . .	+2·6	+3·0	+5·5	+6·0

The trough of low pressure was transferred to its normal position on the 19th, but the humid currents continued to give rain from the 18th to the 21st chiefly in Burma, North-Eastern India and the Central Provinces. The rainfall was exceedingly light in the west coast and the break in the rains held steadily in the Deccan and Southern and North-Western India. The following gives temperature variation data for this period in these areas:—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	18th August.	19th August.	20th August.	21st August.
	°	°	°	°
Punjab . . .	+5·0	+5·4	+6·3	+6·1
Sind and Rajputana .	+2·9	+3·4	+4·5	+2·9
Madras Deccan . .	+3·0	+2·3	+3·2	+4·9
Madras Coast . .	+1·4	−0·9	−2·8	−1·5
Mysore . . .	+2·6	+3·8	+3·0	+3·5
South Madras . .	+2·4	+2·0	+2·1	+2·8

The excess was, as hitherto, greatest in the North Punjab. The following gives data :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	18th Aug.	19th Aug.	20th Aug.	21st Aug.
	°	°	°	°
Rawalpindi . . .	+11·3	+7·8	+10·2	+13·0
Sialkot . . .	+9·5	+8·0	+9·4	+9·5
Peshawar . . .	+6·4	+4·9	+4·3	+5·7
Murree . . .	+6·2	+4·5	+6·8	+7·9

A depression appeared or formed in Upper Burma on the 20th. It passed into South-East Bengal on the 21st, through South-West Bengal and Chota Nagpur into the eastern districts of the Central Provinces on the 22nd, and the north-eastern districts of the Central Provinces on the 23rd. It advanced rapidly along a westerly track at a rate averaging 15 miles per hour. It marched very rapidly and hence did not generally give large falls of rain. Burma received heavy rain on the 20th, Bengal, Chota Nagpur and Bihar on the 22nd and 23rd, and the Central Provinces moderate to heavy rain on the 21st, 22nd and 23rd. The rainfall was very heavy in the Hoshangabad and neighbouring districts of the Central Provinces, several stations recording amounts in 24 hours ranging between 5 and 11 inches. The depression filled up rapidly during the next 24 hours.

Heavy rain then began to fall in the North-Western Provinces and a depression formed in that area on the 25th. It was maintained chiefly, if not solely, by the Bombay current and was displaced slightly eastwards during the next three days, at the same time increasing slightly in intensity. It determined heavy rain to the Gangetic Plain, more especially the central and eastern districts of the North-Western Provinces from the 24th to the 27th or 28th.

The East Punjab also received moderate rain on the 26th and 27th.

The condition of unusually high temperature in North-Western India and Southern India held steadily from the 21st to the 25th, as shown below :—

PROVINCE OR DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	21st August.	22nd August.	23rd August.	24th August.	25th August.
	°	°	°	°	°
Punjab	+6·1	+6·5	+7·8	+6·6	+6·3
Rajputana	+4·6	+3·3	+4·8	+7·1	+6·3
Madras Deccan	+4·9	+4·3	+1·0	+2·7	+5·0
Madras Coast	−1·5	−1·0	−0·4	+0·8	+2·1
Mysore	+3·5	+3·0	+0·8	+2·5	+5·0

The following gives daily variations for the two stations at which temperature was most largely in excess during this period.—

DATE.	STATION.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of date.
		°
21st August . .	Rawalpindi	+15·0
	Sialkot	+9·5
22nd "	Rawalpindi	+11·7
	Sialkot	+9·3
23rd "	Rawalpindi	+11·8
	Sialkot	+10·6
24th "	Rawalpindi	+12·0
	Peshawar	+8·4
25th "	Rawalpindi	+14·3
	Lahore	+8·5

The weather in North-Eastern India during the last week of the month was determined chiefly by a cyclonic whirl which began to form in Central Bengal on the 25th and was maintained during the next three days solely by indraught from the Bay. The depression was almost stationary from the 26th to the 28th, during which there were hence two independent depressions in existence in North-Eastern India, the first in the Gangetic Plain and the second in Bengal, and maintained by the two great branches of the monsoon current. Very heavy rain fell in East and North Bengal during this period. The following gives the most noteworthy falls :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Chittagong . . .	Kodala . . .	26th August	13·40
Chittagong Hill Tracts	Bandarban . .	27th "	11·85
" . . .	Kodala . . .	" "	10·53
Noakhali . . .	Ramganj . .	" "	10·05
" . . .	Lakhimpur . .	28th "	10·95
Chittagong . .	Satkanya . .	" "	9·25
Tippera . . .	Ramchandrapur .	" "	8·55

The depression in the North-Western Provinces filled up on the 28th, on which day the Bombay current was diverted to the more easterly or the Bengal depression. This depression began to move westwards and was in West Bengal on the 29th, the western districts of Chota Nagpur and the eastern districts of the North-Western Provinces on the 30th, and in Baghelkhand and Bundelkhand on the 31st. Bihar and Chota Nagpur received moderately heavy rain on the 29th and 30th, and Central India and the central and northern districts of the Central Provinces on the 30th and 31st.

The dispersion of the storm in the North-Western Provinces was followed by a feeble incursion of monsoon winds into the South-East Punjab, which hence received light to moderate rain from the 29th to the 31st. Little or no rain was received in North Bombay or Rajputana during this period.

Pressure.—The mean pressure of the Indian area was ·02" below the normal. The local variations of pressure from the normal were well marked and important. Pressure was generally in local defect in Northern India and Burma and in excess in the Peninsula. The defect was moderate in amount in the Punjab, Upper Burma, Assam, Bengal, Chota Nagpur, Bihar and the eastern districts of the North-Western Provinces in which it ranged between ·02" and ·05", and was, on the whole, greatest in Central and East Bengal and South Bihar. Pressure was in moderate local excess in Lower Sind, South-West Rajputana, Cutch, Gujarat and the Peninsula. The excess was largest in the Konkan and the West Deccan, where it averaged ·05". The vertical pressure anomalies were moderate in amount and positive in Upper India.

The following table gives variation data of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of August 1898.	Pressure anomaly, August 1898.
	"	"
Burma Coast and Bay Islands . . .	—·021	—·001
Burma Inland	—·027	—·007
Assam	—·052	—·032
Bengal and Orissa	—·050	—·030
Gangetic Plain and Chota Nagpur . .	—·049	—·029
Upper Sub-Himalayas	—·040	—·020
Indus Valley and North-West Rajputana .	—·035	—·015
East Rajputana, Central India and Gujarat.	—·003	+·017
Deccan	+·001	+·021
West Coast	+·023	+·043
South India	+·011	+·031

Temperature.—The mean temperature conditions of the month did not differ largely from the normal, although the rainfall was above the normal in 25 out of the 56 rainfall divisions of the Empire. The mean temperature of the month was above the normal over the greater part of the Empire.

The mean maximum temperature of the month was above the normal in the Punjab, Sind, Rajputana, Gujarat, Kathiawar and the southern half of the Peninsula, in all of which areas the rainfall was in marked defect. The variations were moderate to considerable over the greater part of these areas. They exceeded 4° in amount at the following stations :—Rawalpindi (+7°·3), Sambhar (+5°·6), Sialkot (+5°·2), Bickaneer (+5°·0), Montgomery (+4°·8), Sirsa (+4°·7), Ajmere (+4°·3), Cuddapah (+4°·6), Salem (+4°·4) and Negapatam (+4°·1).

The day temperature was below the normal generally elsewhere, but the variations were small and unimportant except in Berar, the Central Provinces, Baghelkhand, Bundelkhand and the south-eastern districts of the North Western Provinces in which they ranged between 2° and 5°. The deficiency was greatest at Nowgong (—4°·7), Jubbulpore (—4°·0) and Hoshangabad (—3°·7).

The mean minimum temperature of the month was in

general excess except in Sind, the Central Provinces, Berar, Central India, Orissa, and the eastern districts of the North-Western Provinces. The variations were small and less than 2° in amount except in East and Central Rajputana and the Central and East Punjab, and a small area in Central Madras represented by Cuddapah. The variations exceeded 4° at Lahore (+4°·4) and Rawalpindi (+4°·2).

The mean temperature of the month was above the normal in the Punjab, Sind, Kathiawar, Gujarat, Rajputana, North Bihar and North Bengal, and in the Peninsula to the south of Lat. 18°N. The variations were small over the greater part of the area, but exceeded 2° in a part of Central Madras and the greater part of the Punjab and Rajputana. They were more than 2° at stations for which data are given below:—

Province.	Station.	Mean daily temperature.		
		Actual, August 1898,	Normal, August.	Variation of actual from normal, August 1898.
		°	°	°
Punjab	Rawalpindi	90·0	84·2	+5·8
	Montgomery	95·4	91·2	+4·2
	Sialkot	89·0	84·9	+4·1
	Lahore	91·3	87·4	+3·9
	Sirsa	92·2	88·4	+3·8
	Ludhiana	89·7	87·0	+2·7
	Peshawar	91·1	88·4	+2·7
	Mooltan	93·6	91·1	+2·5
Rajputana	Sambhar	86·9	82·5	+4·4
	Bickaneer	91·6	87·2	+4·4
	Ajmere	84·6	81·0	+3·6
	Jeypore	85·4	82·5	+2·9
Madras	Cuddapah	88·0	84·6	+3·4
	Salem	84·8	81·6	+3·2
	Negapatam	87·3	84·9	+2·4
	Trichinopoly	88·3	86·1	+2·2

The mean temperature conditions of the month at the hill stations in Northern India were practically normal. Temperature was in considerable excess at Leh (+3°·0) and also at Bushire (+1°·0) and Baghdad (+3°·3) in the Persian area. It was, on the other hand, in slight defect at Quetta (—1°·5).

The following table gives comparative temperature variation data of the month for the eleven meteorological provinces:—

Meteorological Province.	Variation from normal of		
	Mean maximum temperature, August 1898.	Mean minimum temperature, August 1898.	Mean daily temperature, August 1898.
	°	°	°
Burma Coast and Bay Islands	—0·4	+0·5	+0·1
Burma Inland	—1·0	+0·4	—0·4
Assam	+0·2	+0·2	+0·2
Bengal and Orissa	—0·3	+0·4	—0·1
Gangetic Plain and Chota Nagpur	—1·6	0	—0·8
Upper Sub-Himalayas	+1·7	+1·8	+1·8
Indus Valley and North-West Rajputana.	+2·7	+1·5	+2·1
East Rajputana, Central India and Gujarat.	+1·0	+0·9	+0·9
Deccan	—1·8	—0·2	—1·0
West Coast	+1·4	+0·8	+1·1
South India	+2·2	+0·8	+1·5

Winds.—The monsoon current in the Bay was, as shown by observations taken on board ships, of normal strength. Winds were stronger generally than the normal in Bengal and the Gangetic Plain. They were also on the mean of the month more westerly than usual in Bengal and Orissa, this deflection being directly related to the local deficiency of pressure in the submontane districts of North-Eastern India.

The monsoon trough of low pressure lay further north than usual, more especially in its western half. The Bombay monsoon current was hence determined more largely than usual across Central India and the northern half of the Peninsula. The Bombay current was weaker and less steady than usual in the Arabian Sea and West Coast districts.

Winds were remarkably light and unsteady over the greater part of Upper India. They were more westerly and less southerly than usual in Rajputana and Central India. In consequence of the abnormal features of the pressure conditions, gradients were steeper than usual in the Peninsula and Central India. Winds were hence stronger than usual over the whole of the interior of the Peninsula and in Central India. The increased strength of the winds was on the whole most strongly exhibited at the hill stations of Chikalda, Pachmarhi and Mount Abu. Winds were normal in direction at the Seychelles and Zanzibar.

Humidity.—The mean humidity conditions of the month were practically normal at Port Blair and in Lower

Burma. There was a very slight excess of aqueous vapour in Bengal, Upper Assam, Orissa, Bihar, the North-Western Provinces and Central India, and a slight defect in Berar, Chota Nagpur and the Central Provinces. As temperature was, however, in slight to moderate defect in these areas, the mean humidity of the month was normal or in slight to considerable excess. The excess was most marked at Nowgong (+10) and Sutna (+8). Humidity was in largish defect in Baluchistan, the Punjab, Rajputana, Lower Sind and North Bombay, due in part to a largish defect of aqueous vapour and in part to increased temperature. The deficiency was most marked at Jeypore (—14) and Quetta, Ludhiana and Ajmere (each —10). The air was also considerably drier than usual in the West, Central and South Deccan, Mysore and South Madras (as represented by Trichinopoly and Salem.) The mean humidity of the month was 11 below the normal at Bellary, 7 below at Bangalore and Trichinopoly, and 6 below at Salem and Hyderabad (Deccan).

The following table gives variation data of the mean aqueous vapour pressure and mean humidity of ten meteorological provinces for the month of August 1898:—

Meteorological Province.	Mean absolute humidity.		Mean relative humidity.	
	Average actual, August 1898.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Variation of actual from normal, August 1898.
	"	"	%	
Burma Coast and Bay Islands	·905	+·014	89	+ 2
Assam	·940	+·008	85	— 1
Bengal and Orissa	·945	+·001	86	+ 1
Gangetic Plain and Chota Nagpur.	·922	+·007	85	+ 2
Upper Sub-Himalayas	·844	—·011	72	— 4
Indus Valley and North-West Rajputana.	·833	—·003	61	— 4
East Rajputana, Central India and Gujarat.	·799	—·015	73	— 4
Deccan	·742	—·018	82	+ 1
West Coast	·842	—·005	83	— 4
South India	·672	—·025	70	— 5

Cloud.—There was less cloud than usual on the mean of the month in the Punjab, Sind, Rajputana, Upper Assam, Central Bengal, Malabar, South Madras and the Circars. The deficiency was large in South Madras and was moderately large over the area including Jacobabad, Mooltan, Ludhiana and Lahore, and in Kashmir in which it ranged between 1·0 and 1·8. Cloud was in excess over the remainder of India. The excess was generally small in amount, but was moderate to large in the area including Berar, the Central Provinces, Bundelkhand, Baghelkhand and the south-eastern districts of the North-Western Provinces.

The following table gives variation data of the mean cloud amount of ten meteorological provinces for the month of August 1898:—

Meteorological Province.	Mean cloud amount.	
	Average actual, August 1898.	Variation of actual from normal, August 1898.
Burma Coast and Bay Islands	8·8	+0·7
Assam	8·0	0
Bengal and Orissa	8·6	+0·6
Gangetic Plain and Chota Nagpur	8·3	+0·6
Upper Sub-Himalayas	5·7	—0·3
Indus Valley and North-West Rajputana	2·5	—1·1
East Rajputana, Central India and Gujarat	7·4	+0·3
Deccan	8·9	+1·0
West Coast	7·6	+0·2
South India	7·6	0

Rainfall.—The distribution of the rainfall of the month was determined chiefly by the abnormal pressure conditions of the month. The Bombay current was weaker than usual in the Arabian sea, and the rainfall in the west coast districts was hence considerably below the normal. Rain fell almost daily but the falls were much lighter than usual. The largest amount recorded in 24 hours at Bombay during the month was only 0·74 inch. The average rainfall of the month in the west coast division was only 10·08 inches, 7·41 inches or 42 per cent. below the normal. The rainfall of the month was also more or less below the normal over nearly the whole of the Peninsula, due in part to the same cause and in part to the increased strength of the winds in the Deccan. The deficiency averaged 23 per cent. in Southern India and 14 per cent. in the Deccan.

As already stated, the Bombay current was determined more largely across the head of the Peninsula than usual, and as a consequence, the rainfall of the month was very

scanty in Upper India. It was actually or practically nil in the South and West Punjab, Sind, Baluchistan and Cutch. It was considerably below the normal in the South-East Punjab, East Rajputana and the north-western districts of the North-Western Provinces. The rainfall of the month was, on the other hand, more or less in excess over nearly the whole of North-Eastern India and Burma, and over the greater part of Central India and the Central Provinces. The excess averaged 42 per cent. in the Gangetic Plain and Chota Nagpur, 31 per cent. in Bengal and Orissa, 30 per cent. in Burma Coast and 27 per cent. in Burma Inland. Much of the rain in North-Eastern India fell in connection with cyclonic whirls. The chief periods of general rain were the 1st to the 7th, the 9th to the 13th, and the 21st to the 31st. Heavy cyclonic downpours were received in the Naini Tal hill district from the 10th to the 13th, and in East Bengal from the 26th to the 28th. The heaviest recorded fall in 24 hours was 13·40 inches at Kodala in the Chittagong district on the 26th.

The following table gives comparative rainfall data of the month for the eleven meteorological provinces:—

METEOROLOGICAL PROVINCE.	RAINFALL.		
	Mean actual for August 1898.	Mean normal for August.	Variation from normal.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	33·56	27·79	+8·25*
Burma Inland	10·81	8·51	+2·31
Assam	16·25	16·54	−0·29
Bengal and Orissa	17·96	13·73	+4·23
Gangetic Plain and Chota Nagpur	16·45	11·57	+4·88
Upper Sub-Himalayas	9·07	11·15	−1·58*
Indus Valley and North-West Rajputana.	0·09	2·50	−2·42
East Rajputana, Central India and Gujarat.	4·58	8·06	−3·26*
Deccan	7·90	9·29	−1·28*
West Coast	10·08	17·49	−7·41
South India	3·35	4·37	−1·02

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian land area was ·020″ below the normal. Relatively to this general condition, pressure was in defect to the north of a line joining Jacobabad, Jeypore, Nowgong, Jubbulpore, Gopalpur and Bassein, and was in excess over the whole of the remainder of India.

The deficiency was moderate in amount over the greater part of the area, including the Punjab, the eastern districts of the North-Western Provinces, Chota Nagpur, Bihar, Bengal, Assam and Upper Burma. The following gives data for the stations, the negative anomalies at which exceeded ·03″ in amount:—

STATION.	Variation from normal of mean 8 A.M. pressure of August 1898.	Pressure anomaly, August 1898.
	″	″
Chittagong	−·067	−·047
Gaya	−·063	−·043
Berhampore	−·062	−·042
Darbhanga	−·060	−·040
Saugor Island	−·059	−·039
Burdwan	−·058	−·038
Jessore	−·057	−·037
Patna	−·057	−·037
Hazaribagh	−·056	−·036
Narayanganj	−·055	−·035
Dhubri	−·054	−·034
Mymensingh	−·051	−·031
Calcutta	−·051	−·031
Peshawar	−·059	−·039
Dera Ismail Khan	−·058	−·038
Lahore	−·051	−·031

The positive anomalies exceeded ·02″ over nearly the whole of the Peninsula.

The following gives comparative data for the stations at which the local excess was ·04" or over :—

STATION.	Variation from normal of mean 8 A.M. pressure of August 1898.	Pressure anomaly, August 1898.
	"	"
Ratnagiri	+·035	+·055
Goa	+·035	+·055
Bombay	+·031	+·051
Hyderabad (Deccan)	+·025	+·045
Bellary	+·024	+·044
Sholapur	+·022	+·042
Karwar	+·021	+·041
Amraoti	+·020	+·040

Hence pressure was in largish local excess in the Konkan and West Deccan.

Pressure was in considerably smaller defect at the hill stations in Northern India than at the neighbouring plain stations. The vertical pressure anomalies were hence positive and moderate in amount, as is shown by the following data for nine pairs of stations :—

HILL STATION.	Variation of actual from normal pressure, August 1898.	PLAIN STATION.	Variation of actual from normal pressure, August 1898.	Vertical pressure anomaly (Hill—Plain).
	"		"	"
Quetta	+·005	Jacobabad	—·034	+·039
Murree	—·025	Peshawar	—·059	+·034
Leh	+·003	Lahore	—·051	+·054
Kailang	—·039	Lahore	—·051	+·012
Simla	—·012	Ludhiana	—·048	+·036
Chakrata	—·006	Roorkee	—·040	+·034
Ranikhet	—·010	Barielly	—·023	+·013
Darjeeling	—·039	Dhubri	—·054	+·015
Mount Abu	—·010	Deesa	+·010	—·020

The chief abnormal features of the mean distribution of pressure of the month were as follows :—

(1) Pressure was in slight defect on the average of the whole Indian area.

(2) Pressure was in local defect in Northern India and Burma. The deficiency was moderate in amount in the Punjab and North-Eastern India.

(3) Pressure was in local excess in the Peninsula, Central India, Rajputana and North Bombay. The excess was moderate to considerable in amount in the Peninsula and was greatest in the Konkan.

(4) The vertical pressure anomalies in Northern India were positive and generally moderate in amount.

Barometric depressions and cyclonic storms of the month.

At the commencement of the month, pressure was below the normal over the whole of India, slightly in the Peninsula and considerably in the Gangetic Plain and the greater part of Burma. In consequence of these conditions the monsoon currents were determined more largely than usual to the Gangetic Plain, North-Eastern India and Burma, and there was a very pronounced tendency to the frequent formation of small depressions or cyclonic whirls over the areas of heaviest rainfall. These local whirls formed in fact the chief features of the meteorology of the month.

As stated in last month's review, the rainfall at the end of the month was heavy in the Gangetic Plain, and a small whirl was in process of formation in the south-eastern and central districts of the North-Western Provinces. It was clearly marked on the 1st and a well-defined cyclonic circulation about a centre near Cawnpore was established on that day. The following gives data :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Allahabad	29·429	+·047	—·088	SSW	4	9	0·27	Showery.
Lucknow	·391	—·021	—·125	SE	3	10	0·71	Ditto.
Mainpuri	·375	—·061	?	E	2	10	1·70	
Cawnpore	·366	—·043	—·133	Calm	1	10	2·25	Showery.
Jhansi	·430	—·028	—·096	W	3	6	0·38	
Nowgong	·441	—·002	—·094	W	2	10	0·29	Drizzling.
Sutna	·427	+·001	—·102	W	10	7	0·27	Fine.

The rainfall was general in the North-Western Provinces but was nowhere excessive. In the district of Cawnpore, where the largest falls occurred, an average of 1·28 inches had fallen during the previous 24 hours.

The depression advanced west-north-westwards up the Gangetic Plain during the next 24 hours, and at the same time filled up and was very faintly exhibited in the chart of the 2nd, at 8 A.M. of which day the cyclonic circulation was shown about a centre a little to the south-west of Mainpuri, as shown below :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Lucknow .	29·437	+·046	—·076	SE	3	8	...	Distant lightning.
Bareilly .	·453	+·025	—·053	NNE	3	7	0·07	Showery.
Agra . .	·406	—·001	—·104	NE	8	10	1·53	Raining.
Mainpuri .	·395	+·020	?	ESE	1	8	0·93	
Jhansi .	·439	+·009	—·087	W	5	7	0·58	
Cawnpore .	·431	+·065	—·071	Calm	1	10	0·07	

Moderately heavy rain had fallen over the North-Western Provinces and Central India.

The depression and cyclonic circulation disappeared during the next 24 hours.

On the morning of the 3rd the pressure conditions were practically normal. A shallow depression lay over Upper Sind and the South-West Punjab, and the trough of low pressure stretched in an east-south-easterly direction from that area to Chota Nagpur and Orissa.

Pressure fell briskly in the submontane districts of Northern India and was unchanged in the Peninsula during the next 24 hours. These changes displaced the trough of low pressure northwards, and its axis was defined on the 4th and the following four days by the stations of Patna, Lucknow, Bareilly and Meerut. Rain fell off largely in the North Western Provinces and increased in Bihar and Chota Nagpur. Moderate to very heavy rain was received in that area on the 5th and 6th, and a shallow depression formed on the 6th in Bihar. The following data indicate its position at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Hazaribagh	29·393	—·043	—·155	W	6	10	0·68	Showery.
Darbhanga	·405	—·012	—·150	ESE	4	4	0·76	
Patna .	·376	—·031	—·167	E	4	10	1·67	Showery.
Gaya .	·373	—·046	—·167	Calm	4	10	0·88	
Gorakhpur .	·420	+·013	—·112	NE	1	8	1·28	Showery.
Allahabad .	·442	+·025	—·091	WNW	9	10	4·44	Continuous rain.

The depression advanced along the trough of low pressure into the eastern districts of the North-Western Provinces during the next 24 hours. The following data show its position at 8 A.M. of the 7th :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Benares .	29·416	0	—·118	WSW	5	10	2·74	
Gorakhpur .	·398	—·022	—·139	E	4	10	0·23	Showery.
Bahraich .	·397	—·032	?	ENE	3	3	0·78	Showery.
Lucknow .	·375	—·068	—·157	E	2	10	3·17	Continuous rain.
Allahabad .	·391	—·051	—·145	WSW	14	10	0·40	Drizzling.

The rainfall was heavy in the eastern and central districts of the North-Western Provinces, amounts ranging between three and six inches being received at a large number of stations.

The large amount of 11·05 inches was registered at Digri in the Farukhabad district.

The depression filled up completely during the next 24 hours and the trough of low pressure continued to occupy the same position as before the formation of this depression. Meanwhile a storm had commenced to form at its eastern extremity in South Bengal and the north-west angle of the Bay. This formed the chief feature of the meteorology of the next week.

Cyclonic storm of the 7th to the 12th August.—This storm formed under conditions

which frequently immediately precede storm formation at the head of the Bay in July and August. As already stated the trough of low pressure, more especially in its western half, lay considerably further north than usual. The Bombay current was hence diverted from Upper India and determined chiefly to Central and North-Eastern India. The Bay of Bengal current was of moderate strength, and was giving moderate to heavy rain, chiefly in Bengal and Bihar. The interaction of the two currents in Chota Nagpur, South-West Bengal and the north-west angle of the Bay tended on the 6th to the formation of a depression. It developed slightly during the next 24 hours, and a shallow depression lay over the north-west angle of the Bay and South Bengal on the morning of the 7th. The following data show the character of the weather in the north of the Bay at 8 A.M. of that date and indicate the position of the storm centre :—

Name of vessel.	8 A.M. position. Lat. N.	8 A.M. position. Long. E.	Barometer corrected.	Wind. Direction.	Wind. Force.	Weather.
	° ′	° ′	″			
S.S. *Neptune* .	14 20	85 13	...	SW	7	High confused sea, 4 P.M. rain squalls.
S.S. *Booldana* .	15 20	85 39	29·525	WSW	6	Heavy sea and hard squalls of wind and rain.
S.S. *Kohinur* .	16 48	92 25	·518	SW	10	High sea from south-west to west, and fresh to whole gale with hard squalls of wind and rain.
S.S. *Uganda* .	17 17	86 25	·478	SW	6	High sea and overcast. 4 P.M. occasional rain.
S.S. *Hohenfels*.	18 00	84 35	·489	NW	4	...
S.S. *Karagola* .	19 07	90 11	·389	SW	6	High sea and frequent hard rain squalls.
S.S. *Mascotte* .	20 07	87 15	...	SW	5	Cloudy. 4 A.M., continuous rain.
F.L.V. *Torch* .	Mutlah		·372	Var.	2 to 4	Very heavy S. swell and very heavy rain between 8 and 11 A.M.

The data indicate that very strong monsoon winds prevailed in the centre and east of the Bay, and light variable airs in the north-west angle. Very heavy rain and frequent hard to violent squalls were experienced by vessels in the north and centre.

The weather at the Mutlah Light Station is thus described by Captain Beahan—

"A very heavy southerly swell all through the day, wind from 2 A.M. 7 A.M. westerly and from 8 A.M. to 11 A.M. north-east; very heavy rain between the latter hours. Wind from south-east and south between noon and 4 P.M. with light rain; sky overcast. Wind west from 4 P.M. to midnight. No rain but much lightning between south-west and north-west."

8th August.—The pressure changes of the previous 24 hours were everywhere small in amount. The depression at the head of the Bay was unchanged in position and character. The following gives 8 A.M. data of the coast stations within the storm area :—

Station.	Pressure. 8 A.M., reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	″	″	″				Inches.	
Chittagong	29·411	—·003	—·237	SE	10	7	0·15	Fine.
Barisal .	·367	—·026	—·219	ENE	1	10	0·36	
Calcutta .	·368	—·014	—·197	NE	3	9	0·29	Showery.
Saugor Island.	·351	—·010	—·217	NE	6	9	1·49	Sea smooth.
False Point	·416	+·024	—·154	W	15	10	5·74	Heavy rain.

The preceding data indicate that the storm centre was in about Lat. 21¼° N. and Long. 89° E.

The following marine data indicate the weather in the north of the Bay :—

Name of vessel.	8 A.M. position. Lat. N.	8 A.M. position. Long. E.	Barometer corrected.	Wind. Direction.	Wind. Force.	Weather.
	° ′	° ′	″			
S.S *Lindula* .	16 55	92 33	29·552	SW	6	High sea and continuous rain squalls.
S.S. *Kohinur* .	17 04	90 30	·513	WSW	7	Heavy squalls of wind and rain.
S.S. *City of Calcutta.*	17 45	87 01	·506	SW	4	Midnight, heavy rain squalls.
S.S. *Booldana* .	18 09	87 26	·477	WSW	5	High sea and cloudy. Noon, heavy wind and rain squalls.
S.S. *Hohenfels*.	20 02	87 09	·439	NW	7 to 8	...
S.S. *Ellora* .	21 32	88 06	·354	NNE	2	Heavy south-east swell and cloudy. Midnight, occasional squalls.
F.L.V. *Torch* .	Mutlah		·340	NE	2 to 3	Very heavy south-south-west swell. Midnight, passing heavy rain showers. Sea slight.
F.L.V. *Comet* .	Long sand		·349	NE	2	...

The preceding data give practically the same position for the centre as the data of the coast stations. They also indicate that south-west winds, force 6 to 8, prevailed to the south and south-east of the depression, and that winds were very light near the centre in the north-west quadrant. The F. L. V. *Comet* and *Torch* and the S.S. *Ellora*, all within 30 or 50 miles of the centre at 8 A.M., had light north-east winds, force 2 to 3. The S.S. *Hohenfels*, about 30 miles to the south-west of the Mutlah Station, had, on the other hand, north-west winds of force 7 to 8. The data hence indicate clearly the character of the air movement in the storm area, the chief feature being the contrast between the lightness of the north-east winds in the north-west quadrant, and the strength of the south-west winds in the south and south-east quadrants.

Captain Beahan describes the weather during the day at the Mutlah Station in the following terms:—

"A very heavy south-south-west swell, wind light from north and north-east up to 2 P.M., when it shifted suddenly into west in a rain squall, force a fresh gale up to 7 P.M. By midnight the wind had shifted back to north, force a strong breeze, with passing heavy rain showers."

9th August.—Pressure had risen over the whole area except locally in the north-west angle of the Bay, where it had fallen slightly. It had risen briskly in Burma and slightly over the greater part of India. These changes slightly emphasized the depression in the north-west of the Bay. The following gives 8 A.M. data of the coast stations within the storm area:—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Chittagong	29·473	+·062	—·189	SSE	14	10	0·14	
Barisal	·421	+·054	—·180	SSE	1	10	0·10	
Calcutta	·386	+·018	—·194	NNE	5	10	0·48	Showery.
Saugor Island.	·329	—·022	—·255	N	10	8	1·94	Sea slight.
Balasore	·404	+·024	—·166	WSW	5	9	1·65	Showery.
False Point	·434	+·018	—·147	W	22	10	5·51	Continuous rain.
Puri	·500	+·020	?	WNW	12	10	1·88	Sea slight.

The centre at 8 A.M. was a little to the south-east of Saugor Island.

10th August.—The pressure changes were generally slight and unimportant. Pressure had increased briskly in the north of the Bay and fallen slightly in South-West Bengal and Chota Nagpur, to which the storm was now transferred. The following data indicate its position at 8 A.M.:—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Balasore	29·411	+·007	—·172	WSW	5	4	1·47	Showery.
Saugor Island.	·408	+·079	—·189	SW	22	10	1·25	"
Calcutta	·382	—·004	—·211	SW	5	10	0·87	"
Jessore	·398	+·014	—·208	S	9	10	0·39	
Burdwan	·378	—·020	—·215	ENE	1	10	0·08	Showery.
Berhampore	·402	—·021	—·195	E	9	10	0·22	"
Bankura	·364	—·046	?	NNW	5	9	0·11	
Midnapore	·387	—·006	—·213	Calm	3	10	1·00	
Chaibassa	·399	—·032	?	Calm	16	7	0·92	Showery.

The depression was now central between Calcutta and Midnapore in Lat. 22½° N. and Long. 88° E., and had hence advanced about due north-west during the previous 24 hours. It had commenced to fill up, but pressure was still between a fourth and a fifth of an inch below the normal at the centre. Strong cyclonic winds were blowing in South Bengal. Winds were very light in the north and north-west quadrants of the storm area, but were increasing. Strong south-west winds (force 5 to 7) were now established at the head of the Bay, where weather was showery with a high sea. Weather improved rapidly during the day, as is shown by the following description of Captain Beahan:—

"A.M. a gentle west-south-west gale, sea going down fast. Noon, a fresh south-west breeze but south swell still heavy. Sunset, a moderate south-south-west breeze and sea. Weather fine."

General and moderately heavy rain had fallen over Bengal, Orissa and Chota Nagpur. Weather was showery in the North-Western Provinces, the Central Provinces and the West Coast districts, but the rainfall was light except in the storm area. The break in the rains established in North-Western India on the 7th held steadily.

11th August.—The pressure changes were again small in amount except in the areas affected by the advance of of the storm. Pressure had increased briskly in South and West Bengal, and fallen slightly in Bihar. The storm had advanced in a north-north-west direction during the

previous 24 hours into South Bihar. The following data ndicate the position of the inner storm area at 8 A.M.:—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Ranchi .	29·460	+·023	—·118	WNW	6	9	0·15	Showery.
Hazaribagh.	·432	—·015	—·151	W	9	10	3·01	Thunderstorm.
Gaya .	·414	—·025	—·159	NE	8	10	2·86	Continuous rain.
Patna .	·438	—·032	—·139	ENE	6	10	0·77	Showery.
Dehri .	·434	—·010	—·131	W	8	10	2·15	Drizzling rain.
Darbhanga	·477	0	—·114	ESE	6	9	0·03	
Bhagalpur	·456	+·021	—·120	E	6	10	0·72	Drizzling rain.
Naya Dumka.	·469	+·053	—·118	SSE	3	10	1·47	

The barometric depression at the centre had decreased to a sixth of an inch. The centre was between Gaya and Hazaribagh at 8 A.M., in about Lat. 24½° N. and Long. 85½° E. General rain had fallen over the same areas as on the previous day. The largest amounts were received in the Palamau, Shahabad and Gaya districts, where several stations reported falls ranging between 2 and 6 inches.

12th August.—The pressure changes were everywhere small and generally of no importance. The depression in Bihar was filling up rapidly and had advanced slowly into Central Bihar. The following data indicate the inner area of the cyclonic circulation :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Hazaribagh.	29·492	+·060	—·097	WSW	9	10	0·14	Showery.
Gaya .	·458	+·044	—·116	SW	7	10	1·96	Continuous rain.
Naya Dumka.	·484	+·015	—·103	ENE	2	9	0·31	
Bhagalpur	·491	+·035	—·088	SE	5	10	...	
Darbhanga	·501	+·024	—·093	ESE	7	4	0·04	Fine.
Patna .	·461	+·023	—·120	E	8	10	0·84	Showery.
Arrah .	·461	+·034	?	Calm	5	10	0·29	
Dehri .	·461	+·027	—·111	W	7	10	3·57	Drizzling rain.

The cyclonic circulation was still well marked. Its centre was between Dehri and Patna in Lat. 25½° N. and Long. 85° E. It had hence only advanced 80 miles during the previous 24 hours. The rainfall in the area of depression was now comparatively light and light to moderate showers were received during the previous 24 hours in Burma, North-Eastern India, the Central Provinces, the West Coast districts and the West Deccan. Fine weather with light to moderate south-west or west winds held steadily in North-Western India.

The storm practically filled up during the next 24 hours. The following gives the position and rate of advance of the centre from the 9th to the 12th :—

Date.	Position of centre at 8 A.M.		Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.	Long. E.		
	° ′	° ′	Miles.	Miles.
9th August . . .	21 35	88 30	...	...
10th " . . .	22 30	88 0	80	3
11th " . . .	24 30	85 30	200	8
12th " . . .	25 30	85 0	80	3

Pressure on the 13th was in moderate to considerable defect both in North-Eastern India and Upper India. It was normal or in slight excess in the Peninsula and Central India. Gradients were hence steeper than usual. The western half of the trough of low pressure lay considerably further north than usual, and hence the Bombay current continued to be determined across the head of the Peninsula towards Chota Nagpur, and a very shallow low pressure area lay over Bengal. Moderate to heavy rain fell in that area during the day, and the depression intensified and concentrated during the next 24 hours.

The following gives the history of the cyclonic storm thus initiated.

Depression and cyclonic storm of the 14th to the 17th.—The position and character of the depression at 8 A.M. of the 14th is indicated by the following 8 A.M. data :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Calcutta .	29·547	+·052	—·054	SW	7	10	1·89	Continuous rain.
Jessore .	·541	+·048	—·072	Calm	1	10	2·09	"
Berhampore	·487	+·014	—·117	NW	5	10	5·85	Showery.

Station.	Pressure. 8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches	
Bogra .	·525	+·038	—·075	...	...	8	0·17	Fine.
Malda .	·502	+·040	?	E	3	10	0·62	
Naya Dumka.	·509	+·030	?	NW	1	10	1·55	
Raniganj .	·526	+·040	?	Calm	2	10	0·46	

The centre of the depression was near Berhampore, where the heaviest rain had fallen during the previous 24 hours.

15th August—The barometric changes were everywhere small. The shallow depression had advanced in a west-north-west direction into Central Bihar. The following data indicate its position and character at that hour:—

Station.	Pressure. 8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud	Rainfall.	Weather.
	"	"	"				Inches	
Hazaribagh	29·516	—·039	—·084	SW	12	10	0·97	Showery.
Gaya .	·458	—·062	—·121	NW	6	10	1·04	Continuous rain.
Naya Dumka	·538	+·029	—·053	SSW	1	10	0·25	
Bhagalpur .	·499	+·001	—·074	E	2	10	4·63	
Patna .	·478	—·049	—·105	ENE	3	10	1·24	Showery.
Darbhanga .	·518	—·013	—·080	ESE	5	8	0·97	
Arrah .	·479	—·036	?	ENE	2	10	0·62	Drizzling rain.
Dehri .	·475	—·063	—·094	W	4	10	0·19	Passing showers.

The depression was of small extent and very shallow. The centre at 8 A.M. was between Patna and Gaya in Lat. 25½° N., and Long. 85½° E. General moderate to heavy rain had fallen over the whole of North-Eastern India, but the largest amounts were recorded in the Palamau district. The following gives the most noteworthy falls:—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 15th August.
		Inches.
Palamau	Panki	7·20
	Latehar	7·15
	Garhwa	4·15

The rainfall was lighter in the Central Provinces and the West Coast districts than on the previous day. Light dampish winds with partially clouded skies and fine weather continued in North-Western India.

16th August.—The depression was very faintly shown on this day. The following data show its position at 8 A.M.:—

Station.	Pressure. 8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud	Rainfall.	Weather.
	"	"	"				Inches	
Dehri .	29·501	+·026	—·070	S	7	10	2·49	Dark, gloomy.
Arrah .	·521	+·042	?	ESE	4	8	0·31	Passing showers.
Buxar .	·504	+·003	—·071	E	7	7	2·30	
Benares .	·518	—·050	—·051	NE	4	8	1·07	Showery.
Allahabad .	·539	—·026	—·034	NE	7	10	0·20	Do.
Sutna .	·586	—·011	—·012	W	11	10	1·15	Do.

The centre of the residual depression was a little to the south of Buxar in Lat. 25½° N., and Long. 84° E. The rainfall in the storm area was small in amount.

The storm continued to march westwards and filled up during the next 24 hours.

The following gives the position and rate of advance of the centre from the 13th to the 16th:—

Date.	Position of centre at 8 A.M. Lat. N.	Position of centre at 8 A.M. Long. E.	Distance travelled during interval.	Average hourly rate of motion during interval.
	° ′	° ′	Miles.	Miles.
13th August	23 45	89 50	...	...
14th "	24 25	89 0	80	3
15th "	25 30	85 30	230	10
16th "	25 30	84 0	90	4

The storm gave moderately heavy rain to North-Eastern India during its existence.

Rainfall on the 16th was almost restricted to Burma, North-Eastern India and the West Coast districts. Light to moderate rain was received in these districts and in the North-Western Provinces and the Central Provinces on the 17th, 18th, 19th and 20th. During this period the distribution of pressure changed to some extent and became more favourable to the occurrence of rain in Upper India. Gradients decreased generally, and pressure fell in the Peninsula relatively to Northern India.

The trough of low pressure was during this period displaced southwards and occupied its normal position on the 19th and 20th. A storm of unusual character passed across Northern India during the next four days, of which the following is an account :—

Cyclonic storm of the 20th to the 23rd August.—Pressure gave way rapidly locally in Central and Upper Burma during the 24 hours preceding 8 A.M. of the 20th, and a shallow depression lay over Upper Burma at that hour. The following gives data of this depression area :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Yamethin .	29·630	—·113	—·080	SE	11	10	2·37	Drizzling.
Mandalay .	·606	—·113	—·091	SSE	1	10	1·30	Showery.
Kindat .	? 559	— 113	—·122?	SSE	1	3	0·06	Fine.
Bhamo .	·595	—·101	—·080	Calm	1	10	0·32	Showery.
Lashio .	?	—·144	—·112	?	?	10	0·31	
Taunggyi .	?	?	?	SSW	?	10	2·47	Continuous rain.

The preceding data show that a depression in which pressure was from a tenth to an eighth of an inch below the normal lay over Upper and Central Burma. The observations are not sufficient to establish whether the depression formed in Burma or advanced from Siam. The former appears, however, to be the most probable supposition. Very heavy rain had fallen over the whole of Burma during the previous 24 hours, more especially in Central Burma.

21st August.—Pressure had begun to rise in Burma and had fallen rapidly in East Bengal, to which the low pressure area had been transferred. The following data show its position at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Chittagong.	29·536	—·123	—·153	ESE	5	10	2·70	Thunder-storm.
Noakhali .	·528	—·131	?	W	3	10	1·76	
Comilla .	·521	—·137	?	NW	2	8	0·04	
Narayanganj	·531	—·121	—·116	N	3	8	0·07	Showery.
Barisal .	·483	—·145	—·147	NNW	0	10	0·21	Raining.
Jessore .	·555	—·090	—·063	Calm	1	10	0·04	

The data show that a shallow depression lay over South-East Bengal, the centre of which was probably in about Lat. 22° N., and Long. 90½° E. Winds were unusually light in South-East and South-West Bengal, although they were cyclonic in direction.

Moderate rain had fallen in East Bengal during the previous 24 hours, and practically no rain had been received in the remainder of Bengal.

22nd August.—Pressure had risen briskly to rapidly in East Bengal, Arakan, Upper Burma and Lower Assam and had fallen slightly to briskly in Chota Nagpur and the eastern districts of the Central Provinces. The depression had advanced westwards through South Bengal into Chota Nagpur and the eastern districts of the Central Provinces. The following data indicate its position at 8 A.M. :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
F. L. V. *Torch.*	29·547	+ ·014	?	SSE	5	8		Gentle S. swell and passing light rain showers.
F. L. V. *Comet.*	·529	—·031	?	SSE	4	3		
False Point.	·526	—·015	—·093	SSW	7	10	1·40	Thunder-storm.
Balasore .	·499	...	—·099	S	2	8	2·20	Showery.
Midnapore .	·506	—·052	—·115	NE	2	10	0·40	
Chaibassa .	·479	—·066	?	NE	2	7	0·97	Showery.
Ranchi .	·530	—·044	—·082	ENE	11	9	0·38	Showery.
Sambalpur .	·487	—·099	—·159	S	6	10	0·59	

The depression was of slight intensity with moderate gradients to the east and south-east. Winds were moderate to fresh at the head of the Bay and weather showery.

Moderate rain had fallen in South Bengal, Orissa, Chota Nagpur and the Central Provinces. Weather was fine and dry in Upper India and in the Deccan. The rainfall was heaviest in Orissa during the previous 24 hours. An average of 2·10 inches had fallen in the Cuttack district and of 2·52 inches in the Balasore district.

The centre of the depression at 8 A.M. was probably in Lat. 22½° N., and Long. 83½° E., and had hence marched about 460 miles, or at the rate of 19 miles per hour during the previous 24 hours.

23rd August.—Pressure had increased briskly to rapidly in Orissa, Chota Nagpur, Bihar, North Madras and the eastern districts of the Central Provinces, and fallen briskly to rapidly in the western and northern districts of the Central Provinces to which the depression had now advanced.

The following data show its position at 8 A.M. of the 23rd :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A. M. reduced to sea level and constant gravity at Lat. 45°	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Seoni .	29·567	—·039	—·086	SW	3	10	1·80	Continuous rain.
Jubbulpore	·490	—·081	—·126	SSE	3	6	1·01	Continuous rain.
Sutna .	·540	—·047	—·069	NE	8	10	0·99	Showery.
Nowgong	·541	—·067	—·068	E	2	10	0·91	Continuous rain.
Saugor .	·525	—·090	—·076	NNE	6	10	0·86	
Hoshangabad.	·537	—·110	—·113	Calm	3	10	5·56	Continuous rain.
Pachmarhi	...	—·060	—·101	Calm	13	10	6·73	Continuous rain.

The data indicate that the storm was changing in character as the steepest gradients were now to the south and south-west of the centre and were very slight in the eastern quadrant. The centre of the depression, at which pressure was an eighth of an inch below the normal, was about 40 miles to the north-west of Jubbulpore in Lat. 23½° N., and Long. 79°½ E.

Light showers had fallen in North Eastern India during the previous 24 hours and very heavy rain in the Central Provinces. The following gives the more noteworthy falls:—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 23rd August.
		Inches.
Bhandara . . .	Sakoli	5·05
Hoshangabad . .	Seoni	8·26
" . . .	Harda	6·26
" . . .	Hoshangabad	5·56
Betul . . .	Chicholi	6·00

The rainfall was heavy over the greater part of the Central Provinces and excessive in the Hoshangabad district.

The depression filled up rapidly during the afternoon and evening of the 23rd, and there was no trace of its existence on the morning of the 24th.

The following gives the position and rate of advance of the storm from the 21st to 23rd:—

Date.	Position of centre at 8 A.M.		Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.	Long. E.		
	°	° ′	Miles.	Miles.
21st August . .	22 0	90 30	...	...
22nd " . .	22 30	83 25	460	19
23rd " . .	23 35	79 30	260	11

The storm was very remarkable in several respects, more especially the following :—

1st. Its formation in or to the east of Burma.

2nd. Its rapid movement along an almost due westerly track from Upper Burma to the north-western districts of the Central Provinces.

3rd. Its rapid dispersion in the Central Provinces after a heavy cyclonic downpour, followed by rapid increase of pressure.

Pressure fell over Northern India and Burma on the 24th and the whole of the India on the 25th, most rapidly in the Punjab, in the western districts of which it was two-tenths of an inch below the normal on the 25th. Steepish gradients hence obtained, and moderately strong monsoon winds prevailed. The Punjab received a moderate burst of rain on the 26th and 27th.

The Bombay current was chiefly determined to the North-Western Provinces to which it gave heavy and general rain during the period from the 25th to the 28th.

A shallow depression formed in the area of heaviest rainfall on the 25th. It intensified slightly during the

next 24 hours. The following data show its position at 8 A.M. of the 26th:—

STATION.	PRESSURE.			WIND.				WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	
	"	"	"				Inches	
Sutna .	29·619	+·067	—·006	WSW	14	10	3·83	Continuous rain.
Allahabad	·610	+·103	—·004	SSW	6	10	1·89	"
Lucknow.	·531	+·033	—·083	E	2	10	0·46	Showery.
Bahraich.	·574	+·060	?	ESE	3	7	1·54	Continuous rain.
Cawnpore	·533	+·013	—·081	N	4	10	3·63	"
Mainpuri.	·572	+·071	?	Calm	2	8	2·27	

The depression and cyclonic whirl was of small extent, but was well marked, although the winds were light at all stations within it. The centre was a little to the south-east of Cawnpore. Very heavy rain had been received, more especially in the Allahabad, Banda, Fatehpur and Cawnpore districts. The following gives the most noteworthy falls :—

District.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 26th August.
		Inches.
ALLAHABAD	Sirathu	10 93
BANDA	Baberu	7·43
"	Kamasin	6·70
FATEHPUR	Khajwa	9·04
"	Khaga	8·45
"	Ghazipur	8·00
"	Fatehpur	7·33

The following gives the mean rainfall of the previous 24 hours in the districts within the central storm area :—

DISTRICT.	Avearge rainfall during 24 hours preceding 8 A.M of 26th August.
	Inches.
Fatehpur	8·21
Banda	4·30
Cawnpore	3·25
Allahabad	2·72

The rainfall was hence heaviest in the Fatehpur district, the centre of the area of depression.

The depression occupied practically the same position during the next 24 hours. The following data indicate its position at 8 A.M. of the 27th :—

STATION.	PRESSURE.			WIND.				WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	
	"	"	"				Inches	
Allahabad	29·597	—·013	—·021	WSW	12	10	1·14	Continuous rain.
Benares .	·619	—·008	+·003	SW	4	10	0·36	
Gorakhpur	·595	—·031	—·030	SSE	2	10	1·75	Showery.
Bahraich.	·604	+·030	?	ESE	7	8	0·44	"
Lucknow.	·578	+·047	—·039	N	3	10	0·23	"
Cawnpore	·600	+·067	—·018	WNW	5	10	1·62	Continuous rain.

The area of depression was larger than on the 26th, and the centre was north of Allahabad and slightly to the east of its position on the 26th. General rain had fallen in the North-Western Provinces, moderate to heavy in amount. It was heaviest in the Allahabad, Banda, Fatehpur, Cawnpore and Basti districts, but was less concentrated than on the previous day.

The depression intensified slightly during the next 24 hours, and also again shifted slightly to the eastwards. The following gives meteorological data of the storm area at 8 A.M. of the 28th:—

STATION.	PRESSURE.			WIND.				WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	
	"	"	"				Inches	
Benares .	29·547	—·072	—·075	WSW	5	10	0·50	Showery.
Gorakhpur .	·594	—·001	—·034	E	3	8	1·58	"
Bahraich .	·624	+·020	?	ENE	5	4	1·31	"
Bareilly .	·662	+·048	+·039	E	3	10	1·84	Continuous rain.
Lucknow .	·627	+·049	+·005	Calm	2	10	1·36	Showery.
Cawnpore .	·634	+·034	+·016	Calm	1	10	0·51	"
Allahabad .	·545	—·052	—·075	WNW	22	10	1·88	Gale of wind.

The centre of the storm was probably in about Lat. 25½°N. and Long. 82½°E. or 40 or 50 miles to the east of its position at 8 A.M. of the 27th.

General rain had again been received in the North-Western Provinces. It was heaviest in the Hamirpur, Rai Bareli, Sultanpur, Jaunpur and Allahabad districts, and was now light in the western half of the Province.

The depression filled up during the next 24 hours, and was not shown in the chart of the 29th.

Its disappearance was probably chiefly due to the increasing influence of a depression and cyclonic whirl which formed in Bengal on the 26th, and which was the chief feature of the meteorology of the remainder of the month.

As already stated, the previous depression formed in an area of heavy rainfall in the North-Western Provinces, and was maintained chiefly, if not solely, by the indraught of the Bombay current. It was almost stationary during its existence, being displaced slightly to the east—an unusual occurrence, but evidently due to the fact that it was fed solely by the Bombay and not by the Bengal current.

The following gives an account of the depression which was initiated in Bengal on the 25th and 26th.

Depression and cyclonic storm of the 26th to the 31st.—As already stated, the pressure gradients increased in India on the 24th and 25th. Fresh to strong monsoon winds prevailed at the head of the Bay. These winds gave a general burst of rain to North-Eastern India from the 26th to the 30th. The rainfall was very heavy in the eastern and northern districts of Bengal on the 26th. The following gives the most noteworthy falls :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 26th August.
		Inches.
CHITTAGONG	Kodala	13·40
	Fenoa	7·68
RANGPUR	Peerganj	6·72
	Bhawaniganj	6·08
PUBNA	Serajganj	6·50
BOGRA	Panchbibi	6·40
MYMENSINGH	Kishorganj	6·27
DINAJPUR	Nawabganj	6·24

Pressure was very uniform over the whole of Bengal and Bihar with a tendency to the initiation of a low pressure area in Central Bengal, about a centre near Berhampore.

27th August.—Pressure fell locally in East Bengal, and a shallow and largish low pressure area lay over the greater part of Bengal on the morning of the 27th. The following data show its position and character :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Jessore	29·646	+·016	—·012	SW	0	10	1·10	Continuous rain.
Narayanganj	·620	—·022	—·060	SW	7	10	8·16	"
Mymensingh	·603	—·044	—·085	SE	1	10	3·95	"
Dinajpur	·643	+·016	—·017	NE	4	10	1·65	"
Berhampore	·636	+·042	—·012	NW	4	10	2·02	Drizzling.
Calcutta	·668	+·039	+·024	W	7	10	0·09	"

The storm area as defined by the isobar of 29·65" was about 350 miles long and 250 miles broad, and in that area the range of pressure was probably less than ·05". A well defined cyclonic circulation was established in the area, about a centre in Lat. 24¼° N. and Long. 90¼° E.

Very heavy rain had been received in a part of the storm area, more especially in the Bogra, Pubna, Dacca, Mymensingh, Noakhali, Tippera and Chittagong districts. The following gives the more noteworthy falls :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 27th August 1898.
		Inches.
CHITTAGONG	Kodala	10·53
	Satkanya	6·52
	Chittagong	6·06
CHITTAGONG HILL TRACTS	Bandarban	11·85
	Rangamati	7·22
NOAKHALI	Ramganj	10·05
DACCA	Dacca	8·00
	Narayanganj	6·58
TIPPERA	Nasirnagar	6·73
SONTHAL PARGANAS	Bhagya	6·06

The following gives mean rainfall data of the previous 24 hours in the storm area :—

District.	Average actual rainfall of 24 hours preceding 8 A.M. of 27th August.	Heaviest rainfall in district on 27th August.
	Inches.	Inches.
Chittagong	5·25	10·53
Noakhali	3·82	10·05
Tippera	4·09	6·73
Mymensingh	2·25	5·75
Dacca	5·07	8·00
Bogra	2·30	3·75
Pubna	2·48	3·99

28th August.—The depression had intensified slightly during the previous 24 hours. The following gives data of the storm area at 8 A.M. of the 28th :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles past 24 hours.			
	"	"	"				Inches	
Jessore	29·593	—·053	—·073	Calm	2	10	2·05	Continuous rain.
Narayanganj	·550	—·070	—·137	SW	6	10	3·71	
Mymensingh	·617	+·014	—·077	ESE	6	9	3·22	Continuous rain.
Bogra	·621	+·008	—·015	...	...	10	0·67	
Berhampore	·598	—·038	—·057	N	4	10	0·98	Showery.
Calcutta	·610	—·058	—·042	W	6	10	0·48	"

The centre was in practically the same position as on the previous day, *viz.*, in Lat. 24¼° N. and Long. 90¼° E.

The intensification of the storm had accompanied excessive rain in the eastern districts of Bengal, more especially Chittagong, Noakhali, Tippera, Backergunj and Dacca.

The following gives the heaviest falls :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 28th August 1898.
		Inches.
Noakhali	Lakhimpur	10·95
	Noakhali	7·90
	Harishpur	7·09
	Chhagalnaya	7·78
	Hatya	6·95
Tippera	Ramchandrapur	8·55
	Comilla	7·45
Chittagong	Satkanya	9·25
Gaya	Jahanabad	6·85

The following gives mean data for the districts in which the rainfall was heaviest :—

District.	Average actual rainfall of 24 hours preceding 8 A.M. of 28th August.	Heaviest rainfall in district on 28th August.
	Inches.	Inches.
Noakhali	6·80	10·95
Tippera	3·65	8·55
Chittagong	3·39	9·25
Backergunge	2·85	4·63
Faridpur	4·29	4·80
Dacca	2·92	4·39

29th August.—The storm had again developed slightly, and was commencing to move westwards. The following gives meteorological data of the storm area for 8 A.M. of the 29th :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles past 24 hours.			
	"	"	"				Inches	
Calcutta	29·558	—·052	—·098	SW	7	10	2·69	Continuous rain.
Jessore	·569	—·024	—·100	SW	2	10	2·68	"
Narayanganj	·631	+·081	—·059	ESE	16	10	0·44	
Berhampore	·540	—·058	—·120	E	6	10	0·29	Showery.
Malda	·587	—·042	?	ENE	6	8	0·05	
Naya Dumka	·554	—·070	—·094	ENE	2	9	0·43	
Raniganj	·521	—·113	?	NNW	1	10	0·16	Drizzling.
Burdwan	·488	—·138	—·174	SW	1	10	3·59	Heavy rain.

The storm was now central to the north-west of Burdwan in about Lat. 23½° N. and Long. 87½° E. Gradients were steepish near the centre in all quadrants, and moderately strong winds prevailed in South and East Bengal. Winds were very light near the centre and in the western quadrant. Thus the mean velocity of the winds at Burdwan during the previous 24 hours, was only 1 mile per hour, and the actual velocity at 8 A.M. 2 miles per hour.

The rainfall of the previous 24 hours was light to moderate in East Bengal (except Backerganj), and was heavy in South-West and Central Bengal, more especially in the Hooghly, Howrah, Jessore, Khulna, Burdwan, Bankura and Midnapore districts, for which data are given below :—

District.	Average actual rainfall of 24 hours preceding 8 A.M. of 29th August	Heaviest rainfall in district on 29th August.
	Inches.	Inches.
Burdwan	1·60	3·59
Bankura	1·36	3·15
Hooghly	3·50	5·33
Howrah	2·49	3·73
Jessore	2·33	3·85
Khulna	3·08	7·41
Backergunj	2·31	4·20

30th August.—The storm had drifted rather rapidly westwards during the previous 24 hours and now covered the western districts of Chota Nagpur and Baghelkhand, as is shown by the following data :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
Hazaribagh	29·562	—·021	—·104	E	9	10	0·63	Showery.
Daltonganj	512	—·080	?	NNE	3	8	0·04	
Gaya	·550	—·031	—·094	NE	8	10	0·56	Showery.
Dehri	·535	—·049	—·094	E	11	10	0·90	Passing showers.
Benares	·568	—·013	—·059	NE	2	10	...	
Allahabad	·589	—·003	—·037	ENE	10	10	...	
Sutna	·590	—·031	—·048	NNE	7	10	0·48	Showery.

The data when charted indicate that the storm was a shallow and largish depression with light to moderate gradients, and that the centre was in about Lat. 24° N. and Long. 83½° E. Moderate rain had fallen in South-West Bengal, and moderately heavy rain in Chota Nagpur, more especially the districts of Manbhum and Singhbhum.

31st August.—The depression was now filling up steadily, and had been transferred eastwards to Baghelkhand, Bundelkhand and the neighbouring districts of the Central Provinces. The following gives data :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Jubbulpore	29·596	—·024	—·074	WSW	5	10	2·08	Continuous rain.
Sutna	·564	—·026	—·079	NE	7	10	0·35	Showery.
Nowgong	·595	—·034	—·053	NE	4	10	0·70	Drizzling.
Saugor	·627	—·026	—·020	NW	6	10	1·28	

The cyclonic circulation was less regular than hitherto. The centre was probably in Lat. 24° N. and Long. 81° E.

Moderate rain had fallen in the storm area and in the Central Provinces, South Bihar and Chota Nagpur. The storm filled up during the next 24 hours in South-East Rajputana and Bundelkhand.

The following gives the position and rate of advance of the depression from the 28th to the 31st :—

Date.	Position of Centre at 8 A.M.		Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.	Long. E.		
	° ′	° ′	Miles.	Miles.
28th August	24 10	90 15	...	...
29th "	23 50	87 30	170	7
30th "	24 0	83 25	260	11
31st "	24 0	81 0	150	6

The chief feature of the meteorology of the last week of the month was the co-existence of two cyclonic storms in North-Eastern India. The following points in connection with those storms are deserving of record as illustrating important features in connection with storm formation and generation. The two storms were independent and

maintained by different humid currents, the westerly storm by the Bombay current and the easterly storm by the Bay current. The formation of both storms accompanied the occurrence of heavy and concentrated rainfall, which was, on the whole, most excessive in and near the central depression. The two storms were practically stationary during the period of their common existence from the 26th to the 28th. The westerly storm advanced slightly eastwards, *i.e.*, in the opposite direction to that in which storms in the Gangetic Plain usually advance, more especially when they are in part or in whole maintained by the Bay current. The dispersion of this storm accompanied the determination of the Bombay current towards Bengal, Orissa and the head of the Bay, and hence to the depression in that area. The storm in Bengal which had hitherto been almost stationary then commenced to march west-north-westwards along the usual track of cyclonic storms in the rains, and at the normal rate of movement.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-west of India.

No report was received.

Summary of special storm reports.

The following gives a statement of the chief local storms, of which reports were received during the month:—

5th.—Thunderstorm at Salem from 4 P.M. to 5-15 P.M.

17th.—Thunderstorm at Pachmarhi.

21st.—Severe thunderstorm at Allahabad from 6 P.M. to 9 P.M.

25th.—Thunderstorm at Allahabad at 4-30 A.M. Thunderstorm at Simla during night of the 25th.

26th.—Severe thunderstorm at Salem from 7-35 P.M. to 8-30 P.M. 2·54 inches of rain fell during the storm, 11·5 miles of wind were registered by the anemometer between 8 P.M. and 8-15 P.M.

28th.—Thunderstorm at Salem. It began at about 8 P.M. and continued until 9-7 P.M. 2·46 inches of rain fell during the storm.

30th.—Dust storm at Jeypore from 2-20 P.M. to 2-40 P.M.

31st—Thunderstorm at Salem from 7 P.M. to 8 P.M.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Conditions in this area were characterized by several abnormal features. The monsoon current, so far as can be judged from the available data, was feebler than usual on at least 27 days during the month, and stronger than usual on only two days, *viz.*, the 6th and the 25th, when its average strength was 4·4 and 4·7, respectively, as compared with 4·3, its normal intensity in August. There were also large fluctuations in its strength from day to day, thus indicating that it was much less steady than is ordinarily the case in August. Winds were strongest during the month on the 25th when they averaged 4·7 in force, and feeblest on the 29th when their average strength was only 2·9. On the mean of the whole month the monsoon current in the Arabian Sea was 0·4 below its normal August strength, *viz.*, 4·3. The winds, although fairly normal in direction in the western half of the sea, blew more directly from the west than usual in the eastern half. Notwithstanding the great unsteadiness of the current, the weather was much more settled than usual throughout the month.

Bay of Bengal.—At the commencement of the month a moderate monsoon prevailed generally over the Bay. The air movement as determined from the data of 18 vessels was 3·6, as compared with 4·0, the normal of the month. Winds intensified rapidly during the next twenty-four hours, more especially in the centre and east of the Bay, and on the morning of the 2nd were blowing with an average force of 4·3. Very strongly marked monsoon conditions obtained generally over the Bay during the next four days, the mean intensity of the air movement during the period fluctuating between 4·4 and 5·0. The strongest winds throughout the period were of force 9. On the 7th, monsoon winds (force 3 to 10) prevailed over the Bay except in the extreme north where a depression was in the process of formation and winds

were irregularly cyclonic in direction and light in force. The disturbance intensified slowly during the next two days, and marching northwards passed inland across the Sandheads on the 9th. It was a storm of moderate intensity and occasioned fresh gales, hard squalls, heavy continuous rain and a high sea over the north of the Bay. The strongest winds during its existence over the sea were experienced on the 9th, at 8 A.M. of which day the mean intensity of the air movement as deduced from the data of 22 vessels was 5·7, or 1·7 greater than the normal of the month. With the passage inland of the depression the winds reverted to their normal monsoon directions and at the same time fell off rapidly in strength so that their average strength on the morning of the 10th was only 4·2 or 0·2 above the normal.

The monsoon current continued to take off in intensity during the next forty-eight hours and on the morning of the 12th its average strength was 3·8 or 0·2 below the normal. No significant change occurred on the 13th and 14th, the monsoon current remaining below its normal strength. Winds decreased still further in strength during the next two days, and on the morning of the 16th were 0·7 below their normal intensity. An increasing monsoon obtained until the 22nd, at 8 A.M. of which day the mean intensity of the air movement for the whole of the Bay was 4·4 or 0·4 above the normal. This increase was, however, only temporary as winds again began to decrease and averaged 3·4 in force on the 23rd and 3·2 on the 24th. A light monsoon obtained during the next two days. Winds increased rapidly during the 26th and were of normal strength from the 27th to 30th. They, however, decreased rapidly again during the next twenty-four hours, and at the end of the month their mean strength as deduced from the data of 27 vessels was only 3·4 or 0·6 less than their intensity on the previous day.

From the preceding account of the weather in the Indian Seas it will be seen that, while the Bay of Bengal current was steadier than usual and on the mean of the month of normal strength, the current in the Arabian Sea was not only exceedingly unsteady but also slightly weaker than usual. The most noteworthy feature of the marine meteorology of August 1898, as of the corresponding period of 1897, was the almost total absence of cyclonic disturbances over the sea area.

Equatorial Belt.—The information for this region is even more limited than usual. It however tends to show that conditions were fairly normal in this area during the greater part of the month. The data for the Seychelles and Zanzibar indicate that winds, although normal in direction at both these stations, were slightly above their normal strength at the latter, and slightly feebler than usual at the former station. A noteworthy feature of the meteorology of the month at these stations was the scanty rainfall. Thus the rainfall of the month was 34 per cent. below the normal at the Seychelles and only 0·09 inch in total amount at Zanzibar as compared with 1·83 inches, the normal fall of the month.

Temperature of the Air.

The variations of the mean temperature of the month were related to the distribution of the rainfall. The rainfall of the month was in considerable defect in the Punjab, Rajputana, Central India West, Gujarat, Kathiawar, Berar, the Konkan, the Deccan and Southern India. It was more or less above the normal over the remainder of India, the excess being greatest, relatively to the normal, in the North-Western Provinces, East, Deltaic and Central Bengal, Orissa, South Bihar and the western and central districts of the Central Provinces and also in Tenasserim and Arakan.

The mean maximum temperature of the month was higher than usual in Baluchistan, the Punab, Upper Sind, Rajputana, Kathiawar and Gujarat. The excess was more than 2° in amount over nearly the whole of that area and was more than 3° at stations for which comparative data are given below:—

Province.	Station.	Mean maximum temperature.		
		Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
		°	°	°
Punjab	Rawalpindi	100·8	93·5	+7·3
	Sialkot	99·2	94·0	+5·2
	Montgomery	106·2	101·4	+4·8
	Sirsa	102·1	97·4	+4·7
	Lahore	99·3	96·0	+3·3
	Mooltan	103·4	100·2	+3·2
Rajputana	Sambhar	94·8	89·2	+5·6
	Bickaneer	101·3	96·3	+5·0
	Ajmere	91·8	87·5	+4·3
	Jeypore	93·6	89·9	+3·7
	Deesa	91·4	88·3	+3·1

The excess was hence greatest in this area in the Central and North-East Punjab and Central and North-West Rajputana.

The mean maximum temperature of the month was also above the normal in the Peninsula to the south of Lat. 18°N. The excess was more than 2° in amount over the eastern half of the area and was more than 3° at the stations for which comparative data are given below:—

Province.	Station.	Mean maximum temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
		°	°	°
Madras	Cuddapah	97·3	92·7	+4·6
	Salem	95·8	91·4	+4·4
	Negapatam	97·0	92·9	+4·1?

The mean maximum or day temperature of the month was generally below the normal over the remainder of India. The variations were small in Burma and North-Eastern India, but were moderate to considerable in amount in Berar, the Central Provinces, Bundelkhand, Baghelkhand and the south-eastern districts of the North-Western Provinces. The variations were more than 2° in amount in these areas and exceeded 3° at stations for which comparative data are given in the following table:—

Station.	Mean maximum temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	°	°	°
Nowgong	83·6	88·3	—4·7
Jubbulpore	80·8	84·8	—4·0
Hoshangabad	81·5	85·2	—3·7
Indore	79·1	82·6	—3·5
Saugor	80·1	83·5	—3·4
Allahabad	86·5	89·8	—3·3
Sutna	82·6	85·7	—3·1

The mean minimum temperature of the month was above the normal over the greater part of India. It was in slight defect in Sind, the Central Provinces, Berar, Orissa, South Bihar, Bundelkhand, Baghelkhand and the eastern half of the North-Western Provinces. The deficiency was greatest at Seoni, Jubbulpore and Benares, where it slightly exceeded 1°.

The minimum or night temperature of the month was generally above the normal of the month over the remainder of India, but the variations were small except in the Punjab and Rajputana. The following gives comparative data for stations in these two areas:—

Area.	Station.	Mean minimum temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
		°	°	°
First area	Rawalpindi	79·2	75·0	+4·2
	Lahore	83·3	78·9	+4·4
	Montgomery	84·5	81·0	+3·5
	Ludhiana	81·8	78·7	+3·1
	Sialkot	80·5	77·5	+3·0
	Sirsa	82·3	79·4	+2·9
	Peshawar	80·0	77·8	+2·2
Second area	Bickaneer	81·8	78·0	+3·8
	Sambhar	79·0	75·8	+3·2
	Ajmere	77·3	74·5	+2·8
	Jeypore	77·1	75·0	+2·1

A noteworthy feature of the month was the excessive night temperature in the North-East Punjab as represented by the stations of Rawalpindi, Sialkot and Lahore.

Another noteworthy feature of the month was the unusually low night temperature in parts of Baluchistan, as is shown by the following data:—

Station.	Mean minimum temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	°	°	°
Quetta	56·9	61·9	—5·0
Chaman	70·5	71·0	—0·5
Kabul	59·6	59·8	—0·2

These conditions were local as the mean night temperature was almost as largely in excess in Persia as in the Punjab.

The mean temperature of the month was above the normal in two areas. The first included the Punjab, Rajputana, Sind, Kathiawar and Gujarat. Over the greater part of the Punjab the excess ranged between 2° and 6°, as is shown by the following data :—

Province.	Station.	Mean daily temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
		°	°	°
Punjab	Rawalpindi	90·0	84·2	+5·8?
	Montgomery	95·4	91·2	+4·2
	Sialkot	89·0	84·9	+4·1
	Lahore	91·3	87·4	+3·9
	Sirsa	92·2	88·4	+3·8
	Ludhiana	89·7	87·0	+2·7
	Peshawar	91·1	88·4	+2·7
	Mooltan	93·6	91·1	+2·5
Rajputana	Sambhar	86·9	82·5	+4·4
	Bickaneer	91·6	87·2	+4·4
	Ajmere	84·6	81·0	+3·6
	Jeypore	85·4	82·5	+2·9

The second area included the whole of the Peninsula to the south of Lat. 18° N. The excess was generally small to slight in amount, but was more than 2° in the area represented by the stations for which comparative data are given below :—

Province.	Station.	Mean daily temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
		°	°	°
Madras	Cuddapah	88·0	84·6	+3·4
	Salem	84·8	81·6	+3·2
	Negapatam	87·3	84·9	+2·4?
	Trichinopoly	88·3	86·1	+2·2

The mean temperature of the month was below the normal over the remainder of India, except Tenasserim, North Bengal and North Bihar, where it was very slightly above the normal. The variations in that large area were generally small to slight in amount and exceeded 2° only in parts of the Central Provinces and Central India. The following gives comparative data for stations in these areas at which the deficiency was more than 2° :—

Station.	Mean daily temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	°	°	°
Jaubulpore	76·6	79·4	—2·8
Nowgong	80·1	82·6	—2·5
Seoni	75·3	77·6	—2·3
Hoshangabad	77·5	79·6	—2·1

Temperature was in considerable excess in Kashmir and in slight defect in parts of Baluchistan, as shown by the following data :—

Station.	Mean daily temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	°	°	°
Srinagar	76·8	74·5	+2·3
Leh	67·0	64·0	+3·0
Quetta	74·8	76·3	—1·5

It was in slight to considerable excess at Baghdad and in Persia and in very slight excess at Aden, as is shown below :—

Station.	Mean daily temperature. Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	°	°	°
Baghdad	96·2	92·9	+3·3
Bushire	91·2	90·2	+1·0
Muscat	86·1	?	?
Aden	86·5	86·2	+0·3

The highest day temperatures of the month in North-Western India were generally registered during the fourth

week of the month (from the 21st to the 25th.) The following gives the highest maximum temperature recorded at all stations where the maximum exceeded 105° during some period of the month :—

STATION.	Highest maximum temperature recorded in August 1898.	Date on which recorded.	Highest maximum temperature in August *previous to* 1898.	Year in which recorded.
	°		°	
Jacobabad . . .	110·3	5th	114·4	1877
Montgomery . .	110·0	24th and 25th.	112·9	1893
Mooltan . . .	108·9	4th	111·2	1889
Khushab . . .	108·4	11th, 24th and 25th.	108·4	1896
Rawalpindi . . .	108·0	21st	110·0	1877
Peshawar . . .	107·5	19th	112·7	1877
Sirsa	107·3	25th	110·9	1877
Dera Ismail Khan .	107·2	25th	113·5	1888
Sialkot . . .	105·7	18th, 20th and 23rd.	110·4	1885
Bickaneer . . .	105·1	5th and 24th.	105·4	1879

The chief features of the mean temperature conditions of the month were as follows :—

(1) Temperature, both by day and night, and hence on the mean of the month, was above the normal in the Punjab, Sind, Rajputana, Kathiawar and Gujarat. The excess ranged between 2° and 6° in the Punjab and Rajputana and was absolutely greatest in the North-East Punjab (as represented by Rawalpindi and Sialkot.)

(2) Temperature, both by day and night, and hence also on the mean of the month, was above the normal in Tenasserim and the Peninsula to the south of Lat. 18° N. The excess in the mean temperature of the month was small over the greater part of the latter area and averaged between 2° and 3½° in the area represented by the stations of Cuddapah, Salem, Trichinopoly and Negapatam.

(3) Temperature was below the normal over nearly the whole of the remainder of the country, the deficiency being more marked in the day than the night temperature. The deficiency was moderate in amount (ranging between 2° and 3°) in the area of heavy rainfall in the Central Provinces and Bundelkhand, defined by the stations of Nowgong, Saugor, Hoshangabad, Jubbulpore and Seoni.

(4) Temperature was in slight to considerable excess in Kashmir and also in Persia.

(5) Temperature was in slight defect in Baluchistan, chiefly due to low night temperature.

The following table gives temperature data of the month for the 56 meteorological divisions of the Empire :—

PROVINCE.	DIVISION.	ACTUAL TEMPERATURE.					VARIATION FROM NORMAL OF		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
BURMA	Tenasserim	83·2	74·1	78·6	9·0	15·1	—0·2	+1·0	—1·2
	Lower Burma (Deltaic)	84·1	75·8	80·0	8·2	14·2	—0·5	+0·3	—0·8
	Central do.	86·8	75·5	81·1	11·3	18·3	—0·8	0	—0·8
	Upper do.	88·5	76·0	82·3	12·6	21·8	—1·1	+0·4	—1·5
	Arakan	83·0	77·7	80·8	6·2	12·1	—0·5	+0·5	—1·0
BENGAL AND ASSAM	Eastern Bengal	86·1	77·3	81·7	8·7	16·4	—0·3	+0·2	—0·5
	Assam (Surma)	89·8	76·7	83·4	13·1	21·2	+0·6	0	+0·6
	Do. (Brahmaputra)	87·3	77·8	82·6	9·5	19·8	—0·2	+0·4	—0·6
	Deltaic Bengal	87·5	78·7	83·1	8·8	15·3	—0·6	+0·5	—1·1
	Central do.	88·1	78·3	83·2	9·7	17·8	—0·5	+0·6	—1·1
	North do.	88·7	78·2	83·5	10·5	21·2	+1·1	+1·5	—0·4
	Bengal Hills	67·8	54·8	61·2	13·0	23·1	+0·3	+1·0	—0·7
	Orissa	87·4	78·3	82·8	9·1	18·4	—0·4	—0·2	—0·2
	Chota Nagpur	84·9	74·9	79·9	10·0	17·7	—1·0	+0·6	—1·6
	Bihar (South)	87·7	78·4	83·1	9·2	18·2	—1·6	—0·4	—1·2
	Do. (North)	83·9	78·9	83·9	10·0	17·8	+0·2	+0·8	—0·6
NORTH-WESTERN PROVINCES AND OUDH.	North-Western Provinces (East)	86·7	77·9	82·3	8·8	17·7	—3·1	—0·8	—2·3
	Oudh (South)	88·3	78·3	83·3	10·0	20·1	—2·2	—0·2	—2·0
	Do. (North)	89·2	78·1	83·7	11·1	19·4	?	?	?
	North-Western Provinces (Central)	87·5	77·6	82·6	9·9	19·9	—2·0	—0·2	—1·8
	Do. do. (West)	91·8	79·5	85·6	12·3	25·0	+1·2	+1·1	+0·1
	Do. do. (Submontane East)	?	78·7	?	?	?	?	—0·1	?
	Do. do. (do. West)	87·2	76·1	81·7	11·1	22·1	—1·1	0	—1·1
	Do. do. (Hills)	69·2	61·2	65·3	8·3	16·5	—0·7	+0·8	—1·5

Province.	Division.	Actual Temperature.					Variation from normal of		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Punjab	Punjab (South-East)	93·2	81·0	87·1	12·2	24·8	+1·6	+1·9	−0·3
	Do. (South)	98·4	80·9	89·6	17·5	29·1	+4·7	+2·9	+1·8
	Do. (Central)	99·3	83·3	91·3	16·0	26·0	+3·3	+4·4	−1·1
	Do. (Submontane)	96·6	80·4	88·2	16·2	30·3	+3·7	+3·1	+0·6
	Do. (Hills)	85·8	62·4	74·1	23·4	34·4	+2·2	+1·4	+0·8
	Do. (North)	101·5	79·6	90·6	21·9	35·0	+3·2	+2·2	+1·0
	Do. (West)	104·3	83·2	93·8	21·2	29·9	+3·4	+2·1	+1·3
Bombay and Malabar Coast Districts (Madras).	Malabar	84·4	75·3	79·9	9·1	14·5	+1·7	+0·7	+1·0
	Madras (South Central)	93·2	72·9	83·0	20·3	28·5	+3·2	+1·7	+1·5
	Coorg	70·0	62·6	66·3	7·4	13·3	−0·5	+0·5	−1·0
	Mysore	83·4	66·2	74·8	17·2	24·8	+2·9	+0·5	+2·4
	Konkan	83·8	76·2	80·0	7·6	11·9	+1·0	+1·0	0
	Bombay Deccan	84·0	68·8	76·4	15·2	22·7	+0·4	−0·1	+0·5
	Hyderabad (North)	85·4	69·0	77·3	16·4	23·1	?	?	?
	Khandesh	84·9	70·5	77·8	14·4	24·8	−1·6	+0·4	−2·0
Central Provinces and Berar.	Berar	84·3	72·2	78·3	12·1	21·3	−2·5	−0·7	−1·8
	Central Provinces (West)	82·9	73·6	78·3	9·3	18·7	−3·1	−0·1	−3·0
	Do. (Central)	81·9	72·4	77·2	9·5	17·0	−3·0	−0·9	−2·1
	Do. (East)	84·2	75·3	79·8	8·9	16·3	−2·7	−0·8	−1·9
Bombay (North)	Gujarat	88·0	77·0	82·5	11·1	18·1	?	?	?
	Kathiawar & Cutch	88·6	76·5	82·6	12·1	18·1	+1·6	+0·7	+0·9
	Sind	97·0	79·2	88·1	17·8	23·1	+1·0	−0·2	+1·2
	Baluchistan Hills	96·0	59·5	77·5	36·5	45·6	+2·1	−5·0	+7·1
Rajputana and Central India.	Central India (East)	82·6	73·8	78·2	8·9	17·4	−2·7	−0·2	−2·5
	Rajputana (East), Central India (West)	91·6	76·9	84·3	14·7	24·5	+4·2	+2·1	+2·1
	Do. (West)	97·7	79·2	88·5	18·5	25·1	+5·0	+3·8	+1·2
Madras	East Coast (North)	90·3	78·8	84·6	11·5	20·1	+1·2	+0·2	+1·0
	Hyderabad (South)	87·9	72·6	80·3	15·3	23·6	+0·4	+1·4	−1·0
	Madras (Central)	93·7	75·7	84·7	18·0	26·9	+2·8	+1·2	+1·6
	East Coast (Central)	95·0	79·0	87·0	16·0	26·9	+0·5	+0·3	+0·2
	Do. (South)	96·6	77·0	86·8	19·6	30·6	+2·2	+0·8	+1·4
	Madras (South)	95·8	77·6	86·7	18·3	29·5	+1·0	+0·4	+0·6

The hottest area in India during the month defined by the isotherm of 90° included Upper Sind and the West, Central and North Punjab. The following gives data for this area :—

Division.	Temperature.		
	Mean maximum of August 1898.	Mean minimum of August 1898.	Mean daily temperature of August 1898.
	°	°	°
West Punjab	104·3	83·2	93·8
Upper Sind	106·4	80·4	93·4
Central Punjab	99·3	83·3	91·3
North "	101·5	79·6	90·6

Temperature at the commencement of the month was in slight to considerable excess in Sind, Rajputana, Upper Burma, the Madras Presidency and Mysore, and below the normalover the remainder of India. The following gives temperature variation data for the 24 hours preceding 8 A. M. of the 1st :—

Political Province or Area.	Variation from normal of		
	Mean maximum temperature, 1st August.	Mean minimum temperature, 1st August.	Mean temperature, 1st August.
	°	°	°
Burma	0	+1·0	+0·5
Bengal and Assam	−2·4	−0·1	−1·3
N.-W. Provinces and Oudh	−4·5	−0·9	−2·7
Punjab	−3·3	−0·4	−1·9
Sind and Rajputana	+1·4	+2·2	+1·8
Central India and Gujrat	−2·1	+0·5	−0·8
Central Provinces and Berar	−2·3	+0·1	−1·1
Bombay	−1·2	+0·5	−0·4
Madras	+3·8	+1·8	+2·8

During the next six days, *i.e.*, from the 2nd to the 7th, temperature varied slightly from day to day, but the only

important feature was a moderate excess in Upper India. The following gives data :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	2nd August.	3rd August.	4th August.	5th August.	6th August.	7th August.
	°	°	°	°	°	°
Punjab . . .	−0·2	−0·2	+1·1	+2·2	+2·8	+2·4
Sind	+2·0	+2·4	+1·4	+1·7	+0·2	+0·3
Rajputana . . .	+3·1	+2·6	+4·7	+4·5	+3·3	+2·5

During the second week of the month a cyclonic storm of moderate intensity advanced from the north-west angle of the Bay through South-West Bengal and Chota Nagpur into Bihar where it apparently filled up, and was followed by a second whirl which formed in Central Bengal and drifted through Bihar on the 15th and the North-Western Provinces on the 16th and 17th where it filled up during the next 24 hours. Frequent and heavy rain was received during this period in West Bengal, Bihar, Chota Nagpur, the Central Provinces, the North-Western Provinces and the eastern states of Central India. Temperature was hence more or less below the normal in these areas. It was slightly above it in Southern India and in Upper India. The excess in those areas was not very pronounced (except in the Punjab), as is shown by the following data :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A. M. OF						
	9th August	10th August	11th August	12th August	13th August	14th August	15th August
	°	°	°	°	°	°	°
Punjab	+3·5	+4·9	+5·6	+5·0	+3·4	+3·8	+3·9
Sind	+0·5	−0·3	0	−0·3	−0·7	0	−0·1
Rajputana . . .	+1·7	+2·1	+2·4	+3·0	+2·9	+3·2	+2·7
Madras Coast . .	+1·7	+2·5	+1·8	+3·8	+3·4	+3·7	+2·1
Madras Inland . .	+1·1	+2·0	+1·5	+3·0	+3·7	+3·4	+2·7
Mysore . . .	+1·3	+1·7	+0·8	+2·1	+0·9	+2·2	+0·3

The following gives the largest departures of the mean daily temperature from the normal, day by day, during this period :—

DATE.	STATION.	Variation from normal of mean temperature of 24 hours preceding 8 A. M. of date.
		°
9th August . . .	Montgomery	+ 7·2
10th ,, . . .	Montgomery	+ 7·6
11th ,, . . .	Rawalpindi	+10·8
12th ,, . . .	Rawalpindi	+ 9·6
13th ,, . . .	Ludhiana	+ 5·1
14th ,, . .	Ludhiana	+ 5·8
15th ,, . . .	Ludhiana	+ 6·2
16th ,, . . .	Rawalpindi	+ 8·9

Temperature was hence most largely in excess in the submontane districts of the Punjab during this period :—

During the next four days, *i.e.*, from the 17th to 20th, rainfall was lighter and more local than in the previous week and temperature increased over the whole of India by moderate amounts. The following gives variations of the 17th and the 20th for comparison :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A. M. OF	
	17th August.	20th August.
	°	°
Burma	−0·7	−0·6
Bengal and Assam	+0·4	+0·3
North-Western Provinces and Oudh . .	+0·4	+2·2
Punjab	+4·5	+6·3
Sind and Rajputana	+1·9	+4·5
Central India and Gujarat	+0·2	+1·1
Central Provinces and Berar	−0·1	−2·3
Bombay	+0·7	+1·4
Madras	+1·3	+0·7

Temperature was most largely above the normal in Upper India and the interior of Madras during this period. The following gives the largest variations, day by day, in the former area :—

DATE.	STATION.	Variation from normal of mean temperature of 24 hours preceding 8 A. M. of date.
		°
17th August . . .	Rawalpindi	+ 9·4
	Sialkot	?
18th ,, . . .	Rawalpindi	+11·3
	Sialkot	+ 9·5

DATE.	Station.	Variation from normal of mean temperature of 24 hours preceding 8 A. M. of date.
		°
19th August	Sialkot	+ 8·0
	Rawalpindi	+ 7·8
20th "	Rawalpindi	+ 10·2
	Sialkot	+ 9·4

A storm passed rapidly westwards through Upper and Central Burma on the 20th, South Bengal on the 21st, Chota-Nagpur and the eastern districts of the Central Provinces on the 22nd, Baghelkhand, Bundelkhand and the northern half of the Central Provinces on the 23rd, and filled up in Rajputana during the next 24 hours. It gave moderately heavy rain to the areas through which it passed which reduced temperature to some extent, chiefly in the Central Provinces and Berar where the rainfall was heaviest.

Temperature was, on the other hand, in large excess during the period in Upper India, but in moderate defect in Baluchistan, as is shown below :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	21st August.	22nd August.	23rd August.	24th August.
	°	°	°	°
Baluchistan (Quetta)	—3·7	—1·7	+0·2	—0·4
Punjab	+6·1	+6·5	+7·2	+6·6
Upper Sind	+1·8	0	+1·9	+1·8
Rajputana	+4·6	+3·3	+4·8	+7·1

The excess was during this period, as in the previous, most marked in the North-East Punjab. The following gives maximum daily variation data for that area :—

DATE.	Station.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of date.
		°
21st August	Rawalpindi	+13·0
	Sialkot	+ 9·5
22nd "	Rawalpindi	+11·7
	Sialkot	+ 9·3
23rd "	Rawalpindi	+11·8
	Sialkot	+10·6
24th "	Rawalpindi	+12·0
	Peshawar	+ 8·4

During the last week of the month rainfall was heavy and frequent in Bengal, the Gangetic Plain, Central India and the Central Provinces. Temperature was hence below the normal in these areas during the period, as is shown below :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF						
	25th August.	26th August	27th August.	28th August.	29th August.	30th August.	31st August.
	°	°	°	°	°	°	°
Bengal	+0·7	—1·1	—2·6	—2·5	—2·3	—1·8	—0·2
Bihar	+0·2	—2·5	—3·1	—2·5	—1·0	—0·4	0
Chota Nagpur	+1·0	+0·2	—0·7	+0·7	—1·2	—3·3	—3·4
North-Western Provinces and Oudh	—1·2	—4·7	—4·0	—2·3	—3·6	+0·1	+0·4
Central India and Gujarat.	—0·8	—2·3	—1·5	—0·8	—1·4	—0·6	—0·2
Central Provinces and Berar.	—2·6	—4·1	—0·8	0	—1·3	—2·4	—3·8

Temperature was largely above the normal in Upper India and Madras on the 25th and 26th. Rainfall in these areas on the 26th and 27th reduced temperature to the normal. Dry weather again prevailed from the 28th to the end of the month, and temperature again rose above the normal to a moderate extent. The following gives comparative data :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF						
	25th August.	26th August.	27th August.	28th August.	29th August.	30th August.	31st August.
	°	°	°	°	°	°	°
Punjab	+6·3	+2·3	—2·9	+0·9	+5·0	+3·1	+1·7
Sind	+1·2	+0·4	—0·4	+0·6	+0·3	+0·3	+0·8
Rajputana	+6·3	+4·2	+4·0	+4·5	+4·2	+4·8	+4·6
Madras Coast	+2·1	+1·9	+0·8	—0·8	+0·3	+0·1	+1·8
Madras Inland	+4·1	+2·0	+0·9	+0·2	+1·2	+0·8	—0·3
Mysore	+5·0	+4·3	+1·3	+1·4	+1·4	+0·1	+0·2

The following table, giving the variations of the maximum, minimum and mean temperatures from the normal for the 24 hours preceding 8 A.M. of the 31st, indicates the

temperature conditions prevailing at the end of the month :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 31st August.	Mean minimum temperature, 31st August.	Mean temperature, 31st August.
	°	°	°
Burma	+0·5	+0·7	+0·6
Bengal and Assam	—0·5	+0·1	—0·2
North-Western Provinces and Oudh	0	+0·7	+0·4
Punjab	+1·5	+1·8	+1·7
Sind and Rajputana	+4·0	+1·9	+3·0
Central India and Gujarat	—1·1	+0·7	—0·2
Central Provinces and Berar	—5·9	—1·6	—3·8
Bombay	+0·3	—0·1	+0·1
Madras	+0·6	+0·6	+0·6

The following gives the variations of the mean daily temperature from the normal week by week during the month, and also for the whole month in nine of the large provinces or political divisions of the Empire :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING.					
	6th August.	13th August.	20th August.	27th August.	3rd September.	For whole month August 1898.
	°	°	°	°	°	°
Burma	—0·8	—0·1	—0·2	—0·3	+0·3	—0·2
Bengal and Assam	0	+0·3	—0·5	+0·1	—0·2	—0·1
North-Western Provinces and Oudh.	—1·3	—1·4	+1·0	—0·6	—0·2	—0·7
Punjab	—0·1	+3·9	+4·6	+4·6	+2·2	+3·1
Sind and Rajputana	+2·3	+1·3	+2·4	+3·0	+2·4	+2·4
Central India and Gujarat.	—0·2	—0·6	—0·7	—0·6	—0·5	—0·3
Central Provinces and Berar.	—0·5	—1·9	—1·7	—2·7	—1·4	—1·8
Bombay	+0·1	+0·3	+0·9	+1·1	+0·3	+0·7
Madras	+1·6	+1·6	+1·9	+1·8	+0·6	+1·5

Winds.

Winds were on the average of the month stronger than usual at Port Blair and Diamond Island and normal at Akyab. They were much more westerly than usual at Port Blair but normal in mean direction at Diamond Island and Akyab.

The monsoon current was stronger than usual in Bengal and the Gangetic Plain. The following gives comparative data :—

AREA.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
Bengal Coast	336	277	+59	+21
„ Inland	124	116	+ 8	+ 7
Orissa	87	65	+22	+34
Bihar	132	104	+28	+27
Chota Nagpur	204	185	+19	+10
North-Western Provinces and Oudh.	89	80	+ 9	+11

These figures hence suggest that the current in the Bay was of at least normal strength. The data collected from the logs of vessels indicate that the mean strength of the winds (in Beaufort scale) was 4·0, or identical with the normal (4·0).

Winds were in August 1898 somewhat more westerly than usual in South Bengal, more especially at the interior stations and also in Orissa. They were, on the other hand, less westerly than usual at Berhampore in Central Bengal. In the following table are given data showing the amount of the westerly deflection in the mean winds of the month for seven stations :—

STATION.	MEAN WIND DIRECTION.		
	Actual, August 1898.	Normal, August.	Westerly deflection.
Cuttack	S 68° W	S 41° W	+27°
False Point	S 55° W	S 47° W	+ 8°
Saugor Island	S 26° W	S 13° W	+13°
Calcutta	S 16° W	S 14° E	+30°
Chittagong	S 1° W	S 25° E	+26°
Burdwan	S 10° W	S 28° E	+38°
Berhampore	S 45° E	S 41° E	— 4°

This westerly deflection of the winds was directly related to the deficiency of pressure in North-Eastern India.

The mean position of the trough of low pressure during the month was somewhat further north than usual, more especially in its western half. The following table gives data showing the unsteadiness or variability of the winds at the stations nearest the axis of the trough :—

Station.	Mean Steadiness.		
	Actual percentage, August 1898.	Normal percentage, August.	Variation of actual from normal August 1898.
Hazaribagh	18	8	+10
Allahabad	17	4	+13
Agra	19	7	+12
Meerut	24	10	+14
Ludhiana	8	11	— 3
Lahore	23	25	— 2

The mean position of the axis during the month was hence defined by these stations and lay to the north of the first three of these stations.

Winds were generally much weaker than usual in the central and western districts of the North-Western Provinces, and only differed to any important extent in their mean direction from the normal at stations near the axis of the trough of low pressure.

The following data illustrate this feature of the irregular variation of the mean wind directions of the month from the normal at stations near the axis of the trough of low pressure :—

Station.	Mean wind direction.	
	Actual, August 1898.	Normal, August.
	°	°
Hazaribagh	S 38 W	S 4 W
Allahabad	N 80 W	N 16 E
Agra	S 70 W	S 53 W
Meerut	S 35 W	S 55 E
Ludhiana	S 15 W	S 59 E
Lahore	S 65 W	S 80 E

The following gives comparative data of the strength and steadiness of the winds in the areas dominated by the Bay current :—

Area.	Mean wind velocity in miles per diem.			Mean steadiness.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
				%	%	
Burma	163	129	+34	80	69	+11
Assam	112	74	+38	33	14	+19
Bengal	194	153	+41	57	57	0
Orissa	166	152	+14	74	45	+29
Bihar	132	104	+28	57	49	+ 8
Chota Nagpur	204	185	+19	18	8	+10
North-Western Provinces and Oudh.	89	80	+ 9	22	12	+10

The Bombay monsoon current was below its normal strength in the Arabian Sea, as judged by the mean force of the winds recorded on board vessels entering the port of Bombay. The mean strength of the winds for the month was 3·9 or 0·4 below the normal. Winds in the interior of the Peninsula were, on the other hand, slightly stronger than usual.

The following table gives the mean daily wind velocity at fourteen stations :—

	Station.	Mean wind velocity in miles per diem.			
		Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
Coast	Kurrachee	434	397	+ 37	+ 9
	Bhuj	523	356	+167	+47
	Rajkot	331	278	+ 53	+19
	Bombay	382	376	+ 6	+ 2
	Ratnagiri	212	244	— 32	—13
Inland	Deesa	357	278	+ 79	+28
	Sholapur	322	296	+ 26	+ 9
	Poona	479	327	+152	+46
	Khandwa	273	199	+ 74	+37
	Nagpur	241	191	+ 50	+26
	Bellary	324	263	+ 61	+23
	Raipur	321	194	+127	+65
	Jubbulpore	129	101	+ 28	+28
	Buldana	248	195	+ 53	+27

The preceding table gives data for stations under the sole influence of the Bombay current during the month. They show that the winds on the mean of the month were normal in strength in the Konkan coast districts and were stronger than usual in the interior of the Peninsula, including the Deccan, Berar and the Central Provinces.

This was of course in accordance with certain abnorma features of the pressure distribution, *viz.*, the local excess in the Peninsula, greatest in the western districts and the local deficiency in Northern India, most marked in the submontane districts of North-Eastern India.

The increased air movement in the interior due to these conditions was as marked in Rajputana and Central India as in the Deccan. The following gives comparative data for four stations in that area :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.	Actual, percentage, August 1898.	Normal percentage, August.	Variation of actual from normal, August 1898.
Ajmere	251	156	+95	89	64	+25
Jeypore	135	118	+17	58	43	+15
Agra	176	146	+30	19	7	+12
Sutna	236	186	+50	53	40	+13

The increased air movement was even more strongly exhibited at the hill stations in these areas, as shown below :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Actual, August 1898.	Normal, August.	Variation of actual from normal.	Percentage variation.
Mount Abu	370	254	+116	+46
Pachmarhi	363	206	+157	+76
Chikalda	403	266	+137	+52
Wellington	80	88	— 8	— 9

The data for Wellington show that this effect was almost evanescent in Southern India.

Another effect of the same conditions was the increased westing (or decreased southing) of the winds over the greater part of Rajputana and Central India, and also (but to a less extent) the Central Provinces. The following gives data for three typical stations :—

STATION.	MEAN WIND DIRECTION.		
	Actual, August 1898.	Normal, August.	Westerly deflection.
	°	°	°
Deesa	S 83 W	S 52 W	+31
Agra	S 70 W	S 53 W	+17
Sutna	N 85 W	N 74 W	+11

Winds were practically normal in direction at the Konkan coast stations, as is shown by the following data :—

STATION.	MEAN WIND DIRECTION.	
	Actual, August 1898.	Normal, August.
	°	°
Bombay	S 82 W	S 81 W
Ratnagiri	S 89 W	S 72 W
Karwar	N 62 W	N 87 W

The mean wind directions of the month at stations in Mysore, the Deccan and the Central Provinces differed to no important extent from the normal.

The following gives comparative data of the strength and steadiness of the winds in the areas under the influence of the Bombay current :—

AREA.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual percentage, August 1898.	Average normal percentage, August.	Variation of actual from normal, August 1898.
Rajputana	248	184	+64	80	61	+19
Central India	148	133	+15	58	42	+16
" Provinces	209	148	+61	86	70	+16
Berar	248	195	+53	89	79	+10
Bombay Coast	206	210	— 4	86	72	+14
" Deccan	401	312	+89	90	85	+ 5
Madras Coast	172	182	—10	91	69	+22
" Deccan	324	263	+61	97	87	+10
Mysore	218	222	— 4	89	88	+ 1

Winds were less steady than usual in South Madras, but differed little from the normal in direction.

It is interesting to note, in connection with the meteorology of the month in India, that winds were normal in direction, both at the Seychelles and Zanzibar. They were, however, stronger than usual in August at Zanzibar and somewhat weaker at the Seychelles.

The chief features of the mean air movement over the Indian area during the month were:—

(1) The monsoon current was of normal strength in the Bay of Bengal, but slightly weaker than usual in the Arabian Sea.

(2) The winds were practically of normal intensity in the Bombay coast districts.

(3) They were on the whole, stronger and more westerly than usual in Bengal.

(4) Winds were very light and unsteady in Upper India and were more westerly than usual in Rajputana and Central India.

(5) Winds were stronger than the normal over the whole of the interior of the Peninsula and in Central India.

Humidity and Cloud.

The mean pressure of the aqueous vapour in the air was very slightly larger than usual in Burma, Upper Assam, Bengal, Orissa, Bihar, Central India and the North-Western Provinces, and in slight defect in Chota Nagpur, Berar and the Central Provinces. As temperature was in slight to moderate defect in these areas the relative humidity of the month was normal or in slight to considerable excess in these areas. The following gives comparative data for this area:—

Area.	Mean absolute humidity.			Mean relative humidity.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August, 1898.
	"	"	"	%	%	
Burma	·906	·891	+·015	91	88	+3
Bengal	·953	·952	+·001	87	87	0
Upper Assam	·956	·938	+·018	86	86	0
Orissa	·920	·918	+·002	85	83	+2
Bihar	·971	·957	+·014	85	83	+2
Chota Nagpur	·792	·799	—·007	86	85	+1
Central Provinces	·778	·804	—·026	85	83	+2
Berar	·711	·725	—·014	80	79	+1
Central India	·837	·853	+·034	90	81	+9
North-Western Provinces and Oudh.	·890	·882	+·008		80	+1

The excess was most marked in the small area represented by the stations for which comparative data are given below:—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.	Actual, August 1898.	Normal August.	Variation of actual from normal, August 1898.
	"	"	"	%	%	
Nowgong	·913	·868	+·045	91	81	+10
Sutna	·860	·837	+·023	88	80	+8

The air was much drier than usual, both absolutely and relatively, over the large area including Baluchistan, the Punjab, Rajputana, Lower Sind, Kathiawar and Gujarat. In the following table are given comparative data for this area of decreased humidity in August 1898:—

Area.	Mean absolute humidity.			Mean relative humidity.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
	"	"	"	%	%	
Baluchistan (Quetta)	·300	·384	—·084	35	45	—10
Punjab	·830	·849	—·019	59	66	—7
Rajputana	·751	·800	—·049	66	76	—10
Lower Sind	·831	·869	—·038	75	79	—4

The deficiency in the mean relative humidity was more than 5 at the stations for which data are given below :—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	"	"	"	%	%	
Jeypore	·730	·809	—·079	62	76	—14
Ajmere	·755	·791	—·036	66	76	—10
Ludhiana	·826	·874	—·048	63	73	—10
Quetta	·300	·384	—·084	35	45	—10
Mooltan	·822	·878	—·056	54	62	— 8
Meerut	·853	·878	—·025	71	77	— 6
Deesa	·767	·800	—·033	69	75	— 6

The air was drier than usual in the Peninsula and was very dry over the greater part of the Deccan, Mysore and a part of South Madras represented by Salem and Trichinopoly. The deficiency was most marked in the areas represented by stations for which data are given below :—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, August 1898.	Normal, August	Variation of actual from normal, August 1898.	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	"	"	"	%	%	
Bellary	·554	·658	—·104	52	63	—11
Trichinopoly	·662	·708	—·046	53	60	— 7
Bangalore	·585	·612	—·027	71	78	— 7
Hyderabad (Dn.)	·701	·725	—·024	73	79	— 6
Salem	·725	·752	—·027	67	73	— 6
Sholapur	·619	·660	—·041	64	69	— 5
Bombay	·850	·878	—·028	82	87	— 5
Chitaldroog	·611	·620	—·009	71	76	— 5
Mysore	·587	·630	—·043	70	75	— 5

The conditions in these areas were very similar to those which obtained in August 1897, but were slightly more pronounced.

The mean humidity of the month was practically normal at the hill stations in the North-Western Himalayas and also at Mount Abu. The following gives data for four stations :—

Station.	Mean absolute humidity.			Mean relative humidity.		
	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
	"	"	"	%	%	
Murree	·573	·551	+·022	80	82	—2
Simla	·533	·528	+·005	92	91	+1
Ranikhet	·594	·572	+·022	90	88	+2
Mount Abu	·593	·609	—·016	89	91	—2

The following summarizes the chief abnormal features of the mean hygrometric conditions of the month :—

(1) Humidity was on the mean of the month practically normal at Port Blair and in slight excess in Burma.

(2) It was normal or in slight to moderate excess in Upper Assam, Bengal, Bihar, Chota Nagpur, Orissa the North-Western Provinces, Central India, the Central Provinces and Berar. The increased humidity was most pronounced in Baghelkhand and Bundelkhand.

(3) The air was much drier than usual in the Punjab, Baluchistan, Lower Sind, Rajputana, Kathiawar and Gujarat.

(4) The air was slightly drier than usual in the Konkan, and was considerably drier than usual over the greater part of the Deccan and Mysore and in a part of Madras represented by the stations of Salem and Trichinopoly. The deficiency in the mean humidity of the month was greatest at Bellary (—11) and Bangalore and Trichinopoly (each —7).

The variations in the amount of cloud differed somewhat in their distribution from those of the humidity of the air stratum near the earth's surface. Cloud was in excess over the whole of India with the exception of Upper Assam, Central Bengal, the Punjab, Kashmir, Sind, Rajputana, Malabar, Coorg, the Carnatic and the Circars, and locally at Sholapur (—0·2) and Katmandu (—0·3). The following gives comparative data for Burma, the Bay Islands and North-Eastern and Central India :—

Area.	Mean cloud amount.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
Bay Islands (Port Blair)	8·4	7·5	+0·9
Burma	8·9	8·3	+0·6
Assam	8·0	8·0	0
Bengal	8·7	8·1	+0·6
Orissa	8·5	7·7	+0·8
Chota Nagpur	10·0	9·0	+1·0
Bihar	7·4	7·2	+0·2
North-Western Provinces and Oudh	7·6	7·1	+0·5
Central India	8·9	7·7	+1·2

Cloud was in moderate to largish defect in Upper India by amounts which exceeded 1·0 over the greater part of the Punjab and Upper Sind. The deficiency was 1·5 or upwards at the stations for which data are given below:—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, August 1898.	Normal, August.	Variation of actual from normal, August 1898.
Ludhiana	4·3	5·8	—1·5
Mooltan	0·6	2·2	—1·6
Jacobabad	0·7	2·3	—1·6
Murree	1·7?	6·5	—4·8?
Srinagar	2·2	4·0	—1·8

Cloud was in slight to considerable excess in Berar, Central India, the Central Provinces, the Deccan, Mysore and the Konkan coast, as is shown by the following statement:—

AREA.	MEAN CLOUD AMOUNT.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
Berar	9·0	8·0	+1·0
Central Provinces	9·3	7·8	+1·5
Central India	8·9	7·7	+1·2
Deccan	8·4	8·1	+0·3
Mysore	8·6	8·1	+0·5
Konkan Coast	8·1	7·7	+0·4

The excess was considerable to large in the Central Provinces, Berar and Central India.

It is noteworthy that there was a moderate to considerable excess of cloud in the dry areas of the Deccan and Mysore, in which, as shown above, the mean humidity of the month was considerably below the normal. This is indicated by the following data for three stations:—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, August 1898.	Normal, August.	Variation of Actual, from normal, August 1898.
Bangalore	7·9	6·6	+1·3
Hyderabad (Deccan)	7·2	6·8	+0·4
Bellary	8·7	7·8	+0·9

The following gives the chief abnormal features in the mean distribution of cloud during the month:—

(1) Cloud was in moderate to largish defect in Upper India, including the Punjab, Sind and Rajputana. The deficiency was most marked in Upper Sind and the South Punjab.

(2) Cloud was in slight to moderate defect in Malabar, South Madras, the Circars and Upper Assam.

(3) Cloud was in excess over the remainder of India. The excess was large in the Central Provinces and Central India, and slight to moderate in the remaining districts.

Rainfall.

The rainfall in August is generally heavy over the greater part of India, for the rain-bearing currents which are fully established in July are maintained throughout the whole of August, though their strength in August is usually not so great as in July. In August also there is a greater probability of the occurrence of more or less prolonged breaks in the rains, so that, on the whole, the rainfall in August is usually lighter than in July. The average distribution of the precipitation in August is, however, very similar to that in July. The areas of heaviest rainfall are the west coast districts of the Peninsula, Arakan, Lower Pegu, Tenasserim, Assam, the Sikkim-Himalayas, South-East Bengal, and parts of North Bengal and of the Central Provinces. On the other hand, the rainfall is light and scanty in Central Burma, the southern districts of Madras, including Tinnevelly, Madura and parts of Coimbatore and Salem, Upper Sind and the West Punjab. The normal rainfall in August varies from average amounts of thirty-eight inches in Tenasserim and thirty-three inches in Arakan to about two inches in Sind, the West Punjab and South Madras.

The distribution of the rainfall of August 1898 was chiefly determined by the following features:—

(1) The weakness of the Arabian Sea current and the normal strength of the Bay current.

(2) The abnormal pressure conditions which determined the Bay current more to the north-east and east than usual and the Bombay current more directly across Central India and the head of the Peninsula and hence diverted it from Upper India.

Numerous depressions of small intensity formed during the month as is usually the case during the prevalence of the humid currents of the south-west monsoon over the Indian area. There were in all about seven depressions and cyclonic storms during the month and all of them with one or at the most two exceptions were initiated over the land and were hence of slight intensity.

These storms in the majority of cases passed over Bengal, Bihar, Chota Nagpur and the North-Western Provinces and gave abundant rain to these areas and also, to a slightly less degree, to the Central Provinces and Central India.

The chief periods of most general rain were as follows:—

(1) From the 1st to the 12th.—Bengal, Bihar, Chota Nagpur, the North-Western Provinces, Central India and the Central Provinces obtained moderate to heavy rain, and the west coast districts, the Deccan and Berar light to moderate rain during this period. The rainfall was in part due to two cyclonic storms or depressions.

(2) From the 13th to the 17th, during which North-Eastern India and the Central Provinces obtained moderate to heavy rain.

(3) From the 21st to the 31st.—The rainfall during this period was chiefly due to a series of three cyclonic storms which chiefly affected North-Eastern India. Burma, Bengal, Bihar, Chota Nagpur, the North-Western Provinces, the Central Provinces, Central India and the South-East Punjab obtained moderate to heavy rain.

The preceding remarks have stated the chief periods during which the rainfall of the month occurred. Its actual distribution and variation from the normal are fully exhibited in Plates IV and V. The following gives a summary of the most important features of the rainfall of the month:—

(1) Rainfall was in defect in thirty rainfall divisions and was more or less in excess in the remaining twenty-five divisions.

(2) The deficiency was moderate in amount and ranged between 10 per cent. and 25 per cent. of the normal in seven rainfall divisions, and was upwards of 25 per cent. in defect in the following divisions:—

Baluchistan Hills, Sind, the West Punjab, West Rajputana, the South Punjab, the Central Punjab, Hyderabad South, Rajputana East and Central India West, Central Madras, Berar, Kathiawar, South Madras, East Coast Central, Malabar, the Submontane Punjab, the North Punjab, the Bombay Deccan, Mysore, the South-East Punjab, Gujarat, East Coast North and Konkan.

The rainfall was in moderate to considerable defect in the Deccan and Southern India generally, and was in large and serious defect over the greater part of the Punjab (56 per cent.), Sind (99 per cent.), Rajputana (67 per cent.), Baluchistan (100 per cent.), and North Bombay (41 per cent.).

(3) The rainfall of the month was between 1 and 25 per cent. in excess in nine divisions and was upwards of 25 per cent. in excess in the fifteen divisions, named below:—

Oudh South and North, Arakan, the North-Western Provinces Central, Tenasserim, the North-Western Provinces East, Eastern Bengal, the North-Western Provinces East Submontane, the North-Western Provinces Hills, South Bihar, Central and Deltaic Bengal, Orissa, the Central Provinces West and Lower Burma.

The rainfall was in very large excess in Tenasserim (30 per cent.), the North-Western Provinces (58 per cent.), Arakan (64 per cent.) Deltaic Bengal (36 per cent.), East Bengal (63 per cent.) and Central Bengal (42 per cent.).

The following table gives comparative rainfall data of the month for the 57 meteorological divisions of India. In the majority of these divisions the data are based on the rainfall statements of the month published by the Provincial Governments, but in the cases of Burma, Assam, Mysore and Hyderabad, for which the statements were not received in time, the data are derived from the weekly telegrams received from district officers in those provinces:—

Province.	Division.	Rainy days.		Rainfall.		
		Average actual, August 1898.	Average normal, August.	Average actual, August 1898.	Average normal, August.	Variation of actual, from normal, August 1898.
				Inches.	Inches.	Inches.
Burma	Tenasserim*	?	?	63·59	38·11	+25·48
	Lower Burma (Deltaic)*	?	?	26·36	20·73	+ 5·63
	Central do.*	?	?	12·61	13·44	— 0·83
	Upper do.*	?	?	9·43	10·78	— 1·35
	Arakan*	?	?	56·05	32·90	+23·15

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Province.	Division.	Rainy days. Average actual, August 1898.	Rainy days. Average normal, August.	Rainy days. Average actual, August 1898.	Rainfall. Average normal, August.	Rainfall. Variation of actual, from normal, August 1898.
Bengal and Assam	Eastern Bengal	22·0	17·9	26·25	16·10	+ 10·15
	Assam (Surma) *	?	?	29·18	23·32	+ 5·86
	Do. (Hills) *	?	?	23·57	26·77	− 3·20
	Do. (Brahmaputra) *	?	?	16·69	13·71	+ 2·98
	Deltaic Bengal	19·4	15·9	16·59	12·19	+ 4·40
	Central do.	17·7	14·9	16·07	11·31	+ 4·76
	North do.	14·2	15·9	13·24	16·78	− 3·54
	Bengal Hills	22·5	22·4	22·71	27·98	− 5·27
	Orissa	15·0	15·1	15·29	11·98	+ 3·31
	Chota Nagpur	19·1	16·3	14·75	13·87	+ 0·88
	Bihar (South)	16·5	13·4	17·28	11·81	+ 5·47
	Do. (North)	12·7	14·0	10·68	12·60	− 1·92
North-Western Provinces and Oudh.	North-Western Provinces (East)	18·1	12·5	17·66	10·79	+ 6·87
	Oudh (South)	15·5	11·9	19·14	10·47	+ 8·67
	Do. (North)	16·8	11·7	19·75	10·44	+ 9·31
	North-Western Provinces (Central)	15·8	11·8	17·80	10·55	+ 7·25
	Do. do. (West)	8·7	9·3	9·12	7·70	+ 1·42
	Do. do. (Submontane, East)	15·8	12·2	17·60	10·78	+ 6·82
	Do. do. (do. West)	12·9	12·1	15·89	13·11	+ 2·78
	Do. do. (Hills)	20·4	18·3	24·83	16·60	+ 8·23
Punjab	Punjab (South-East)	4·4	7·4	3·62	5·96	− 2·34
	Do. (South)	1·2	4·8	0·53	4·13	− 3·60
	Do. (Central)	1·6	5·1	1·53	4·75	− 3·22
	Do. (Submontane)	5·0	8·0	4·68	8·30	− 3·62
	Do. (Hills)	15·5	15·3	17·62	16·67	+ 0·95
	Do. (North)	3·3	5·4	2·82	4·78	− 1·96
	Do. (West)	0·2	2·8	0·11	2·07	− 1·96
Bombay and Malabar Coast Districts, (Madras).	Malabar	17·1	21·8	10·77	20·13	− 9·36
	Travancore	6·6	?	3·49	?	?
	Madras (South Central)	4·2	5·6	2·80	3·49	− 0·69
	Coorg	16·9	?	9·49	?	?
	Mysore*	?	?	3·22	5·32	− 2·10
	Konkan	25·0	23·8	17·70	23·96	− 6·26
	Bombay Deccan	7·7	9·9	3·64	6·14	− 2·50
	Khandesh	9·1	8·5	5·33	5·99	− 0·66
Central Provinces and Berar.	Berar	8·3	?	4·29	8·89	− 4·60
	Central Provinces (West)	12·7	12·8	12·65	9·87	+ 2·78
	Do. do. (Central)	18·6	14·1	15·25	12·86	+ 2·39
	Do. do. (East)	15·0	13·2	12·83	12·54	+ 0·29
Bombay (North)	Gujarat	9·1	13·2	6·01	9·28	− 3·27
	Kathiawar	4·6	7·4	3·10	6·28	− 3·18
	Sind	0	?	0·01	1·94	− 1·93
	Baluchistan Hills	0	?	0	0·75	− 0·75
Rajputana and Central India.	Central India (East)	14·5	?	13·65	12·24	+ 1·41
	Rajputana (East) and Central India (West)	5·5	?	4·22	9·65	− 5·43
	Rajputana (West)	0·4	?	0·29	3·87	− 3·58
Madras	East Coast (North)	8·5	10·2	4·88	7·23	− 2·35
	Do. (do.) (a)	18·5	17·7	9·06	12·75	− 3·69
	Hyderabad (South) *	?	?	2·28	5·76	− 3·48
	Madras (Central)	4·6	5·9	1·93	4·30	− 2·37
	East Coast (Central)	3·9	5·2	1·60	3·06	− 1·46
	Do. (South)	7·2	7·4	5·17	5·16	+ 0·01
	Madras (South)	2·1	3·3	0·99	2·02	− 1·03

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Arakan, Tenasserim and Lower Burma obtained almost daily rain during the month. The rainfall was generally moderate in amount and well distributed. Some large falls were, however, received, the most noteworthy of which were the following :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
AMHERST . . .	Moulmein . . .	27th	10·02
TAVOY	Tavoy	6th	8·15
AKYAB	Maungdaw . . .	5th	8·14
KYAUKPYU . . .	Myebon . . .	26th	8·00

The rainfall of the month was in large excess in Arakan (64 per cent.), and in moderate excess in Tenasserim and Lower Burma.

Central Burma received light to moderate rain during the first three weeks and only light local showers during the last week, and the rainfall of the month was in defect of the normal in that area to a moderate extent.

Numerous light showers fell in Upper Burma at frequent intervals, and the precipitation of the month was hence somewhat irregularly distributed. These showers were most general on the 17th and 20th. The rainfall of the month was in considerable excess in that area.

The following table gives comparative data of the rainfall of the month for the five divisions of the province :—

DIVISION.	NUMBER OF RAINY DAYS.		RAINFALL.			
	Average actual, August 1898.	Average normal, August.	Average actual, August 1898.	Average normal, August.	Variation from normal.	Percentage variation.
			Inches.	Inches.	Inches.	
Tenasserim . . .	27·0	?	49·41	38·11	+11·30	+30
Lower Burma . .	27·2	?	26·07	20·73	+ 5·34	+26
Central . . .	17·4	?	10·02	13·44	− 3·42	−25
Upper . . .	11·0	?	9·08	6·61	+ 2·47	+37
Arakan . . .	29·0	?	54·06	32·90	+21·16	+6

Bengal received almost daily rain throughout the month. The periods of most general and heaviest rain were the 1st, the 4th to the 9th, the 12th to the 16th and the 26th to the 30th.

The rainfall in the second of these periods, *i.e.*, from the 4th to the 9th was due to a strongish influx of monsoon winds from the Bay on the 4th and 5th followed by the formation of a cyclonic whirl in Bihar which drifted westwards up the Gangetic Valley. The rainfall was heavy in Bihar on the 6th and 7th. The heaviest falls in 24 hours ranged between three and five inches.

The second burst of rain accompanied the advance of a cyclonic whirl which formed in the north-west angle of the Bay on the 7th and drifted in a north-westerly direction into Bihar on the 11th. The rainfall due to this storm was moderately heavy.

Whilst this depression was filling up another formed on the 14th in Central Bengal. It developed slightly and advanced into Bihar on the 15th and thence passed into the south-eastern districts of the North-Western Provinces on the 16th and filled up in the central districts of that area on the 17th. The rainfall due to this storm was general and heavy over the whole of Bengal. Rainfalls exceeding five inches in 24 hours were recorded at stations, for which data are given below :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
MURSHIDABAD .	Lalbagh . . .	13th August.	5·20
	Berhampore . . .	14th "	5·85
SONTHAL PARGANA.	Pakour . . .	" "	5·16
MYMENSINGH .	Sherepur Town . .	15th "	7·35
PALAMAU . .	Panki	" "	7·20
	Latehar . . .	" "	7·15

Frequent showers fell during the period from the 17th to the 25th, heaviest and most frequent in East Bengal and least frequent in Bihar. During this period a depression passed rapidly from Burma through South Bengal and the eastern districts of the Central Provinces and Chota Nagpur on the 21st and 22nd into the north-eastern districts of the Central Provinces on the 23rd. It gave moderate and fairly general rain in South Bengal, Orissa and Chota Nagpur on the 22nd and 23rd.

The rainfall of the last period, *i.e.*, the 26th to the 30th, was by far the heaviest burst of the month. It was due to a strongish influx of humid winds into East and Central Bengal on the 25th and 26th. A depression slowly formed on the 26th, 27th and 28th in Central Bengal which drifted slowly west-north-westwards through the Sonthal Parganas and South Bihar during the next three days and filled up in Bundelkhand and South-East

Rajputana on the 1st September. The indraught of humid winds gave very heavy downpours in East Bengal and heavy rain over the remainder of the province.

The following gives rainfalls in twenty-four hours exceeding eight inches in amount.

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A. M. of date.
			Inches.
CHITTAGONG	Kodala	26th August.	13·40
	"	27th "	10·53
" HILL TRACTS.	Bandarban	" "	11·85
NOAKHALI	Ramganj	" "	10·05
	Lakimpur	28th "	10·95
CHITTAGONG	Satkanya	" "	9·25
TIPPERA	Ramchandrapur	" "	8·55

The following table giving comparative data for the rainfall divisions of the province shows that the rainfall of the month was in large excess (63 per cent.) in East Bengal, in moderately large excess in Deltaic Bengal (36 per cent.), Central Bengal (42 per cent.), Orissa (28 per cent.) and South Bihar (46 per cent). It was practically normal in Chota Nagpur, and in moderate defect in North Bengal (21 per cent.), Bengal Hills (19 per cent.) and North Bihar (15 per cent.).

DIVISION.	NUMBER OF RAINY DAYS,			RAINFALL.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
				Inches.	Inches.	Inches.
Eastern Bengal	22·0	17·9	+4·1	26·25	16·10	+10·15
Deltaic "	19·4	15·9	+3·5	16·59	12·19	+ 4·40
Central "	17·7	14·9	+2·8	16·07	11·31	+ 4·76
North "	14·2	15·9	−1·7	13·24	16·78	− 3·54
Bengal Hills	22·5	22·4	+0·1	22·71	27·98	− 5·27
Orissa	15·0	15·1	−0·1	15·29	11·98	+ 3·31
Chota Nagpur	19·1	16·3	+2·8	14·75	13·87	+ 0·88
South Bihar	16·5	13·4	+3·1	17·28	11·81	+ 54·7
North "	12·7	14·0	−1·3	10·68	12·60	− 1·92

The rainfall of the month was more than 25 per cent. below the normal in the districts of North Bengal and North Bihar, for which data are given below :—

DISTRICT.	RAINFALL.		
	Average actual, August 1898.	Average normal, August.	Percentage variation from normal.
	Inches.	Inches.	
Jalpaiguri	10·24	25·82	−60
Cooch Behar	11·80	21·90	−46
Purnea	8·97	15·29	−42

It was more than 50 per cent. in excess in the districts, for which comparative data are given in the following table :—

DIVISION.	Station.	RAINFALL.		
		Average actual, August 1898.	Average normal, August.	Percentage variation from normal.
		Inches.	Inches.	
SOUTH-WEST BENGAL	Murshidabad	19·91	11·12	+79
	Khulna	19·87	11·78	+69
	Jessore	17·55	10·91	+61
	Birbhum	19·08	12·52	+52
EAST BENGAL	Faridpur	21·09	11·70	+80
	Noakhali	41·15	24·20	+70
	Backergunge	25·53	15·30	+66
	Chittagong	36·20	22·25	+63
BIHAR	Gaya	19·82	12·27	+62
	Patna	16·73	11·10	+51
ORISSA	Cuttack	19·47	12·45	+56

The North-Western Provinces generally received abundant rain due to the determination of a series of cyclonic whirls which passed from Bengal or the north-west of the Bay into that area. The chief periods of general and heavy rain were the 1st to the 8th, the 10th to the 13th, the 16th to the 20th and the 26th to the 29th.

A depression lay over the North-Western Provinces on the 1st and 2nd. Moderate rain fell over the whole area on these dates. Very heavy rain fell in the Muzaffarnagar and Saharanpur districts on the 2nd and 3rd during the breaking up of this depression. The following gives the heaviest downpours :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M of date.
			Inches.
SAHARANPUR	Muhammadpur	2nd Aug.	6·67
	Deobund	3rd "	8·00
	Roorkee	3rd "	7·59

A depression which formed in Bihar on the 6th passed westwards across the North-Western Provinces on the 7th

and filled up on the 8th. It gave the following heavy downpours :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Banda	Girwan	6th Aug.	7·77
Unao	Purwa	" "	6·51
Cawnpore	Derapur	7th "	6·30
Farukhabad	Digri	" "	11·05
Etawah	Etawah	8th "	8·35
Agra	Bah	" "	7·86
Etah	Aliganj	" "	5·97

The rainfall during this period was heaviest in the central districts including Cawnpore, Farukhabad, Etawah, Mainpuri and Etah.

A break in the rains obtained over the western division and the greater part of the central division from the 9th to the 15th.

Unusually heavy rain fell in the hill districts of the North-Western Provinces during this period, more especially on the 10th, 11th, 12th and 13th. The following gives the heaviest downpours :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Dehra Dun	Raipur	11th Aug.	9·50
"	Rajpur	11th "	8·90
Naini Tal	Naini Tal	10th "	9·14
"	"	11th "	5·50
"	"	12th "	7·84
"	"	13th "	8·70
"	Kathgodam	10th "	7·16
"	"	11th "	5·87
"	"	12th "	4·20
"	"	13th "	6·23
"	Haldwani	10th "	1·12
"	"	11th "	4·16
"	"	12th "	4·50
"	"	13th "	6·57

It will be seen from the preceding data that 31·18 inches fell in four days (the 10th to the 13th) at Naini Tal.

This heavy rainfall caused serious landslips at that station, one of which resulted in large destruction of property and some loss of life.

The eastern and central districts received fairly general and moderately heavy rain on the 15th, 16th and 17th and again on the 22nd and 23rd, the latter accompanying the passage of a cyclonic storm through the northern districts of the Central Provinces and Baghelkhand. A cyclonic whirl accompanying a strong advance of monsoon winds from the Bombay Coast formed on the 25th in the central districts. It was practically stationary during the next three days and then filled up on the 29th. Very heavy and general rain was received during that period.

The following gives the most noteworthy falls :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Cawnpore	Belhaur	25th Aug.	6·55
Allahabad	Sirathu	26th "	10·93
Banda	Baberu	26th "	7·43
"	Kamasin	26th "	6·70
Fatehpur	Khajwa	26th "	9·04
"	Khaga	26th "	8·45
"	Ghazipur	26th "	8·00
"	Fatehpur	26th "	7·33

The rainfall during this period was very heavy in the south-eastern and central districts and was light in the western districts.

The rainfall of the month was in moderate to very large excess. The following gives comparative data for the eight rainfall divisions of the province :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
				Inches.	Inches.	Inches.
North-Wesrtern Provinces, East.	18·1	12·5	+5·6	17·66	10·79	+6·87
South Oudh	15·5	11·9	+3·6	19·14	10·47	+8·67
North Oudh	16·8	11·7	+5·1	19·75	10·44	+9·31
North-Western Provinces, Central.	15·8	11·8	+4·0	17·80	10·55	+7·25
North-Western Provinces, West.	8·7	9·3	−0·6	9·12	7·70	+1·42
North-Western Provinces, East Submontane.	15·8	12·2	+3·6	17·60	10·78	+6·82
North-Western Provinces, West Submontane.	12·9	12·1	+0·8	15·89	13·11	+2·78
North-Western Provinces, Hills.	20·4	18·3	+2·1	24·83	16·60	+8·23

The rainfall of the month was below the normal over a part of the western and submontane divisions in the districts for which data are given below:—

District.	Rainfall.		
	Average Actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
	Inches.	Inches.	Inches.
Meerut	7·15	7·97	—0·82
Moradabad	8·62	10·85	—2·23
Bijnor	7·59	12·21	—4·62
Muzaffarnagar	7·17	8·08	—0·91

These districts border on the districts in the South and South-East Punjab, where the rainfall of the month was largely below the normal.

The month was practically rainless over a considerable portion of the Punjab. The rainfall of the month was absolutely or practically *nil* (*i.e.*, less than a tenth of an inch) in the following districts:—Ferozepore, Montgomery, Jhang, Dera Ismail Khan, Dera Ghazi Khan, Muzaffargarh and Mooltan.

Rain occurred in the remaining plain districts chiefly during two periods, *viz.*, the 1st to the 5th and the 23rd to the 28th or 29th. The rainfall was generally light to moderate in amount, but was heavy on the 26th and 27th in the Umballa, Sialkot, Hoshiarpur, Gurdaspur, Gujarat, Jhelum, Rawalpindi and Peshawar districts. The following falls exceeding 4 inches were recorded on the 26th:—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 26th August 1898.
		Inches.
UMBALLA	Jagadhri	5·35
SIALKOT	Daska	4·33
JHELUM	Jhelum	4·08

The following gives comparative data for the plain districts which received rain during the month:—

District.	Rainfall.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Gurgaon	4·30	6·88	—2·58	—38
Rohtak	1·92	5·04	—3·12	—62
Delhi	4·71	6·58	—1·87	—28
Karnal	2·55	5·25	—2·70	—51
Umballa	7·71	8·91	—1·20	—13
Ludhiana	1·09	5·93	—4·84	—82
Jullundur	2·53	6·26	—3·73	—60
Hoshiarpur	6·41	8·93	—2·52	—28
Gurdaspur	8·13	11·99	—3·86	—32
Sialkot	4·81	7·78	—2·97	—38
Gujarat	3·59	6·21	—2·62	—42
Jhelum	3·30	3·92	—0·62	—16
Rawalpindi	6·40	7·68	—1·28	—17
Peshawar	1·05	2·75	—1·70	—62
Hazara	5·85	7·50	—1·65	—22
Kohat	2·12	2·90	—0·78	—27
Hissar	0·63	4·05	—3·42	—84
Shahpur	0·48	2·89	—2·41	—83
Lahore	0·26	4·21	—3·95	—94
Amritsar	1·31	5·83	—4·52	—78
Gujranwala	1·62	5·52	—3·90	—71
Bannu	0·18	2·21	—2·03	—92

In the Punjab hill districts, including the Simla and Kangra districts, rain was received almost daily throughout the month. The rainfall was very uniformly distributed. It was more or less in excess over the greater part of the Kangra district, and was normal in amount at Kasauli and Simla, but was in large defect in the interior of the Simla district, *e.g.*, at Kotkhai, Kotgarh and Kilba. The following gives comparative data for nine stations in these two hill districts:—

District.	Station.	Rainfall.		
		Actual, August 1898.	Normal, August.	Variation of actual, from normal, August 1898.
		Inches.	Inches.	Inches.
SIMLA	Kasauli	19·78	18·87	+ 0·91
	Simla	18·77	18·05	+ 0·72
	Kotgarh	6·70	13·54	— 6·84
	Kot Khai	4·21	12·04	— 7·83
	Kilba	1·71	4·28	— 2·57
KANGRA	Hamirpur	23·44	15·56	+ 7·88
	Kangra	35·62	22·14	+ 13·48
	Dharmsala	39·21	38·57	+ 0·64
	Kulu	4·59	8·36	— 3·77

The following gives comparative data for the seven divisions of the province :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
				Inches.	Inches.	Inches.
Punjab (South-East) .	4·4	7·4	—3·0	3·62	5·96	—2·34
Do. (South) . .	1·2	4·8	—3·6	0·53	4·13	—3·60
Do. (Central) .	1·6	5·1	—3·5	1·53	4·75	—3·22
Do. (Submontane) .	5·0	8·0	—3·0	4·68	8·30	—3·62
Do. (Hills) . .	15·5	15·3	+0·2	17·62	16·67	+0·95
Do. (North) . .	3·3	5·4	—2·1	2·82	4·78	—1·96
Do. (West) . .	0·2	2·8	—2·6	0·11	2·07	—1·96

No rain fell in British Baluchistan during the month.

The rainfall of the month was unsually small in amount in Kashmir. Showers fell in the valley, chiefly on the 12th and 13th and the 25th to the 27th, but the total fall of the month was much below the normal.

The month was practically rainless over the whole of West Rajputana including the states of Jeysulmere, Jodhpore and Bickaneer. In Central and East Rajputana the rainfall of the month was much less than the normal. Moderate to heavy rain was received in the Jeypore, Ulwar, Bhurtpore, Dholpur, Kerowlee and Kotah states during the first four days of the month. The following heavy falls were recorded—

State.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Ulwar	Rajgarh . . .	1st August.	7·38
Bhurtpore . . .	Kumber . . .	,, ,,	5·96
Kotah	Baran . . .	,, ,,	4·49
Jeypore	Bandikui . . .	,, ,,	4·19
Bhurtpore . . .	Wair . . .	2nd ,,	4·60

No rain fell in Ajmere Merwara, Partabgarh, Kusalgarh or Sirohee during this period.

A break in the rains set in on the 5th which lasted until the 20th over nearly the whole of Rajputana. Dholpur and Bhurtpore received light to morderate showers on the 7th and 8th.

Occasional rain was received in the central and eastern districts during the last ten or eleven days of the month. The showers were light and sporadic in Jeypore, Ulwar and Ajmere. Kotah obtained moderate rain on the 21st and Bhurtpore and Dholpur from the 24th to the 27th. Light to moderate showers fell almost daily in Oodeypore, Kusalgarh, Sirohee and Partabgarh during this period. Fairly general rain was received in the eastern states on the 30th and 31st. It was light, except in Kotah where heavy rain fell on the 31st, averaging 2·8 inches in amount.

The following gives comparative data of the rainfall of the month in the larger states :—

State.	Rainfall.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Jeysulmere . . .	0·03	2·30	—2·27	—99
Jodhpore . . .	0·31	4·17	—3·86	—93
Bickaneer . . .	0·50	3·02	—2·52	—83
Jeypore . . .	2·52	9·61	—7·09	—74
Ulwar	4·88	9·65	—4·77	—49
Bhurtpore . . .	6·47	8·39	—1·92	—23
Dholpur . . .	7·16	?	?	?
Kerowlee . . .	4·29	10·52	—6·23	—59
Kotah	7·00	9·76	—2·76	—28
Ajmere-Merwara . .	0·87	6·60	—5·73	—87
Oodeypore . . .	2·05	8·53	—6·48	—76
Sirohee . . .	0·83	14·52	—13·69	—94

The rainfall was in large to very large defect over the whole area.

The rainfall in Central India was generally abundant, and occurred during the same periods as in the North-Western Provinces and the Central Provinces.

Moderate to heavy rain was received from the 1st to the 6th, and moderate daily showers in Gwalior, Bundelkhand and Baghelkhand from the 5th to the 13th. Little or no rain fell in Bhopal during this period. A short break obtained from the 14th to the 17th. General moderate to heavy rain was received from the 18th to the 26th, accompanying two cyclonic storms. The rainfall was on the whole heaviest in Gwalior and Bhopal during

this period. The following gives the largest falls (over four inches) in 24 hours :—

STATE.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Bhopal	Ashta	2nd August.	7·10
Gwalior	Shujaulpur	3rd ,,	4·22
Bhopal	Bhopal	4th ,,	7·79
Rewah	Rewah	6th ,,	4·63
Gwalior	Manpur	19th ,,	4·35
,,	Ali Rajpur	,, ,,	4·25
,,	Sonkach	22nd ,,	5·57
Bhopal	Ashta	,, ,,	5·10
Gwalior	Jobat	23rd ,,	5·30
,,	Jhabua	,, ,,	4·50
,,	Bagand	,, ,,	4·40
,,	Sitamau	31st ,,	10·89
,,	Neemuch	,, ,,	6·10

A partial break obtained from the 27th to the 29th. The passage of the last cyclonic storm of the month through Central India on the 30th and 31st gave heavy general rain. The following large amounts were registered :—

STATE.	Station.	Rainfall during 24 hours preceding 8 A.M. of 31st August 1898.
		Inches.
Gwalior	Sitamau	10·89
,,	Neemuch	6·10

The following statement gives comparative rainfall data of the more important states or divisions of Central India :—

STATE.	RAINFALL.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Rewah	18·85	14·12	+4·73	+33
Gwalior	11·58	10·50	+1·08	+10
Bhopal	16·29	13·27	+3·02	+23
Indore	12·86	7·59	+5·27	+69
Rutlam	10·00	10·26	—0·26	— 3
Nagode	21·66	12·72	+8·94	+70
Maihar	16·11	13·55	+2·56	+19

The rainfall of the month was hence normal or in excess. The excess was generally moderate in amount, but was large in Indore and Nagode.

The Central Provinces received frequent moderate rain during the month. This was chiefly due to the fact that the great majority of the depressions passed westwards up the Gangetic Plain, and hence considerably to the north of the Central Provinces. The advance of each depression from Bihar or Bengal into the North-Western Provinces was accompanied by a moderate burst of rain in the Central Provinces.

The only storm which passed into the province was that of the 21st to the 23rd. It gave heavy rain on the 23rd to the Hoshangabad and neighbouring districts. The following gives the most noteworthy falls due to this storm :—

DISTRICT.	Station.	Rainfall during 24 hours preceding 8 A.M. of 23rd August 1898.
		Inches.
Hoshangabad	Seoni	8·26
	Harda	6·26
Betul	Chicholi	6·00
Hoshangabad	Hoshangabad	5·56
Bhandara	Sakoli	5·05

The periods of most general rain in Berar and the Central Provinces were the 1st to the 6th, the 10th to the 13th, the 16th to the 23rd and the 30th and the 31st.

The rainfall of the month was normal in the eastern, division, in moderate excess in the central division and in considerable excess (28 per cent.) in the western division of the Central Provinces. It was, on the other hand, in considerable defect in Berar. The rainfall was however very favourably distributed during the month in Berar.

The following gives comparative data :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.		
	Average actual, August 1898.	Average normal, August.	Variation from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
				Inches.	Inches.	Inches.
Central Provinces (West)	12·7	12·8	—0·1	12·65	9·87	+2·78
,, (Central)	18·6	14·1	+4·5	15·25	12·86	+2·39
,, (East)	15·0	13·2	+1·8	12·83	12·54	+0·29
Berar	8·3	?	?	4·29	8·89	—4·60

The monsoon current blew steadily during the month in the west coast districts. It gave daily rain, but the daily falls were unusually light. This is shown very clearly by the following statement, giving the heaviest falls in twenty-four hours during the month at the chief coast stations and at the hill stations on the West Ghats :—

AREA OR DISTRICT.	Station.	Heaviest rainfall in 24 hours during the month of August 1898.
		Inches.
COAST STATIONS	Karwar	2·98
	Honavar	2·99
	Ratnagiri	1·31
	Alibagh	1·08
	Bombay	0·74
	Broach	0·57
	Surat	0·46
KOLABA	Matheran	4·60
SATARA	Malcolmpeth	6·85
NASIK	Igatpuri	3·75
POONA	Lanoli	3·69

Rain was received daily in the Konkan coast districts, but the falls were light, more especially in the northern half. The rainfall of the month was hence below the normal, more especially in Ratnagiri, Kolaba and Thana. The following gives comparative data :—

DISTRICT.	RAINFALL.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August
	Inches.	Inches.	Inches.
North Kanara	16·50	20·68	—4·18
Ratnagiri	19·71	27·61	—7·90
Kolaba	21·27	27·35	—6·08
Thana	11·82	17·73	—5·91

The Deccan districts received light to moderate showers during the first fortnight of the month. The rainfall was moderate in the districts near the West Ghats, but was very scanty in the Bijapur and Sholapur districts.

The Poona and Satara districts also received almost daily showers during the first fortnight of the month. The Nasik and Khandesh districts obtained frequent and well distributed rain during the month. In Ahmednagar the rainfall was not only scanty but very irregularly distributed. The following gives comparative data for the districts in Karnatak, the South Deccan and Khandesh :—

DISTRICT.	RAINFALL.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.
	Inches.	Inches.	Inches.
Dharwar	1·73	4·00	—2·27
Bijapur	1·08	5·19	—4·11
Belgaum	3·27	7·36	—4·09
Satara	3·14	6·40	—3·26
Sholapur	1·20	5·37	—4·17
Poona	5·37	8·82	—3·45
Ahmednagar	0·76	3·77	—3·01
Nasik	9·44	7·97	+1·47
Khandesh	5·03	3·88	+1·15

The rainfall was very light in Gujarat from the 1st to the 18th and an almost complete break in the rains obtained during that period in Gujarat and Kathiawar as in South-West Rajputana. Moderate to heavy rain was received between the 19th and 27th, the only day of heavy rain being the 24th. The following amounts, exceeding four inches, were recorded on that day :—

DISTRICT.	Station.	Rainfall during 24 hours preceding 8 A.M. of 24th August 1898.
		Inches.
REWA KANTHA	Baria	7·08
KAIRA	Dakor	4·14
PANCH MAHALS	Kalol	5·69
" "	Godhra	4·18
" "	Halol	4·10
KAIRA	Thasra	4·06
"	Nadiad	4·01

The following gives comparative data of the rainfall of the month for the nine districts of Gujarat :—

District.	Rainfall.			
	Average actual, August 1898.	Average normal, August.	Variation of actual, from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Surat	5·29	12·83	— 7·54	—59
Broach	4·33	7·99	— 3·66	—46
Kaira	5·90	8·26	— 2·36	—29
Panch Mahals	9·85	9·85	0	0
Ahmedabad	3·11	7·33	— 4·22	—58
Rewa Kantha	10·49	11·83	— 1·34	—11
Mahi Kantha	4·32	11·57	— 7·25	—63
Palanpur	0·18	10·98	—10·80	—98
Kathiawar	1·26	4·83	— 37·	—74

Practically no rain fell in Sind and Cutch as was also the case in the neighbouring Rajputana states of Jodhpore and Jeysulmere.

The northern coast districts of Madras received occasional moderate rain, chiefly during the formation and early stages of the cyclonic storms of the month. The chief periods of rainfall were the 7th to the 10th, the 15th to the 23rd and the 26th to the 28th. As most of the cyclonic storms were land-formed depressions, the rainfall of the month was more or less below the normal, as shown below :—

District.	Rainfa			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal. August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Ganjam	5·61	7·69	—2·08	—27
Vizgapatam	5·38	9·26	—3·88	—42
Godavari	4·84	5·76	—0·92	—16
Kistna	3·86	5·88	—2·02	—34

The rainfall in the coast districts south of Nellore was practically normal. It occurred chiefly during the first and last weeks of the month. The following gives data :—

District.	Rainfall.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Nellore	1·50	3·06	—1·46	—48
Chingleput	4·86	5·12	—0·26	— 5
North Arcot	4·88	5·43	—0·55	—10
South Arcot	6·01	6·04	—0·03	0
Tanjore	5·05	4·61	+0·44	+10
Trichinopoly	4·70	4·34	+0·36	+ 8

The data indicate that the variations were small except in Nellore which received only about half its normal amount.

The rainfall of the month was, on the other hand, in serious defect in the central or Deccan districts. The only period of fairly general rainfall was the last week of the month. The showers were, however, local and light. The following gives comparative data for these districts :—

District.	Rainfall.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Cuddapah	2·53	4·37	—1·84	—42
Anantapur	1·09	3·98	—2·89	—73
Bellary	1·77	3·67	—1·90	—52
Kurnool	2·12	5·27	—3·15	—60

The percentage deficiency was large in all these districts, and was greatest in Anantapur, which received barely a quarter of its normal fall.

The rainfall in the south central and south districts was

also below the normal, but to a much less amount, relatively to the normal, than in the central or Deccan districts. As in the latter area, the only period of fairly general rainfall was the last week of the month, when moderate to heavy showers were received, chiefly on the 26th and 29th.

The following gives comparative data :—

District.	Rainfall.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Salem	3·65	4·58	−0·93	−20
Coimbatore	1·63	2·19	−0·56	−26
Madura	1·51	2·75	−1·24	−45
Tinnevelly	0·34	1·02	−0·68	−67

The Malabar Coast districts received daily rain from the 1st to the 14th, and again on the 22nd and 23rd and to the 29th to the 31st. There were hence two fairly well defined periods of break in the rains, *viz.*, from the 15th to the 21st and the 24th to the 28th. The rainfall was lighter than usual, more especially in Malabar, as is shown below :—

District.	Rainfall.			
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
South Canara	18·55	25·43	−6·88	−27
Malabar	6·40	16·45	−10·05	−61
Travancore State	3·49	?	?	?
Cochin State	5·76	?	?	?

The following gives comparative data for the eight divisions of the Presidency :—

Division.	Number of rainy days.			Rainfall.		
	Average actual, August 1898.	Average normal, August.	Variation of actual from normal, August 1898.	Average actual, August 1898.	Average normal, August.	Variation of actual from normal August, 1898.
				Inches.	Inches.	Inches.
Malabar	17·1	21·8	−4·7	10·77	20·13	−9·36
Madras South Central	4·2	5·6	−1·4	2·80	3·49	−0·69
„ East Coast North	8·5	10·2	−1·7	4·88	7·23	−2·35
„ „ „ (a)	18·5	17·7	+0·8	9·06	12·75	−3·69
„ Central	4·6	5·9	−1·3	1·93	4·30	−2·37
„ East Coast Central	3·9	5·2	−1·3	1·60	3·06	−1·46
„ „ South	7·2	7·4	−0·2	5·17	5·16	+0·01
„ South	2·1	3·3	−1·2	0·99	2·02	−1·03

Table

Abstract of Observations taken at 8 A.M. at 215

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level, in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·021	...	...	...	...	...	...	...	84·3	−0·4	75·7	+0·5	80·0	+0·1	8·5	...	...	...	...	15·0
1	Tenasserim and Bay Islands.	Car-Nicobars	25	29·822	?	29·775	29·854	19th	29·763	1st	·091	80·4	85·5	?	77·1	?	81·3	?	8·4	89·6	21st	73·1	27th	16·5
		Port Blair	61	29·794	+·008	29·786	29·895	27th	29·706	7th	·189	80·8	85·7	?	77·9†	?	81·8†	?	7·8	89·0	19th	73·9	28th	15·1
		Mergui	96	29·811	?	29·839	29·872	26th	29·722	1st	·150	78·4	84·8	+0·3	74·1	+2·1	79·5	+1·2	10·7	88·2	3 days	72·4	6th	15·8
		Tavoy	26	29·839	−·026	29·796	29·912	23rd	29·749	1st	·163	77·1	82·8	+0·3	74·2	+0·7	78·4	+0·5	8·6	87·7	19th	72·5	6th & 17th	15·2
		Moulmein‡	94	29·719	−·036	29·751	29·817	27th	29·607	1st	·210	76·2	81·9	−1·3	74·1	+0·2	78·0	−0·6	7·8	86·5	24th & 27th	72·3	9th	14·2
2	Lower Burma	Rangoon	41	29·766	−·022	29·744	29·872	23rd	29·613	7th	·259	78·0	84·2	−0·7	75·3	−0·4	79·8	−0·6	8·9	88·7	26th	73·9	7days	14·8
		Bassein	27	29·772	−·018	29·734	29·889	23rd	29·607	7th	·282	78·0	84·1	−0·3	75·9	+0·3	80·0	0	8·2	88·7	24th	73·7	21st	15·0
		Diamond Island	41	29·770	−·009	29·746	29·881	23rd	29·629	7th	·252	80·8	83·9	−0·5	76·3	+1·1	80·2	+0·3	7·6	86·6	3 days	73·9	6th	12·7
5	Arakan	Akyab	20	29·703	−·040	29·663	29·844	23rd	29·501	8th	·343	79·2	83·9	−0·5	77·7	+0·5	80·8	0	6·2	88·4	26th	76·3	5 days	12·1
3	Central Burma	Toungoo	183	29·597	−·021	29·723	29·713	23rd	29·417	7th	·296	77·5	85·7	−0·6	74·7	−0·2	80·2	−0·4	11·0	91·7	30th	73·2	9th	18·5
	II.—Burma Inland		...	...	−·027	...	...	...	...	...	...	...	88·4	−1·0	76·0	+0·4	82·2	−0·4	12·4	...	...	...	...	21·1
3	Central Burma	Thayetmyo	134	29·616	−·033	29·692	29·746	23rd	29·442	7th	·304	80·3	88·0	−0·8	76·2	+0·2	82·1	−0·3	11·8	91·1	3 days	73·1	20th	18·0
4	Upper Burma	Minbu	165	29·562	−·022	29·671	29·690	23rd	29·406	7th	·284	79·5	89·1	−1·6	76·7	−0·1	82·9	−0·9	12·4	92·6	20th	73·6	21st	19·0
		Yamethin	657	29·096	?	29·706	29·221	23rd	28·939	7th	·282	76·8	87·3	−2·9	73·5	−0·8	80·4	−1·9?	13·8	94·0	30th	71·7	21st	22·3
		Mandalay	250	29·473	−·027	29·671	29·595	22nd	29·323	7th	·272	81·5	92·4	−0·7	77·9	+0·6	85·2	−0·1	14·5	98·0	3rd	74·1	2 days	23·9
		Kindat	377	29·276	?	29·607?	29·421	26th	29·123	6th	·298	78·6	86·7	−1·6	75·8	?	81·3	−1·0	10·9	94·3	21st	72·0	28th	22·3
		Bhamo	381	29·335	?	29·672	29·487	26th	29·212	1st & 6th	·275	77·5	87·0	−0·9	75·9	+0·8	81·5	−0·1	11·1	94·1	7th & 22nd	72·8	4 days	21·3
4 (a)	Burma Hill Stations.	Taunggyi	?			Not recorded.						66·4	73·9	?	63·3	?	68·6	?	10·6	79·2	27th	60·0	18th	19·2
		Lashio	?	26·996	+·004	?	27·097	27th	26·881	7th & 20th	·216	71·9	82·4	−0·1	68·6	−0·1	75·5	−0·1	13·8	88·5	22nd	66·5	2 days	22·0
	III.—Assam		...	...	−·052	...	...	...	...	...	...	...	88·1	+0·2	77·4	+0·2	82·8	+0·2	10·7	...	...	...	...	20·3
7	Surma	Silchar	104	29·582	−·034?	29·638	29·713	31st	29·395	7th	·318	80·4	89·8	+0·6	76·7	0	83·4	+0·3	13·1	95·5	22nd	74·3	26th & 28th	21·2
9	Brahmaputra	Sibsagar	333	29·335	−·049	29·624	29·502	26th	29·178	8th	·324	79·6	88·2	−1·6	77·0	?	82·6	?	11·2	94·7	8th	71·0	25th	23·7
		Dhubri	115	29·514	−·054	29·583	29·637	31st	29·342	8th	·295	80·8	86·3	−0·2	78·6	+0·4	82·5	+0·1	7·7	90·7	8th	74·8	25th	15·9
	IV.—Bengal and Orissa		...	...	−·050	...	...	...	...	...	...	...	87·5	−0·3	78·2	+0·4	82·8	−0·1	9·3	...	...	...	...	17·5
6	East Bengal	Chittagong	87	29·572	−·067	29·607	29·715	23rd	29·376	8th	·339	80·0	85·1	−0·1	76·1	+0·1	80·6		9·0	88·7	9th	74·1	16th & 28th	14·6
		Noakhali	43	29·606	?	29·596	29·755	31st	29·432	8th	·323	80·1	84·5	?	75·9	?	80·2	?	8·6	87·5	9th	72·8	28th	14·7
		Comilla	36	29·611	?	29·595	29·754	23rd	29·441	8th	·313	80·1	86·1	?	76·3	?	81·2	?	9·8	91·3	22nd	73·8	28th & 29th	17·5
		Sirajganj	49	29·550	?	29·549	29·691	31st	29·392	8th	·299	80·8	87·2	?	78·3	?	82·8	?	8·9	92·3	22nd	73·7	27th	18·6
		Narayanganj	26	29·599	−·055	29·573	29·742	31st	29·431	8th	·311	80·9	85·6	−1·1	78·6	?	82·6	?	8·0	91·1	22nd	75·2	27th	15·9
		Barisal	13	29·611	−·049	29·569	29·737	31st	29·435	7th	·302	81·4	86·1	−0·2	78·0	+0·1	82·1	−0·1	8·1	90·3	21st	75·1	29th	15·2
		Mymensingh	59	29·575	−·051	29·585	29·705	31st	29·420	8th	·285	80·8	86·7	−0·5	78·0	+0·4	82·3	−0·1	8·7	93·2	22nd	75·1	27th	18·1
10	Deltaic Bengal	Faridpur	46	29·577	?	29·571	29·719	31st	29·415	8th	·304	81·3	86·7	?	78·3	?	82·5	?	8·4	90·8	22nd	75·9	5th & 28th	14·9
		Jessore	33	29·574	−·057	29·554	29·723	31st	29·394	8th	·329	81·7	87·9	−0·8	78·6	?	83·3	?	9·3	90·5	5 days	75·7	5th	14·8
		Calcutta	21	29·578	−·051	29·545	29·737	31st	29·392	9th	·345	81·1	86·5	−0·6	78·3	+0·2	82·4	−0·2	8·2	90·4	2nd	75·2	30th	15·2
		Saugor Island	25	29·570	−·059	29·539	29·720	31st	29·361	9th	·359	82·3	86·7	−0·5	80·3	+0·7	83·5	+0·1	6·4	90·4	2nd	77·1	30th	13·3
		Krishnagar	47	29·552	?	29·547	29·712	31st	29·385	8th	·327	81·5	88·4	?	78·1	?	83·3	?	10·3	91·3	3 days	75·2	28th	16·1
		Midnapore	149	29·445	?	29·540	29·597	31st	29·286	8th	·311	81·3	88·5	?	78·3	?	83·4	?	10·2	93·3	4th	75·6	15th	17·7

‡ Mean of 29 days. † Mean of 27 days.

I.

Stations in India, Burma, etc., in August 1898.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st August 1898.	Normal rainfall for period, 1st June to 31st August.	Variation from normal of period, 1st June to 31st August.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	33·56	27·79	+ 8·25	...	...	...	...	I.—Burma Coast and Bay Islands.		
				Not	rec	orded			3·8	?	?	87	·905	9·4	16	?	?	11·28	?	?	36·67	?	?	2·60	Car-Nicobars	Tenasserim and Bay Islands.	1
...	1	...	...	...	3	13	12	2	12·8	9·6	+33	88	·930	8·4	19	?	?	12·29	15·20	− 2·91	54·18	49·97	+ 4·21	1·64	Port Blair		
24	...	...	...	...	1	1	3	2	1·2	1·6	−25	91	·876	7·3	25	?	?	31·26	28·85	+ 2·41	90·70	92·47	− 1·77	4·97	Mergui.		
26	...	...	...	1	1	3	...	...	0·7	?	?	94	·877	9·4	29	?	?	54·47	43·19	+11·28	140·65	128·63	+11·02	8·13	Tavoy.		
...	1	...	2	6	6	9	2	3	3·3	3·2	+19	96	·866	8·8	30	26·18	+ 3·82	69·13	38·96	+30·17	139·57	120·50	+19·07	10·02	Moulmein.		
...	1	...	...	1	7	12	8	2	2·9	4·7	−38	95	·919	9·8	28	22·73	+ 5·27	30·83	18·19	+12·64	68·41	57·38	+11·03	4·12	Rangoon .	Lower Burma.	2
4	1	...	...	3	7	13	2	1	5·2	3·4	+53	94	·905	7·7	27	25·27	+ 1·73	31·43	23·25	+ 8·18	88·30	70·69	+17·61	4·34	Bassein.		
1	...	...	...	2	5	15	7	1	13·4	6·7	+100	86	·909	9·0	23	22·10	+ 0·90	24·57	22·69	+ 1·88	67·84	72·17	− 4·33	4·01	Diamond Island.		
...	...	1	7	6	11	6	...	...	3·5	3·2	+ 9	95	·957	9·0	29	26·09	+ 2·91	49·63	41·26	+ 8·37	165·18	136·79	+28·39	4·75	Akyab .	Arakan.	5
7	...	...	1	12	11	...	...	...	3·5	3·9	−10	93	·892	9·7	29	23·91	+ 5·09	20·74	18·50	+ 2·24	53·65	51·02	+ 2·63	1·47	Toungoo .	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10·81	8·51	+2·31	...	...	...	...	II.—Burma Inland.		
...	...	...	...	6	24	1	...	...	11·1	5·9	+88	85	·871	8·2	13	12·36	+ 0·64	5·94	6·57	− 0·63	16·18	20·34	− 4·16	0·92	Thayetmyo.	Central Burma.	3
1	...	...	3	19	8	...	...	...	16·8	?	?	85	·863	8·8	6	?	?	2·40	5·10	− 2·70	15·08	13·56	+ 1·52	0·67	Minbu .	Upper Burma.	4
...	...	...	...	19	12	...	...	...	9·4	?	?	92	·851	7·0	12	?	?	8·07	5·89	+ 2·18	19·64	12·82	+ 6·82	2·37	Yamethin.		
2	...	...	...	3	18	8	...	...	5·1	?	?	78	·838	8·8	6	?	?	7·47	3·88	+ 3·59	10·65	12·84	− 2·19	3·41	Mandalay.		
4	6	...	...	4	7	5	2	3	2·6	?	?	93	·918	9·1	23	?	?	20·60	13·21	+ 7·39	35·30	40·33	− 5·03	4·65	Kindat.		
27	1	3	...	...	...	...	...	...	1·6	?	?	94	·892	9·3	22	?	?	20·39	16·38	+ 4·01	50·56	48·74	+ 1·82	2·59	Bhamo.		
...	...	..	...	2	13	15	1	...	?	?	?	92	·598	10·0	20	?	?	14·15	14·63	− 0·48	34·87	35·76	− 0·89	3·43	Taunggyi .	Burma Hill Stations.	4(a)
			Not	rec	orde	d.			?	?	?	93	·733	10·0	21	?	?	15·19	12·73	+ 2·46	37·51	35·51	+ 2·00	2·76	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16·25	16·54	−0·29	...	...	...	...	III.—Assam.		
20	1	4	4	1	...	1	...	...	2·3	3·0	−23	90	·943	9·5	20	21·82	− 1·82	20·52	19·66	+ 0·86	47·84	59·49	−11·65	5·59	Silchar .	Surma.	7
6	6	2	1	...	1	12	3	...	2·9	2·7	+ 7	95	955	9·3	20	17·78	+ 2·22	17·04	16·19	+ 0·85	46·46	46·98	−0·52	2·83	Sibsagar .	Brahmaputra.	9
3	...	5	10	5	4	3	1	...	6·5	3·2	+103	88	·935	8·1	17	14·47	+ 2·53	11·18	13·76	− 2·58	51·46	54·46	− 3·00	1·82	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	17·96	13·73	+4·23	...	...	...	...	IV.—Bengal and Orissa.		
4	...	...	...	16	9	2	...	...	9·8	6·1	+61	89	·915	8·4	18	18·42	− 0·42	31·82	19·76	+12·06	79·47	65·65	+13·82	4·87	Chittagong .	East Bengal.	6
...	...	1	4	11	6	8	1	...	6·0	?	?	92	·944	8·5	30	23·04	+ 6·96	43·63	24·99	+18·64	100·08	72·92	+27·16	7·90	Noakhali.		
...	1	...	6	17	5	1	...	1	6·1	?	?	85	·873	8·4	20	17·67	+ 2·33	21·21	16·40	+ 4·81	48·36	50·43	− 2·07	7·45	Comilla.		
2	1	4	11	3	7	1	1	1	2·5	?	?	91	·959	8·4	15	13·85	+ 1·15	16·51	10·93	+ 5·58	40·79	33 55	+ 7·24	6·50	Sirajganj.		
...	1	...	5	14	7	4	...	...	10·0	6·0	+67	93	·977	9·2	23	17·38	+ 5·62	21·16	12·32	+ 8·84	47·27	39·16	+ 8·11	8·16	Narayanganj.		
1	1	...	1	11	11	5	1	...	1·4	?	?	89	·959	8·1	25	18·77	+ 6·23	21·55	12·53	+ 9·02	45·54	44·31	+ 1·23	2·98	Barisal.		
4	...	...	12	14	1	...	...	...	3·1	?	?	90	·943	7·5	21	19·19	+ 1·81	24·15	14·46	+ 9·69	59·93	48·20	+11·76	5·62	Mymensingh.		
6	1	...	1	15	7	1	...	...	1·5	?	?	92	·985	6·9	18	15·96	+ 2·04	17·73	12·23	+ 5·50	40·16	36·82	+ 3·34	4·82	Faridpur .	Deltaic Bengal	10
15	...	...	1	4	6	5	...	...	2·5	4·1	−39	91	·990	8·9	20	17·12	+ 2·88	19·90	11·35	+ 8·55	43·34	35·06	+ 8·28	2·68	Jessore.		
4	...	3	...	6	4	11	3	...	5·1	5·3	− 4	91	·969	9·2	19	18·12	+ 0·88	17·68	12·95	+ 4·73	39·58	36·15	+ 3·43	2·92	Calcutta.		
...	3	2	...	3	6	13	3	1	17·9	12·4	+44	89	·990	9·5	16	16·81	− 0·81	13·32	15·22	− 1·90	36·62	40·40	− 3·78	2·69	Saugor Island.		
...	...	1	6	8	9	3	4	...	5·3	?	?	91	·976	8·1	16	14·12	+ 1·88	15·28	10·54	+ 4·74	39·33	30·49	+ 8·84	3·53	Krishnagar.		
6	4	2	...	2	16	1	...	...	1·5	?	?	89	·959	6·1*	21	15·85	+ 5·15	13·82	12·33	+ 1·49	41·88	33·38	+ 8·50	2·35	Midnapore.		

* Mean of 20 days.

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal.	Bankura	298	29·262	P	29·510	29·417	31st	29·118	10th	·299	80·5	88·0	P	77·8	P	82·9	P	10·2	92·6	4th	74·6	30th	18·0
		Raniganj	334	29·250	P	29·531	29·406	31st	29·110	10th	·296	80·0	87·7	P	77·7	P	82·7	P	10·0	93·2	3rd	74·9	30th	18·3
		Burdwan	99	29·496	−·058	29·542	29·662	31st	29·332	10th	·330	81·4	88·3	−0·9	78·9	0	83·6	−0·5	9·4	91·4	3rd & 4th.	75·8	28th & 30th.	15·6
		Naya Dumka	489	29·099	P	29·544	29·254	31st	28·966	6th	·288	80·6	87·3	P	76·8	P	82·1	P	10·5	93·0	22nd	73·8	30th	19·2
		Berhampore	67	29·527	−·062	29·542	29·691	31st	29·382	8th	·309	81·3	87·7	−0·8	79·0	+0·5	83·4	−0·2	8·7	92·2	22nd	77·3	5 days.	14·9
		Rampur Boalia	70	29·527	P	29·546	29·679	31st	29·377	8th	·302	81·8	87·9	P	78·9	P	83·4	P	9·0	93·1	22nd	74·1	26th	19·0
		Malda	72	29·522	P	29·545	29·659	31st	29·377	8th	·282	82·0	89·6	P	79·0	P	84·3	P	10·6	94·1	22nd	76·0	27th	18·1
		Bogra	61	29·548	?	29·561	29·691	31st	29·400	8th	·291	81·0	88·0	+0·1	78·6	+0·6	83·3	+0·4	9·4	94·2	22nd	75·2	27th	19·0
12	N. Bengal	Dinajpur	123	29·490	−·050	29·566	29·624	31st	29·339	8th	·285	80·9	88·3	−0·4	78·2	P	83·3	P	10·1	94·3	22nd	69·2	6th	25·1
		Rangpur	123	29·501	P	29·580	29·629	31st	29·347	8th	·282	81·7	88·5	P	78·6	P	83·6	P	9·9	93·7	22nd	74·2	26th & 27th	19·5
		Jalpaiguri	284	29·342	−·050	29·582	29·457	30th & 31st.	29·164	8th	·293	81·2	88·9	+1·1	77·6	+1·5	83·3	+1·3	11·3	94·4	8th & 22nd.	74·1	27th	20·3
		Cooch Behar	156	29·462	P	29·572	29·588	31st	29·286	8th	·302	82·2	88·9	P	78·3	P	83·6	P	10·6	94·4	22nd	74·6	27th	19·8
17	North Bihar	Purnea	125	29·482	−·041	29·560	29·624	31st	29·330	8th	·294	82·0	89·1	−0·1	78·9	+1·0	84·0	+0·5	10·2	93·7	22nd	75·2	26th	18·5
14	Orissa	Balasore	46	29·554	−·037	29·547	29·702	31st	29·388	8th	·314	81·0	88·0	+0·7	78·0	+0·2	83·0	+0·5	10·0	92·4	2nd	75·7	10th & 30th	16·7
		False Point	21	29·608	−·031	29·570	29·754	27th	29·430	7th	·324	81·0	86·3	−0·7	77·8	−0·4	82·1	−0·6	8·5	91·0	28th	73·1	9th	17·9
		Cuttack	80	29·518	−·031	29·571	29·690	27th	29·393	7th	·297	80·4	88·2	−1·1	77·9	−0·3	83·1	−0·7	10·3	93·4	31st	75·2	3 days	18·2
		Shortt's Island	P	29·550	P	P	29·728	31st	29·406	9th	·322	81·7	87·1	P	78·6	P	82·8	P	8·5	93·0	28th	75·4	8th	17·6
		Puri	20	29·622	P	29·584	29·765	27th	29·461	7th	·304	82·4	87·2*	P	79·1*	P	83·2*	P	8·1	92·2	31st	70·6	20th	2·16
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·049	...	...	...	...	...	...	...	87·5	−1·6	77·7	0	82·6	−0·8	9·8	...	...	...	...	18·4
15	Chota Nagpur	Hazaribagh	2,007	27·593	−·056	29·539	27·716	27th	27·454	6th	·262	75·3	82·5	−1·1	73·4	+0·5	78·0	−0·3	9·1	88·2	22nd	71·3	30th	16·9
		Ranchi	2,128	27·485	−·042	29·547	27·613	31st	27·359	6th	·254	75·3	82·3	−0·6	72·9	+0·9	77·7	+0·2	9·4	87·2	21st	70·9	30th & 31st.	16·3
		Daltonganj	730 P	28·851	P	29·534	28·972	27th	28·725	6th	·247	79·2	87·3	P	76·3	P	81·8	P	11·0	94·1	4th	74·0	15th & 16th.	20·1
		Chaibassa	760	28·825	P	29·534	28·970	31st	28·688	6th	·282	79·8	87·4	−1·2	77·0	+0·4	82·2	−0·4	10·4	91·9	21st	74·5	31st	17·4
16	South Bihar	Gaya	375	29·191	−·063	29·519	29·319	31st	29·046	6th	·273	80·7	88·5	−1·6	77·8	−0·7	83·1	−1·2	10·7	94·4	4th. & 22nd.	74·8	30th	19·6
		Dehri	351	29·213	P	29·517	29·330	31st	29·074	6th	·256	81·2	86·3	P	78·4	P	82·4	P	7·9	93·3	4th	75·0	16th	18·3
		Patna	183	29·396	−·057	29·531	29·530	31st	29·242	6th	·288	81·9	87·7	−1·6	79·4	−0·1	83·6	−0·9	8·3	93·0	22nd	75·7	28th	17·3
		Arrah	190	29·375	P	29·516	29·499	31st	29·225	6th	·274	81·9	88·8	P	78·4	P	83·6	P	10·4	94·4	22nd	75·0	28th	19·4
		Buxar	239	29·327	P	29·519	29·447	31st	29·186	6th	·261	81·4	87·4	P	78·1	P	82·8	P	9·3	92·0	22nd	75·6	27th	16·4
17	North Bihar	Bhagalpur	160	29·419	P	29·531	29·570	31st	29·281	6th	·289	81·9	88·6	P	79·0	P	83·8	P	9·6	93·7	22nd	76·1	15th	17·6
		Darbhanga	166	29·422	−·060	29·541	29·557	31st	29·287	6th	·270	81·7	88·8	+0·4	79·7	+0·6	84·3	+0·5	9·1	94·8	22nd	76·5	27th	18·3
		Muzaffarpur	178	29·399	P	29·530	29·521	31st	29·265	6th	·256	81·7	88·6	P	78·7	P	83·7	P	9·9	93·7	22nd	76·2	27th	17·5
		Motihari	224	29·369	P	29·550	29·509	31st	29·203	5th	·306	81.6	89·2	P	78·0	P	83·6	P	11·2	92·0	3 days	74·9	27th	17·1
		Chapra	181	29·403	P	29·537	29·530	31st	29·259	6th	·271	81·9	89·2	P	79·1	P	84·2	P	10·1	94·3	22nd	76·6	28th	17·7
18	N.-W. P., East	Benares	267	29·311	−·040	29·533	29·411	18th	29·194	7th	·217	80·7	86·8	−2·9	77·7	−1·1	82·3	−2·0	9·1	93·3	22nd	75·7	3 days	17·6
		Allahabad	309	29·267	−·043	29·530	29·362	18th	29·127	7th	·235	80·4	86·5	−3·3	78·0	−0·5	82·3	−1·9	8·5	92·6	20th & 22nd.	74·8	8th & 12th.	17·8
23	N.-W. P. (East Submontane).	Gorakhpur	256	29·320	−·046	29·532	29·435	31st	29·185	7th	·250	82·0	P	P	78·7	−0·1	P	P	P	P	...	76·8	4 days	P
19	South Oudh	Lucknow	368	29·204	−·045	29·529	29·323	18th	29·052	7th	·271	81·0	88·6	−1·9	78·3	−0·2	83·5	−1·1	10·3	95·5	22nd	74·7	7th	20·8
20	North Oudh	Bahraich	403	29·179	P	29·542	29·300	18th	29·038	7th	·262	81·7	89·2	P	78·1	P	83·7	P	11·1	94·4	22nd	75·0	3 days	19·4
21	N.-W. Provinces (Central).	Cawnpore	416	29·160	−·035	29·529	29·271	18th	28·999	1st	·272	81·2	87·8	−1·8	78·1	−0·1	83·0	−1·0	9·7	95·3	22nd	73·0	8th	22·3
		Mainpuri	516	29·059	P	29·530	29·179	28th	28·905	1st	·274	81·4	88·5	P	78·1	P	83·3	P	10·4	94·3	23rd	74·0	28th	20·3

* Mean of 30 days.

1—*continued.*

in India, Burma, etc., in August 1898—continued.

Wind Direction. Number of winds from: Calm	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st August 1898.	Normal rainfall for period 1st June to 31st August.	Variation from normal of period 1st June to 31st August.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
6	3	...	6	5	3	3	4	1	4·6	?	?	92	·960	8·3	18	16·77	+ 1·23	14·40	12·89	+ 1·51	46·74	35·53	+11·21	3·05	Bankura	Central Bengal	11
15	2	1	5	2	2	3	...	1	1·9	?	?	92	·947	8·6	18	16·23	+ 1·77	19·83	13·23	+ 6·60	47·95	35·72	+12·23	6·24	Raniganj.		
21	...	1	2	...	2	3	1	...	1·0	3·6	−72	89	·967	8·7	20	16·19	+ 3·81	16·45	11·37	+ 5·08	43·68	32·00	+11·68	3·59	Burdwan.		
...	1	5	4	7	7	4	...	3	2·1	?	?	90	·941	9·4	23	18·20	+ 4·80	17·35	13·63	+ 3·72	43·67	36·56	+ 7·11	2·20	Naya Dumka.		
3	1	...	9	6	9	1	...	2	4·8	4·2	+17	91	·975	9·2	21	16·35	+ 4·65	21·01	11·77	+ 9·24	48·50	31·86	+16·64	5·85	Berhampore.		
3	1	1	8	8	8	2	...	...	5·7	?	?	91	1·000	7·4	15	15·19	− 0·19	17·55	11·01	+ 6·54	37·13	32·51	+ 4·62	5·10	Rampur Boalia.		
...	2	3	5	9	10	2	...	...	2·9	?	?	88	·962	8·9	17	14·31	+ 2·69	14·52	10·35	+ 4·17	26·52	32·64	− 6·12	4·26	Malda.		
			Not	rec	orde	d.			?	?	?	90	·952	7·7	15	16·08	− 1·08	12·95	11·97	+ 0·98	38·10	39·02	−0·92	3·75	Bogra.		
...	...	6	15	9	1	...	...	...	4·3	?	?	90	·949	8·3	18	15·96	+ 2·04	12·29	12·56	− 0·27	40·00	42·43	−2·43	1·94	Dinajpur	North Bengal.	12
4	...	3	8	8	6	2	...	...	2·4	?	?	89	·961	6·8	16	13·50	+ 2·50	15·49	12·41	+ 3·08	51·34	47·33	+ 4·01	3·31	Rangpur.		
1	3	8	14	3	2	...	...	...	2·5	?	?	89	·948	3·8	14	19·04	− 5·04	·64	25·74	−16·10	78·96	81·40	− 2·44	2·06	Jalpaiguri.		
7	2	1	10	6	5	...	...	...	2·3	?	?	88	·972	10·0	19	?	?	11·91	21·51	− 9·60	64·50	80·12	−15·62	4·11	Cooch Behar		
2	...	6	18	3	1	...	...	1	4·8	2·3	+109	89	·981	9·0	13	17·16	− 4·16	9·91	13·90	− 3·99	24·35	39·73	−15·38	2·72	Purnea	North Bihar.	17
6	...	...	...	...	4	17	4	...	4·4	?	?	85	·937	6·0	12	16·00	− 4·00	11·85	11·99	− 0·14	22·34	34·10	−11·76	2·20	Balasore	Orissa.	14
...	...	...	...	...	2	15	13	1	10·2	9·5	+7	90	·960	9·0	19	16·06	+ 3·00	22·25	13·56	+ 8·69	35·81	36·34	− 0·53	5·74	False Point.		
6	...	...	...	...	...	12	13	...	3·6	2·6	+38	87	·900	8·0	18	16·15	+ 1·85	15·21	12·37	+ 2·84	28·72	36·81	− 8·09	3·78	Cuttack.		
...	...	...	...	...	3	21	5	2	20·2	?	?	88	·949	7·6	13	?	?	26·18	8·93	+17·25	39·42	28·84	+10·58	7·70	Shortt's Island		
4	1	...	...	...	...	8	12	6	12·9	?	?	87	·964	6·7	9	13·27	−4·27	10·07	10·38	− 0·31	22·13	28·24	− 6·11	2·30	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16·45	11·57	+4·88	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
...	...	2	5	3	6	5	8	2	8·3	7·5	+11	90	·792	10·0	19	17·69	+ 1·31	12·25	13·11	− 0·86	35·11	34·90	+ 0·21	3·01	Hazaribagh.	Chota Nagpur.	15
2	1	1	2	2	4	6	7	6	8·6	?	?	92	·804	8·7	22	17·69	+4·31	11·54	13·84	− 2·30	41·39	36·62	+ 4·77	2·29	Ranchi		
12	...	2	3	...	2	8	4	...	6·0	?	?	86	·860	6·3	17	15·77	+ 1·22	11·49	12·36	− 0·87	29·48	31·31	− 1·83	2·02	Daltonganj.		
8	1	1	...	...	...	8	8	2	4·9	?	?	88	·897	4·5	16	16·73	− 0·73	11·50	13·04	− 1·54	31·78	35·05	− 3·27	1·97	Chaibassa.		
8	...	5	2	6	...	3	5	2	5·9	2·6	+127	90	·944	8·1	20	14·04	− 5·96	17·28	12·50	+ 4·78	28·52	32·16	− 3·64	2·86	Gaya	South Bihar.	16
...	...	...	6	4	5	8	7	1	7·1	?	?	88	·934	7·4	20	14·08	+ 5·92	20·20	12·62	+ 7·58	39·48	30·26	+ 9·22	3·57	Dehri.		
1	...	3	16	2	2	3	3	1	6·0	3·2	+88	89	·974	9·1	19	13·27	+ 5·73	21·52	11·30	+10·22	39·50	30·39	+ 9·11	4·20	Patna.		
6	1	2	10	5	2	1	1	3	3·6	?	?	90	·980	6·9	13	13·31	− 0·31	16·97	11·51	+ 5·46	37·76	29·76	+ 8·00	5·60	Arrah.		
...	...	2	14	3	...	4	5	3	5·4	?	?	89	·952	7·7	18	13·38	+ 4·62	17·47	11·33	+ 6·14	31·87	28·21	+ 3·66	2·30	Buxar.		
9	...	3	6	8	2	1	2	...	3·1	?	?	88	·955	8·5	16	13·62	+ 2·38	23·87	10·80	+13·07	37·10	31·07	+ 6·03	5·80	Bhagalpur	North Bihar.	17
...	...	2	14	12	1	...	1	1	5·1	4·4	+16	90	·975	7·2	10	14·20	− 4·20	9·28	12·47	− 3·19	22·91	32·42	− 9·51	1·91	Darbhanga.		
12	...	2	10	6	...	...	...	1	7·1	?	?	91	·983	63	14	13·31	+ 0·69	16·97	10·28	+ 6·69	34·47	30·39	+ 4·08	3·67	Muzaffarpur.		
...	1	8	19	...	...	...	2	1	6·3	?	?	89	·966	3·8	12	13·25	− 1·25	12·10	12·19	− 0·09	27·46	34·76	− 7·30	3·89	Motihari.		
11	...	1	10	3	...	2	2	2	2·3	?	?	89	·966	8·3	18	12·65	+ 5·35	14·95	10·37	+ 4·58	36·87	28·71	+ 8·16	2·09	Chapra.		
4	1	4	3	3	2	5	6	3	3·1	4·2	−26	90	·956	8·7	16	14·27	+ 1·73	11·69	11·83	− 0·14	38·17	27·70	+10·47	2·74	Benares	N.-W. P., East.	18
...	...	4	7	1	2	5	9	3	8·3	5·6	+48	91	·943	9·3	23	13·91	+ 9·09	27·35	11·10	+16·25	46·95	29·12	+17·83	4·44	Allahabad.		
2	5	10	5	3	2	1	...	3	1·9	2·3	−17	90	·981	7·7	21	13·55	+ 7·45	22·53	11·93	+10·60	38·80	35·28	+ 3·52	2·95	Gorakhpur	N.-W. P. (East Submontane).	23
9	3	2	9	3	2	1	...	2	1·7	3·0	−43	90	·951	7·3	16	12·36	+ 3·64	13·98	11·78	+ 2·20	30·61	28·46	+ 2·15	3·17	Lucknow	South Oudh.	19
8	...	3	9	9	...	...	...	2	2·4	?	?	88	·971	4·6	16	?	?	14·93	9·50	+ 5·43	26·54	27·63	− 1·09	2·35	Bahraich	North Oudh.	20
16	2	3	4	...	...	...	5	1	2·3	?	?	90	·960	7·7	14	11·70	+2·30	19·73	9·37	+10·36	36·20	22·96	+13·24	3·63	Cawnpore	N.-W. Provinces (Central).	21
8	...	1	8	4	4	...	5	1	2·6	?	?	88	·954	8·2	15	?	?	17·79	9·84	+ 7·95	30·01	23·91	+6·10	3·63	Mainpuri.		

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
45	Gujarat	Surat	39	29·914	+·016	29·696	29·819	28th	29·608	1st	·211	80·6	86·8	?	77·2	?	82·0	?	9·6	89·6	31st	75·0	20th	14·6
		Ahmedabad	164	29·555	?	29·667	29·667	28th	29·454	1st	·213	80·4	89·2	?	76·7	?	83·0	?	12·5	94·2	16th	72·6	24th	21·6
22	N.-W. P., West	Agra	555	29·023	−·036	29·534	29·142	28th	28·887	5th	·255	82·4	91·1	+0·7	79·7	+1·1	85·4	+0·9	11·4	99·0	19th & 20th.	74·9	8th	24·1
21	N.-W.P., Central	Jhansi	858	28·752	−·022	29·566	28·867	28th	28·620	1st	·247	79·4	86·2	−2·2	76·5	−0·2	81·4	−1·2	9·7	91·1	25th	73·9	26th	17·2
	IX.—Deccan	...	...	...	+·001	...	...	...	...	...	...	...	84·5	−1·8	71·9	−0·2	78·2	1·0	12·6	...	...	...	...	21·0
38	Bombay (Deccan)	Belgaum	2,556	27·311	?	29·612	27·400	28th	27·235	1st & 2nd,	·165	70·0	77·3	+1·2	65·8	−0·4	71·6	+0·4	11·5	81·7	28th	63·8	27th	17·9
		Sholapur	1,590	28·217	+·022	29·759	28·332	28th	28·121	1st	·211	76·5	89·4	+1·0	70·9	+0·5	80·1	+0·8	18·5	95·2	28th	68·5	27th	26·7
		Poona	1,840	27·958	?	29·757	28·069	28th	27·867	2nd	·202	73·2	80·6	−1·1	69·0	−0·5	74·8	−0·8	11·6	85·0	28th	65·9	18th	19·1
		Bijapur	1,946	27·874	?	29·766	27·980	28th	27·787	2nd	·193	74·7	88·7	?	69·3	?	79·0	?	19·4	93·7	27th	66·5	21st	27·2
40	Khandesh	Malegaon	1,430	28·315	+·009	29·701	28·425	28th	28·215	2nd	·210	76·3	84·5*	−1·6*	71·8*	+0·4*	78·2*	−0·6	12·7	90·9	18th	69·2	17th	21·7
		Ahmednagar	2,152	27·644	?	29·738	27·759	27th	27·544	1st	·215	74·5	85·3	?	69·2	?	77·3	?	16·1	91·3	18th & 28th.	63·5	18th	27·8
41	Berar	Akola	930	28·795	+·010	29·681	28·923	27th	28·698	1st	·225	76·5	84·7	−2·4	72·5	−0·7	78·6	−1·6	12·2	90·9	17th	69·8	25th	21·1
		Amraoti	1,215	28·505	+·020	29·685	28·643	27th	28·412	1st	·231	74·4	83·9	−2·5	71·9	−0·6	77·9	−1·6	12·0	91·2	17th	69·8	5 days	21·4
42	Central Provinces (West).	Khandwa	1,044	28·671	+·016	29·678	28·793	27th	28·577	1st	·216	76·6	83·3	−2·4	74·0	+0·2	78·7	−1·1	9·3	89·7	17th	71·1	19th & 23rd,	18·6
		Hoshangabad	1,006	28·675	+·008	29·649	28·809	28th	28·569	23rd	·240	74·7	81·5	−3·7	73·4	−0·4	77·5	−2·1	8·1	88·7	17th	71·2	3 days	17·5
		Nagpur	1,025	28·664	+·006	29·651	28·800	27th	28·573	2nd	·227	75·7	83·9	?	73·4	?	78·7	?	10·5	91·1	17th	71·1	16th & 17th	20·0
43	Central Provinces (Central).	Chanda	634	29·103	?	29·685	29·225	27th & 28th,	29·001	1st	·224	78·1	86·1	−1·7	74·9	−0·2	80·5	−1·0	11·2	91·7	3 days	72·2	23rd	19·5
		Seoni	2,033	29·645	−·009	29·622	27·783	27th	27·552	1st	·231	73·3	80·6	−2·7	69·9	−1·8	75·3	−2·3	10·7	86·0	3rd	68·4	29th & 30th	17·6
		Jubbulpore	1,327	28·307	−·021	29·596	28·444	27th	28·207	1st	·237	74·6	80·8	−4·0	72·4	−1·5	76·6	−2·8	8·4	85·9	28th	70·1	24th	15·8
		Saugor	1,807	27·851	+·007	29·613	27·983	27th	27·749	1st	·234	74·3	80·1	−3·4	72·3	−0·2	76·2	−1·8	7·8	85·8	19th	70·6	24th	15·2
49	Central India	Sutna	1,040	28·550	−·037	29·552	28·656	27th	28·427	7th	·229	77·1	82·6	−3·1	75·6	−0·1	79·1	−1·6	7·0	89·4	3 days	72·6	16th	16·8
44	Central Provinces (East).	Raipur	970	28·682	−·010	29·607	28·824	27th	28·585	6th	·239	76·3	83·6	−2·6	74·1	−0·7	78·9	−1·7	9·5	88·8	3rd & 28th	71·6	11th	17·2
		Sambalpur	486	29·148	−·039	29·581	29·294	27th	29·040	6th & 10th	·254	78·8	84·7	−2·8	76·5	−0·8	80·7	−1·8	8·2	89·1	28th	73·7	16th	15·4
39	Hyderabad (North).	Aurangabad	1,865																					
		Indur	?				Not recorded.					76·7	86·1	?	73·1	?	79·6	?	13·0	90·8	27th	71·2	23rd	19·6
		Bidar	2,165?	27·625	?	29·733	27·739	28th	27·541	8th	·198	73·4	84·6	?	64·9	?	74·9	?	19·7	89·5	21st	63·0	10th	26·5
53	Hyderabad (South).	Gulbarga	1,502	28·335	?	29·793	28·448	27th	28·248	2nd	·200	75·8	89·4	?	71·1	?	80·2	?	18·3	96·9	25th	69·1	16th	27·8
		Raichur	1,309	28·504	?	29·764	28·616	27th	28·412	2nd	·204	77·8	91·1	?	72·5	?	81·8	?	18·6	95·6	26th	69·6	25th	26·0
		Hyderabad (Deccan).	1,690	28·093	+·025	29·734	28·203	27th	28·010	6th	·193	75·6	85·9	−0·2	72·2	+1·5	79·1	+0·7	13·7	91·9	26th	70·2	8th	21·7
		Secunderabad	1,787	27·999	?	29·736 (a)	28·106	27th	27·919	6th & 7th	·187	74·8	87·0	+0·9	71·9	+1·2	79·5	+1·1	15·1	93·1	26th	69·5	8th	23·6
		Hanamconda	?	28·874	?	28·810	29·002	27th	28·794	1st & 6th	·208	79·4	87·7	?	74·8	?	81·3	?	12·9	92·0	27th	69·3	2nd	22·7
	X.—West Coast	...	...	...	+·023	...	...	...	...	...	...	...	84·1	+1·4	75·8	+0·8	80·0	+1·1	8·3	...	...	...	...	13·0
37	Konkan	Bombay	37	29·783	+·031	29·760	29·891	28th	29·691	1st & 2nd	·200	80·1	84·5	+0·6	77·3	+0·6	80·9	+0·6	7·2	86·5	27th & 28th,	75·0	11th	11·5
		Ratnagiri	110	29·736	+·035	29·784	29·830	28th	29·654	2nd	·176	79·4	84·6	+1·2	76·2	+1·4	80·4	+1·3	8·4	85·9	3 days	73·9	29th	12·0
		Mormugao	60	29·827	?	29·822	29·907	27th	29·750	2nd	·157	79·0	83·6	?	76·1	?	79·9	?	7·5	86·0	25th & 26th	73·4	4th & 31st,	12·6
		Goa	199	29·668	+·035	29·805	29·748	28th	29·593	1st	·155	79·3	82·9	?	76·4	?	79·7	?	6·5	85·0	25th & 30th	74·0	30th	11·0
		Karwar	44	29·833	+·021	29·809	29·903	27th & 28th	29·761	2nd	·142	77·9	83·2	+1·1	75·0	+0·9	79·1	+1·0	8·2	85·2	26th & 27th	73·0	4th	12·2
33	Malabar	Cochin	10	29·916	+·010	29·854	29·984	28th	29·856	2nd	·128	77·9	85·7	+2·5	74·7	+0·6	80·2	+1·6	11·0	88·0	26th	71·7	29th	16·3
		Calicut	27	29·890	+·012	29·847	29·957	29th	29·820	2nd	·137	77·4	84·4	+1·7	74·7	+1·0	79·6	+1·4	9·7	87·3	20th	72·5	4th	14·8
		Mangalore	65	29·849	+·019	29·847	29·906	29th	29·770	2nd	·136	77·9	83·4	+1·0	74·3	+0·5	78·9	+0·8	9·1	85·8	4 days	70·9	3rd	14·9
		Trivandrum	198	29·717	?	29·847	29·781	27th	29·668	2nd	·113	78·3	84·2	?	77·5	?	80·9	?	6·7	86·5	3 days	74·5	18th	12·0

(a) Not reduced to sea level. * Mean of 29 days.

I—*continued.*

in India, Burma, etc., in August 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st August 1898.	Normal rainfall for period, 1st June to 31st August.	Variation from normal of period, 1st June to 31st August.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
2	...	...	...	...	1	11	16	1	7·6	13·6	− 44	83	·871	8·6	6	12·82	−6·82	1·76	7·89	− 6·13	26·23	36·29	−10·06	0·46	Surat	Gujarat.	45
...	...	...	...	...	2	20	8	1	5·6	P	P	82	·842	9·2	6	P	P	3·50	8·56	− 5·06	24·92	24·47	+ 0·45	1·41	Ahmedabad		
1	...	2	...	7	...	12	.	9	6·2	4·4	+ 41	83	·908	6·9	7	10·73	−3·73	10·09	7·67	+ 2·42	17·79	21·71	− 3·92	2·73	Agra	N.-W. P., West	22
7	...	3	...	...	...	6	11	4	3·3	3·9	− 15	84	·850	7·1	17	14·45	+2·55	10·22	12·50	− 2·28	30·64	29·99	+ 0·65	2·54	Jhansi	N.W.P., Central	21
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7·90	9·29	−1·28	...	...	...	...	IX.—Deccan.		
...	...	...	...	...	...	13	14	4	P	20·7	P	91	·671	8·3	15	17·64	− 2·64	3·12	8·74	− 5·62	30·52	30·70	− 0·18	0·31	Belgaum	Bombay (Deccan).	38
...	...	...	...	...	...	14	13	4	18·2	11·0	+ 66	69	·632	7·2	8	11·27	− 3·27	3·00	7·39	− 4·39	15·92	16·69	− 0·77	1·29	Sholapur.		
...	1	...	...	...	...	11	18	1	17·7	14·0	+ 26	84	·684	8·5	12	7·82	+ 4·18	2·53	3·22	− 0·69	15·38	14·82	+ 0·56	0·22	Poona.		
...	...	...	...	...	...	10	16	5	11·6	P	P	83	·715	6·8	5	7·00	− 2·00	1·73	1·96	− 0·23	5·37	6·11	− 0·74	1·00	Bijapur.		
1	...	...	...	...	...	7	19	4	20·7	10·0	+107	76	·685	8·3	3	6·91	− 3·91	3·25	4·07	− 0·82	11·58	13·54	− 1·96	2·51	Malegaon	Khandesh.	40
...	...	...	...	1	...	12	13	5	25·3	P	P	78	·654	7·6	2	P	P	0·63	3·84	− 3·21	6·21	11·62	− 5·41	0·27	Ahmednagar.		
...	...	...	...	...	...	4	21	6	8·4	7·9	+ 6	84	·759	9·5	10	9·73	+ 0·27	3·82	7·44	− 3·62	16·91	23·72	− 6·81	1·28	Akola	Berar.	41
...	...	...	...	...	...	6	20	5	13·8	6·1	+126	91	·772	8·5	8	9·73	− 1·73	2·90	6·80	− 3·90	16·63	24·26	− 7·63	1·18	Amraoti.		
...	1	...	...	...	...	...	25	5	11·4	7·6	+ 50	84	·762	8·3	12	9·91	+ 2·09	9·39	7·14	+ 2·25	21·84	22·01	− 0·17	3·22	Khandwa	Central Provinces (West).	42
3	...	...	...	...	1	19	8	...	4·5	3·4	+ 32	94	·810	9·7	19	15·09	+ 3·91	21·13	14·52	+ 6·61	52·81	40·31	+12·50	5·56	Hoshangabad.		
1	1	...	...	...	...	5	19	5	10·0	8·0	+ 25	86	·766	9·0	13	12·82	+ 0·18	12·83	10·25	+ 2·58	39·22	33·72	+ 5·50	2·71	Nagpur.		
...	...	...	...	...	...	8	23	...	7·1	5·4	+ 31	81	·780	8·3	12	P	P	6·18	13·87	− 7·69	49·20	40·60	+ 8·60	1·25	Chanda	Central Provinces (Central).	43
...	1	1	...	...	...	9	7	13	4·1	4·8	− 15	88	·726	8·8	20	17·73	+ 2·27	9·00	12·90	− 3·90	38·26	41·62	− 3·36	1·80	Seoni.		
...	...	...	...	...	1	11	18	1	5·4	4·6	+ 17	94	·808	9·8	24	16·00	+ 8·00	21·28	16·12	+ 5·16	53·42	46·02	+ 7·40	3·08	Jubbulpore.		
1	...	1	...	...	...	1	25	3	7·0	4·3	+ 63	91	·774	9·8	19	14·55	+ 4·45	17·52	13·53	+ 3·99	55·47	36·03	+19·44	2·24	Saugor.		
...	2	4	1	...	3	5	15	1	12·6	7·9	+ 59	92	·856	9·0	25	13·45	+11·55	25·73	12·07	+13·66	50·51	33·78	+16·73	3·83	Sutna	Central India	49
...	...	...	...	...	2	27	2	...	13·4	7·3	+ 84	90	·811	9·1	13	14·45	− 1·45	9·74	12·66	− 2·92	33·93	38·05	− 4·12	2·56	Raipur	Central Provinces (East).	44
...	...	...	...	...	3	21	5	2	5·9	3·0	+ 97	86	·842	8·7	18	P	P	17·46	17·09	+ 0·37	45·63	50·38	− 4·75	5·80	Sambalpur.		
...	...	...	...	...	...	4	20	7	12·1	P	P	80	·737	7·9	12	P	P	6·63	10·19	− 3·56	31·10	25·43	+ 5·67	2·81	Aurangabad	Hyderabad (North).	39
...	1	...	...	...	...	7	18	5	9·8	P	P	86	·706	5·3	10	P	P	2·86	9·85	− 6·99	20·70	15·00	+ 5·70	0·56	Indur.		
...	2	...	...	...	...	...	12	17	14·3	P	P	76	·680	6·1	7	P	P	2·12	6·43	− 4·31	19·06	16·14	+ 2·92	0·51	Bidar.		
...	...	...	...	...	...	11	18	2	13·0	P	P	77	·735	5·0	4	P	P	1·60	6·56	− 4·96	12·68	14·91	− 2·23	0·57	Gulbarga	Hyderabad (South).	53
...	...	...	...	...	...	...	31	...	8·0	P	P	79	·701	6·1	11	P	P	4·09	8·17	− 4·08	17·59	19·92	− 2·33	1·10	Raichur.		
...	...	...	...	...	...	...	21	10	10·2	10·0	+ 2	75	·651	6·1	10	P	P	3·73	8·17	− 4·44	20·99	19·92	+ 1·07	0·94	Hyderabad (Deccan).		
1	1	...	...	...	...	3	20	6	11·9	P	P	75	·753	5·3	9	P	P	5·13	P	P	20·26	P	P	1·85	Secunderabad.		
																									Hanamconda.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10·08	17·49	−7·41	...	..	...	...	X.—West Coast.		
...	...	...	...	...	...	6	24	1	15·6	15·8	− 1	86	·875	8·7	17	19·64	− 2·64	5·27	11·43	− 6·16	52·94	57·97	− 5·03	0·67	Bombay	Konkan.	36
3	...	...	...	...	...	4	21	3	8·4	10·3	− 18	87	·805	7·8	25	24·36	+ 0·64	11·77	24·65	−12·88	102·35	91·42	+10·93	1·36	Ratnagiri.		
3	5	...	...	...	...	...	...	23	11·4	P	P	91	·900	6·7	21	P	P	12·72	21·41	− 8·69	82·82	74·71	+ 8·11	2·49	Mormugao.		
3	2	...	3	...	...	9	12	2	?	P	P	87	·872	8·9	20	P	P	16·16	20·32	− 4·16	88·56	84·11	+ 4·45	4·18	Goa.		
6	7	...	...	...	...	3	9	6	4·0	P	P	86	·816	7·1	25	23·36	+ 1·64	20·21	24·45	− 4·24	104·26	100·66	+ 3·60	2·86	Karwar.		
4	10	4	...	...	...	...	1	12	5·9	P	P	86	·836	6·2	14	17·91	− 3·91	8·99	13·31	− 4·32	63·79	63·23	+ 0·56	2·70	Cochin	Malabar.	39
14	4	2	...	...	1	...	2	8	7·1	P	P	91	·841	7·2	14	17·88	− 3·88	4·45	15·82	−11·37	74·57	78·39	− 3·82	0·76	Calicut.		
16	1	1	3	3	1	1	2	3	2·3	2·9	− 21	89	·845	8·8	21	23·90	− 2·90	10·54	21·13	−10·59	83·16	92·25	− 9·09	1·41	Mangalore.		
...	18	1	...	...	...	...	3	9	9·3	P	P	82	·794	6·6	2	P	P	0·64	4·91	− 4·27	20·90	24·94	− 4·04	0·47	Trivandrum.		

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure during recorded month.	Date.	Lowest pressure during recorded month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	XI.—South India		...	...	+·011	...	...	...	...	...	...	...	92·0	+2·2	75·1	+0·8	83·6	+1·5	17·0	...	...	...	...	26·4
57	Madras (South)	Pamban	37	29·829	?	29·792	29·912	30th	29·757	2nd	·155	85·6	91·8	?	78·3	?	85·0	?	13·5	92·3	14 days	75·2	27th	17·1
		Tinnevelly	168	29·697	?	29·794	29·761	7th	29·617	2nd	·174	85·2	98·1	?	78·5	?	88·4	?	19·6	102·4	26th	62·9	7th	39·5
		Madura	447	29·401	+·005	29·783	29·497	27th	29·324	2nd	·173	82·7	97·5	+1·0	75·9	+0·4	86·8	+0·7	21·6	102·0	1st	70·0	25th	32·0
34	Madras (South Central)	Salem	940	28·945	+·011	29·826	29·024	27th	28·868	2nd	·156	79·9	95·8	+4·4	73·8	+2·0	84·8	+3·2	22·0	100·9	25th	69·0	27th	31·9
		Coimbatore	1,348	28·523	+·014	29·819	28·595	27th	28·456	2nd	·139	77·1	90·5	+2·0	71·9	+1·3	81·2	+1·7	18·6	93·4	4th	68·3	24th	25·1
35	Coorg	Mercara	3,781	26·190	+·011	?	26·256	27th	26·124	2nd & 3rd	·132	64·5	70·0	−0·5	62·6	+0·5	65·3	0	7·4	74·0	28th	60·7	24th & 25th,	13·3
36	Mysore	Chitaldroog	2,405	27·465	?	29·799	27·555	27th	27·391	2nd	·164	72·6	83·8	?	68·2	?	76·0	?	15·6	90·1	26th	67·4	6 days	22·7
		Bangalore	3,021	26·894	+·013	29·819	26·955	28th	26·819	2nd	·136	70·5	84·6	+2·9	66·0	+0·5	75·3	+1·7	18·6	89·3	25th	64·3	5 days	25·0
		Hassan	3,091	26·837	?	29·840	26·904	27th	26·767	2nd	·137	70·8	79·6	?	64·3	?	72·0	?	15·3	84·9	29th	62·0	30th	22·9
		Mysore	2,518	27·400	?	29·845	27·464	27th	27·321	2nd	·143	72·3	85·4	?	66·1	?	75·7	?	19·3	91·9	26th	63·5	24th	28·4
56	Madras (East Coast, South)	Negapatam	31	29·818	+·013	29·778	29·917	27th	29·736	2nd	·181	83·0	97·0	+4·1?	77·6	+0·6	87·3	+2·4?	19·4	104·5	2nd	71·0	15th	33·5
		Cuddalore	12	29·822	?	29·763	29·920	27th	29·743	2nd	·177	83·0	95·3	?	75·1	?	85·2	?	20·2	101·3	2nd	71·2	3 days	30·1
		Trichinopoly	255	29·596	+·006	29·783	29·697	27th	29·515	2nd	·182	82·4	98·9	+2·9	77·7	+1·4	88·3	+2·2	21·2	101·6	5th & 16th,	72·4	25th	29·2
		Madras	22	29·805	+·013	29·757	29·900	27th	29·712	2nd	·188	82·9	95·1	+1·4	77·4	+0·1	86·3	+0·8	17·7	101·5	1st	72·0	17th	29·5
55	Madras (East Coast, Central)	Nellore	71	29·724	?	29·728	29·825	27th	29·644	2nd	·181	85·7	98·2	?	80·2	?	89·2	?	13·0	102·3	2nd	73·6	28th	28·7
		Masulipatam	15	29·750	+·011	29·699	29·877	27th	29·660	7th	·217	82·2	91·8	+0·5	77·8	+0·3	84·8	+0·4	14·0	98·2	18th	73·1	19th	25·1
54	Madras (Central)	Cuddapah	433	29·395	+·010	29·767	29·499	27th	29·311	2nd	·188	83·1	97·3	+4·6	78·7	+2·2	88·0	+3·4	18·6	102·2	25th	72·7	26th	29·5
		Kurnool	923	28·887	+·012	29·756	28·996	27th	28·807	2nd	·189	78·5	91·6	+2·5	74·2	+0·7	82·9	+1·6	17·4	96·2	26th	70·9	11th	25·3
		Bellary	1,475	28·361	+·024	29·781	28·471	27th	28·280	2nd	·191	78·8	92·1	+1·3	74·2	+0·8	83·2	+1·1	17·9	98·2	26th	72·2	14th & 31st	26·0
52	Madras (East Coast, North)	Cocanada	26	29·711	?	29·672	29·839	27th	29·599	7th	·240	81·3	89·8	+0·9	78·8	+0·6	84·3	+0·8	11·0	97·6	18th	75·5	21st	22·1
		Vizagapatam	31	29·668	+·002	29·637	29·831	27th	29·541	7th	·290	84·2	92·4	+1·4	79·4	−0·3	85·9	+0·6	13·0	97·2	2nd & 12th	75·9	19th	21·3
		Waltair	?				Not	record	ed.			83·0	90·9	?	78·7	?	84·8	?	12·2	95·6	12th	73·5	15th	22·1
		Gopalpur	21	29·627	?	29·588	29·774	27th	29·485	7th	·289	82·7	88·2	?	78·3	?	83·3	?	9·9	90·3	7 days	75·6	8th	14·7
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·566	?	?	25·700	31st	25·430	6th & 10th	·270	85·0	99·8	?	69·6	?	84·7	?	30·2	104·0	7th	65·0	1st	39·0
		Pishin	?			Not	record	ed.				?	96·0	?	52·8	?	74·4	?	43·2	99·0	5th	48·9	13th	50·1
		Quetta	5,502	24·480	+·005	?	24·581	19th	24·377	6th	·204	73·5	92·6	+2·1	56·9	−5·0	74·8	−1·5	35·7	96·1	18th	52·9	12th & 31st	43·2
		Kalat*	?			Not	record	ed.				76·3	92·2	?	47·8	?	70·0	?	44·4	97·7	22nd	42·0	3 days	55·7
		Chaman	4,311	25·487	?	?	25·577	20th & 21st	25·387	7th	·190	83·8	99·3	?	70·5	?	84·9	?	28·8	104·2	18th	64·1	20th & 21st	40·1
30	Punjab	Leh	11,503	19·658	+·003	?	19·746	17th	19·583	8th	·163	60·8	82·4	+4·1	51·6	+1·9	67·0	+3·0	30·8	88·7	21st	44·9	14th	43·8
		Srinagar	5,204	24·679	?	?	24·774	27th	24·535	6th	·239	72·1	88·8	?	64·8	?	76·8	?	24·0	94·4	25th	60·9	5 days	33·5
		Gulmarg	?	21·776	?	?	21·881	31st	21·665	6th	·216	62·0	71·0	?	50·4	?	60·7	?	20·6	76·9	23rd	46·4	13th	30·5
		Skardu	?	22·679	?	?	22·840	30th	22·560	7th	·280	73·5	90·3	?	63·0	?	76·7	?	27·3	97·1	7th	56·3	12th	40·8
		Dras	?	20·689	?	?	20.758	31st	20·607	25th	·151	66·1	85·0	?	49·3	?	67·2	?	35·7	90·5	6th	44·2	10th & 28th	46·3
		Gilgit	?	24·858	?	?	24·969	24th	24 723	7th	·246	82·4	94·0	?	75·4	?	84·7	?	18·6	98·7	21st & 24th	71·0	15th & 16th	27·7
		Chitral	?	24·455	?	?	24·600	31st	24·300	7th & 8th	·300	77·7	101·0	?	61·4	?	81·2	?	39·6	104·2	13 days	56·0	17days	48·2
		Killa Drosh	?			Not	record	ed.				79·6	97·0	?	73·6	?	85·4	?	23·4	103·0	7th	68·3	8th & 14th	34·7
		Fara Chinar	6,000	24·302	?	?	24·434	31st	24·104	6th	·330	77·1	88·9	?	66·3	?	77·6	?	22·6	94·5	19th	60·7	15th	32·8
		Cherat	?	25·493	?	?	25·634	31st	25·357	5th	·277	77·7	90·9	?	72·4	?	81·7	?	18·5	97·9	24th	63·6	26th	3 43

* Mean of 29 days.

I—*continued.*

in India, Burma, etc., in August 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st August 1898.	Normal rainfall for period, 1st June to 31st August.	Variation from normal of period, 1st June to 31st August.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	3·35	4·37	−1·02	...	...	...	...	**XI.—South India.**		
2	...	...	...	8	5	9	7	...	9·4	?	?	73	·906	2·7	0	0·30	− 0·30	0	0·23	− 0·23	0·32	0·98	− 0·66	0	Pamban	MADRAS (South)	57
...	2	...	...	...	...	2	10	17	10·0	?	?	58	·704	4·0	1	1·00	0	0·95	0·31	+ 0·64	2·07	1·35	+ 0·72	0·95	Tinnevelly.		
...	9	...	...	...	...	...	3	19	4·0	3·7	+ 8	65	·735	3·9	7	5·36	+ 1·64	2·73	4·00	− 1·27	4·91	7·78	− 2·87	0·62	Madura.		
1	...	...	...	...	1	20	5	4	6·7	4·2	+ 60	75	·772	4·9	7	11·78	− 4·78	9·14	7·66	+ 1·48	11·19	15·30	− 4·11	2·54	Salem	MADRAS (South Central).	36
...	...	...	3	2	7	14	5	...	4·8	7·4	− 35	80	·751	6·2	1	2·91	− 1·91	0·35	1·19	− 0·84	1·60	3·85	− 2·25	0·35	Coimbatore.		
4	...	...	...	...	...	...	22	5	7·8	8·9	− 12	95	·584	9·3	21	26·30	− 5·30	17·91	26·25	− 8·34	76·73	94·46	−17·73	3·21	Mercara	COORG.	35
...	...	...	...	...	...	14	17	...	12·6	?	?	79	·634	9·0	4	?	?	1·12	2·99	− 1·87	5·34	8·86	− 3·52	0·33	Chitaldroog	MYSORE.	36
...	1	10	19	1	...	...	...	...	9·7	7·6	+ 28	81	·607	8·1	7	10·73	− 3·73	2·16	5·80	− 3·64	6·83	13·84	− 7·01	0·50	Bangalore.		
...	...	...	...	...	...	6	17	8	4·6	?	?	81	·604	8·7	3	?	?	0·80	2·85	− 2·05	7·31	11·99	− 4·68	0·15	Hassan.		
...	1	...	...	...	1	12	17	...	11·6	?	?	77	·690	8·3	4	?	?	3·62	3·15	+ 0·47	6·67	7·59	− 0·92	1·68	Mysore.		
...	...	...	...	2	1	21	7	...	8·8	5·7	+ 54	74	·835	4·9	5	5·91	− 0·91	4·17	3·84	+ 0·33	7·69	7·85	− 0·16	2·12	Negapatam	MADRAS (East Coast, South).	56
...	...	...	...	1	7	10	12	1	1·2	?	?	77	·872	4·2	8	8·00	0	4·86	5·17	− 0·31	11·90	9·32	+ 2·58	1·34	Cuddalore.		
3	...	...	...	...	...	8	18	2	7·5	8·2	− 9	65	·717	6·0	6	5·36	+ 0·64	4·13	4·67	− 0·54	4·49	7·79	− 3·30	1·58	Trichinopoly.		
...	...	...	...	...	4	12	14	1	6·9	7·3	− 5	71	·803	7·8	9	8·27	+ 0·73	7·15	4·56	+ 2·59	12·64	10·54	+ 2·10	1·92	Madras.		
3	...	...	...	...	...	1	13	14	10·6	?	?	65	·796	8·1	2	5·50	− 3·50	1·85	3·40	− 1·55	3·96	7·40	− 3·44	1.50	Nellore	MADRAS (East Coast, Central).	55
1	...	...	...	...	...	4	13	13	9·8	7·8	+ 26	82	·895	7·4	8	9·00	− 1·00	9·84	7·04	+ 2·80	24·19	18·25	+ 5·94	4·65	Masulipatam		
...	...	...	...	...	...	10	8	13	?	?	?	71	·796	7·2	3	7·90	− 4·90	2·30	6·38	− 4·08	4·74	14·39	− 9·65	1·13	Cuddapah	MADRAS (Central)	54
...	...	...	...	...	...	...	27	4	?	?	?	71	·687	6·6	8	9·33	− 1·33	2·05	5·85	− 3·80	13·76	14·71	− 0·95	0·81	Kurnool.		
1	...	...	...	...	...	...	27	3	12·7	10·7	+ 19	57	·565	7·8	3	4·55	− 1·55	0·88	2·58	− 1·70	3·06	6·41	− 3·35	0·33	Bellary.		
...	...	...	...	...	...	15	15	1	7·5	?	?	79	·835	6·5	11	9·10	+ 1·90	7·25	5·71	+ 1·54	23·55	17·75	+ 5·80	3·04	Cocanada.	MADRAS (East Coast, North)	52
2	...	...	...	...	...	16	12	...	?	2·9	?	73	·859	7·2	5	10·64	− 5·64	1·43	5·89	− 4·46	15·14	14·47	+ 0·67	0·90	Vizagapatam.		
...	...	...	...	...	1	21	7	1	?	?	?	75	·842	7·2				No	rain gau	ge.					Waltair.		
	...	1	...	...	1	24	2	1	12·9	9·1	+ 42	81	·898	3·6	11	11·44	− 0·44	3·57	8·56	− 4·99	14·78	22·20	− 7·42	0·86	Gopalpur.		
																									XII.—Hill Stations.		
	3	1	...	16	...	...	...	4	3·3	?	?	50	·602	0·3	1	?	?	0·38	2·10	− 1·72	5·16	5·90	− 0·74	0·38	Sharigh	BALUCHISTAN.	48
			Not	reco	rde	d.			?	?	?	?	?	?	?	?	?		0·21			0·48			Pishin.		
30	...	...	...	1	...	...	...	...	1·3	4·5	− 60	55	·449	0·5	0	0·91	− 0·91	0·	0·70	− 0·70	0·52	2·03	− 1·51	0	Quetta.		
...	1	...	15	...	3	...	10	...	?	?	?	32	·287	?	0	?	?	0	0·52	− 0·52	0·29	1·25	− 0·96	0	Kalat.*		
...	...	...	4	6	7	12	2	...	9·5	?	?	40	·462	0	0	?	?	0	0	0	0	0·42	− 0·42	0	Chaman.		
...	...	...	...	...	...	...	26	5	3·0	1·6	+ 88	52	·275	3·5	1	?	?	0·29	0·49	− 0·20	0·69	1·19	− 0·50	0·19	Leh	PUNJAB.	30
9	1	1	2	13	4	1	...	...	6·0	?	?	87	·695	2·9	4	?	?	1·28	7·36	− 6·08	4·29	19·17	−14·88	0·60	Sinagar.		
7	3	3	5	5	4	1	1	2	2·8	?	?	77	·436	3·6	7	?	?	3·35	?	?	10·53	?	?	1·34	Gulmarg.		
10	1	3	...	...	1	6	10	...	9·8	?	?	57	·472	2·3	0	?	?	0	1·33	− 1·33	0·59	2·12	− 1·53	0	Skardu.		
29	1	...	...	...	...	1	...	...	8·7	?	?	54	·349	2·8	0	?	?	0·11	0·43	−0·32	2·30	?	?	0·09	Dras.		
29	...	...	...	...	...	...	1	1	1·6	?	?	43	·475	2·9	0	?	?	0·08	0·36	− 0·28	1·24	1·46	− 0·22	0·05	Gilgit.		
2	2	...	...	...	...	1	20	6	8·0	?	?	55	·529	1·1	0	?	?	0	?	?	0·67	?	?	0	Chitral.		
8	2	...	1	...	1	5	10	4	?	?	?	51	·510	1·3	0	?	?	0·21	?	?	0·92	?	?	0·08	Killa Drosh.		
...	9	6	6	5	1	1	1	2	5·4	?	?	54	·505	1·0	4	?	?	2·29	?	?	9·97	?	?	1·18	Para Chinar.		
3	4	1	...	2	19	1	1	...	9·8	?	?	73	·687	3·1	2	?	?	1·79	3·24	− 1·45	9·27	8·53	+ 0·74	0·92	Cherat.		

Table

Abstract of Observations taken at 8 A.M. at 215 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
		Murree	6,333	23·709	−·025	?	23·815	18th	23·584	5th	·231	67·8	76·4	+2·3	63·3	+2·4	69·9	+2·4	13·1	81·3	21st	54·9	13th	26·4
		Poo*	?			Not	record	ed.				?	81·8	?	59·9	?	70·9	?	21·9	86·3	6th	54·1	27th	32·2
		Simla	7,224	23·004	−·012	?	23·118	18th	22·882	5th	·236	61·7	67·4	+0·1	59·7	0	63·6	+0·1	7·7	71·4	15th	56·6	27th	14·8
25	North-Western Provinces.	Chakrata	7,022	22·168	−·006	?	23·280	31st	23·052	5th & 6th.	·228	62·4	67·7	−1·5	59·7†	† +0·3	63·7†	−0·6	8·0	73·7	23rd	56·8	3 days	16·9
		Mussooree	6,705	23·419	?	?	23·542	31st	23·288	6th	·254	63·1	68·1	−0·7	61·1	+1·4	64·6	+0·4	7·0	72·3	22nd	57·8	27th	14·5
		Ranikhet	6,069	23·967	−·010	?	24·088	18th	23·834	5th	·254	66·3	72·6	+0·1	62·8	+0·7	67·7	+0·4	9·8	77·0	3rd & 4th	59·0	26th	18·0
		Muktesar	?	22·741	?	?	22·864	18th	22·627	5th	·237	61·4	67·6	?	58·5	?	63·1	?	9·1	71·7	17th	54·9	26th	16·8
13	Bengal	Yatung	10,480?				Not	record	ed.			?	63·3	?	55·7	?	59·5	?	7·6	68·0	18th	49·9	29th & 31st	18·1
		Darjeeling	7,409	22·874	−·039	?	22·975	31st	22·737	10th	·238	61·8	66·3	+0·3	57·7‡	+1·0	61·8	+0·7	8·6	75·7	22nd	55·2	3 days	20·5
		Gantok	5,660	24·358	?	?	24·453	31st	24·252	8th	·201	65·6	73·9	?	51·0	?	62·4	?	22·9	81·2	10th	47·4	27th	33·8
	Central India	Mount Abu	3,945	25·858	−·010	?	25·955	28th	25·749	7th	·206	64·6	71·8	−0·1	63·3	−1·1	67·6	−0·6	8·5	74·1	4 days	61·4	28th	12·7
		Pachmarhi	3,528	26·258	−·016	?	26·385	27th	26·168	1st	·217	67·5	71·7	−3·1	66·2	−0·7	69·0	−1·9	5·5	76·3	17th	64·2	18th & 30th	12·1
	South India	Wellington	6,200	24·203	−·001	?	24·268	27th	24·143	2nd	·125	63·9	72·6	+1·8	55·8	−1·4	64·2	+0·2	16·8	76·2	3rd	50·2	23rd	26·0
XIII.—Extra India.																								
	Ceylon	Trincomalee	12	29·834	?	29·772	29·926	27th	29·767	2nd	·159	81·0	92·5	?	77·2	?	84·9	?	15·3	95·0	20th	75·0	2nd & 17th	20·0
		Colombo	40	29·886	0	29·852	29·960	27th	29·814	2nd	·146	81·0	86·4	?	77·7	?	82·1	?	8·7	90·5	7th	75·0	3 days	15·5
	Persia	Meshed	3,104			Not	record	ed.				76·7	Not recorded.	?	61·1	?	?	?	?	?	...	52·8	20th	?
		Teheran	?(a)	25·834 25·268	? ?	? ?	26·050 25·450	19th 19th	25·705 25·180	13th 13th	·345 ·270	83·1	96·9	?	71·6	?	84·3	?	25·3	101·8	4th & 11th.	66·0	19th	35·8
		Ispahan	?(a)	24·312 24·644	? ?	? ?	24·450 24·800	18th & 19th 19th	24·150 24·500	15th & 16th. 13th	·300 ·300	77·4	96·5	?	61·4	?	79·0	?	35·1	99·7	4th	55·7	22nd	44·0
		Bushire§	14	29·544	−·003	29·517	29·673	19th	29·406	7th	·267	92·0	97·8	+1·0	84·5	+0·9	91·2	+1·0	13·3	103·0	23rd	74·0	29th	29·0
		Jask	?	29·646	?	29·598‖	29·994	18th	29·494	6th	·300	86·3	92·1	?	82·8	?	87·5	?	9·3	96·3	8th	79·7	28th	16·6
	Arabia	Muscat	20	29·587	?	29·555	29·725	19th	29·446	7th	·279	86·0	87·7	?	84·5	?	86·1	?	3·2	93·6	7th	79·7	23rd	13·9
		Baghdad	220	29·469b	(b) −·037	(b) 29·656	29·585	29th	29·270	1st	·315	90·9b	111·5	† +3·8	80·9†	† +2·7	96·2†	+3·3†	30·6	118·7	1st	70·8	29th	47·9
		Aden	94	29·635*	−·015	29·660	29·738	31st	29·555	2nd & 3rd.	·183	84·3	91·9	0	81·1	+0·6	86·5	+0·3	10·8	95·3	26th & 27th	77·4	3rd	17·9
		Perim	?	29·499	?	?	29·591	31st	29·439	21st	·152	89·0	96·0	?	84·9d	?	90·5d	?	11·1	101·3	17th	73·0	31st	28·3
	Afghanistan	Kabul	?				Not	record	ed.			72·1	94·7	?	59·6	?	77·2	?	35·1	99·1	25th	55·0	10th	44·1
	Central Asia	Kashgar§	?	¶25·452	?	?	25·561	31st	25·300	2nd	·261	77·1	91·5	?	68·1	?	79·8	?	23·4	97·7	2nd	59·5	10th	38·2
	Arabian Sea Islands.	Amini Divi	15	29·911	?	29·854	29·976	24th & 28th	29·854	2nd	·122	83·0	83·4	?	78·3	?	80·9	?	5·1	84·9	5th	75·0	7th	9·9
		Minicoy	10	29·889	?	29·824	29·955	27th	29·833	2nd	·122	82·9	87·4	?	?	?	?	?	?	88·6	30th	?	—	?
	Africa	Zanzibar	73	30·089	+·001	30·090	30·133	12th	30·031	2nd	·102	74·6	81·5	?	73·0	?	77·2	?	8·5	83·9	29th	71·6	9th & 22nd	12·3
		Danga (Zanzibar.	?	Not	recorded							74·9	85·7	?	67·5	?	76·6	?	18·2	89·3	27th & 29th	61·6	30th	27·7

* Mean of 30 days.
† Mean of 28 days.
‡ Mean of 24 days.
(d) Mean of 27 days.

NOTE.—When a query is inserted against any reading or in the variation returns for any
(a) Aneroid uncorrected.
(b) Mean of 23 days.

I—*concluded.*

in India, Burma, etc., in August 1898—concluded.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 31st August 1898.	Normal rainfall for period, 1st June to 31st August.	Variation from normal of period, 1st June to 31st August.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
25	1	...	...	2	2	...	...	1	4·2	4·8	−13	82	·558	1·4	13	15·64	−2·64	15·46	14·28	+ 1·18	33·89	28·40	+ 5·49	3·28	Murree.		
2	2	2	...	...	...	10	9	5	?	?	?	?	?	5·5	0	?	?	0·19	0·45	− 0·26	0·61	1·86	− 1·25	0·06	Poo.*		
5	8	8	2	2	2	2	1	1	4·5	1·6	+181	94	·521	9·1	24	19·45	+4·55	18·77	17·98	+ 0·79	38·22	42·32	− 4·10	2·17	Simla.		
20	5	...	...	...	6	...	...	...	8·8	4·3	+105	95	·540	9·1	24	?	?	20·09	18·59	+ 1·50	54·00	44·92	+ 9·08	3·25	Chakrata .	North-Western Provinces.	25
...	5	4	3	2	4	3	3	7	?	8·1	?	97	·565	8·5	25	22·18	+2·82	33·20	32·39	+ 0·81	88·55	72·96	+15·59	5·80	Mussooree.		
19	1	2	2	...	...	1	4	2	2·3	1·9	+ 21	91	·587	8·9	18	17·82	+0·18	15·63	13·91	+ 1·72	38·51	33·13	+ 5·38	3·05	Ranikhet.		
...	1	...	2	10	2	3	...	13	0·8	?	?	95	·517	9·8	15	?	?	19·35	?	?	42·16	?	?	3·86	Muktesar.		
			Not	rec	ord	ed.			?	?	?	?	?	?	27	?	?	10·27	9·30	+ 0·97	23·02	?	?	1·01	Yatung .	Bengal.	13
4	...	8	7	9	1	...	2	...	3·5	3·4	+ 3	96	·533	(h) 7·7	22	24·35	−2·35	20·61	25·61	−5·00	76·15	81·75	− 5·60	2·63	Darjeeling.		
31	...	...	...	...	...	...	...	...	2·2	?	?	93	·587	10·0	29	?	?	24·68	24·98	− 0·30	62·78	69·08	− 6·30	1·52	Gantok.		
...	...	...	...	...	...	28	3	...	15·6	10·8	+41	94	·572	9·0	6	18·50	−12·50	1·63	22·39	−20·76	24·08	52·94	−28·86	0·56	Mount Abu	Central India.	
9	...	...	...	...	...	5	14	3	20·3	7·5	+171	95	·645	9·2	23	21·18	+1·82	26·86	19·74	+7·12	60·93	56·23	+ 4·70	6·73	Pachmarhi.		
19	...	...	...	1	3	6	1	1	3·4	3·8	−11	70	·421	6·0	7	10·89	−3·89	3·74	4·19	−0·45	8·73	11·67	− 2·94	1·32	Wellington.	South India.	
																									XIII.—Extra India.		
...	...	...	...	...	...	31	...	...	12·5	?	?	78	·839	1·5	3	?	?	3·08	5·10	−2·02	6·42	9·78	−3·36	2·24	Trincomalee	Ceylon.	
1	...	...	...	...	1	15	14	...	8·4	8·7	− 4	81	·863	5·9	2	?	?	0·47	4·19	−3·72	17·56	16·98	+0·58	0·24	Colombo.		
			Not	reco	rded				?	?	?	42	·394	0·5	?	?	?	0	0·02	−0·02	0·30	0·27	+0·03	0	Meshed .	Persia.	
22	...	2	2	...	2	1	2	...	3·4	?	?	31	·350	1·2	0	?	?	0	0·09	−0·09	0·09	0·61	−0·52	0	Teheran.		
14	...	1	...	4	2	1	7	2	2·7	?	?	59	·552	0·9	0	?	?	0	0	0	0	0·10	−0·10	0	Ispahan.		
5	6	2	3	4	2	1	1	6	7·3	7·8	− 6	65	·978	0·9	0	?	?	0	?	?	0	?	?	0	Bushire.§		
...	...	...	24	6	...	...	1	...	14·3	?	?	78	1·005	2·3	0	?	?	0	?	?	0·77	?	?	0	Jask.		
1	...	2	13	9	5	...	1	...	5·0	?	?	81	1·013	3·2	0	?	?	0	0	0	2·52	0·08	+2·44	0	Muscat .	Arabia.	
7	11	...	...	...	...	...	3	8	2·8	?	?	30†	·437†	0·3†	0	?	?	0	0·13	−0·13	2·92	0·14	+2·78	0	Baghdad.		
1	...	1	1	1	6	19	2	...	(b) 11·5	10·8	+ 6	74	·894	5·4	0	?	?	0	0·21	−0·21	0	0·22	−0·22	0	Aden.		
...	...	2	2	...	...	18	7	2	13·0	?	?	63	·861	6·5	1	?	?	0·36	0·38	−0·02	0·54	0·40	+0·14	0·30	Perim.		
19	...	1	2	1	...	3	5	...	?	?	?	37	·294	0	0	?	?	0	0·17	−0·17	0·10	0·93	−0·83	0	Kabul .	Afghanistan.	
15	3	...	3	...	5	...	4	...	3·9	?	?	43	·401	4·1	1	?	?	0·16	0·48	−0·32	0·29	1·53	−1·24	0·16	Kashgar§ .	Central Asia.	
...	...	...	...	...	...	4	20	7	?	?	?	85	·954	5·7	3	?	?	0·47	?	?	22·18	?	?	0·14	Amini Devi	Arabian Sea Islands.	
1	1	...	...	...	...	...	15	14	8·3	?	?	74	·840	2·7	5	?	?	1·67	?	?	12·40?	?	?	0·59	Minicoy .		
...	...	...	...	...	24	6	1	...	8·0	?	?	82	·700	7·4	0	?	?	0·09	1·83	−1·74	4·43	5·19	− 0·76	0·05	Zanzibar .	Africa.	
...	...	...	...	5	7	19	...	...	7·8	?	?	83	·717	?	3	?	?	1·47	?	?	5·68	?	?	0·98	Danga (Zanzibar.)		

station, the data for that station are not utilized in calculating the Provincial variations.

¶ Aneroid corrected.

‖ Not reduced to sea level.

(h) Mean of 16 days.

§ Observations of 30 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86

Meteorological Province.	Station.	Elevation of barometer above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Hay Islands.	Port Blair	...	29·805	29·721	·084	29·759	+·012	29·750	85·4	77·9†	7·5	89·0	73·9	15·1	83·5	82·9	80·7†	+ 0·8	75·2	79·4	78·4	77·7
	Rangoon	...	·780	·693	·087	·743	−·011	·721	84·3	75·3	9·0	88·7	73·7	15·0	80·2	78·8	77·9	− 0·6	74·0	78·1	76·8	76·3
	Diamond Island	...	·784	·701	·083	·739	−·006	·715	84·1	76·3	7·8	86·8	74·0	12·8	81·5	82·0	79·3	+ 0·8	74·3	78·1	78·2	76·9
	Cocos Island	111	·797	·631	·076	·664	−·006	·707	85·5	77·4	8·1	89·4	72·7	16·7	83·2	82·9	80·4	+ 0·6	74·6	79·7	79·0	77·8
	Akyab	...	·721	·631	·090	·680	−·027	·643	84·0	77·6	6·4	88·6	76·1	12·5	80·2	81·4	79·8	− 0·4	76·0	78·6	79·7	78·1
Assam.	Silchar	...	·588	·463	·125	·535	−·039	·588	90·0	76·7	13·3	95·6	74·2	21·4	84·4	87·9	83·0	+ 0·6	75·2	79·4	80·2	78·3
	Sibsagar	...	·343	·225	·118	·284	−·043	·568	88·3	77·0	11·3	94·5	71·0	23·5	82·3	87·7	81·6	− 0·7	76·5	79·4	82·3	79·4
	Dhubri	...	·526	·413	·113	·475	−·057	·543	86·5	78·6	7·9	90·8	74·9	15·9	82·6	84·3	81·1	+ 0·5	77·1	79·1	79·8	78·7
Bengal and Orissa.	Chittagong	...	·584	·493	·091	·546	−·058	·580	85·1	76·1	9·0	88·8	74·1	14·7	82·5	82·9	79·7	0	75·3	78·8	79·1	77·7
	Narayanganj	...	·612	·517	·095	·571	−·047	·545	86·7	78·6	8·1	91·1	75·3	15·8	82·9	83·9	82·2	− 0·6	76·6	80·0	80·1	78·9
	Calcutta (Alipore)	...	·590	·496	·094	·548	−·048	·515	86·5	78·3	8·2	90·4	75·1	15·3	83·0	84·1	82·4	− 0·1	77·3	79·7	80·0	79·0
	Saugor Island	...	·582	·489	·093	·541	−·050	·509	86·6	80·2	6·4	90·4	77·1	13·3	83·8	84·3	82·4	0	77·9	80·5	80·7	79·7
	Burdwan	...	·505	·403	·102	·461	−·054	·506	88·4	78·9	9·5	91·4	75·8	15·6	84·3	85·9	82·7	− 0·5	77·6	80·3	80·5	79·5
	Berhampore	...	·537	·441	·096	·496	−·054	·511	87·9	79·0	8·9	92·2	77·1	15·1	84·0	85·6	82·5	−0·6	77·3	80·2	80·7	79·4
	False Point	...	·621	·526	·095	·578	−·040	·541	86·2	77·8	8·4	91·0	72·9	18·1	83·3	83·8	81·0	− 0·5	76·4	79·6	80·1	78·7
	Cuttack	...	·563	·466	·097	·522	−·025	·543	88·3	77·9	10·4	93·4	75·0	18·4	83·8	84·8	81·8	− 0·7	76·0	78·4	78·7	77·7
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·608	27·520	·088	27·566	−·053	·498	82·6	73·4	9·2	88·2	71·1	17·1	77·9	79·4	76·8	− 0·5	71·7	74·2	75·0	73·6
	Patna	...	29·411	29·310	·101	29·366	−·049	·499	87·7	79·4	8·3	93·0	75·7	17·3	84·0	85·9	82·6	− 0·9	78·0	80·2	80·9	79·7
	Darbhanga	...	·434	·331	·103	·388	−·050	·505	88·9	79·7	9·2	94·8	76·3	18·5	85·1	87·0	83·3	+ 0·4	77·9	80·5	81·3	79·9
	Allahabad	...	·282	·185	·097	·238	−·035	·498	86·5	78·0	8·5	92·8	74·7	18·1	82·7	84·6	81·2	− 2·0	76·3	79·1	80·2	78·5
	Lucknow	...	·217	·123	·094	·171	−·047	·492	89·0	78·3	10·7	95·6	74·7	20·9	83·9	86·0	82·8	− 1·7	76·9	79·5	80·1	78·8
Upper Sub-Himalayas.	Dehra Dun	...	27·417	27·333	·084	27·368	−·036	·531	83·3	73·0	10·3	88·3	69·5	18·8	77·7	79·2	76·6	− 1·4	71·8	74·5	75·4	73·9
	Roorkee	...	28·706	28·610	·096	28·654	−·034	·493	89·9	77·1	12·8	97·7	72·4	25·3	83·9	87·6	82·4	− 0·6	75·3	78·2	79·4	77·6
	Meerut	...	·851	·759	·092	·798	−·035	·487	92·5	79·2	13·3	99·6	73·7	25·9	86·8	91·0	85·3	+ 1·5	77·1	77·7	78·9	77·9
	Lahore	...	·844	·754	·090	·792	−·051	·439	99·3	83·3	16·0	104·1	78·1	26·0	91·8	98·8	90·9	+ 4·3	76·7	80·2	81·8	79·6
	Ludhiana	...	·758	·661	·097	·704	−·041	·461	97·5	81·7	15·8	104·2	75·3	28·9	89·3	95·9	88·8	+ 3·1	76·0	78·8	79·9	78·2
Indus Valley and N.-W. Rajputana.	Peshawar	...	·426	·311	·115	·362	−·070	·411	102·3	80·2	22·1	107·5	75·5	32·0	93·5	100·1	90·4	+ 3·2	74·2	80·3	80·5	78·3
	Mooltan	...	29·107	29·012	·095	29·053	−·044	·425	103·5	83·7	19·8	108·8	80·5	28·3	93·9	101·7	92·9	+ 3·0	75·3	80·0	82·7	79·3
	Jacobabad	...	·342	·227	·115	·277	−·045	·414	106·5	80·6	25·9	110·5	78·4	32·1	93·0	105·0	92·8	+ 1·2	75·0	81·2	84·1	80·1
	Kurrachee	...	·625	·558	·067	·594	+·004	·575	88·7	78·2	10·5	90·9	76·8	14·1	84·4	85·5	82·3	+ 0·2	74·5	77·2	77·7	76·5
East Rajputana, Central India, and Gujarat.	Jeypore	...	28·222	28·126	·096	28·173	−·013	·532	93·8	77·2	16·6	102·0	74·5	27·5	85·9	91·7	84·3	+ 2·9	72·2	75·0	76·6	74·6
	Ajmere	...	·052	27·952	·100	27·999	−·021	·540	92·0	77·2	14·8	96·4	74·6	21·8	83·3	91·0	83·9	+ 4·0	72·0	75·1	77·4	74·8
	Oodeypore	...	27·772	·700	·072	·736	?	·593	85·7	73·2	12·5	91·2	71·1	20·1	80·0	82·9	78·8	?	69·9	72·2	74·1	72·1
	Deesa	...	29·227	29·129	·098	29·176	+·004	·590	91·5	75·7	15·8	95·2	73·3	21·9	84·1	89·6	82·9	+ 1·4	72·8	76·1	76·5	75·2
	Nowgong	...	28·871	28·788	·083	28·831	−·010	·541	83·6	76·4	7·2	89·6	73·4	16·2	79·6	82·1	79·3	− 2·3	75·0	78·0	78·9	77·3
	Agra	...	29·043	·949	·094	·993	−·033	·499	91·5	79·8	11·7	99·0	74·9	24·1	86·3	89·0	85·5	+ 0·6	76·6	80·0	81·2	79·3
Deccan.	Belgaum	...	27·321	27·253	·068	27·287	+·012	·770	77·4	65·9	11·5	81·6	63·8	17·8	72·6	73·0	69·9	+ 0·4	65·5	69·3	69·3	68·1
	Sholapur	...	28·218	28·104	·114	28·168	+·015	·685	89·4	70·9	18·5	95·2	68·6	26·6	81·1	86·1	78·9	+ 0·8	68·2	70·6	71·3	70·0
	Poona	...	27·972	27·908	·064	27·941	+·025	·724	80·8	69·0	11·8	84·9	65·9	19·0	76·2	76·9	72·9	− 0·7	67·2	70·9	70·7	69·6
	Akola	...	28·804	28·708	·096	28·754	+·013	·625	81·6	72·4	12·2	90·8	69·9	20·9	80·8	82·3	78·2	− 1·4	70·8	74·3	74·7	73·3
	Buldana	2,132	27·635	27·552	·083	27·591	+·017	·657	79·8	69·0	10·8	85·3	66·7	18·6	75·1	77·8	74·2	− 1·1	67·0	70·3	71·5	69·6
	Khandwa	...	28·683	28·597	·086	28·638	+·021	·637	83·1	74·0	9·1	89·9	71·1	18·8	79·2	81·2	77·5	− 0·8	70·9	73·3	74·0	72·7

† Mean of 27 days. ‡ Mean of 30 days.

II.

Stations in India, Burma, etc., for August, 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from											Wind steadiness.		Wind velocity.		Rainfall.			
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·845†	·947	·914	·902	+·009	89†	83	81	84	−2	8·5	8·2	8·4	+0·9	...	...	...	...	2	4	27	27	2	S. 63° W.	S. 49° W.	84	82	310	242	...	...	Port Blair	Burma Coast and Bay Islands.
·828	·939	·899	·889	+·001	94	91	91	93	+3	9·8	9·8	9·8	+0·9	...	...	...	...	1	15	28	15	3	S. 47° W.	S. 38° W.	79	65	67	110	...	...	Rangoon	
·822	·920	·914	·885	+·012	90	86	84	87	0	8·5	8·8	8·7	+0·7	...	...	...	2	3	8	36	11	2	S. 44° W.	S. 45° W.	77	78	337*	193	...	...	Diamond Island.	
·821	·970	·940	·910	+·006	87	85	83	85	−3	7·1	7·8	7·5	−0·9	...	...	...	...	1	5	48	6	2	S. 47° W.	S. 41° W.	90	91	?	?	8·26	1·35	Cocos Island.	
·879	·959	·995	·944	+·031	93	93	93	93	+5	8·3	8·2	8·3	+0·1	...	...	...	3	13	36	10	...	...	S. 5° E.	S. 1° E	85	63	84	85	...	...	Akyab	
·857	·939	·929	·908	−·012	93	80	72	82	−3	9·0	8·0	8·5	+0·5	34	6	...	4	1	1	2	7	7	N. 48° W.	S. 81° W.	19	7	96*	61	...	...	Silchar	Assam.
·910	·970	1·034	·971	+·022	98	88	79	88	+3	9·0	6·2	7·6	−0·7	12	5	6	...	1	1	35	2	...	S. 52° W.	S. 21° W.	45	15	86*	63	...	...	Sibsagar	
·913	·951	·958	·941	+·013	93	79	81	84	−3	7·7	7·9	7·8	+0·2	9	...	6	20	5	6	13	2	1	S. 49° E.	S. 43° E.	34	19	155*	97	...	...	Dhubri	
·870	·937	·942	·916	+·010	96	85	84	88	+1	8·0	8·1	8·1	+0·4	5	...	...	...	18	20	18	1	...	S. 1° W.	S. 25° E.	74	61	240*	142	...	...	Chittagong	
·892	·985	·978	·952	−·011	91	87	84	87	0	9·0	8·4	8·7	+0·9	...	...	1	5	32	16	6	1	1	S. 28° E.	S. 15° E.	76	75	238	162	...	...	Narayanganj.	Bengal and Orissa.
·926	·973	·970	·956	−·001	95	86	83	88	0	9·0	8·8	8·9	+0·6	...	1	6	1	11	14	23	5	1	S. 16° W.	S. 14° E.	54	56	121	115	...	...	Calcutta (Alipore).	
·928	1·000	1·000	·976	−·012	90	86	85	87	0	9·4	9·4	9·4	+1·5	...	3	1	1	6	18	29	2	2	S. 26° W.	S. 13° W.	68	57	428	315	...	...	Saugor Island.	
·936	·983	·970	·963	+·020	94	83	78	85	+2	8·4	8·7	8·6	+0·3	40	...	1	2	4	5	8	2	...	S. 10° W.	S. 28° E.	21	48	24*	86	...	...	Burdwan.	
·913	·981	·965	·953	−·001	92	84	80	85	−2	8·4	8·6	8·5	−0·2	5	...	...	22	14	9	6	4	2	S. 45° E.	S. 41° E.	50	47	114*	99	...	...	Berhampore	
·896	·964	·982	·947	+·014	94	85	85	88	+3	8·7	8·8	8·8	+0·9	...	1	...	...	3	8	27	22	1	S. 55° W.	S. 47° W.	77	53	244*	238	...	...	False Point	
·876	·900	·902	·893	−·010	92	78	76	82	+1	7·8	8·4	8·1	+0·7	6	1	...	1	1	4	21	25	3	S. 68° W.	S. 41° W.	71	37	87	65	...	...	Cuttack	
·757	·799	·815	·790	−·009	92	84	82	86	+1	10·0	9·9	10·0	+1·0	1	4	3	10	7	9	8	14	6	S. 38° W.	S. 4° W.	18	8	204*	185	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·942	·980	·991	·971	+·018	94	84	80	86	+3	8·8	8·1	8·5	+0·3	6	1	8	25	5	5	4	5	3	S. 84° E.	S. 79° E.	39	38	140*	96	...	...	Patna	
·939	·981	·993	·971	+·010	92	81	78	84	0	6·8	5·8	6·3	+0·1	4	...	1	27	25	1	1	2	1	S. 67° E.	S. 77° E.	74	60	123	111	...	...	Darbhanga	
·886	·951	·972	·936	−·010	92	85	82	87	+4	9·1	8·4	8·8	+1·0	1	3	9	9	3	4	10	15	8	N. 80° W.	N. 16° E.	17	4	229*	134	...	...	Allahabad	
·911	·952	·952	·938	+·023	94	82	77	84	+4	8·1	8·1	8·1	+0·5	23	10	2	14	2	7	...	2	2	N. 72° E.	N. 63° E.	23	14	40*	70	...	...	Lucknow	
·766	·816	·834	·805	+·012	94	86	84	88	+1	8·2	8·7	8·5	+0·8	21	1	...	6	15	7	5	5	2	S. 20° E.	S. 26° W.	32	14	20	24	...	...	Dehra Dun	Upper Sub-Himalayas.
·854	·892	·898	·881	+·017	92	77	69	79	+1	6·8	6·4	6·6	+0·2	35	2	6	1	12	1	2	1	2	S. 72° E.	S. 24° E.	16	22	27§	58	...	...	Roorkee	
·905	·830	·824	·853	−·025	89	66	58	71	−6	6·6	6·4	6·5	0	19	...	1	6	11	...	7	18	...	S. 35° W.	S. 55° E.	24	10	43*	48	...	...	Meerut	
·831	·875	·861	·856	−·012	73	59	47	60	−5	2·5	2·4	2·5	−1·2	10	6	1	6	5	9	4	17	4	S. 65° W.	S. 80° E.	23	25	63	69	...	...	Lahore	
·826	·844	·807	·826	−·048	77	62	49	63	−10	4·9	3·7	4·3	−1·5	14	1	6	2	15	2	5	8	9	S. 15° W.	S. 59° E.	8	11	60	39	...	...	Ludhiana	
·774	·874	·799	·816	+·041	75	55	42	57	−4	0·9	3·3	2·1	−0·8	19	17	13	2	4	2	2	...	3	N. 25° E.	N. 41° E.	40	51	58*	93	...	...	Peshawar	Indus Valley and N.W. Rajputana.
·766	·835	·865	·822	−·056	66	52	43	54	−8	0·2	1·0	0·6	−1·6	8	...	1	...	13	3	37	...	...	S. 23° W.	S. 12° W	66	27	?	67	...	...	Mooltan	
·796	·906	·886	·863	+·042	76	59	40	58	+1	0·7	0·7	0·7	−1·6	3	...	...	1	50	8	...	...	...	S. 40° E.	S. 44° E.	91	59	118*	101	...	...	Jacobabad	
·806	·838	·847	·831	−·038	83	71	69	75	−4	7·0	5·9	6·5	−0·2	...	...	...	...	...	1	25	36	...	S. 71° W.	S. 67° W.	92	88	434*	397	...	...	Kurrachee	
·730	·731	·729	·730	−·079	78	59	49	62	−14	6·3	7·4	6·9	−0·5	...	3	7	1	...	1	20	23	7	S. 87° W.	N. 66° W.	58	43	135	118	...	...	Jeypore	East Rajputana, Central India and Gujarat.
·721	·772	·773	·755	−·036	77	67	53	66	−10	5·3	5·7	5·5	−0·5	...	...	1	...	...	...	14	42	5	S. 84° W.	S. 82° W.	89	64	251	156	...	...	Ajmere	
·691	·694	·733	·706	?	84	68	66	73	?	6·3	6·7	6·8	?	...	1	...	...	1	1	17	34	8	S. 82° W.	?	82	?	200	?	...	...	Oodeypore	
·770	·792	·739	·767	−·033	87	68	53	69	−6	8·8	8·2	8·5	+0·5	...	...	...	...	...	...	14	44	4	S. 83° W.	S. 52° W.	92	75	357	278	...	...	Deesa	
·849	·942	·949	·913	+·045	93	93	87	91	+10	9·7	9·4	9·6	+1·2	...	1	4	6	...	1	3	43	4	N. 85° W.	N. 89° W.	63	44	60*	79	...	...	Nowgong	
·874	·941	·962	·926	+·028	86	75	71	77	0	7·2	7·4	7·3	+0·7	...	...	9	...	14	...	20	...	19	S. 70° W.	S. 53° W.	19	7	176*	146	...	...	Agra	
·627	·678	·670	·658	+·002	98	85	83	89	0	8·7	9·1	8·9	+0·2				Not	rec	orde	d.	...	...	?	S 71° W.	?	89	?	517	...	...	Belgaum	Deccan.
·656	·620	·584	·619	−·041	86	58	48	64	−5	7·6	8·7	8·2	−0·2	...	...	...	...	...	...	29	26	7	S. 73° W.	W.	87	81	322*	236	...	...	Sholapur	
·646	·692	·677	·672	−·011	91	77	73	80	0	8·8	9·0	8·9	+0·3	...	...	...	...	...	...	18	43	1	S. 78° W.	S. 85° W.	93	89	479*	327	...	...	Poona	
·732	·762	·760	·751	−·002	92	73	70	79	+3	8·3	8·7	8·5	+0·3	1	1	...	...	...	...	3	26	31	N. 67° W.	N. 67° W.	87	82	?	200	...	...	Akola	
·639	·681	·695	·671	−·026	90	78	74	80	−1	9·8	9·2	9·5	+1·7	...	...	...	...	...	...	4	41	17	N. 81° W.	N. 65° W.	91	76	248*	195	3·81	0·90	Buldana	
·722	·749	·741	·737	−·029	86	76	72	78	−1	8·8	8·9	8·9	+1·3	...	5	...	...	...	...	2	29	26	N. 65° W.	N. 81° W.	85	84	273	199	...	...	Khandwa	

* Corrected. § Mean of 19·3 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86

Meteorological Province.	Station.	Elevation of barometer cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L., and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature Wet-bulb. Mean minimum.	Temperature Wet-bulb. Mean 10 hours.	Temperature Wet-bulb. Mean 16 hours.	Temperature Wet-bulb. Mean daily.
Deccan—*contd.*	Hoshangabad	...	28·692	28·604	·088	28·646	+·014	29·612	81·6	73·4	8·2	88·9	71·0	17·9	76·8	79·8	76·5	−1·8	71·9	74·3	75·6	73·9
	Nagpur	...	·678	·582	·096	·628	+·016	·605	83·9	73·4	10·5	91·3	71·1	20·2	78·6	81·6	78·4	−1·8	71·5	74·0	75·2	73·6
	Nagpur (Sanitary Commissioner's Office).	...	·681†	·592†	·089	·635†	?	·601‡	84·7	73·3	11·4	91·2	70·6	20·6	79·2	82·0	78·4	?	71·4	74·6	75·7	73·9
	Jubbulpore	...	·321	·236	·085	·277	−·015	·557	80·9	72·5	8·4	85·9	70·0	15·9	76·5	77·9	75·3	−2·6	69·2	74·3	75·1	72·9
	Saugor	...	27·871	27·787	·084	27·827	+·010	·576	80·1	72·3	7·8	85·5	70·4	15·1	76·2	78·4	75·2	−1·4	70·5	73·3	74·3	72·7
	Sutna	...	28·562	28·474	·088	28·519	−·029	·512	82·9	75·5	7·4	89·4	72·6	16·8	79·1	81·2	78·3	−2·1	73·8	76·4	77·3	75·8
	Raipur	...	·695	·602	·093	·647	−·004	·553	83·6	74·0	9·6	88·8	71·4	17·4	79·0	80·4	78·3	−1·6	72·0	75·0	75·6	74·2
	Hyderabad (Deccan).	...	·100	27·989	·111	·049	+·019	·667	85·9	72·1	13·8	92·0	70·4	21·6	79·5	84·1	78·6	+1·3	69·6	72·4	73·7	71·9
West Coast.	Bombay	...	29·795	29·727	·068	29·758	+·031	·735	84·6	77·2	7·2	86·5	75·0	11·5	81·6	82·2	80·5	+0·6	73·4	77·5	77·6	76·2
	Ratnagiri	...	·749	·681	·068	·712	+·030	·759	84·6	76·0	8·6	86·0	73·9	12·1	81·1	81·5	79·6	+0·8	73·8	77·3	77·3	76·1
	Karwar	...	·849	·773	·076	·808	+·021	·783	83·1	75·0	8·1	85·4	73·0	12·4	80·0	81·2	78·7	+0·9	73·0	75·5	75·9	74·8
	Cochin	...	·923	·859	·064	·888	+·011	·825	85·7	74·7	11·0	88·2	71·9	16·3	81·3	82·9	79·6	+1·0	73·3	76·8	77·4	75·8
South India.	Salem	...	28·939	28·799	·140	28·883	−·010	·746	95·5	73·8	21·7	100·7	69·1	31·6	85·2	91·3	82·4	+2·6	71·6	74·9	76·1	74·2
	Mercara	...	26·218	26·145	·073	26·196	+·024	?	70·0	62·7	7·3	74·0	60·7	13·3	66·4	66·3	65·4	+0·1	61·7	64·7	65·0	63·8
	Chitaldroog	...	27·470	27·377	·093	27·433	+·024	·745	83·9	68·2	15·7	89·9	67·2	22·7	77·1	80·5	75·2	+1·7	65·7	69·5	70·0	68·4
	Bangalore	...	26·899	26·792	·107	26·858	+·014	·742	84·6	66·0	18·6	89·5	64·1	25·4	76·4	81·4	74·5	+2·2	64·3	68·3	69·2	67·3
	Hassan	...	·843	·770	·073	·819	+·016	·790	79·8	64·3	15·5	84·9	62·0	22·9	75·0	76·0	71·1	+1·3	63·3	67·6	68·0	66·3
	Mysore	...	27·401	27·302	·099	27·352	+·013	·767	85·4	66·1	19·3	91·8	63·3	28·5	78·1	81·1	74·7	+1·0	64·7	68·8	69·5	67·7
	Trichinopoly	...	29·601	29·453	·148	29·541	−·001	·723	98·6	77·8	20·8	101·8	72·2	29·6	90·0	95·9	86·3	+2·2	71·8	74·5	76·1	74·1
	Madras	...	·806	·684	·122	·754	+·008	·774	94·9	77·3	17·6	100·8	72·0	28·8	87·4	89·1	84·2	+0·3	?	76·8	78·6	77·0
	Bellary	...	28·367	28·243	·124	28·314	+·010	·711	92·1	74·2	17·9	98·2	72·0	26·2	83·7	89·2	81·9	+1·1	67·2	69·6	70·9	69·2
	Cocanada	...	29·715	29·607	·108	29·666	+·021	·628	89·6	78·8	10·8	97·8	75·5	22·3	84·1	87·6	83·7	+0·6	75·9	76·7	77·2	76·6
	Vizagapatam	...	·673	·570	·103	·627	−·003	·597	92·2	79·3	12·9	97·2	75·9	21·3	87·7	88·4§	85·5‖	+0·5	75·3	78·7	78·6	77·6
Hill Stations, Baluchistan.	Quetta	...	24·487	24·408	·079	24·445	+·003	?	92·9	56·9	36·0	96·3	52·7	3·6	83·2	91·3	74·5	−0·5	48·6	61·5	64·1	58·1
Hill Stations, Punjab.	Leh	...	19·656	19·541	·115	19·609	−·012	?	82·5	51·6	30·9	88·7	44·9	43·8	68·9	77·5	65·5	+4·3	45·6	53·5	56·6	51·9
	Srinagar	...	24·684	24·587	·097	24·634	−·034	?	89·0	64·9	24·1	94·4	60·9	33·5	78·5	87·2	76·5	+4·0	(a) 62·5	74·6	?	?
	Murree	...	23·727	23·694	·033	23·709	−·020	?	76·2	63·3	12·9	81·5	54·9	26·6	70·9	73·8	69·3	+2·4	59·6	66·2	68·6	64·8
	Kailang	10,087	20·671	20·588	·083	20·632	−·039	?	76·5	?	?	82·0	?	?	67·2	70·8	?	?	49·0	58·3	57·4	54·9
	Simla (Ridge)	...	23·021	22·974	·047	22·995	−·007	?	67·5	59·7	7·8	71·4	56·6	14·8	63·6	65·7	63·3	−0·1	58·8	62·0	63·6	61·5
Hill Stations, N.-W. P.	Chakrata	...	·185	23·137	·048	23·159	−·010	?	67·9	59·8¶	8·1	73·7	56·6	17·1	64·8	64·7	63·1¶	−0·3	59·7†	63·8	63·3	62·3
	Ranikhet	...	·981	·917	·064	·934	−·021	?	72·7	62·8	9·9	77·0	59·0	18·0	68·6	68·7	66·9	+0·1	62·0	65·7	66·4	64·7
	Muktesar	...	22·758	22·699	·059	22·729	?	?	67·6	58·5	9·1	71·8	54·9	16·9	62·9	64·7	62·4	?	58·1	61·5	63·0	60·9
Hill Station, Nepal.	Katmandu	4,388	25·385?	25·297?	·088	25·344?	?	?	83·6	68·7	14·9	89·4	66·1	23·3	78·1	77·5	74·6	−0·4	76·4	(a) 71·3	(a) 72·2	70·3
Hill Station, Bengal.	Darjeeling	...	22·889	(b) 22·836	·053	(b) 22·869	−·039	?	66·5	(c) 57·6	8·9	75·6	55·0	20·6	63·7	(b) 62·9	(d) 60·9	+0·3	57·2	62·6	(b) 61·8	60·5
Hill Stations, Central India.	Mount Abu	...	25·880	25·828	·052	25·852	−·009	?	72·1	63·3	8·8	74·9	61·6	13·3	67·3	70·8	67·3	−0·2	62·1	65·2	67·4	64·8
	Pachmarhi	...	26·279	26·208	·071	26·242	−·005	?	71·8	66·2	5·6	76·3	64·2	12·1	68·6	70·3	67·9	−1·6	65·7	67·4	68·1	67·1
	Chikalda	3,642	·175	·109	·066	·140	0	?	69·6	64·1	5·5	74·8	62·6	12·2	66·6	68·7	65·9	−1·7	64·0	66·0	67·3	65·7

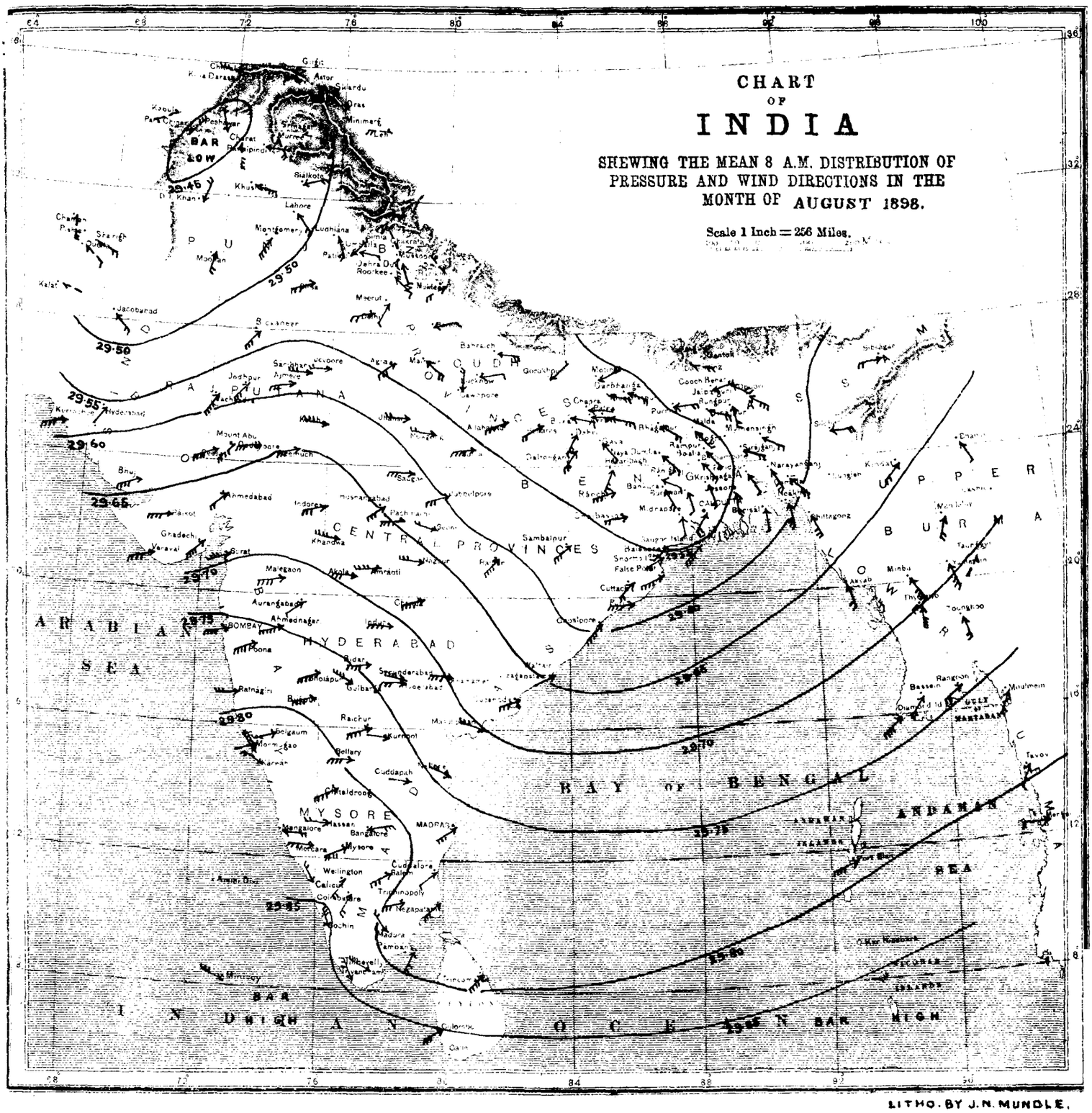
† Mean of 23 days. ‡ Mean of 22 days. § Mean of 30 days. ‖ Mean of 27 days. ¶ Mean of 28 days.

II—*continued.*

Stations in India, Burma, etc., for August, 1898—continued.

Vapour Tension.					Humidity.					Cloud.				Wind Direction.											Wind steadiness.		Wind velocity.		Rainfall.			
														Number of winds from																		
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·765	·820	·837	·807	−·019	93	89	83	88	+ 3	9·5	9·1	9·3	+1·4	5	...	...	...	...	2	29	25	1	S. 65° W.	S. 74° W.	82	75	108	90	...	...	Hoshangabad.	Deccan—*concld.*
·748	·781	·794	·774	−·023	91	80	75	82	+ 3	9·3	9·1	9·2	+0·6	...	1	...	...	...	...	7	42	12	N. 85° W.	N. 80° W.	90	64	241	191	...	...	Nagpur.	
·747	·800	·810	·786	?	91	81	75	82	?	9·3	8·7	9·0	?	1	...	...	...	...	6	38	15	2	S. 51° W.	?	87	?	52*	?	...	...	Nagpur (Sanitary Commissioner's Office).	
·675	·821	·838	·778	−·034	85	90	88	88	+ 4	9·7	9·7	9·7	+1·4	...	1	...	...	...	1	17	32	11	S. 85° W	N. 87° W.	84	64	129	101	...	...	Jubbulpore.	
·725	·785	·800	·770	−·025	97	87	82	87	+ 2	9·6	9·5	9·6	+3·0	1	2	1	...	...	...	6	44	8	N. 86° W.	N. 79° W.	85	67	183*	110	...	...	Saugor.	
·815	·874	·892	·860	+·023	92	88	84	88	+ 8	8·4	7·8	8·1	+1·2	...	5	8	1	1	3	10	30	4	N. 85° W	N. 74° W.	53	40	236	186	...	...	Sutna.	
·759	·817	·821	·799	−·028	90	83	79	84	+ 2	9·3	9·0	9·2	+1·1	1	1	...	...	...	14	42	3	1	S 38° W.	S. 75° W.	87	64	321*	194	...	...	Raipur.	
·693	·708	·702	·701	−·024	88	70	61	73	− 6	7·1	7·3	7·2	+0·4	5	...	...	...	...	...	...	57	...	W.	N. 81° W.	92	84	189*	203	...	...	Hyderabad (Deccan).	
·771	·892	·887	·850	−·028	82	83	81	82	− 5	8·9	9·0	9·0	+0·2	...	...	...	...	...	1	14	43	4	S. 82° W.	S. 81° W.	90	83	382	376	...	...	Bombay.	West Coast.
·806	·887	·884	·859	+·010	90	84	82	85	− 1	8·4	8·4	8·4	+1·1	1	2	...	...	...	...	14	34	11	S. 89° W.	S. 72° W.	84	68	212	244	...	...	Ratnagiri.	
·788	·826	·823	·812	−·016	91	81	77	83	− 4	6·7	7·3	7·0	−0·2	2	8	...	...	...	...	3	24	25	N. 62° W.	N. 87° W.	80	73	97	87	...	...	Karwar.	
·802	·862	·870	·845	+·013	93	80	77	83	− 4	5·4	6·6	6·0	−0·4	...	2	1	...	...	...	...	24	35	N. 60° W.	N. 78° W.	89	62	134	133	...	...	Cochin.	
·748	·730	·697	·725	−·027	90	61	50	67	− 6	5·0	7·4	6·2	−0·1	2	...	...	1	2	4	28	17	8	S. 64° W.	S. 57° W.	72	75	160	93	...	...	Salem.	South India.
·541	·594	·602	·579	0	94	92	93	93	− 1	8·7	9·2	9·0	−0·4	9	...	...	...	...	...	2	39	12	N. 82° W.	N. 73° W.	79	89	180*	208	...	...	Mercara.	
·601	·626	·605	·611	−·009	87	67	59	71	− 5	8·7	9·2	9·0	+0·4	...	...	...	...	...	...	26	31	5	S. 74° W.	S. 83° W.	89	87	262*	259	...	...	Chitaldroog.	
·584	·599	·572	·585	−·027	91	66	55	71	− 7	7·3	8·5	7·9	+1·3	...	1	...	...	...	...	16	39	6	S. 84° W.	S. 79° W.	89	90	231*	188	...	...	Bangalore.	
·572	·592	·591	·585	−·005	95	69	67	77	− 3	8·4	8·6	8·5	−0·3	...	...	...	...	...	...	9	44	9	W.	N. 87° W.	92	89	111*	106	...	...	Hassan.	
·594	·590	·576	·587	−·043	93	61	55	70	− 5	8·9	9·0	9·0	+0·5	...	1	1	...	...	...	12	41	7	S. 88° W.	S. 84° W.	87	86	268*	333	...	...	Mysore.	
·700	·649	·636	·662	−·046	74	46	38	53	− 7	4·9	5·7	5·3	−2·0	8	1	...	...	1	...	11	36	5	S. 85° W.	N. 84° W.	76	82	179	198	...	...	Trichinopoly	
?	·780	·836	·834	+·016	?	60	62	71	− 1	6·5	6·7	6·6	0	...	...	13	35	23	1	...	...	...	S. 82° W.	S. 41° W.	98	60	165	166	...	...	Madras.	
·581	·550	·530	·554	−·104	69	48	39	52	−11	8·5	8·8	8·7	+0·9	1	...	...	...	...	...	...	57	4	N. 87° W.	N. 87° W.	97	87	324*	263	...	...	Bellary.	
·860	·823	·798	·827	−·023	87	71	62	73	− 3	5·9	5·6	5·8	−0·9	...	...	...	...	...	2	20	33	7	S. 78° W.	S. 82° W.	85	79	179*	198	...	...	Cocanada.	
·825	·863	·849	·846	−·011	83	66	64	71	− 2	7·7	8·0	7·9	+1·1	...	...	...	...	...	3	32	26	...	S. 62° W.	S. 70° W.	90	67	?	66	...	...	Vizagapatam	
·261	·321	·319	·300	−·084	55	28	23	35	−10	0·7	1·3	2·0	+0·7	37	1	1	...	1	...	2	10	10	N. 68° W.	N. 80° W.	29	34	28*	76	...	...	Quetta.	Hill Stations, Baluchistan.
·258	·276	·276	·270	+·006	67	40	30	46	− 2	3·5	4·9	4·2	−1·0	...	...	...	...	...	...	1	54	7	N. 86° W.	S. 69° W.	97	39	71	39	...	...	Leh.	Hill Stations, Punjab.
(a) ·545	·816	?	?	?	(a) 90	83	?	?	?	1·9	2·5	2·2	−1·8	14	8	7	...	4	6	3	12	8	N. 85° W.	N. 51° W.	22	5	110*	82	...	...	Srinagar.	
·475	·598	·647	·573	+·022	82	79	78	80	− 2	1·3	2·0	1·7	−4·8	48	1	...	...	2	4	3	2	2	S. 39° W.	S. 4° W.	11	14	104*	132	...	...	Murree.	
?	·413	·357	?	?	?	62	49	?	?	5·8	6·7	6·3	−0·2	...	2	...	...	2	10	13	22	13	S. 77° W.	S. 76° W.	64	63	55	41	1·87	0·83	Kailang.	
·488	·542	·570	·533	+·005	95	92	90	92	+ 1	9·9	9·8	9·9	+1·0	8	26	16	2	1	7	2	...	...	N. 72° W.	S. 76° W.	21	14	108	81	...	...	Simla (Ridge).	
(a) ·503	·572	·563	·546	+·005	(a) 96	93	93	94	+ 2	9·4	9·6	9·5	+0·9	10	6	...	...	1	44	...	...	1	S.	S. 75° W.	61	46	215	111	...	...	Chakrata.	Hill Stations, N.-W.P.
·550	·605	·626	·594	+·022	96	86	89	90	+ 2	9·4	9·6	9·5	+0·8	31	1	1	1	...	2	11	12	3	S. 73° W.	S. 58° W.	34	25	62*	50	...	...	Ranikhet.	
·482	·535	·561	·526	?	97	93	92	94	?	9·7	9·6	9·7	?	...	5	3	8	15	8	4	4	15	S. 42° E.	?	8	?	19*	?	...	...	Muktesar.	
·659	(a) ·692	(a) ·727	·693	+·016	94	(a) 73	(a) 77	81	0	6·2	7·3	6·8	−0·3	...	...	...	30	4	2	3	11	12	N. 83° E.	N. 77° W.	18	5	16	18	13·50	1·23	Katmandu.	Hill Station, Nepal.
(c) ·470	·560	(b) ·543	·524	+·017	(c) 98	94	(b) 94	95	0	?	?	?	?	7	1	9	16	15	3	2	1	2	S. 78° E.	S. 81° E.	53	26	83	95	...	...	Darjeeling.	Hill Station, Bengal.
·546	·600	·633	·593	−·016	94	90	84	89	− 2	7·2	7·7	7·5	−1·0	...	...	...	...	...	1	58	3	...	S. 47° W.	S. 60° W.	98	73	370*	254	...	...	Mount Abu	Hill Stations, Central India.
·629	·659	·665	·651	−·008	98	94	90	94	+ 4	9·0	8·0	8·5	−0·2	14	...	...	...	...	...	14	25	9	S. 85° W.	N. 84° W.	66	75	363*	206	...	...	Pachmarhi.	
·595	·632	·653	·627	−·016	99	96	93	96	+ 2	9·5	9·3	9·4	+0·5	1	27	...	...	...	...	...	4	30	N. 27° W.	N. 41° W.	88	74	403*	266	19·57	2·08	Chikalda.	

* Corrected. (a) Mean of 20 days. (b) Mean of 25 days. (c) Mean of 24 days. (d) Mean of 18 days.

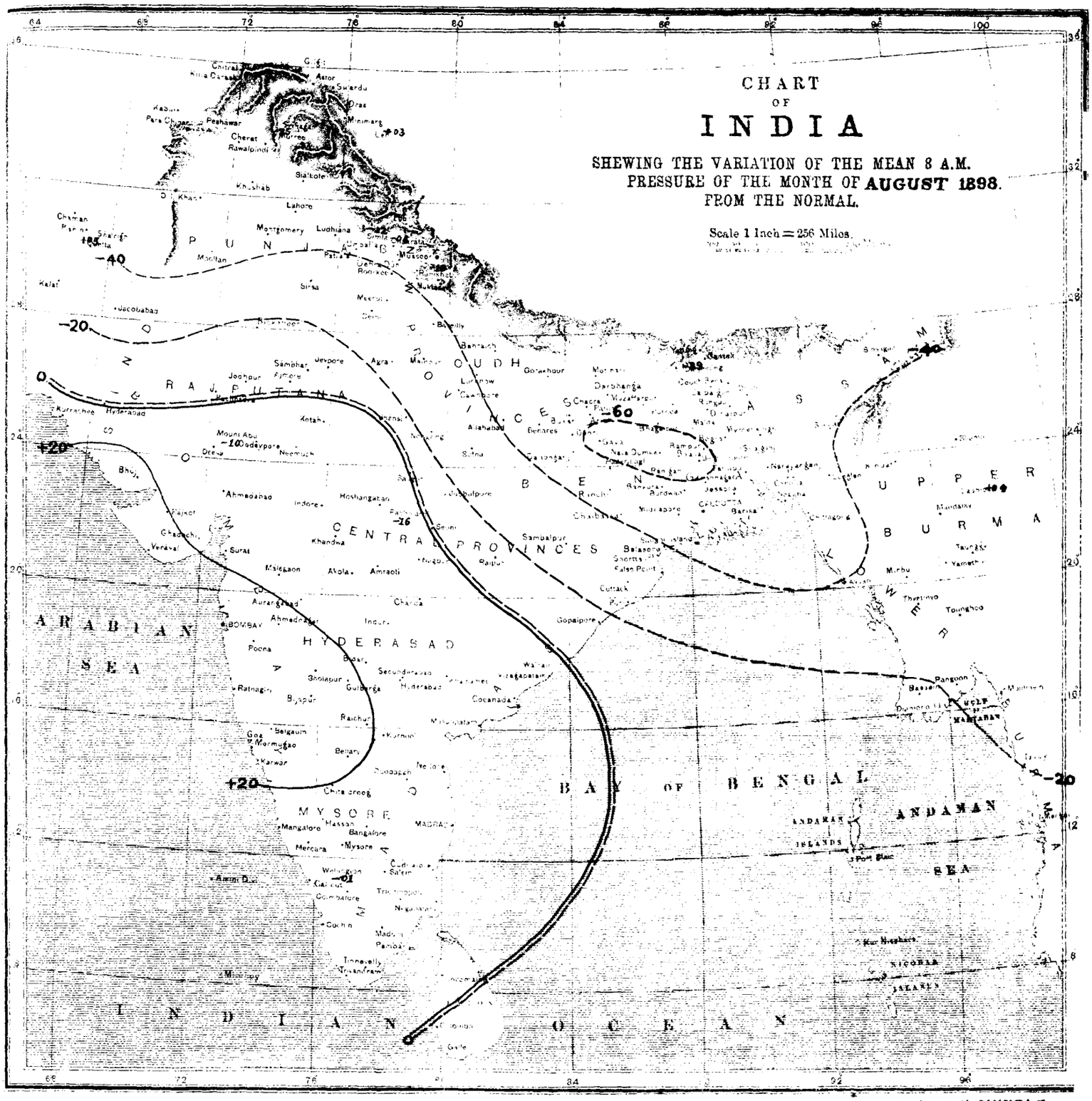


Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shown by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shown by the following notation:—

Velocity of	0 to 2 miles per hour	..	one feather added to the wind arrow
,, ,,	2 to 5 ,, ,, ,,	..	two feathers ,, ,, ,, ,,
,, ,,	5 to 10 ,, ,, ,,	..	three ,, ,, ,, ,, ,,
,, ,,	10 to 20 ,, ,, ,,	..	four ,, ,, ,, ,, ,,
	over 20 ,, ,, ,,	...	five ,, ,, ,, ,, ,,



Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

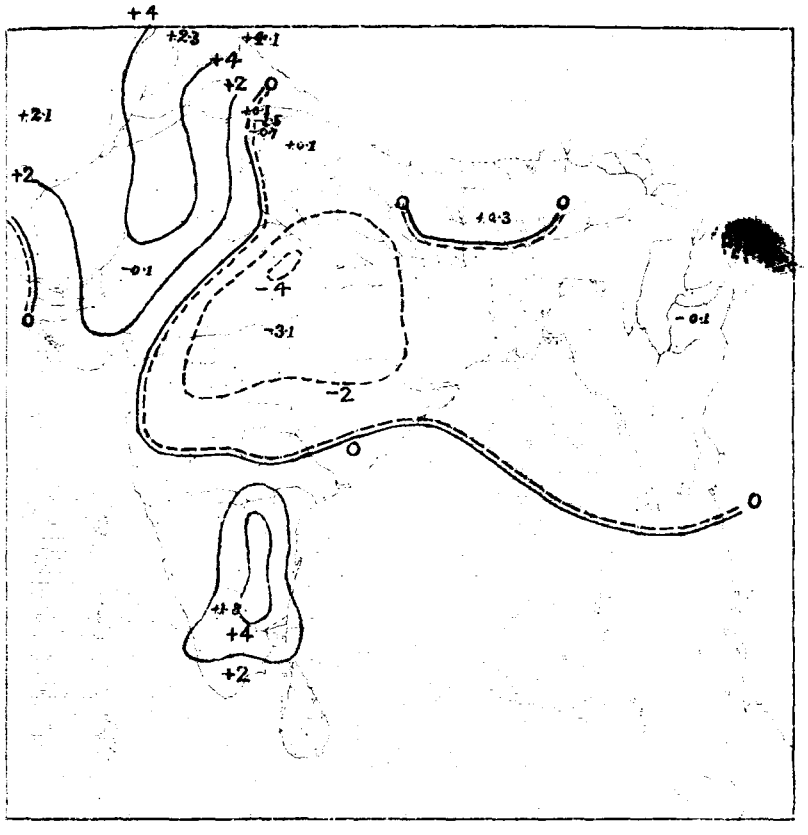
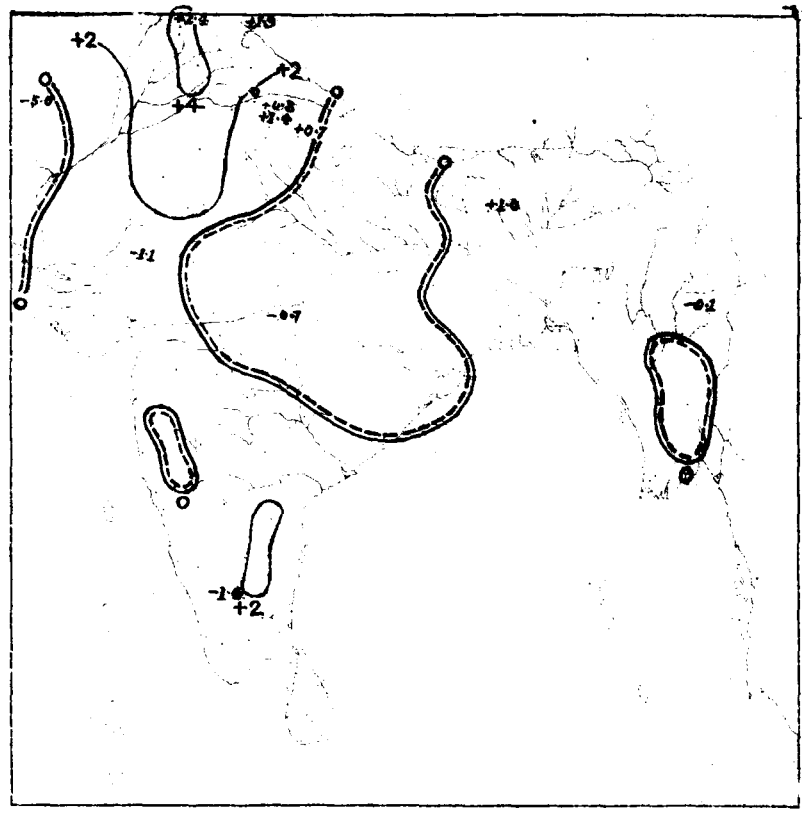


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

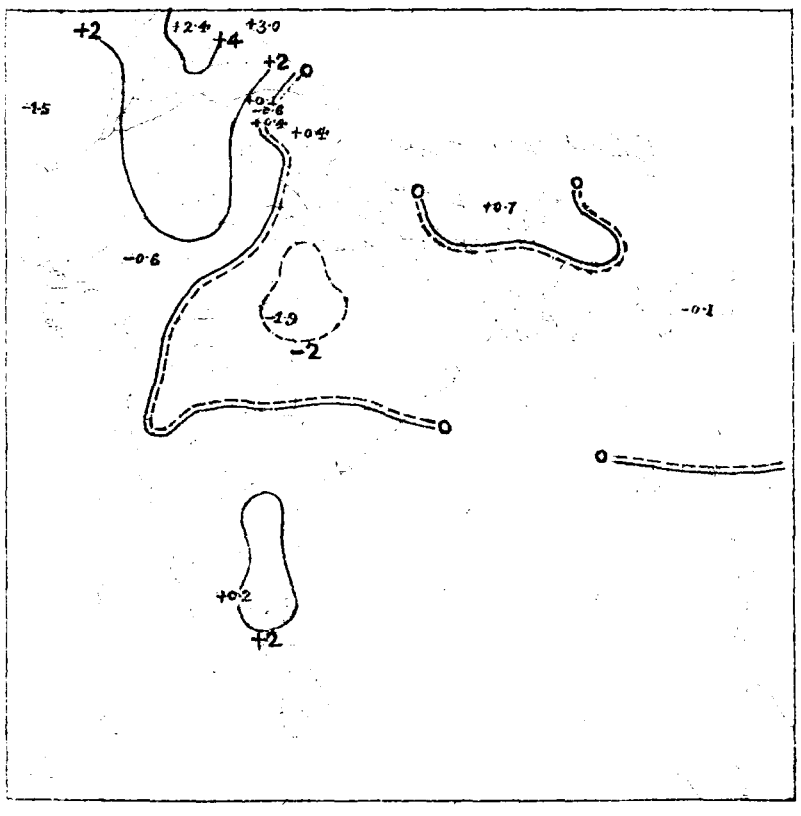
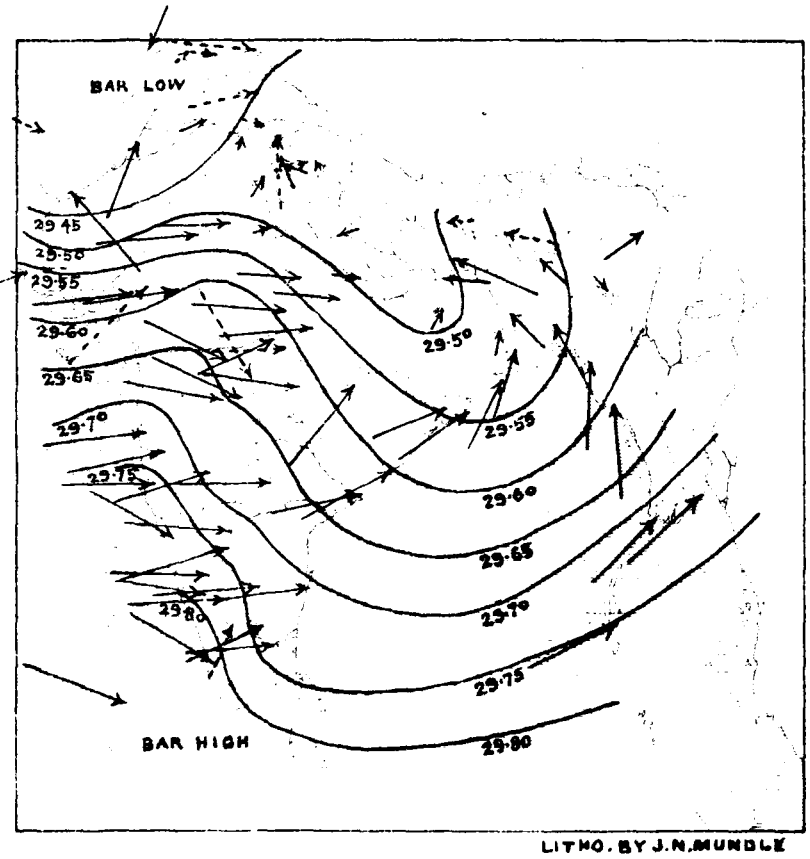


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF AUGUST 1898.



LITHO. BY J.N.MUNDLE

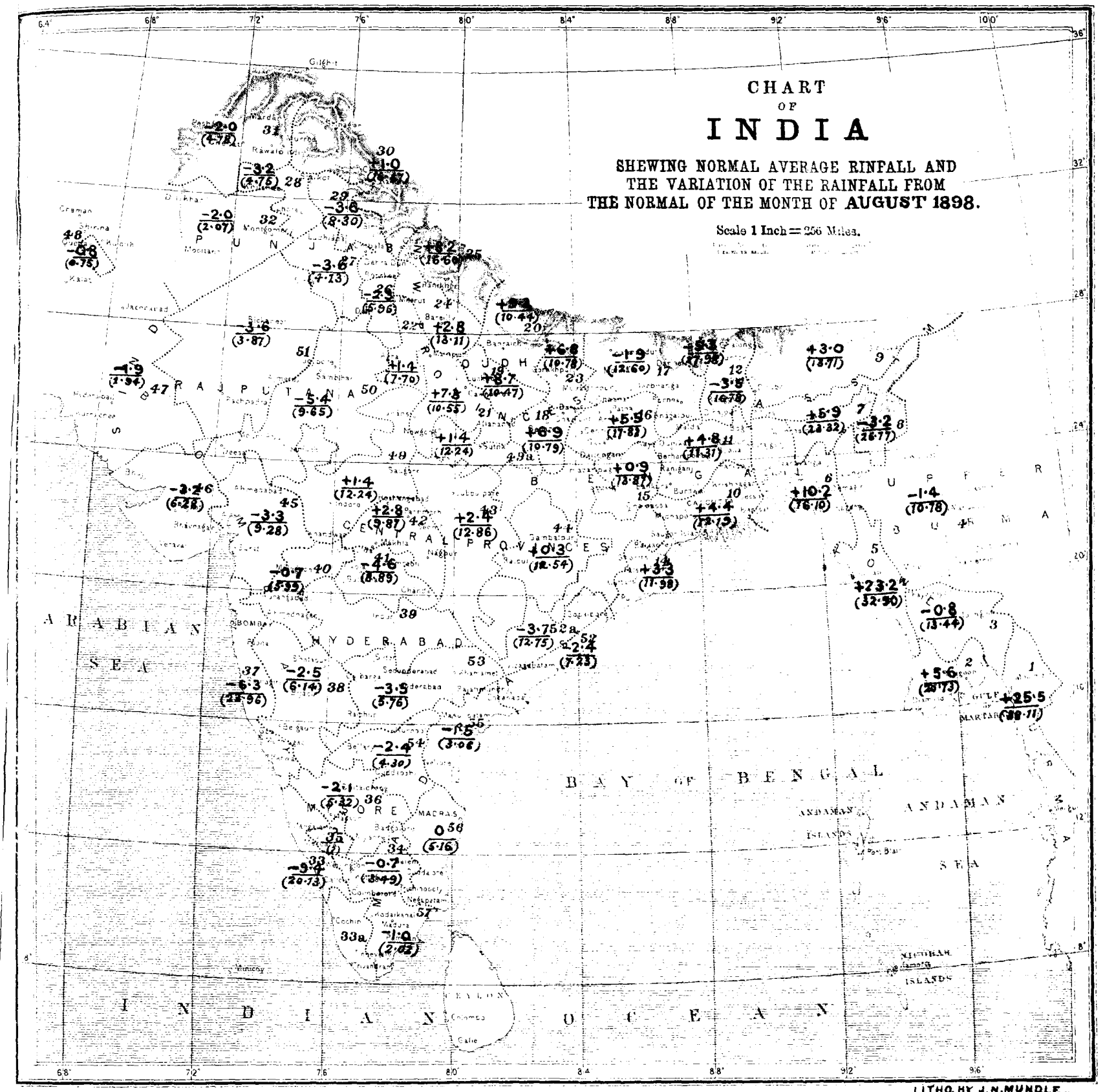
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of ⅛th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this Chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in Elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Reg. No. 243, Wr., I.—June 93.—52,50.

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim	17. North Bihar	33. Malabar	48. Baluchistan Hills
2. Lower Burma, Deltaic	18 North Western Provinces, East	33a Travancore	49. Central India, East
3. Central do.	19. South Oudh	34. Madras, South Central	49a Do. do.
4. Upper do.	20. North do.	35. Coorg	50. Rajputana East, Central India West
5. Arakan	21. North Western Provinces, Central	36. Mysore	51. West Rajputana
6. East Bengal	22. Do. do., West	37. Konkan	52. East Coast, North
7. Assam, Surma	23. Do. do., East Submontane	38. Bombay Deccan	52(a). Do. do. (a)
8. Do., Hills	24. Do. do., West do.	39. Hyderabad, North	53. Hyderabad, South
9. Do., Brahmaputra	25. Do. do., Hills	40. Khandesh	54. Madras, Central
10. Deltaic Bengal	26. South East Punjab	41. Berar	55. East Coast, Central
11. Central do.	27. South do.	42. Central Provinces, West	56. East Coast, South
12. North do.	28. Central do.	43. Do., Central	57. Madras, South
13. Bengal Hills	29. Punjab, Submontane	44. Do., East	
14. Orissa	30. Do., Hills	45. Gujarat	
15. Chota Nagpur	31. North Punjab	46. Kathiawar	
16. South Bihar	32. West do.	47. Sind	

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GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, SEPTEMBER, 1898.

INTRODUCTION.

THIS review of the weather in India during the month of September 1898 is based on observations taken daily at 8 A.M. at 215 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 86 stations. The rainfall summary is based on the rainfall data of the meteorological observatories and on the weekly rainfall telegrams received during the month from district officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had reached the Meteorological Office up to the date of the publication of the Review. A summary of the weather in the Bay of Bengal and the Arabian Sea, based on information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of September, 1898.

The principal meteorological features of the month of September in normal years are the retreat of the south-west monsoon from Upper India and the occasional occurrence of more or less severe cyclonic storms over the Bay of Bengal. The time of the withdrawal of the monsoon currents from Upper India apparently depends largely on the general strength of the monsoon during the whole period of its prevalence, but usually occurs during the third or fourth week of the month. The withdrawal from Central and Upper India of the Bombay and Bengal branches of the south-west monsoon air currents occurs fairly simultaneously, and is followed by fine dry weather in that region, but Bengal and Burma continue to receive moderate general rain from the Bay current, and the Konkan, Malabar, the Deccan and Southern India from the Arabian Sea current. As mentioned above, the cyclonic storms of this period are sometimes of considerable severity, and give heavy and general rainfall. Their course is, as a rule, west-north-west from the north of the Bay across the Orissa coast and the central parts of the country, and they are frequently remarkable for their long vitality, and for their tendency to recurve in the Central Provinces or Central India from west to north.

The following gives a brief account of the more important features of the meteorology of India during the month :—

At the commencement of the month the monsoon winds in the Arabian Sea were practically of normal strength and in the Bay slightly below their average force for the period. Moderate rain was falling in Burma, North-Eastern India, the Central Provinces, Central India, Rajputana and the west coast districts. The Bombay current was determined more largely to Southern India and the Deccan on the 3rd and the following days, and dry weather set in again over Rajputana and Central India. The Bengal current increased on the 5th and was slightly above its normal strength from that date to the 8th. Bengal and the Gangetic Plain received general rain during

this period. A shallow depression formed in the central districts of the North-Western Provinces on the 6th. It was stationary on the 7th and filled up on the 8th.

During this period and the next two days, the Peninsula and the Central Provinces received light to moderate rain, whilst clear weather held steadily in the Punjab, Rajputana and the adjacent districts of Central India and the North-Western Provinces.

During this period from the 1st to the 10th, the variations of temperature were generally small. The only persistent feature was a considerable to large excess in the dry area including the greater part of the Punjab, Sind, Rajputana and the western districts of the North-Western Provinces. The following gives data from the 2nd to the 9th illustrating this feature:—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF							
	2nd Sept.	3rd Sept.	4th. Sept.	5th Sept.	6th Sept.	7th Sept.	8th Sept.	9th Sept.
	°	°	°	°	°	°	°	°
Baluchistan (Quetta) .	+5·2	+5·8	+4·2	—0·7	—1·8	+1·1	+3·1	+0·8
Punjab . . .	+2·8	+1·0	+2·0	+3·4	+1·5	+1·8	+2·0	+0·7
Rajputana . .	+1·5	+2·2	+4·2	+3·5	+1·2	+1·8	+3·0	+4·7
Central India . .	—1·0	+0·8	+1·4	0	—1·7	—0·4	+1·5	+2·5

A depression began to form in the north-west of the Bay on the 10th. It intensified slightly on the 11th, when the centre at 8 A.M. was in Lat. 18¼° N. and Long. 86¾° E. It continued to develop during the next 24 hours and advanced slowly northwards, and at 8 A.M. of the 12th the centre was in Lat. 18¾°N. and Long 87° E.

The storm increased rapidly in intensity during the next 24 hours, and weather was very squally with much rain, and strong winds and gales in the north of the Bay on the 13th. The centre passed a little to the west of False Point at about 8 A.M. and near, and to the west of Shortt's Island in the afternoon (about 5 P.M.). Winds of force 6 to 9 were experienced by vessels in the north of the Bay. The storm advanced through North Orissa and Chota Nagpur on the 14th, and South Bihar on the 15th into North Bihar on the 16th, where it filled up during the next 24 hours. Very heavy rain fell in Orissa, Chota Nagpur, Bihar and Bengal during the progress of the storm, and exceptionally heavy rain occurred in the Sonthal Parganas and the submontane districts of North Bihar and North Bengal when the storm was breaking up.

The following amounts exceeding 10 inches in 24 hours were registered:—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
PURNEA . . .	Gondwara (Korah) .	15th September	18·40
SONTHAL PARGANAS .	Sahibganj . .	" " .	11·52
Ditto . . .	Bario . . .	" " .	10·12
COOCH BEHAR . .	Matabhanga . .	16th " .	13·10
PURNEA . . .	Purnea . . .	" " .	12·54
JALPAIGURI . . .	Fallacotta . .	" " .	10·65
SONTHAL PARGANAS .	Sahibganj . .	" " .	10·40

A noteworthy feature of the storm was the very large reduction of temperature which accompanied this heavy rainfall. The following gives data in illustration:—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	11th Sept.	12th Sept.	13th Sept.	14th Sept.	15th Sept.	16th Sept.
	°	°	°	°	°	°
Orissa . . .	+0·6	0	—1·6	—3·3	—0·5	+2·0
Bengal . . .	+1·1	+0·2	—0·8	—3·6	—4·4	—1·8
Chota Nagpur . .	+0·8	+0·6	0	—3·9	—5·6	—3·1
Bihar . . .	—2·6	—1·0	+0·6	—2·0	—8·0	—8·5

The Bombay current was also moderate to strong during this period and gave heavy rain in the west coast districts from the 11th to the 16th. The rainfall was very heavy in the Colaba and Thana districts on the 11th. The following amounts exceeding 10 inches were registered on that day in these two districts:—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 11th September 1898.
		Inches.
THANA	Bassein	14·11
KOLABA	Uran	13·54
"	Alibagh	10·38
"	Pen..	10·10

The Deccan and Southern India received general rain from the 11th to the 14th, Khandesh, the Central Provinces and Berar from the 12th to the 16th, and Raj-

putana and Central India from the 13th to the 16th, and the Punjab from the 13th to the 15th.

The rainfall in Upper India reduced temperature largely in the Punjab. The following gives data for that area :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	11th Sept.	12th Sept.	13th Sept.	14th Sept.	15th Sept.	16th Sept.
	°	°	°	°	°	°
Punjab . . .	+2·9	+3·0	+0·2	—1·6	—3·0	—3·9

Winds fell off considerably in the Arabian Sea on the 16th and dry weather set in over the whole of North-Western India on the 17th and continued for some days.

Temperature increased steadily in North-Eastern and Upper India on the 17th and 18th, and was approximately normal over the whole Indian area on the 19th and 20th.

Meanwhile another depression had begun to form in the north of the Bay on the 19th. Weather was squally with winds of force 4 to 6 and moderate rain at the head of the Bay on the 20th. The depression was of feeble intensity on that day, when it began to move north-westwards. It advanced across North Orissa and South-West Bengal during the next 24 hours and was in Chota Nagpur on the 21st, the eastern districts of the North-Western Provinces on the 22nd, and the central districts of the North-Western Provinces on the 23rd and filled up during the next 24 hours. The disturbance was throughout feeble, but gave a moderate burst of rain to Bengal, Bihar, Chota Nagpur and the eastern districts of the North-Western Provinces.

The Bombay current was weak during this period from the 17th to the 24th and gave local showers in the west coast districts (chiefly Malabar) and Southern India.

Dry weather with clear or lightly clouded skies obtained throughout the period in North-Western and Central India. Temperature differed little from the normal during this period in India, except in the area covered by the storm, for which comparative data are given below :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	20th Sept.	21st Sept.	22nd Sept.	23rd Sept.	24th Sept.
	°		°	°	°
Bengal	—2·1	—2·8	—2·1	+0·2	+1·5
Chota Nagpur	—2·0	—2·4	—0·7	+0·9	+0·8
Bihar	—3·3	—5·9	—7·2	—3·5	—0·8
North-Western Provinces and Oudh.	—0·4	—1·6	—2·6	—3·8	—1·6

During the remainder of the month both currents were considerably below their normal strength. The Bombay current continued to be determined to the southern half of the Peninsula. Southern India and the Deccan hence received moderate and favourable rain from the 25th to the end of the month. The Central Provinces, Burma and Bengal also obtained occasional showers during the period, but the rainfall in these areas was small.

A stationary depression appeared in Sind on the 26th. It intensified slightly on the 27th and 28th, and slowly filled up on the 29th and 30th. It gave showers in the North Punjab from the 27th to the 29th. Moderate to heavy snow fell on the Pir Punjal Range and the Kashmir Himalayas. The fall is stated to have varied from 4 to 7 feet above 12,000 feet.

Temperature conditions were approximately normal on the 25th, 26th and 27th. Temperature was generally in slight excess, more especially in Rajputana. A cold wave appeared in the North Punjab on the 28th, and spread south-eastwards during the next two days.

The following gives data on each day from the 28th to the 30th for the stations at which temperature was reduced most largely below the normal:—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
28th Sept.	Peshawar . .	—11·8	— 2·6	— 7·2
	Rawalpindi . .	— 9·9	— 2·5	— 6·2
29th „	Murree . . .	— 9·7	—10·2	—10·0
	Peshawar . .	—12·2	— 3·9	— 8·1
	Quetta . . .	— 6·7	— 6·7	— 6·7
30th „	Sialkot . . .	—11·5	— 7·6	— 9·6
	Dera Ismail Khan .	—10·5	— 4·6	— 7·6

Pressure.—The mean pressure of the Indian land area was practically normal, differing by only +·002″ from the normal. Pressure was in relative defect in Bihar, Chota Nagpur, North-Western India and the west and south of the Peninsula. The deficiency was small except in the extreme south and in Ceylon where it ranged between ·02″ and ·034″. Pressure was in relative excess over the remainder of India, generally by small amounts. The excess was slightly above ·02″ in North Madras, Cachar and Upper Burma. The vertical anomalies were small and generally positive in Northern India, except in Sikkim, where they were negative and moderate in amount.

The following table gives the mean pressure variations

and anomalies of the month for the eleven meteorological provinces:—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of September 1898.	Pessure anomaly, September 1898.
	"	"
Burma Coast and Bay Islands	+·015	+·013
Burma Inland	+·022	+·020
Assam	+·011	+·009
Bengal and Orissa	+·008	+·006
Gangetic Plain and Chota Nagpur	—·003	—·005
Upper Sub-Himalayas	+·001	—·001
Indus Valley and North-West Rajputana	—·012	—·014
East Rajputana, Central India and Gujarat	+·003	+·001
Deccan	+·008	+·006
West Coast	—·018	—·020
South India	—·005	—·007

Temperature.—The variations of the mean temperature conditions of the month from the normal were determined mainly by the distribution and character of the rainfall.

The mean maximum temperature was in slight defect in the southern half of the Peninsula where the rainfall of the month was considerably above the normal. It was in slight to moderate defect in Upper Burma, Assam, Bengal, Bihar and part of the North-Western Provinces, over the greater part of which area the rainfall was unusually heavy. The deficiency ranged between 2° and 4° in Upper Burma., Upper Assam, the northern districts of North Bengal and in North Bihar and was greatest at Patna (−3°·7), Jalpaiguri (−3°·1) and Darbhanga (−2°·9). It was also in slight to moderate defect in the East Punjab, and in the Punjab hills and Kashmir, chiefly a result of the heavy snow-fall of the last week of the month on the higher mountain ranges in Kashmir.

The mean maximum temperature was above the normal over the remainder of India but the departures from the normal were small except in the area of scanty rainfall in Rajputana and the South Punjab where the day temperature was in excess by amounts averaging 3°. The excess was greatest at Sambhar (+4°·4) and Bickaneer (+3°·0).

The mean minimum temperature of the month differed less from the normal than the maximum. It was slightly below the normal in the submontane districts of Northern India and the hill districts of Upper India and above it elsewhere. The variations were small and insignificant in all districts except the area of deficient rainfall, including Rajputana and the South Punjab. It was 3°·4 above the normal at Ajmere, 2°·7 above at Bickaneer and 2°·6 above at Sirsa.

The mean temperature of the month was generally below the normal in Northern India (*i.e.*, Upper-Burma Assam, Bengal, Bihar, the North-Western Provinces, and the East Punjab) and also over the southern half of the Peninsula. The variations were small and less than 2° except in two areas. The first included the greater part of North Bihar as defined by the stations of Patna (−2°·5), Darbhanga (−2°·3) and Jalpaiguri (−2°·0).

The second area was defined by Rawalpindi (−2°·1), Murree (−2°·1) and Simla (−2°·0).

The mean temperature of the month was above the normal over the remainder of the country, generally by small amounts. The excess was most pronounced in Rajputana and the South Punjab. It was 3°·3 at Sambhar, 2°·9 at Bickaneer, 2°·7 at Sirsa and 2°·3 at Ajmere.

The following gives variation data for the eleven meteorological provinces of the Empire:—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, September 1898.	Mean minimum temperature, September 1898.	Mean daily temperature, September 1898.
	"	"	"
Burma Coast and Bay Islands	+0·9	+0·7	+0·8
Burma Inland	—2·0	—0·2	—1·1
Assam	—2·0	—0·6	—1·3
Bengal and Orissa	—0·8	0	—0·4
Gangetic Plain and Chota Nagpur	—1·3	—0·6	—1·0
Upper Sub-Himalayas	—0·9	—0·2	—0·6
Indus Valley, and North-West Rajputana.	+0·8	+1·3	+1·1
East Rajputana, Central India and Gujarat.	+1·1	+0·6	+0·9
Deccan	+0·5	+0·5	+0·5
West Coast	—0·1	+0·4	+0·2
South India	—0·9	+0·2	—0·4

Winds.—The Bombay current was during the greater part of the month below the normal. The only period when it was vigorous was from the 10th to the 16th. It was also determined more largely than usual to the Peninsula, more especially Southern India. It withdrew from Upper India on the 18th and 19th. Winds were hence as a rule on the mean of the month more westerly and feebler than usual in Rajputana, Central India and North Bombay. They were also generally lighter than

usual in the Deccana nd Southern India where the ascensional movement and rainfall were much greater than usual. The Bay current was on the mean of the month of normal strength. Winds were normal in direction in the Andamans and Lower Burma, but slightly below the normal at Port Blair. Winds were stronger than usual in Bengal, more especially in East Bengal and at the coast stations and were deflected considerably to the westwards. Winds were also stronger in Bihar and of normal strength in the North-Western Provinces. The trough of low pressure lay slightly further north than usual, more especially in its western half, and winds were hence remarkably unsteady at Meerut and Lucknow. Winds were normal in direction and strength at the Seychelles and Zanzibar.

Humidity.—The air was damper than usual over nearly the whole of India due in a part of the area to a slight excess in the amount of aqueous vapour present in the air. It was very slightly drier than usual in the Andamans, Lower Burma, Orissa and a part of South West-Bengal, Berar, the Central Deccan and Central Rajputana. The positive variations of the mean humidity of the month were 5 or upwards in three areas. The first included North Bihar and the eastern districts of the North-Western Provinces. The second area included Mysore and the neighbouring districts of Madras. The excess was greatest in this area at Madras and Chitaldroog (each +7). The third area included the North Punjab and Kashmir. The mean humidity of the month was 8 in excess at Peshawar and 6 at Murree The following table gives variation data of the mean aqueous vapour pressure and mean humidity of ten meteorological Provinces for the month of September 1898:—

METEOROLOGICAL PROVINCE.	MEAN ABSOLUTE HUMIDITY.		MEAN RELATIVE HUMIDITY.	
	Average actual, September 1898.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Variation of actual, from normal, September 1898.
	"	"	%	
Burma Coast and Bay Islands.	·910	+·016	87	—1
Assam . . .	·902	—·006	87	+2
Bengal and Orissa .	·927	—·008	83	—1
Gangetic Plain and Chota Nagpur.	·863	—·002	82	+2
Upper Sub-Himalayas .	·730	—·009	69	+1
Indus Valley and North West Rajputana.	·737	—·003	64	+1
East Rajputana, Central India and Gujarat.	·744	+·029	69	+1
Deccan . . .	·749	+·012	77	+1
West Coast . .	·836	—·002	85	0
South India . .	·709	+·018	76	+3

Cloud.—The mean amount of cloud during the month differed little from the normal over the whole of India and was generally in excess. There was a slight deficiency in the South-West Punjab, Baluchistan, Sind and South-West Rajputana. The excess was moderately large in Mysore and Malabar, where it ranged between 1·0 and 2·0 and in Cachar and East Bengal where it slightly exceeded 1·0. The following table gives variation data of the mean cloud amount of ten meteorological provinces for the mouth of September 1898:—

METEOROLOGICAL PROVINCE.	MEAN CLOUD AMOUNT.	
	Average actual, September 1898.	Variation of actual, from normal September 1898.
	"	"
Burma Coast and Bay Islands . . .	8·3	+0·7
Assam	7·8	+0·6
Bengal and Orissa	7·5	+0·4
Gangetic Plain and Chota Nagpur . . .	6·8	+0·6
Upper Sub-Himalayas	3·4	0
Indus Valley and North-West Rajputana .	1·5	—0·3
East Rajputana, Central India and Gujarat .	4·2	0
Deccan	6·8	+0·3
West Coast	7·0	+0·9
South India	7·6	+1·0

Rainfall.—The Bombay current was weaker than usual during the greater part of the month, and was determined chiefly to the Peninsula. The only period when it was strong was from the 10th to the 16th, during which it gave heavy rain in the west coast districts and a moderate burst to the Central Provinces, Central India, Rajputana, North Bihar and the Punjab. It also gave rain from the 1st to the 9th and the 20th to the end of the month, chiefly in the west coast districts, Deccan and Southern India. The rainfall of the month was in large to moderate defect over the northern half of the area dependent on the Bombay current, including the greater part of the Punjab, Rajputana, Sind, Central India, the Central Provinces and Berar. The deficiency was most marked in the South-East and South Punjab which received barely 40 per cent. of their normal fall.

The rainfall was in excess in the west coast districts, the Deccan and Southern India, the percentage amount increasing southwards. The excess was over 50 per cent. in Mysore and South Madras.

The Bay current was of about normal strength on the average of the month and was determined chiefly to North-Eastern India by two cyclonic storms. The rainfall of the month was practically normal in Burma and the North-Western Provinces or in the eastern and western districts of the region dependent on the Bay current, and was more or less in excess in the intermediate region, including Assam, Bengal, Bihar and Chota Nagpur. The excess was very large in Bihar and North and Central Bengal and abnormally large in the districts of Champaran, Saran, Muzaffarpur, Darbhanga, Patna, Monghyr, Bhagalpur and Darjeeling which received from two to three times their normal amounts.

The following table gives comparative data of the eleven meteorological provinces:—

METEOROLOGICAL PROVINCE.	RAINFALL.		
	Average actual, September 1898.	Average normal, September.	Variation of actual, from normal, September 1898.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	16·09	21·76	−5·15*
Burma Inland	8·05	8·02	+0·03
Assam	14·37	13·31	+1·06
Bengal and Orissa	13·45	11·25	+2·20
Gangetic Plain and Chota Nagpur	13·13	7·49	+5·64
Upper Sub-Himalayas	5·88	5·07	+1·13*
Indus Valley and North-West Rajputana.	0·82	0·89	−0·07
East Rajputana, Central India and Gujarat.	5·27	4·84	+0·02*
Deccan	7·64	7·53	+0·13*
West Coast	14·53	9·30	+5·24
South India	7·13	4·35	+2·78

* A reference to Table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian land area for the month of September 1898 was ·002″ higher than usual and hence practically normal.

Pressure was, relatively to the general condition, in defect or the pressure anomalies were negative in the west and south of the Peninsula, Upper India and the submontane districts of Northern India. The negative anomalies were more than ·02″ in amount in the greater part of Southern India and locally at Mooltan and Jacobabad in Upper India. Data are given below:—

STATION.	Variation from normal of mean 8 A.M. pressure of September 1898.	Pressure anomaly, September 1898.
	″	″
Colombo	−·032	−·034
Cochin	−·030	−·032
Calicut	−·028	−·030
Mangalore	−·018	−·020
Karwar	−·021	−·023
Salem	−·020	−·022
Bangalore	−·020	−·022
Jacobabad	−·022	−·024
Mooltan	−·023	−·025
Peshawar	−·018	−·020

These negative anomalies indicate that the local deficiency of pressure was moderate in amount in Malabar and Ceylon.

Pressure was in local excess generally in the remainder of the Indian area, including Central India the Central Provinces, the North-Western Provinces, Bengal and Burma. The positive anomalies were generally small but were moderate in amount in Upper Burma, Cachar and North Madras and exceeded ·020″ at the stations for which data are given below:—

STATION.	Variation from normal of mean 8 A.M. pressure of September 1898.	Pressure anomaly, September 1898.
	″	″
Silchar	+·027	+·025
Bhamo	+·027	+·025
Mandalay	+·023	+·021
Cocanada	+·032	+·030
Masulipatam	+·023	+·021
Raipur	+·025	+·023
Hoshangabad	+·028	+·026

The variations of pressure from the normal at the hill stations differed to a slight extent from those at the neighbouring plain stations, and the vertical pressure nomalies were small and generally positive in Northern India except in Sikkim, where they were negative and

moderate in amount. The following gives comparative data for eight pairs of stations :—

HILL STATION.	Variation of actual from normal pressure, September, 1898.	PLAIN STATION.	Variation of actual from normal pressure, September, 1898.	Vertical pressure anomaly (Hill—Plain).
	"		"	"
Leh	+·003	Lahore . . .	—·008	+·011
Quetta . . .	—·002	Jacobabad . .	—·022	+·020
Murree . . .	—·040	Peshawar . .	—·018	—·022
Simla . . .	0	Ludhiana . .	—·009	+·009
Chakrata . . .	+·013	Roorkee . . .	0	+·013
Ranikhet . . .	+·011	Bareilly . . .	+·017	—·006
Darjeeling . .	—·035	Dhubri . . .	+·001	—·036
Mount Abu . .	—·017	Deesa . . .	+·001	—·018

Barometric depressions and cyclonic storms of the month.

The pressure conditions varied more largely and rapidly during the month than is usual in September. The monsoon currents in the Arabian Sea and Bay of Bengal, however, were steadier than usual, and hence normal monsoon conditions prevailed over the whole of India during the month, and in consequence of the frequent pressure changes all parts of India, except Upper India, received frequent rain. The rainfall of the month was partly determined by two depressions or cyclonic storms, brief accounts of which are given below.

At the commencement of the month pressure was normal in the Peninsula, Central and Upper India, and in moderate to considerable excess in North Eastern India. Light to moderate rain was falling in the Punjab and Rajputana and the west coast districts. Weather was fine with light showers in North-Eastern India. Pressure gave way generally on the 3rd and 4th, briskly to rapidly in Upper India and slightly elsewhere. This was followed on the 4th and 5th by general and moderately heavy rain in Bengal and the Gangetic Plain, and favourable rain was also received in the centre and south of the Peninsula. On the 6th the rainfall due to the Bengal current extended into the East Punjab, and a very hallow depression was shown in the central districts of the North-Western Provinces in which the rainfall had been heavy during the previous 48 hours. The distribution of the heaviest rainfall is indicated by the following table giving amounts exceeding 4 inches recorded at 8 A.M. of the 5th and 6th.

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A. M. of date.
			Inches.
DEHRA DUN . .	Rajpur . . .	5th September.	7·35
Do. . .	Bhogpur . . .	"	4·50
ALMORA . . .	Tanakpur . . .	"	7·37
HAMIRPUR . . .	Bija Nagar . .	"	6·15
Do. . . .	Hamirpur . . .	"	5·40
Do. . . .	Rath	"	5·32
Do. . . .	Thana	"	5·26
Do. . . .	Mahoba . . .	"	4·80
UNAO	Safipur . . .	"	4·43
CAWNPORE . . .	Bhognipur . .	"	4·20
FARUKHABAD . .	Aligarh . . .	"	4·10
JHANSI . . .	Narhat . . .	6th	4·60
DEHRA-DUN . . .	Rajpur . . .	"	4·50
AZAMGARH . . .	Mahul . . .	"	4·25

Heavy rain continued to fall in the North-Western Provinces during the next 24 hours, and the depression was practically unchanged in character and position at 8 A.M. of the 7th. The precipitation was light and local in the North-Western Provinces during the next 24 hours, and the depression filled up.

The following gives the average rainfall data of the eight rainfall divisions of the North-Western Provinces from the 4th to the 8th :—

DIVISION.	AVERAGE ACTUAL RAINFALL DURING 24 HOURS PRECEDING 8 A.M. OF					Total of period 4th to 8th September, 1898.
	4th September.	5th September.	6th September.	7th September.	8th September.	
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
North-Western Provinces (East	0·73	1·27	1·23	0·69	0·16	4·08
Oudh (South) . .	0·31	0·92	0·89	0·34	0·55	3·01
Do. (North)	0·70	0·87	0·93	1 50	0·32	4·32
North-Western Provinces (Central)	0·34	2·04	0·66	0·62	0·06	3·72
North-Western Provinces (West)	0·13	1·21	0·88	0·44	0·26	2·92
North-Western Provinces (Submontane, East)	0·58	0·88	1·34	1·58	0·88	5·26
North-Western Provinces (Submontane, West)	0·32	1·30	0·76	0·78	0·69	3·85
North-Western Provinces Hills	0·31	1·41	0·79	0·67	0·87	4·05

Sporadic light showers fell on the 8th and 9th in the Punjab, Rajputana and Central India and the Bombay current was chiefly diverted to the centre and south of the Peninsula. The trough of low pressure lay further south than usual, and its eastern extremity extended into the north-west of the Bay. Remarkably heavy downpours of rain occurred on the 7th and 8th in the northern districts of North Bihar due to local conditions not shown in the daily weather charts. The following gives the most remarkable falls on the 8th :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 8 September, 1898.
		Inches.
SARAN	Bhareh . . .	19·00
CHAMPARAN	Bettiah . . .	12·34
Do.	Motihari . . .	8 45
Do.	Ramnagar . . .	6 70
PURNEA	Kaliaganj . . .	8·70

This heavy rainfall was apparently quite local, but may have extended into the adjacent districts of Nepal.

Winds on the 9th were generally normal in direction over the Bay area and were, on the whole, below their usual strength in September. This was especially the case in the north-west of the Bay, for which 8 A.M. data are given below :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Bezwada* .	18 50	87 06*	29·690	S	2	4 A.M. occasional rain.
S.S. *Kerbela* . .	20 24	86 58	·691	E	2	Fine 4 P.M. rainy.
F. L. V. *Torch* .	Mutlah.		·704	SSW	3	Moderate south swell.
S.S. *Mombassa* .	21 25	87 45	·694	S	2	Fine.
F. L. V. *Comet* .	Long	Sands.	·691	SSE	2	Sea slight.

* Noon position.

During the next 24 hours pressure gave way very slightly at the head of the Bay. The changes were everywhere small, and the distribution of pressure was unchanged. Winds were, however, shifting round to easterly directions at Akyab, Chittagong and Saugor Island. Winds were even lighter in the north-west of the Bay than on the 9th. The following gives data :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S S. *Gladys Royle* .	18 10	87 13	...	Calm.	0	Fine.
S.S. *Chanda*. .	19 26	89 53	29·714	SW	2	Noon, light showers.
S.S. *Darius* . .	19 58	87 10	·670	Var.	2	Fine.
F. L. V. *Torch* .	Mutlah.		·679	SW	2	Moderate south swell.
F. L. V. *Hesperus* .	Intermediate		·671	S	2	Midnight, showery.
F. L. V. *Comet* .	Long	Sands.	·680	SSE	1	Sea calm.

Weather was fine in this area. South-west winds, force 3 to 5, and fine weather obtained in the south of the Bay, and winds of force 2 to 5 off the Pegu Coast where weather was squally and rainy. Pressure gave way briskly in the north-west of the Bay, and a shallow depression and cyclonic storm formed in that area during the day, of which the following is an account :—

Cyclonic storm of the 11th to the 16th September.—This storm formed in the north-west angle of the Bay in the area covered by the eastern extremity of the trough of low pressure. The Bay current was slightly below its normal strength. The Bombay current was strong and diverted chiefly across the Peninsula to which it gave moderate to heavy rain. The interaction of this current near the North Madras Coast with the current in the north of the Bay was apparently the efficient cause which initiated the whirl.

A brisk fall of pressure in the north-west of the Bay during the 24 hours preceding 8 A.M. of the 11th accompanied

the formation of a closed pressure area in that region. The following gives 8 A.M. marine meteorological data :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	°	″			
S.S. *Beswada* .	13 46	84 41	29·656	W	5	Noon, hard squalls.
S.S. *Nawab* . .	Bimlipatam.		·578	Var.	...	Noon, heavy rain.
F. L. V. *Torch* .	Mutlah Station.		·641	SSW	4	South swell and showery.
F. L. V. *Hesperus*.	Intermediate.	„	·644	SE	3	...
F. L. V. *Comet* .	Long Sands	„	·634	ENE	3 to 4	Slight sea.

Winds had increased from an average of 2·5 in force on the 9th to an average of 3·0 on the 10th and 11th, and weather was squally with heavy thick rain near the Burma Coast and was also now squally in the centre of the Bay. The centre of the depression which had formed was probably at 8 A.M. in about Lat. 18¼° N. and Long. 86½° to 86¾° E.

Skies had clouded over during the previous night, and weather was showery on the morning of the 11th at the head of the Bay. The weather on the 10th and 11th is thus described by the Light House-keeper at Shortt's Island :—

"The weather during the 10th and 11th was unsettled with light passing showers and easterly airs, and the atmosphere was exceedingly clear from sunset to daylight. Lightning nearly all round the horizon, but most vivid to N.E., E. and S.E."

Captain Cleaver of the *F. L. V. Comet* at the Long Sands speaks of the weather at that station on the 11th in the following terms :—

"The storm began to affect the weather here at 6 A.M. of the 11th. Weather was squally with rain. The sky assumed a disturbed appearance, heavy cumulo-nimbus clouds rising to a great altitude and being capped with stratus clouds which indicated a north-east current above. The surface winds were easterly of force 3 to 5 and there was much lightning to the east and north-east. The setting sun gave a fiery appearance to the surrounding clouds. All day the clouds were continually changing."

The winds at the coast stations and in the north-west of the Bay at 8 A.M. showed that a well-defined and a moderate cyclonic circulation was established at that hour.

12th September.—Pressure had again given way briskly in the north-west of the Bay and had increased slightly to briskly in Lower Burma and the south-east of the Bay. The depression was hence deeper than on the previous day. It had commenced to move slowly northwards, and the centre at 8 A.M. was probably in about Lat. 18¾° N. and Long. 87°E. It had hence advanced about 40 miles during the previous 24 hours. The following gives data of the weather in the north-west of the Bay at 8 A.M.

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Nawab* . .	19·01	85 18	29·508	NE	4	Slight showers.
S.S. *Lightning* .	19·38	89 13	·598	SE	2	Rain squalls.
S.S. *Malda* . .	19·46	89 51	·592	SE	4	Noon, squally.
F. L. V. *Torch* .	Mutlah.		·590	SSW	3	Squally and moderate south swell.
F. L. V. *Hesperus* .	Intermediate.		·573	E	4	Squally and slight south-east swell.
S.S. *Karagola* .	21 20	90 06	·625	E by S	4	Moderate sea and showery.
S.S. *Maharani* .	Saugor Island		·594	N	6	Occasional rain.
F. L. V. *Comet* .	Long Sands.		·596	ENE	3 to 5	Squally and slight sea.
S.S. *Lindula* . .	Hooghly River.		·608	NE	6	Occasional rain squalls.

The following gives data for the coast stations in the storm area:—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	″	″	″				Inches.	
False Point	29·545	—·060	—·116	E	11	7	0·36	Showery.
Cuttack .	·557	—·061	—·101	ENE	5	4	0·12	Fine.
Puri . .	·532	—·067	...	NE	17	2	0·29	Sea smooth
Gopalpur .	·517	—·079	...	NNE	14	5	1·24	Showery.
Vizagapatam	·550	—·025	—·123	NW	...	10	3·13	Raining.

Moderate to heavy rain was falling over the greater part of the Peninsula, and more especially in the storm area in the Vizagapatam and Ganjam districts. Over the greater part of Bengal no rain was falling. The weather at the Long Sands is thus described by Captain Cleaver :—

"Weather was much disturbed during the day and ugly with heavy squalls and passing showers. The tops of cumulus clouds were frequently tinged with bright colors. Sea was rough throughout."

The Lighthouse-Keeper, Shortt's Island, describes the weather as follows :—

"During the 12th light rain squalls prevailed, increasing in force and frequently after sunset till 10 P.M., then ceasing till midnight, but weather gradually assumed a threatening appearance, especially between N and E and to the SE. At sunset there was a bank of bright red cumulus clouds to the northward and towards east and south-east. The sky was of an indigo color. Winds were from ENE, E and ESE during the day, blowing in gusts.

13th September.—Pressure had given way very rapidly in the depression area, and the disturbance had now developed into a storm of considerable intensity. It had continued to drift slowly northwards and was, as shown by

the observations, central a little to the south-west of False Point at 8 A.M., in Lat. 20¼°N and Long 86¾°E. The centre passed to the east of Puri early in the morning, as is indicated by the following observations taken by the observer during the night of the 12th and morning of the 13th :—

Date.	Hour.	Pressure reduced to sea level and constant gravity at Lat. 45°.	Temperature of air.	Relative humidity	Wind. Direction.	Wind. Average velocity in miles per hour.	Cloud.	Rainfall.	Weather.
		"	°	%				Inch.	
12th Sept.	10 P.M.	29·450	81·4	89	ENE	12	4	0·12*	Drizzling rain.
" " .	Mid-night.	·414	79·7	91	NE	12	6	0·15	Clear overhead with stars, gloomy to N.E., bank of cloud to E extending to south. Sea slight.
13th " .	2 A.M.	·374	80·0	91	ENE	14	7	...	Heavy rain and lightning to S.W.
" " .	4 " .	·336	80·3	88	ENE	17	8	0·09	Rain between 2·52 A.M. and 3·5 A.M. and sea slight.
" " .	6 " .	·340	78·9	93	N	25	10	0·11	Drizzling rain and strong wind.
" " .	8 " .	·371	78·6	92	N	27	10	0·02	Drizzling rain and sea slight.
" " .	10 " .	·390	78·4	92	W	28	10	0·17	Strong wind and sea rising.

* Rainfall from 10 A.M. of 12th.

The observations show that the centre probably passed northwards to the east of Puri between 4 to 6 A.M. The weather at that station was not very stormy and the rainfall small in amount.

The following data taken from the logs of ships show the weather prevailing at 8 A.M. of the 12th in the north-west of the Bay :—

Name of Vessel.	8 A.M. Position. Lat. N.	8 A.M. Position. Long. E.	Barometer (corrected.)	Wind. Direction.	Wind. Force.	Weather.
	° ′	° ′	"			
S.S. *Lightning* .	18 08	90 37	29·678	S	9	Tremendous sea. 4 A.M. heavy rain.
S.S. *Maharaja* .	18 18	92 32	·768	SW	4	Rough sea, 4 P.M. heavy rain.
S.S. *Malacca* .	19 32	87 23	·453	SSW	8	Frequent hard squalls and high sea.
S.S. *Nawab* .	20 01	86 57	·398	SE	5	Squally, 4 A.M. heavy rain.
F. L. V. *Torch* .	Mutlah		·468	SSW	6	Moderate S and SSE sea.
F. L. V. *Hesperus*	Intermediate		·481	SSE	5	Squally and moderate SE sea and swell.
F. L. V. *Comet* .	Long Sands.		·481	ESE	7 to 8	Squally and high sea.
S.S. *Kistna* .	Chittagong.		·724	...	...	Noon, thick with rain.

Very stormy squally weather with heavy rain now obtained in the north of the Bay.

The S.S. *Malacca* was nearest to the centre at 8 A.M., being at a distance of about 70 miles to the south-south-east. The following gives extracts from her log for the day :—

Hour.	Name of Vessel.	8 A.M. Position. Lat. N.	8 A.M. Position. Long. E.	Barometer. (corrected.)	Wind. Direction.	Wind. Force.	Weather.
		° ′	° ′	"			
4 A.M. .	S.S. *Malacca*	...	...	...	WSW	7	Moderate gale, frequent hard squalls of wind and rain and high sea.
8 " .	" .	19 32	87 23	29·453	SSW	8	Fresh gale, frequent hard squalls of wind and rain. High sea.
Noon .	" .	20 18	87 39	...	S	to 7	Moderate gale, and high sea.
4 P.M. .	" .	...	...	...	S	7	Moderate gale, squally and high sea.
8 " .	" .	...	...	...	S	7	Moderate gale, squally and high sea.
Mid-night.	" .	...	...	...	SSE	7	Moderate gale and high sea.

The following gives 8 A.M. data for the coast stations in the storm area :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches.	
Saugor Island.	29·475	—·124	—·193	E	12	10	0·79	Sea slight.
Balasore .	·452	—·118	—·199	NE	7	9	2·41	Showery.
Shortt's Island.	·390	—·210	...	ESE	18	8	0·88	Squally.
False Point .	·334	—·211	—·326	ESE	12	9	0·79	Wind variable.
Cuttack .	·399	—·158	—·258	NNE	8	10	0·52	Showery.
Puri .	·371	—·161	...	N	20	10	0·49	

The cyclonic circulation due to the storm now extended over the whole of North-Eastern India, the eastern districts of the Central Provinces, North Madras and the north of the Bay. Heavy rain had fallen in North Madras and moderate rain in Orissa, Chota Nagpur and South-West

Bengal. The heaviest falls during the preceding 24 hours in the storm area were as follows :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 13th September 1898.
		Inches.
Vizagapatam	Waltair	5·41
"	Balacheruvu	3·45
"	Bimlipatam	3·12
Ganjam	Pundi	4·69
"	Calingapatam	4·11
"	Darengabadi	3·36
Gaya	Rajauli	4·15
Singhbhum	Kalikapur	3·96
Cuttack	Dharmsala	3·28

The storm continued to advance northwards and the centre passed a little to the west of Shortt's Island during the afternoon. The following gives special observations recorded by the Lighthouse-keeper :—

DATE.	HOUR.	Barometer corrected and reduced to 32°.	Temperature of air.	Relative humidity.	WIND. Direction.	WIND. Velocity in miles per hour.	Cloud.	Rainfall.	WEATHER.
		"	°	%					
13th September.	Noon	29·293	80·3	98	NE by E	23	10	...	10 A.M. to 1 P.M.—Sky was an uniform *nimbus*, squalls almost continuous and increasing in force, barometer falling fast, wind blowing in strong gusts and sea rising.
"	1 P.M.	·221	82·1	88	ESE	66	9	...	1 P.M. Squalls ceased and weather brightened a little.
"	2 "	·210	82·5	85	SE	32	8	...	1-30 P.M.—Wind shifted to S. E., weather fine, but looking dirty to the southward. 2-30 P.M.—Wind hauled to SE by S.
13th September.	3 P.M.	·206	81·1	87	SE by S	25	10	...	3 P.M. to 4 P.M.—Strong breeze, light driving rain, very ugly to SE., S and S.S.W. and occasional strong squalls with hard driving rain; wind increasing to a fresh gale.
"	4 "	·198	81·7	87	SSE	30	10	0·45	4·30 P.M.—Wind hauled to S.S.W.
"	5 "	·212	79·9	93	SSW	48	10	...	5 P.M. to 6 P.M.—Wind S.S.W., strong squalls, incessant and at times terrific, with hard rain.
"	6 "	·222	77·9	100	SSW	67	10	...	6 P.M. to 7 P.M.—Steady S.S.W. gale, though force slightly moderating, hard driving rain but not heavy and lightning to S.E.
"	7 "	·268	78·9	95	SSW	64	10	...	...
"	8 "	·348	79·9	91	SSW	46	10	...	8 P.M. to 10 P.M.—Steady fresh gale, rain light and continuous.
"	10 "	·358	79·9	90	SSW	40	10	...	10 P.M. to midnight—No change, much lightning to S. E.
"	Midnight.	·364	80·2	89	SSW	35	10	1·10	...

These observations show that the centre passed to the west of Shortt's Island between 4 P.M. and 5 P.M. The average velocity of the storm winds at that station was greatest between 6 and 7 P.M. when it was 66 miles per hour.

The following gives a brief statement of the weather during the day at Saugor Island and the Light-ships at the entrance to the Hooghly :—

Long Sands.—"Weather very ugly, heavy *nimbus* cloud, giving very heavy rain, sea high and considerable S. E. swell, cirro-cumulus clouds driving up from S.E. to N.W. across the E.S.E. surface wind. The lowering alto-cumulus clouds show that the

storm was confined to the surface. From 8 P.M. of the 13th to 4 A.M. of the 14th there was a succession of heavy squalls and torrents of rain, the wind being steady at S.S.E. from 6 P.M. and of force 7 to 8. On the morning of the 14th after 4 A.M. the storm abated, the wind veering to south.

Mutlah.—8 A.M. a moderate S.S.E. gale and moderate southerly and S.S.E. sea. 10 A.M. fresh gale from S.S.E. with very high confused S.S.E. and southerly sea. Noon, wind and sea the same. Midnight, fresh southerly gale and high confused sea. Lightning to W. and N.W.

Saugor Island.—2 A.M. sea smooth, overcast with rain, dark and gloomy. Wind direction steady. Lightning to W. with vivid flashes.

2 P.M.—Sea rough, stormy with hard squalls, accompanied with rain from S.E., wind still variable, but slowly becoming more easterly.

8 P.M.—Sea very rough. Stormy with hard squalls accompanied with rain from S.E. Wind variable, slowly becoming more southerly. Lowest barometer 29·339."

2 A.M. of 14th.—Sea very rough, squally weather. ualls decreasing in force, wind variable, slight thunder.

14th September.—The storm had advanced more rapidly northwards during the previous 24 hours than hitherto, and was at 8 A.M. central between Chaibassa and Ranchi. The following gives 8 A.M. data of stations in the central storm area:—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Balasore	29·450	—·002	—·204	SSW	19	8	2·84	Showery.
Midnapur	·443	—·090	—·242	S	9	10	1·83	...
Burdwan	·534	—·058	—·160	E	8	10	4·05	Continuous rain.
Gaya	·507	—·107	—·169	NE	27	10	0·12	Strong wind.
Hazaribagh	·443	—·144	—·242	ENE	22	10	1·61	Gale.
Ranchi	·348	—·235	—·321	NNE	22	10	2·04	Severe gale.
Chaibassa	·230	—·292	...	SW	10	7	2·12	Showery.
Sambalpur	·470	—·061	—·206	SW	5	10	0·67	...
Cuttack	·465	+·066	—·195	WSW	7	9	2·73	Continuous rain.

Strong cyclonic winds prevailed over the greater part. of the storm area. The velocity at Saugor Island at 8 A.M. was over 30 miles per hour, at Gaya 27 miles per hour and at Hazaribagh and False Point 26 miles per hour. Very heavy rain had been received in Orissa, Bihar and South-West Bengal. The following gives the heaviest falls, exceeding 5 inches:—

Division.	District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 14th September 1898.
			Inches.
Bihar	Purnea	Gondwara (Korah)	7·00
	"	Kaliaganj	6·60
Orissa	Cuttack	Jajpur	6·40
	"	Salipore	5·33
	Balasore	Chandbali	6·05
	"	Akhyapada	5·92
	"	Soro	5·13
	Orissa Tributary Mahals.	Bispara	5·45
	Ditto	Dhenkanal	5·13
Bengal	Backergunge	Bhola	5·92
	Bankura	Kotalpur	5·29
	Midnapore	Tamluk	5·05

The rainfall during the previous 24 hours was heaviest in the Cuttack and Balasore districts of Orissa. Weather was still stormy in the north of the Bay where winds were of force 6 to 8 with frequent squalls. In the centre and south of the Bay they ranged in force between 3 and 5. Weather improved considerably during the day, as is shown by the following account of the weather at Shortt's Island given by the Lighthouse-keeper:—

"Between midnight and 6 A.M. wind moderated to strong and fresh S.S.W. breeze, rain ceased and weather brightened, though dirty looking to S. and S.E. with much lightning. Barometer rising slowly From 6 A.M. to 8 A.M. wind again freshened, looking dirty and threatening to S. and S. E. and a heavy sea beating on the island. From 8 A.M. to 10 A.M. clouds to the northward broke and showed every appearance of coming fine weather but at 10 A.M. clouded over again and a hard rain squall struck the station, the wind backing to S. E. during the squall. From 10-20 A.M. to noon, moderate S.S.W. gale, fine. Noon to 4 P.M. moderate to fresh S.S.W. gale, fine. From 4 P.M. to 6 P.M. no change. From 6 P.M. to 8 P.M. moderate gale, weather looking finer, stars shining brightly at the zenith. From 8 P.M. to midnight S. S. W. gale, weather fine.

15th September.—Pressure had fallen from ·10" to ·20" in Bihar and had risen rapidly in Chota Nagpur (·31" at Chaibassa). The storm had advanced north-north-westwards during the previous 24 hours into Bihar and was

central near Gaya at 8 A.M. The following gives 8 A.M. data of stations in the storm area :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches	
Darbhanga .	29·496	—·121	—·206	ESE	20	10	2·00	Squally.
Patna .	·403	—·162	—·287	E	21	10	2·81	Severe gale.
Gaya . .	·310	—·197	—·372	SE	24	10	4·96	Heavy rain.
Buxar .	·356	—·225	...	E	17	10	2·14	
Benares .	·478	—·104	—·198	N	7	10	1·27	Showery.
Dehri .	·243	—·289	—·437	NW	...	10	2·23	Drizzling rain.
Daltonganj .	·400	—·084	...	SW	14	10	2·90	
Hazaribagh	·435	—·008	—·251	SSE	26	10	5·79	Gale.
Ranchi .	·480	+·132	—·194	S	20	10	3·06	Continuous rain.
Naya Dumka	·547	+·027	—·146	SSE	6	10	2·26	

The data show that the centre at 8 A.M. was near and a little to the west-south-west of Gaya where pressure was nearly four-tenths of an inch below the normal. Steep gradients hence obtained over the storm area and strong winds and gales prevailed in Chota Nagpur, Bihar and West Bengal. Winds had an average velocity during the past 24 hours of 31 miles per hour at Saugor Island, 26 miles per hour at Hazaribagh, and 24 miles per hour at Gaya.

Very heavy rain had fallen over Chota Nagpur and Bihar and moderate to heavy rain in Bengal. The following gives amounts exceeding 7 inches recorded at 8 A.M.

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 15th September 1898.
		Inches.
PURNEA	Gondwara (Korah) . .	18·40
"	Purnea	8·08
SONTHAL PARGANAS . .	Sahibganj	11·52
"	Bario	10·12
"	Bhagya	9·62
"	Barharwa	8·05
"	Barkope	7·49
BIRBHUM	Morari	7·06

The data show that the precipitation during the previous 24 hours had been exceptionally heavy in the Sonthal Parganas and the Purnea and Birbhum districts. The heaviest cyclonic downpours had been received in the Sonthal Parganas. This rainfall had caused a very large reduction of temperature in Bihar and Chota Nagpur during the previous 24 hours, ranging from 2° at Ranchi to 8° at Purnea.

The rainfall had fallen off in the interior of the Peninsula due to the northward extention of the Bombay current into Upper India and light to moderate rain had been received in the Punjab, Rajputana, Gujarat and Kathiawar as well as in the west coast districts during the previous 24 hours.

16th September.—The depression had continued to advance northwards and to fill up during the previous 24 hours. A shallow residual depression lay over North Bihar at 8 A.M. The following gives data for stations in the storm area :—

Station.	Pressure. 8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Pressure. Change in past 24 hours.	Pressure. Variation from normal.	Wind. Direction at 8 A.M.	Wind. Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	"	"	"				Inches	
Gaya .	29·574	+·264	—·113	SW	18	10	0·98	Showery.
Patna .	·499	+·096	—·194	W	20	10	2·66	Continuous rain.
Darbhanga .	·517	+·021	—·183	S	12	10	3·81	Continuous rain.
Muzaffarpur	·417	—·028	...	ESE	4	10	4·26	Heavy rain.
Motihari .	·521	—·008	...	NE	32	10	4·25	Raining.
Buxar .	·559	+·203	—·127	NW	21	10	1·84	Drizzling rain.
Arrah .	·503	+·161	...	WNW	13	10	2·73	Ditto.
Chapra .	·483	+·081	...	W	13	10	3·58	Ditto.

The centre of the depression was probably a little to the south-west of Muzuffarpur in about Lat. 26°N and Long. 85¼°E. Gradients were still steep in the south quadrant and winds were strong in Bihar. They were falling off rapidly in Bengal and Chota Nagpur. Very heavy rain had been received in North Bihar and North Bengal, and moderate to heavy rain in Chota Nagpur

and Central Bengal. The following gives the heaviest falls :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 16th September, 1898.
		Inches.
Cooch Behar	Matabhanga	13·10
Jalpaiguri	Fallacotta	10·65
Darjeeling	Siliguri	8·15
Do	Kurseong	7·20
Do	Darjeeling	7·04
Purnea	Purnea	12·54
Sonthal Parganas	Sahibganj	10·40
Saran	Bhoreh	8·00
Muzaffarpur	Paru	7·15

The precipitation in the west coast districts was less than on the previous day, and the rainfall due to the Bombay current was now light and sporadic rather than general.

The storm filled up during the next 24 hours, and there was no trace of its existence shown on the morning of the 17th. Light to moderate rain was received in North Bihar and North Bengal, but the heavy rain accompanying the advance of the cyclone ceased on the afternoon of the 16th.

The following data give the position and rate of advance of the centre from the 11th to the 15th :—

DATE.	POSITION OF CENTRE AT 8 A.M.				Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.		Long. E.			
	°	′	°	′	Miles.	Miles.
11th September	18	12	86	45	...	...
12th "	18	45	87	0	40	2
13th "	20	15	86	45	105	4
14th "	23	10	85	45	210	9
15th "	24	40	84	45	132	6
16th "	26	0	85	15	90	4

The chief feature of the storm was the heavy rainfall in those districts through which the central area of the storm passed, and the districts in the eastern quadrant when it approached the Sikkim hills. The following gives data :—

DISTRICT.	AVERAGE ACTUAL RAINFALL DURING 24 HOURS PRECEDING 8 A.M. OF					Total rainfall of period, 12th to 16th September.
	12th September.	13th September.	14th September.	15th September.	16th September.	
	Inch.	Inches.	Inches.	Inches.	Inches.	Inches.
Cuttack	0·32	1·01	3·59	0·14	0·11	5·17
Balasore	0·28	1·61	4·41	0·39	0·44	7·13
Singhbhum	0·19	0·99	2·40	1·24	0·68	5·50
Manbhum	0·08	0·39	1·74	2·40	0·17	4·78
Hazaribagh	0·14	0·31	1·61	4·01	0·62	6·69
Bankura	0·15	0·66	2·62	0·47	0·01	3·91
Burdwan	0·19	0·82	2·39	1·14	0·07	4·61
Sonthal Parganas	0·02	0·12	1·03	4·91	1·10	7·18
Purnea	0·03	0·01	2·39	5·47	3·77	11·67
Gaya	0·08	0·47	0·56	2·31	0·96	4·38
Patna	0·09	0·30	0·47	3·33	2·36	6·55
Darbhanga	0·01	0	0·51	2·66	3·61	6·79
Muzaffarpur	0·17	0	0·12	2·28	5·10	7·67
Jalpaiguri	0	0·02	0·12	0·72	5·14	6·00
Cooch Behar	0	0	0·06	0·50	5·25	5·81

On the 17th and 18th after the disappearance of the previous storm, pressure was higher than usual in Western India and was in moderate to considerable defect in North-Eastern India and Upper Burma. The eastern half of the trough of low pressure hence lay further south than usual and covered the head of the Bay. South-west winds of force 4 prevailed in the centre and south of the Bay. Weather was squally with much rain in the north of the Bay on the 18th. Winds were light and variable at the head of the Bay. The following gives data in illustration :—

NAME OF VESSEL.	8 A.M. POSITION.				Barometer (corrected).	WIND.		WEATHER.
	Lat. N.		Long. E.			Direction.	Force.	
	°	′	°	′	″			
S.S. *Pundua*	19	38	89	44	29·620	WNW	4	Drizzling rain.
S.S. *Deepdale*	20	16	87	27	·617	W	4	Heavy rain, squalls.
F. L. V. *Torch*	Mutlah				·614	WSW	3	Drizzling rain.
F. L. V. *Hesperus*	Intermediate				·614	N	1	Raining with thunder.
S.S. *Maharani*	21	15	90	15	·644	S	...	Noon, heavy showers.
Shortt's Island					·648	N	13*	
F. L. V. *Comet*	Long		Sands		·609	N	1 to 2	Raining and sea calm.

Miles per hour.

These observations, and those of the Bengal and Orissa coast stations show that there was a tendency to the establishment of a depression at the head of the Bay.

The Bombay current was giving little or no rain except in the west coast districts of Southern India where light local showers continued to be received.

Pressure gave way in the north-west of the Bay, and a shallow depression lay over that area and South-West Bengal on the morning of the 19th. The following gives an account of the storm thus initiated.

Cyclonic storm of the 19th to the 21st September.—The conditions under which the depression was generated have been described above. The following gives data of the coast stations in the area of depression for 8 A.M. of the 19th :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches.	
Chittagong.	29·622	—·021	—·114	SE	6	8	0·18	
Saugor Island.	·564	—·046	—·114	NE	5	9	1·07	Showery.
Shortt's Island.	...	—·029	...	WNW	9	10	2·05	Gloomy.
False Point.	·589	—·030	—·074	WNW	3	9	0·99	Wind variable.
Puri . .	·619	+·002	...	calm	8	6	4·74	Sea smooth.

The data indicate that the depression was feeble and that the centre was probably a little to the south-east of Saugor Island, and nearly midway between that station and the Mutlah Station.

The following data of the weather in the north of the Bay are taken from the logs of vessels :—

Name of Vessel.	8 A.M. Position.		Barometer (corrected).	Wind.		Weather.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	"			
F.L.V. *Torch* .	Mutlah.		29·575	S	1	Moderate S. swell.
F.L.V. *Hesperus*	Intermediate.		·557	ENE	1	
F.L.V. *Comet* .	Long Sands.		·573	NE	2 to 3	Slight sea.
S.S. *Kistna* .	21 43	91 14	·602	NE	4	Fine.

The information for the sea area in the north of the Bay is exceedingly scanty. The marine data indicate that monsoon winds of force 4 to 6 prevailed in the centre and east. Winds were very light and unsteady in the north-west angle of the Bay.

20th September.—The barometric changes in the storm area were very slight. The low pressure area was slightly more pronounced, due chiefly to a brisk rise of pressure in North Bengal, Assam and part of Burma. It was practically unchanged in position, as is shown by the following data for the Bengal and Orissa coast stations :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches.	
Chittagong.	29·644	+·022	—·097	SE	7	10	0·45	
Barisal .	·578	—·006	—·141	SSE	...	9	0·53	
Saugor Island.	·576	+·012	—·107	NE	7	10	0·74	
False Point	·619	+·030	—·052	W	7	10	1·04	Rainy.
Puri .	·629	+·010	...	Calm.	11	8	0·66	Sea smooth
F. L.V. *Hesperus*	·643	+·026	...	E	1	10	0·80	Raining.
F.L.V. *Torch*	·617	—·018	...	S	2	10	...	Moderate S and SW swell and light passing rain showers.
F. L. V. *Comet.*	·631	—·002	...	NE	1	9	...	Raining.

They indicate that the centre of the depression was a little to the west of the Mutlah Station and probably in Lat. 21°N. and Long. 88½°E. The weather at the head of the Bay is described by the captain of the Mutlah light vessel in the following terms :—

Mutlah station.—Light variable winds and moderate southerly and south-westerly swell. 4 P.M. heavy bank passing from east round by north to west-south-west. Light passing rain showers throughout the day. 4 P. M. very clear fine weather.

21st September.—Pressure had increased over the whole Indian area. The rise was brisk to rapid in South Bengal and the north of the Bay and was slight in Bihar and Chota Nagpur to which the depression had now advanced

The following gives 8 A M. observations of stations in the depression area :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Chaibassa	29·646	+·024	...	WSW	0	7	1·70	Showery.
Bankura .	·618	+·046	...	Calm.	2	6	1·52	
Burdwan.	·662	+·064	—·041	Calm.	1	10	0·05	Thunder-storm.
Berhampore.	·663	+·059	—·043	Calm.	4	10	1·61	Showery.
Patna .	·652	+·018	—·048	ENE	8	10	5·03	Continuous rain.
Hazaribagh.	·644	+·019	—·069	W	8	10	0·93	Showery.
Ranchi .	·649	+·020	—·054	WNW	6	7	0·06	Showery.

The depression was very shallow with feeble gradients but the cyclonic circulation of the storm area extended over the whole of North-Eastern India. Moderate to heavy rain had fallen in Bengal, Bihar, Chota Nagpur and the north-eastern districts of the North-Western Provinces and light to moderate rain in the south of the Peninsula. No rain had been received during the previous 48 hours in North-Western, Western and Central India where fine weather with clear or lightly clouded skies now obtained.

22nd September.—The barometer had continued to rise generally in Northern India, the rise being greatest in Bengal. The depression had partially filled up and the residual depression now lay over the eastern districts of the North-Western Provinces, as is shown by the following data :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Allahabad .	29·727	+·033	+·024	WSW	7	3	...	Fine.
Benares .	·739	+·058	+·037	WSW	7	9	...	
Gorakhpur .	·747	+·079	+·043	ENE	6	8	1·23	Showery.
Lucknow .	·724	+·017	+·016	NE	3	10	0·20	Showery.
Cawnpore .	·714	+·008	—·007	Calm	2	10	0·20	
Nowgong .	·736	+·002	+·008	WNW	2	0	...	

Light to moderate rain had fallen in Bengal, Bihar and the eastern districts of the North-Western Provinces.

23rd September.—The residual depression continued to fill up slowly and was in the central districts of the North-Western Provinces at 8 A.M. The following observations define its character at that hour :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inch.	
Bahraich .	29·759	+·007	...	ESE	3	1	0·15	Showery.
Bareilly .	·777	—·009	+·071	NE	1	0	0·05	Showery.
Mainpuri .	·750	+·003	...	N	3	8	0·04	
Jhansi .	·768	+·019	+·022	NW	3	2	...	Fine.
Nowgong .	·758	+·022	+·020	NW	2	10	...	
Lucknow .	·744	+·020	+·028	Calm.	2	10	0·23	Showery.

Light rain had fallen over the districts passed over by the residual depression.

It filled up completely during the next 24 hours.

The storm was throughout feeble and of slight importance. It gave a moderate short burst of rain in Bengal and Bihar, and light rain in the eastern and central districts of the North-Western Provinces.

The following gives the position and rate of motion of the centre from the 20th to the 23rd :—

DATE.	POSITION OF CENTRE AT 8 A.M.				Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.		Long. E.			
	°	′	°	′	Miles.	Miles.
20th September . .	21	0	88	30	...	...
21st " . .	23	40	86	15	235	10
22nd " . .	26	0	82	0	325	14
23rd " . .	26	45	80	15	135	6

Pressure was generally above the normal on the 24th except in South India where it was in slight defect. Rain was now restricted to Burma and Southern India.

Pressure increased on the 25th thus emphasizing the high-pressure conditions in Northern India.

The only important feature of the remainder of the month was a depression which appeared in Sind on the 26th. It intensified slightly on the 27th and was stationary

on that day and the 28th. It slowly filled up on the 29th and 30th. The disturbance accompanying this depression gave showers on the 27th, 28th and 29th in the North Punjab and Kashmir. Heavy snow fell on the Pir Punjal and the higher ranges of the Kashmir Himalayas. Over four feet of snow fell at Minimarg and seven feet on the Borzil pass. A much larger amount fell on the eastern face of the Pir Punjal.

Weather was fine and dry over the greater part of India from the 26th to the end of the month, but daily showers fell in Southern India.

At the end of the month pressure was in large excess in Upper India, in moderate to considerable excess in Central India and the Deccan, and in slight to moderate defect in North-Eastern India, Burma and the Malabar Coast.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-West of India.

The snowfall on the higher ranges of the Western Himalayas is usually very small in amount in the month of September. Occasionally the first falls of the winter season occur on the Kashmir and Chitral mountains in the third or fourth week of the month. The fall during the present month in these districts and in the Punjab Himalayas was unusual and much above the normal. The following gives accounts of the local falls in Kashmir, Lahoul, the Simla Hill Districts and Garhwal.

I. KASHMIR AND PUNJAB HIMALAYAS.

(1) *Kashmir.*—The Telegraph Master, Minimarg, describes the snowfall on the neighbouring hills as follows:—

"There was a slight fall of snow and hail on the surrounding hills on the 11th instant. From the 11th to the 14th we had rain off and on with snow. The tops of the surrounding hills were covered with several inches of snow. Occasional light showers were received between the 14th and 27th on which day snow began to fall about 7 P. M. and continued during the whole of the next day. The fall in the valley was over four feet deep. On the Borzil pass it is said to have been seven feet. This is quite an unusual thing at this time of the year. The numberdar of the village, one of the oldest residents of the place, states this happened only once to his recollection, some 20 years ago."

(2) *Simla hill districts.*—The following report has been received from the Deputy Conservator of Forests, Bushahr Division :—

On the 26th September clouds brought up by a south-eastern breeze gave snow as low as 10,000 feet. The weather cleared soon after sunset. Again on the 29th September snow fell, giving a sprinkling above 10,000 feet.

The snow retired a few days after the falls to 14,000 feet. The weather was fine in the intervals with cloudless skies.

There is an unusually small quantity of snow on the passes and hills. On the northern slope there is a little snow in places at 14,000 feet and on the southern the snow line is at 15,000 feet.

(3) *Lahoul.*—Two slight falls of snow occurred on the Rotang pass in Lahoul on the 25th and 27th between 5 and 6 P. M., and 11 A. M. and 7 P. M. respectively.

II. NORTH-WESTERN PROVINCES HIMALAYAS.

Gurhwal.—There was snowfall on the 22nd September. On the high ranges the fall was 3 to 5 inches in depth. The snowline descended to about 11,000 feet but retreated quickly to its previous height. The snow extended over all the high ranges near the perpetual snows.

Summary of special storm reports.

The number of local storms during the month was not large. Duststorms are of occasional occurrence in September in Sind and the South-West Punjab and thunderstorms in Upper India when the monsoon current is withdrawing from that area and also in Southern India.

The following gives a statement of the chief local storms of which reports were received during the month:—

6th.—Severe thunderstorm at Salem from 9-45 P. M. to 10-45 P. M. 1·74 inches of rain fell during the storm.

8th.—Thunderstorm at Simla between 7 A. M. and 8 A. M. The storm came from the south-west.

9th.—Thunderstorm at Pachmarhi.

11th.—Thunderstorm at Pachmarhi. Thunderstorm at Chikalda where 1·9 inches of rain fell between 2 P. M. and 4 P. M.

12th.—Thunderstorm at Jeypore from 4-15 P. M. to 4-35 P. M.

Thunderstorm at Pachmarhi.

13th.—Thunderstorm at Jubbulpore with heavy rain.

Thunderstorm at Pachmarhi. Thunderstorm at Simla from the south-west lasting from 2-55 P. M. to 4-30 P. M.

21st.—Thunderstorm at Salem from 8 P. M. to 8-50 P. M.

23rd.—Severe thunderstorm at Salem from 2-40 P. M. to 3 P. M.

28th.—Thunderstorm at Simla from 2-20 P. M. to 4-10 P. M.

Thunderstorm at Salem 5 P. M. to 5-20 P. M.

29th.—Thunderstorm at Jubbulpore from 3 P. M. to 5-30 P. M.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea:—Ordinary monsoon winds force 2 to 6 obtained generally over the Arabian Sea at the commencement of the month except along the west coast of India where the air motion was more directly from the west than usual. Weather was generally cloudy with occasional heavy rain near the South Konkan and Malabar coasts. The mean intensity of the air movement for the whole of the Arabian sea was 3·7 or 0·2 above the normal. No important change occurred during the next forty-eight hours except in the south-east where winds fell off considerably in intensity. The wind force for all parts of the sea averaged 3·1 at 8 A. M. on the 2nd, and 2·9 at the same hour of the 3rd. This falling off of the current was only temporary and winds began to increase again during the day and averaged 3·2 on the morning of the 4th. An increasing monsoon obtained generally during the next two days. The mean strength of the winds at 8 A. M. of the 6th was 3·8 or 0·3 above the normal. Winds were on this day fairly normal in direction in the centre and north but contained a strong southerly component in the west and a westerly element in the east. Weather was showery in the neighbourhood of the Konkan Coast and fine over the remainder of the Arabian Sea. Winds fell off rather rapidly in force on the 8th and averaged only 3·0 at 8 A.M. of the 9th and 3·1 at the corresponding hour of the 10th. They however increased again during the next 24 hours and were of average force 3·4 on the morning of the 11th. No important change took place during the next four days, a moderate monsoon prevailing generally. Gradients diminished during the 15th and the winds decreased rapidly and averaged only 2·6 in force at 8 A. M. of the 16th. No significant change occurred in the pressure conditions during the remainder of the month and the air motion hence continued very feeble and exceedingly unsteady during that period. These features were on the whole most pronounced on the 22nd on which day 21 vessels out of 25 contributing meteorological information for the Arabian Sea had light irregular airs and calms, and the wind force ranged from 0 to 2. The mean strength of the air movement at 8 A. M. of that day was only 2·0 or 1·5 below the normal. Weather was throughout the period fine over the whole area except in the vicinity of the Malabar and Konkan Coasts where showers were of occasional occurrence.

Bay of Bengal.—Gradients were very feeble over the Bay during the first eight days of the month, and winds were hence exceedingly unsteady over the whole of that area except in the extreme south where moderate south-west winds prevailed steadily. Weather was generally cloudy with occasional showers and squalls. The air movement was feeble in intensity, and varied between 2·6 and 3·2 during the period and averaged 2·9 for the whole period as compared with 3·7 the normal of the month. The pressure changes of the next two days tended to give increased gradients over the southern half of the Bay, and winds hence increased in that area and were of force 2 to 5 over the whole of the Bay to the south of Lat. 17°N. on the morning of the 10th. To the north of that parallel, on the other hand, winds were very feeble and unsteady (force 1 to 2). Weather was fine with clouded skies except off the Ganjam coast where it was unsettled with heavy rain and hard squalls. The wind force averaged 3·0 at 8 A.M. of that day. Winds had shifted to easterly directions on the Bengal coast and there was a slight tendency to the formation of a cyclonic storm over the area of disturbed weather in the north-west of the Bay. It intensified rapidly during the day, and on the morning of the 11th a well-defined depression and cyclonic circulation was shown over the north-west of the Bay. Winds were, however, still feeble over the Bay, the strongest at 8 A.M. being only of force 5. The storm commenced to drift slowly northwards during the day, developing at the same time, and crossed the Orissa coast near False Point on the morning of the 13th. The storm was of considerable intensity and occasioned very squally weather over the northern half of the Bay on the 12th and 13th. The strongest winds experienced in the storm area were of force 9. The mean intensity of the air movement was 4·0 on the 12th and 4·7 on the 13th. The storm continued to influence the winds and weather over the northern half of the Bay during the day, so that very strong winds, force 6 to 8, and squally weather obtained in that area on the morning of the 14th. The mean air movement as recorded on board 20 vessels was 5·0 or 1·3 above the normal at 8 A.M. on that day. With the continued march northwards of the storm winds moderated rapidly during the next 24 hours and averaged only 3·9 at 8 A.M. of the 15th. A decreasing monsoon obtained generally during the next two days, the mean strength of the winds diminishing to 3·1

on the 17th. On the 18th ordinary monsoon winds of force 2 to 6 prevailed generally over the Bay except in the north where winds were exceedingly light (force 1 to 3) and unsteady. Weather was disturbed with heavy rain squalls in the area of light irregular winds in the north and fine elsewhere. A shallow diffused low-pressure area formed over the north of the Bay during the day, and under its influence the winds became irregularly cyclonic. The mean wind force, as derived from the data of 17 vessels, was 3·8 or 0·1 above the normal at 8 A.M. of the 19th. The depression marched north-westwards and passed inland across the Bengal coast near Saugor Island about noon of the 20th. With the passage inland of the storm winds reverted to their normal directions in the north of the Bay and at the same time fell off in intensity, so that on the morning of the 21st fine weather with light to moderate winds was re-established over the whole of the Bay. The mean intensity of the air movement at 8 A.M. of that day was 3·4 or 0·3 below the normal. Large and important pressure changes occurred during the remainder of the month, which gave very uniform pressure over the whole of the Bay. Winds hence fell off rapidly and were very feeble and irregular except at the entrance to the Bay where moderate westerly winds continued to prevail. The mean air movement during this period from the 22nd to the 30th ranged between an average of 2·0 and of 2·9.

Equatorial Belt:—The information for this region is as usual very scanty. It, however, tends to show that moderate south-east trades prevailed in the west of this area during the first three weeks, *i.e.*, from the 1st to the 22nd and light airs and calms during the remainder of the month. The data for the Seychelles indicate that winds were normal in direction at that station, though slightly below their normal strength.

From the preceding account of the weather in the Indian seas it will be seen that the monsoon currents withdrew from the northern half of the Arabian sea in the third week of the month. They were, on the average of the month, below their normal intensity to a slight extent both in the Bay and the Arabian Sea.

Temperature of the Air.

The mean temperature of the month varied to a slight extent from the normal, due chiefly to the occurrence of general and favourable rain over by far the greater part of India.

The mean maximum temperature of the month was generally below the normal over Upper Burma, Assam, Bengal, Bihar, the North-Western Provinces, the East and North Punjab and the Peninsula to the south of Lat. 16° or 17°N. The deficiency was generally small in amount, but exceeded 2° in Upper Burma, Assam, North Bengal, North and Central Bihar and the East Punjab, as is shown by the comparative data of the stations given below:

Area.	Station.	Mean maximum temperature. Actual September 1898.	Normal September	Variation of actual from normal, September 1898.
		°	°	°
Upper Burma	Kindat	86·0	88·8	−2·8
	Yamethin	89·2	92·0	−2·8
Assam	Sibsagar	86·4	88·6	−2·2
	Dhubri	83·1	85·8	−2·7
North Bengal	Jalpaiguri	84·2	87·3	−3·1
North and Central Bihar	Patna	86·5	90·2	−3·7
	Darbhanga	85·3	88·2	−2·9
	Purnea	86·2	88·9	−2·7
East Punjab	Rawalpindi	89·7	93·4	−3·7
	Sialkot	92·1	95·3	−3·2

The mean maximum temperature was above the normal over the remainder of India. The positive variations were, however, less than 2°, except in an area including the South Punjab and part of Rajputana for which data are given below:—

Station.	Mean maximum temperature. Actual September 1898.	Normal September.	Variation of actual from normal, September 1898.
	°	°	°
Sambhar	96·0	91·6	+4·4
Bickaneer	100·9	97·9	+3·0
Sirsa	101·0	98·2	+2·8
Mooltan	101·8	99·7	+2·1

The minimum or night temperature differed, as usual in the rains, less from the normal than the maximum. It was, on the mean of the month, above the normal, except in the submontane districts of Northern India and in Upper Burma and North Bombay and in a part of Madras. The positive variations also were generally small in

amount and were less than 2°, except in an area for which data are given in the following table :—

Station.	Mean minimum temperature. Actual September, 1898.	Normal, September.	Variation of actual from normal, September 1898.
	°	°	°
Ajmere	76·3	72·9	+3·4
Sambhar	76·0	73·9	+2·1
Bickaneer	79·4	76·7	+2·7
Sirsa	77·6	75·0	+2·6

The mean temperature of the month was below the normal in Upper Burma, Assam, Bengal, Bihar, the North-Western Provinces, the North and East Punjab, Madras, Cutch and Kathiawar and in excess of the normal over the remainder of the country. The variations were generally small in amount, but exceeded 2° in two areas for which data are given below :—

Province.	Station.	Mean daily temperature. Actual, September 1898.	Normal, September	Variation of actual from normal, September 1898.
		°	°	°
North Bihar	Patna	82·2	84·7	—2·5
	Darbhanga	81·2	83·5	—2·3
Rajputana and South Punjab	Sambhar	86·0	82·7	+3·3
	Bickaneer	90·2	87·3	+2·9
	Sirsa	89·3	86·6	+2·7
	Ajmere	83·9	81·6	+2·3

The following gives mean temperature data of the month for the 56 meteorological divisions of the Empire :—

Province.	Division.	Actual Temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of month of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	85·3	74·4	79·8	10·9	17·9	+1·2	+1·3	−0·1
	Lower Burma (Deltaic)	85·7	76·3	81·0	9·3	15·4	+0·8	+0·3	+0·5
	Central do.	89·7	75·9	82·9	13·8	22·0	+0·6	+0·4	+0·2
	Upper do.	88·9	75·2	82·0	13·7	21·8	−2·4	−0·4	−2·0
	Arakan	86·1	78·2	82·2	7·9	13·1	—0·5	+0·2	−0·7
Bengal and Assam	Eastern Bengal	86·5	77·0	81·8	9·4	16·4	−1·1	0	−1·1
	Assam (Surma)	88·5	76·0	82·3	12·5	23·3	−1·2	—0·3	−0·9
	Do. (Brahmaputra)	84·8	76·1	80·4	8·7	16·8	−2·5	—0·7	−1·8
	Deltaic Bengal	88·3	78·5	83·4	9·8	15·5	+0·1	+0·3	−0·2
	Central do.	87·8	77·6	82·7	10·2	16·6	−1·2	+0·3	−1·5
	North do.	85·5	75·8	80·7	9·7	18·7	−2·5	−1·0	−1·5
	Bengal Hills	67·3	51·9	59·6	15·4	25·3	−1·6	+0·9	—2·5
	Orissa	89·5	78·6	84·1	11·0	18·8	+0·9	+0·2	+0·7
	Chota Nagpur	86·2	73·6	79·9	12·7	19·1	−0·1	+0·3	−0·4
	South Bihar	88·1	77·2	82·6	10·9	20·7	−2·2	−1·2	−1·0
	North do.	86·2	76·5	81·4	9·7	19·8	−2·8	−1·4	−1·4
North-Western Provinces and Oudh.	North-Western Provinces (East)	89·7	76·3	83·0	13·4	23·7	−1·2	—0·9	—0·3
	Oudh (South)	90·2	76·0	83·1	14·2	30·1	−1·5	—0·4	—1·1
	Do. (North)	89·2	75·2	82·2	14·0	26·4	...	...	...
	North-Western Provinces (Central)	90·2	75·4	82·9	14·8	25·3	−1·3	—0·4	−0·9
	Do. do. (West)	92·0	75·6	83·8	16·4	29·4	+0·1	+0·1	0
	Do. do. (East Sub-montane)	...	76·2	...	...	...	...	—1·7	...
	Do. do. (West do.)	87·8	72·1	79·9	15·7	27·4	−0·8	−1·2	+0·4
	Do. do. (Hills)	68·4	56·9	62·6	11·5	20·4	—1·2	−0·8	−0·4
Punjab	Punjab (South-East)	94·0	77·3	85·7	16·7	26·8	+1·4	+0·8	+0·6
	Do. (South)	97·2	75·9	86·6	21·3	34·8	+2·8	+2·6	+0·2
	Do. (Central)	96·5	76·8	86·7	19·7	30·5	?	?	?
	Do. (Submontane)	92·1	73·8	83·0	18·2	31·3	−2·6	+0·1	—2·7
	Do. (Hills)	77·7	54·8	66·2	22·9	44·1	−2·8	−1·4	−1·4
	Do. (North)	92·0	69·9	81·0	22·1	37·3	−2·6	+0·6	—3·2
	Do. (West)	100·6	77·0	88·8	23·6	39·0	+0·7	+1·3	−0·6

Province.	Division.	Actual temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of month of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Bombay and Malabar Coast Districts (Madras).	Malabar	83·3	74·2	78·8	9·0	15·6	0	+0·2	−0·2
	Madras (South Central)	89·5	71·7	80·6	17·9	23·8	−1·0	+0·8	−1·8
	Coorg	71·6	62·6	67·2	9·0	15·8	−0·8	+0·9	−1·7
	Mysore	81·3	66·3	73·8	15·0	22·3	−1·0	+1·0	−2·0
	Konkan	83·0	75·1	79·1	7·9	13·9	−0·1	+0·5	−0·6
	Bombay Deccan	84·2	68·8	76·5	15·5	23·0	+0·1	+0·6	−0·5
	Hyderabad (North)	86·9	72·9	79·9	14·0	20·7	...	...	...
	Khandesh	86·4	69·2	77·8	17·3	30·9	+0·8	−0·2	+1·0
Central Provinces and Berar.	Berar	89·8	72·0	80·9	17·8	29·3	+1·8	−0·1	+1·9
	Central Provinces (West)	88·1	73·7	80·9	14·4	23·7	0	+0·6	−0·6
	Do. (Central)	86·6	72·3	79·5	14·3	22·5	−0·1	+0·5	−0·6
	Do. (East)	88·9	75·9	82·4	13·0	19·1	+0·6	0	+0·6
Bombay (North)	Gujarat	90·1	75·5	82·8	14·7	24·9	...	...	...
	Kathiawar and Cutch	89·2	73·6	81·5	15·6	24·9	+0·6	−1·0	+1·6
	Sind	97·1	76·9	87·1	20·2	29·1	+1·2	+0·7	+0·5
	Baluchistan Hills	89·8	51·7	70·8	38·1	55·6	+2·4	−1·9	+4·3
Rajputana and Central India.	Central India (East)	87·3	72·9	80·2	14·5	24·5	+0·8	+0·2	+0·6
	Rajputana (East), Central India (West)	92·6	74·4	83·6	18·2	29·4	+2·1	+1·7	+0·4
	Do. (West)	97·5	76·4	87·0	21·2	33·7	+3·0	+2·7	+0·3
Madras	East Coast (North)	89·3	77·9	83·6	11·4	19·7	+1·2	+0·3	+0·9
	Hyderabad (South)	87·3	72·1	89·8	15·2	23·0	+0·9	+1·5	−0·6
	Madras (Central)	90·3	73·9	82·1	16·4	25·8	−0·5	−0·1	−0·4
	East Coast (Central)	91·7	77·2	84·5	14·5	25·9	−1·3	0	−1·3
	Do. (South)	92·3	75·5	83·9	16·8	23·6	−1·3	−0·4	−0·9
	Madras (South)	93·3	76·6	84·9	16·7	25·3	?	?	?

At the commencement of the month the temperature conditions differed little from the normal over the greater part of India. Temperature was in moderate defect in the Central Provinces and in moderate excess in North Madras. It was in considerable to large excess in the Punjab (excepting the northern districts) and Rajputana. The following gives comparative data for the 24 hours preceding 8 A.M. of the 1st :—

Political Province or Area.	Variation from normal of Mean maximum temperature, 1st September.	Mean minimum temperature, 1st September.	Mean temperature, 1st September.
	°	°	°
Burma	+1·2	+1·3	+1·3
Bengal and Assam	+0·7	+0·6	+0·7
North-Western Provinces and Oudh	+0·6	+1·3	+1·0
Punjab	+1·8	+3·4	+2·6
Sind and Rajputana	+3·8	+2·9	+3·4
Central India and Gujarat	−0·8	+0·1	−0·4
Central Provinces and Berar	−4·1	+0·1	−2·0
Bombay	+0·1	+0·4	+0·3
Madras	+1·8	+1·7	+1·8

Temperature fell rapidly over North-Eastern India and the Peninsula on the 5th and 6th due to increasing rain but was throughout the whole period from the 1st to the 6th in slight to considerable excess in Sind, the Punjab and Rajputana. The following gives data in illustration :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 1st Sept.	2nd Sept.	3rd Sept.	4th Sept.	5th Sept.	6th Sept.
	°	°	°	°	°	
Punjab	+2·6	+2·8	+1·0	+2·0	+3·4	+1·5
Sind and Rajputana	+3·4	+1·8	+0·6	+2·6	+2·1	+0·9

The following table giving comparative data for the 6th shows the conditions obtaining over the Indian area on that day :—

Political Province or Area.	Variation from normal of Mean maximum temperature, 6th September.	Mean minimum temperature, 6th September.	Mean temperature, 6th September.
	°	°	°
Burma	−0·3	+0·3	0
Bengal and Assam	−1·8	−0·3	−1·1
North-Western Provinces and Oudh	−6·6	−1·7	−4·2

Political Province or Area.	Variation from normal of		
	Mean maximum temperature, 6th September.	Mean minimum temperature, 6th September.	Mean temperature, 6th September.
	°	°	°
Punjab	+1·4	+1·5	+1·5
Sind and Rajputana	+0·3	+1·5	+0·9
Central India and Gujarat	−1·8	+0·1	−0·9
Central Provinces and Berar	−3·8	−0·4	−2·1
Bombay	+0·4	+0·3	+0·4
Madras	−1·2	−0·7	−1·0

Rain fell over nearly the whole of India from the 6th to the 10th when a partial break set in on the 11th and 12th in North-Western India. During this period temperature was more or less below the normal, over the greater part of India more especially the East Punjab, the Gangetic Plain, North Bengal and the Peninsula south of Lat. 16° N. Temperature was, on the other hand, in steady excess in Rajputana, the West Punjab and Sind where the rainfall was, as hitherto, scanty. The following gives comparative data of the period for these areas :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	7th Sept.	8th Sept.	9th Sept.	10th Sept.	11th Sept.	12th Sept.
	°	°	°	°	°	°
West Punjab	+3·2	+3·3	+2·5	+2·9	+3·5	+4·7
Rajputana	+1·8	+3·0	+4·7	+4·9	+6·1	+5·0
Sind	+0·3	+0·5	+0·1	+1·1	+0·8	+1·3

The conditions at the end of this period are given by the following data :—

Political Province or Area.	Variation from normal of		
	Mean maximum temperature, 12th September.	Mean minimum temperature, 12th September.	Mean temperature, 12th September.
	°	°	°
Burma	−2·7	−1·3	−2·0
Bengal and Assam	−0·5	0	−0·3
North-Western Provinces and Oudh	−1·5	+1·9	+0·2
Punjab	+1·4	+4·6	+3·0
Sind and Rajputana	+2·9	+2·9	+2·9
Central India and Gujarat	+2·6	+1·0	+1·8
Central Provinces and Berar	+1·7	+0·5	+1·1
Bombay	−3·3	−0·1	−1·7
Madras	−3·4	0	−1·7

The temperature conditions of the next week from the 13th to the 19th were largely determined by the first cyclonic storm of the month, which marched northwards from the north-west of the Bay into North Bihar. It gave very heavy rain to the whole of North-Eastern India.

The Bombay current was also vigorous during this period, and Western and Central India received moderate rain, and Rajputana and the East Punjab light rain. Temperature was hence reduced generally below the normal, the reduction depending upon the intensity of the rainfall. The following data illustrate the reduction of temperature in the areas affected by the cyclonic storm :—

Province or Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	13th September.	14th September.	15th September.	16th September.	17th September.	18th September.
	°	°	°	°	°	°
Burma	−2·2	−2·1	−0·4	+0·3	+0·4	−0·6
Assam	+0·6	−1·5	−3·7	−2·5	−1·8	−1·2
Bengal	−0·8	−3·6	−4·4	−1·8	−1·6	−1·3
Bihar	+0·6	−2·0	−8·0	−8·5	−8·0	−4·9
Chota Nagpur	0	−3·9	−5·6	−3·1	−0·7	−1·7
Orissa	−1·6	−3·3	−0·5	+2·0	+0·6	+2·4
North-Western Provinces East.	−0·1	+0·5	−2·6	−5·1	−1·0	+0·6

The reduction of temperature was hence unusually large from the 14th to the 16th in Chota Nagpur, from the 15th to the 18th in Bihar, and on the 16th in the eastern districts of North-Western Provinces. The following gives data for the two stations at which temperature was most largely in defect on each day of the period :—

Date.	Station.	Variation from normal of		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
14th September	Cuttack	−8·3	−2·9	−5·6
	Burdwan	−8·4	−3·3	−5·9
15th "	Gaya	−11·4	−5·6	−8·5
	Purnea	−11·9	−5·7	−8·8
16th "	Benares	−15·2	−5·4	−10·3
	Darbhanga	−12·8	−5·0	−8·9
17th "	Patna	−14·0	−5·8	−9·9
	Darbhanga	−12·9	−5·2	−9·1
18th "	Patna	−8·3	−3·6	−6·0
	Darbhanga	−8·7	−3·3	−6·0

The following gives comparative data for the remainder of India during this period :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	13th September.	14th September.	15th September.	16th September.	17th September.	18th September.
	°	°	°	°	°	°
North-Western Provinces (West)	+1·1	−2·5	−0·8	−0·9	−0·4	+1·0
Punjab . . .	+0·2	−1·6	−3·0	−3·9	−1·1	−0·3
Sind and Rajputana .	+2·2	+1·8	+0·7	+0·9	+2·2	+1·1
Central India and Gujarat.	−0·5	−0·2	−1·2	−1·0	−0·5	−0·2
Central Provinces and Berar.	+0·2	−0·6	−0·8	−0·6	−0·9	−0·3
Deccan . . .	−3·1	−2·4	−1·8	−0·4	+0·8	+0·4
Bombay Coast . .	−1·2	−0·5	−0·2	+0·2	+1·5	+0·8
Madras Coast . .	−3·5	−1·3	−0·8	+0·8	+0·4	+0·5

The preceding data show that temperature increased considerably on the 17th and 18th, and the variations were nowhere large in amount at the end of this period, as is shown by the following data for the 24 hours preceding 8 A.M. of the 19th :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 19th September.	Mean minimum temperature, 19th September.	Mean temperature, 19th September.
	°	°	°
Burma	−1·2	−0·9	−1·1
Bengal and Assam	−1·9	−1·0	−1·5
North-Western Provinces and Oudh .	+2·0	−2·3	−0·2
Punjab	+0·1	−2·5	−1·2
Sind and Rajputana	+1·8	−0·1	+0·9
Central India and Gujarat . .	+0·3	−0·8	−0·3
Central Provinces and Berar . .	+1·0	−0·1	+0·5
Bombay	−0·1	0	−0·1
Madras	+0·2	+0·4	+0·3

The second cyclonic storm of the month formed in the north of the Bay on the 19th and 20th and passed northwestwards through Chota Nagpur, West Bengal and South Bihar into the North-Western Provinces, where it filled up on the 24th. Its effect in reducing temperature below the normal was less than that of the previous storm.

The following gives data in illustration :—

PROVINCE OR AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	20th September.	21st September.	22nd September.	23rd September.	24th September.
	°	°	°	°	°
Orissa	−3·5	−1·7	+1·1	+1·1	+2·2
Bengal	−2·1	−2·8	−2·1	+0·2	+1·5
Chota Nagpur	−2·0	−2·4	−0·7	+0·9	+0·8
Bihar	−3·3	−5·9	−7·2	−3·5	−0·8
North-Western Provinces and Oudh.	−0·4	−1·6	−2·6	−3·8	−1·6

The following comparative data for the 25th illustrate the temperature conditions obtaining in India at the end of this period :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 25th September.	Mean minimum temperature, 25th September.	Mean temperature, 25th September.
	°	°	°
Burma	−1·2	+1·3	+0·1
Bengal and Assam	+1·6	+0·7	+1·2
North-Western Provinces and Oudh .	−0·7	+1·2	+0·3
Punjab	+1·2	+3·2	+2·2
Sind and Rajputana	+1·8	+0·1	+1·0
Central India and Gujarat . .	+0·5	−0·5	0
Central Provinces and Berar . .	+1·6	−0·3	+0·7
Bombay	+1·1	+0·6	+0·9
Madras	−1·5	+0·5	−0·5

Temperature was, it will be seen, in slight to moderate excess except in Madras where it was in slight defect, and in Central India and Gujarat where it was normal.

The rainfall in India was generally small in amount during the remainder of the month and occurred chiefly in the west coast districts and Southern India. A remarkable local precipitation occurred on the 27th, 28th, and 29th in the North Punjab and Kashmir, the chief feature of which was a heavy and abnormally early fall of snow in Kashmir and the Punjab hills which brought the snow line down to about 8,000 feet in the Kashmir hills and to 10,000 or 11,000 feet in the Punjab hills. This heavy snowfall was followed by the advance of a well-defined cold wave, commencing in the North Punjab and advancing south-eastwards. Its progress is best illustrated by the comparative data for selected stations given below :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	27th September.	28th September.	29th September.	30th September.
	°	°	°	°
Peshawar	−0·6	−7·2	−8·1	−6·7
Rawalpindi	−1·6	−6·2	−4·8	−6·9
Sialkot	+0·2	−2·8	−5·1	−9·6
Dera Ismail Khan	+0·6	−4·3	−6·3	−7·6
Lahore	+2·8	+3·6	−1·7	−3·4
Ludhiana	+0·5	0	−3·3	−6·1
Meerut	+0·9	+2·0	+2·8	−2·8
Agra	+2·7	+4·5	+4·8	−6·3
Jhansi	+0·3	+3·6	+0·8	−8·4

The following table gives comparative data showing the conditions obtaining at the end of the month :—

POLITICAL PROVINCE OR AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 30th September.	Mean minimum temperature, 30th September.	Mean temperature, 30th September.
	°	°	°
Burma	+2·2	+0·9	+1·6
Bengal and Assam	+1·4	+1·5	+1·5
North-Western Provinces and Oudh	−2·0	−3·3	−2·7
Punjab	−7·7	−3·2	−5·5
Sind and Rajputana	−1·5	−0·4	−1·0
Central India and Gujarat	−1·4	−1·5	−1·5
Central Provinces and Berar	−1·2	+0·8	−0·2
Bombay	+0·7	+0·3	+0·5
Madras	+0·4	−0·3	+0·1

The following table gives the variations of the mean temperature week by week during the month and also for the whole month :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING				
	10th September.	17th September.	24th September.	1st October.	For whole month, September 1898.
	°	°	°	°	°
Burma	0	−0·9	−0·4	+1·2	0
Bengal and Assam	−0·7	−2·0	−1·4	+1·0	−0·7
North-Western Provinces and Oudh.	−2·1	−1·0	−1·4	+0·1	−0·8
Punjab	+2·0	−0·5	0	−1·2	+0·2
Sind and Rajputana	+2·1	+2·1	+0·9	+1·1	+2·0
Central India and Gujarat	+1·0	+0·1	−1·3	+0·5	+0·2
Central Provinces and Berar	+1·0	0	−0·5	+0·8	+0·4
Bombay	+0·1	−0·1	−0·4	+1·0	+0·3
Madras	−0·9	−0·8	+0·4	−0·3	−0·3

Winds.

The mean winds of the month at Port Blair and in Lower Burma were, in September, normal in direction. They were, on the other hand, considerably weaker and less steady than usual except perhaps at Diamond Island, where the air movement, as recorded by an anemometer recently supplied, was 24 per cent. higher than the mean as given by the observations of the previous anemometer. The following gives data :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			MEAN STEADINESS.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.	Actual percentage, September 1898.	Normal percentage, September.	Variation from normal, September 1898.
Port Blair	191	228	−37	60	74	−14
Diamond Island	225	182	+43	37	55	−18
Rangoon	45	89	−44	67	49	+18

Winds were, on the whole, of normal strength and steadiness in Bengal. The most noteworthy feature of the air movement was the decreased easting or increased westing of the winds at the inland stations and the increased easting at the coast station of False Point, as is shown by the following data:—

Station.	Mean wind direction.		
	Actual, September 1898.	Normal, September.	Increased westing.
Chittagong	S 15° W	S 22° E	+37°
Calcutta	S 1° W	S 23° E	+24°
Burdwan	S 3° E	S 27° E	+24°
Saugor Island	S 8° W	S 2° W	+ 6°
Cuttack	S 49° W	S 23° W	+26°
False Point	S 1° E	S 20° W	—21°

Winds were more southerly and less easterly than usual at the Bihar stations as in the interior of Bengal. Winds were on the average of the month slightly stronger and less variable than usual in Bihar.

The trough of low pressure lay further north than usual, more especially in the west and centre. The axis was defined approximately by the following stations:—Patna, Buxar, Lucknow, Meerut, Ludhiana and Lahore.

Data are given for five of these stations in the following table:—

Station.	Mean wind direction.		Mean steadiness.		
	Actual, September 1898.	Normal, September.	Actual percentage, September 1898.	Normal percentage, September.	Variation of actual from normal, September 1898.
Patna	S 76° E	S 89° E	35	37	— 2
Lucknow	S 83° E	N	12	18	— 6
Meerut	S 45° W	N 49° W	3	19	—16
Ludhiana	S 49° E	N 44° W	23	14	+ 9
Lahore	N 66° E	N 55° E	32	7	+25

As a consequence of the abnormal position of the trough of low pressure, the mean winds at Hazaribagh, Allahabad, and other stations, which were in September 1898 to the south of the axis of the trough, departed largely from the normal, as is shown by the following data:—

Station.	Mean wind direction.		Mean steadiness.		
	Actual, September 1898.	Normal, September.	Actual percentage, September 1898.	Normal percentage, September.	Variation of actual from normal, September 1898.
Hazaribagh	S 73° W	S 52° E	28	10	+18
Allahabad	N 53° W	N 8° W	26	13	+13

Winds were also generally of normal strength in the North-Western Provinces, the Punjab and Sind. Winds in the latter area were, on the mean of the month, practically normal in direction and were steadier than usual.

The following table gives comparative data of the mean air movement of the month in Burma and Northern India:—

Political Province or area.	Mean wind velocity in miles per diem.		
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.
Bay Islands (Port Blair)	191	228	—37
Burma	108	115	— 7
Bengal	137	123	+14
Orissa	129	132	— 3
Bihar	139	91	+48
Chota Nagpur	174	178	— 4
North-Western Provinces and Oudh	78	70	+ 8
Punjab	61	54	+ 7
Sind	205	214	— 9

Winds were lighter and more westerly than usual in Rajputana and Central India.

The following gives data showing the strength and steadiness of the winds in these two areas:—

Political Province.	Mean wind velocity in miles per diem.			Mean steadiness.		
	Average actual, September 1898	Average normal, September.	Variation from normal, September 1898.	Average actual percentage, September 1898.	Average normal percentage, September.	Variation from normal, September 1898.
Rajputana	134	147	—13	54	49	+ 5
Central India	80	105	—25	52	36	+16

The mean winds at the majority of stations in Rajputana and Central India were from north-westerly directions, but the westerly element was much stronger than usual in September, as is shown by the following data:—

Station.	Mean wind direction.		
	Actual, September 1898.	Normal, September.	Increased westing.
Jeypore	N 69° W	N 39° W	+30°
Nowgong	N 83° W	N 68° W	+15°
Agra	N 60° W	N 44° W	+16°
Sutna	N 60° W	N 49° W	+11°

Winds were much weaker and somewhat less steady than usual in Berar, the Central Provinces and Deccan. They were generally slightly more westerly than usual on the mean of the month, but the variations were small.

Winds were considerably weaker than usual at Bombay and were more northerly or less westerly at that station than usual.

Winds were also lighter than usual in Southern India, a condition frequently associated with excessive rainfall in September. The following gives data in illustration:—

Station.	Mean wind direction.		Mean wind velocity in miles per diem.		
	Actual, September 1898.	Normal, September.	Average actual, September 1898.	Average normal, September.	Variation from normal, September 1898.
Madras	S 43° W	S 36° W	117	149	—32
Trichinopoly	S 87° W	N 80° W	126	161	—35
Bellary	N 78° W	N 78° W	217	223	— 6
Cocanada	S 37° W	S 48° W	140	169	—29

The following table gives comparative data of the strength of the air movement in Western and Southern India:—

Political Province or Area.	Mean wind velocity in miles per diem.		
	Average actual, September 1898.	Average normal, September.	Percentage variation from normal, September 1898.
Central Provinces	102	112	— 9
Berar	137	178	—23
Konkan	157	168	— 7
Malabar	135	118	+14
Deccan	206	219	— 6
Madras (East Coast)	129	159	—19

Winds were slightly stronger and much steadier than usual at the hill stations from Simla eastwards. They were very unsteady at Murree and also at Katmandu and Darjeeling. The mean wind directions for the month were more easterly than usual, as is shown below:—

Station.	Mean wind direction.	
	Actual, September 1898.	Normal, September.
Murree	S 17° E	S 5° W
Simla	N 29° E	N 13° E
Darjeeling	N 27° E	S 58° E

Winds were slightly weaker and less steady at Zanzibar and the Seychelles, and were on the mean of the month normal in direction at the Seychelles, as is shown by the following data:—

Station.	Mean wind direction.		Mean wind velocity in miles per diem.		Mean steadiness.	
	Actual, September 1898.	Normal, September.	Actual, September 1898.	Normal, September.	Actual, percentage, September 1898.	Normal percentage, September.
Zanzibar	S 2° W	S 8° E	123	138	60	63
Seychelles (Port Victoria)	S 41° E	S 41° E	275	292	85	90

Humidity and Cloud.

The mean humidity conditions of the month differed very slightly from the normal over by far the greater part of India.

The air was slightly drier than usual in three areas.

The first included Lower Burma and the Andamans for which data are given below :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Port Blair . . .	·907	·893	+·014	86	87	—1
Diamond Island . .	·881	·871	+·010	85	87	—2
Rangoon . . .	·891	·893	—·002	87	89.	—2

The second area included Orissa and a part of South-West Bengal, as shown by the following data :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Saugor Island . .	·956	·976	—·020	83	86	—3
Calcutta . . .	·915	·943	—·028	84	86	—2
Cuttack . . .	·895	·895	0	79	80	—1
False Point . . .	·950	·929	+·021	84	84	

The variations were hence as small in this area as in Lower Burma.

The third area included a part of the Deccan defined by the stations for which comparative data are given below :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Chikalda . . .	·642	·629	+·013	87	89	—2
Akola	·745	·739	+·006	73	74	—1
Buldana . . .	·674	·680	—·006	77	78	—1
Hyderabad (Deccan) .	·734	·735	—·001	76	78	—2

The air was also locally drier than usual in Chota Nagpur and in a part of Rajputana represented by the station of Jeypore, where the mean humidity of the month was 4 below the normal.

The air contained slightly more aqueous vapour than usual over nearly the whole of the remainder of India, and the mean humidity of the month was above the normal, generally to a small extent. The variations were largish in three areas. The first included the North Punjab and Kashmir. Data are given below for this area :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Peshawar . . .	·686	·592	+·094	62	54	+8
Murree . . .	·403	·418	—·015	71	65	+6
Srinagar . . .	·553	·493	+·060	82	78	+4

The second area included the greater portion of Oudh the eastern districts of the North-Western Provinces, and North Bihar. The following gives comparative data for stations in this area :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Lucknow . . .	·880	·838	+·042	80	73	+7
Darbhanga . . .	·908	·935	—·027	87	82	+5
Patna . . .	·909	·912	—·003	84	80	+4

The third area included Mysore and the adjacent districts of the Madras Presidency, as is shown by the following data :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Madras . . .	·882	·823	+·059	80	73	+7
Chitaldroog . .	·636	·592	+·044	76	69	+7
Mysore . . .	·631	·595	+·036	77	71	+6
Hassan . . .	·618	·578	+·040	82	76	+6
Salem . . .	·766	·746	+·020	77	72	+5
Bangalore . . .	·638	·603	+·035	80	76	+4

The following gives comparative data for the large divisions of Northern and Central India in September 1898 :—

Political Province or Area.	Absolute humidity.			Relative humidity.		
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Bengal	·928	·942	—·014	84	85	—1
Chota Nagpur	·738	·754	—·016	81	84	—3
Bihar	·909	·924	—·015	86	81	+5
Orissa	·923	·912	+·011	82	83	—1
North-Western Provinces and Oudh.	·799	·790	+·009	75	73	+2
Punjab	·716	·712	+·004	61	59	+2
Sind	·793	·841	—·048	72	77	—5
Rajputana	·721	·704	+·017	64	65	—1
Central India	·834	·785	+·049	78	73	+5
Central Provinces	·786	·769	+·017	78	77	+1
Berar	·710	·710	0	75	76	—1

The following gives comparative data for the five divisions of the Peninsula :—

Division.	Absolute humidity.			Relative humidity.		
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
West Coast	·836	·838	—·002	85	85	0
Bombay Deccan	·663	·656	+·007	78	77	+1
Madras Deccan	·579	·654	—·075?	58	64	—6?
Madras Coast	·868	·847	+·021	77	74	+3
Madras, South	·749	·732	+·017	71	67	+4

The air was, on the whole, more humid than usual at the Punjab and Kashmir hill stations, and drier in the Sikkim and Kumaon Himalayas. The following gives data for six stations :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September. 1898.	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
	"	"	"	%	%	
Leh	·161	·172	—·011	39	41	—2
Srinagar	·553	·493	+·060	82	78	+4
Murree	·403	·418	—·015	71	65	+6
Simla	·399	·441	—·042	77	78	—1
Ranikhet	·487	·508	—·021	78	81	—3
Darjeeling	·459	·478	—·019	93	94	—1

The chief features of the humidity conditions of the month were—

(1) Conditions were practically normal over the whole of India. The amount of aqueous vapour present in the air was generally slightly above the normal, and the variations of the relative humidity in different parts of India depended chiefly upon the temperature variations.

(2) The air was damper than usual in the North Punjab and Kashmir.

(3) The air was much damper than usual in Mysore and South Madras (excepting Malabar), and also at Wellington.

(4) The air was damper in Oudh, the eastern districts of the North-Western Provinces and North Bihar.

(5) The air was slightly drier than usual in Lower Burma and the Andamans.

(6) It was slightly drier in Orissa and South-West Bengal.

(7) It was slightly drier than the normal in Berar and the Central Deccan.

There was more cloud than usual over the whole of India excepting Sind, the South-West Punjab and South-West Rajputana and locally perhaps at Agra, Sutna, Sholapur, Hyderabad, Cuttack, Berhampore, Roorkee, Sibsagar and Burdwan, where the mean cloud amount of the month was very slightly below the normal.

The following gives comparative data for the area of deficient cloud amount in Upper India :—

Area.	Mean cloud amount.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
Sind	1·6	2·3	—0·7
South-West Punjab	0·6	0·9	—0·3
South-West Rajputana	4·2	4·8	—0·6

The deficiency was small in actual amount except at Kurrachee (—1·3).

The mean amount of cloud during the month was in slight excess in the Punjab, the North-Western Provinces, Bengal, Assam, Bihar, Chota Nagpur and Burma, as is show by the following comparative data :—

POLITICAL PROVINCE OR AREA.	MEAN CLOUD AMOUNT.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
Punjab	2·0	1·8	+0·2
North-Western Provinces and Oudh.	4·6	4·5	+0·1
Bihar	6·5	6·1	+0·4
Chota Nagpur	8·8	8·0	+0·8
Bengal	7·8	7·3	+0·5
Assam	7·8	7·2	+0·6
Burma	8·3	7·6	+0·7

The only stations in these areas at which the excess in the mean cloud amount of the month was more than one were Narayanganj (+1·2) and Silchar (+1·4).

There was considerably more cloud than usual in the Peninsula except the Central Deccan where the deficiency was very slight.

The following gives comparative data for that area :—

DIVISION.	MEAN CLOUD AMOUNT.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
Central Provinces	6·6	6·1	+0·5
Berar	7·2	6·6	+0·6
Deccan	7·8	7·4	+0·4
West Coast	7·0	6·1	+0·9
Madras Coast	6·8	6·1	+0·7

The cloud amount was in considerable to large excess in the greater part of Southern India at the stations for which data are given below :—

STATION.	CLOUD AMOUNT.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
Salem	7·6	5·6	+2·0
Bangalore	8·3	6·3	+2·0
Wellington	9·0	7·1	+1·9
Mysore	9·2	7·6	+1·6
Cochin	7·0	5·3	+1·7
Hassan	8·9	7·9	+1·0

There was somewhat less cloud than usual at the hill stations in Kashmir, Rajputana and the Central Provinces. The defect was most marked at Murree (—1·2) and Mount Abu (—1·0). Cloud was in largish excess at Wellington in Southern India (+1·9).

It is noteworthy that the cloud amount was in moderate excess at Zanzibar and Aden and in large excess at Perim and the Seychelles. The following gives data :—

STATION.	CLOUD AMOUNT.		
	Actual, September 1898.	Normal, September.	Variation of actual from normal, September 1898.
Zanzibar	5·7	4·8	+0·9
Aden	3·0	2·3	+0·7
Perim	4·6	2·8	+1·8
Seychelles	7·1	5·6	+1·5

The chief features of the distribution of cloud during the month were as follows :

(1) There was somewhat less cloud than usual in Baluchistan, Sind, the South-West Punjab and South-West Rajputana.

(2) The mean cloud amount was in general excess over the remainder of India.

(3) Cloud was in considerable excess over the greater part of Southern India, more especially in Mysore.

(4) Cloud was in considerable excess in South-East Bengal and Cachar.

Rainfall.

The rainfall of the month in September differs considerably in its distribution from that of the previous months of the monsoon. The monsoon currents fall off in strength slightly during the first half and rapidly during

the second half of the month. As a rule they withdraw from Upper India before the end of the month, and the rainfall of the month in that part of India is light and very irregularly distributed. The withdrawal of the monsoon currents from Upper India is accompanied by a considerable change in the direction and lie of the trough of low pressure, the western extremity of which moves eastwards into the North-Western Provinces or Bihar, and the trough tends to run in a northerly or north-westerly direction from Orissa instead of a westerly or west-north-westerly direction as in July and August. As the storms of the south-west monsoon period almost invariably pass along the trough of low pressure, the normal tracks of these storms in September, more especially in the latter half of the month, are northerly to north-westerly. This change hence modifies considerably the distribution of the rainfall of the period, and when the storms advance northwards from the head of the Bay, then Orissa, Bengal, Bihar, Chota Nagpur, and the eastern districts of the North-Western Provinces frequently receive heavy cyclonic rain. This was conspicuously the case in September 1898.

The Bombay current falls off in strength much more rapidly than the Bay current and usually withdraws from the northern half of the Arabian Sea before the end of the month. The rainfall of the month is hence usually small in amount in Upper India, moderate in Central India and the Deccan, and moderate to heavy in North-Eastern India and Burma.

The chief periods of rainfall during the month due to the Bombay current were as follows :—

1st.—From the 1st to the 9th, when it gave rain chiefly in the West Coast districts, Deccan and Southern India.

2nd.—From the 10th to 16th, when it gave heavy rain in the West Coast districts and moderate rain in North-Western and Central India and the Deccan.

3rd.—From the 19th to the end of the month. Malabar, the South Deccan and Southern India obtained light to moderate daily rain during this period.

The following gives the chief periods of rainfall due to the Bay current :—

1st.—From the 3rd to the 10th, when Bengal and the Gangetic Plain obtained moderate to heavy rain. The northern districts of North Bihar had very heavy downpours on the 7th and 8th.

2nd.—From the 11th to the 17th, when the rainfall accompanied the advance of the first cyclonic storm of the month. Burma, Assam, Orissa, Bengal, Chota Nagpur, Bihar and the eastern districts of the North-Western Provinces obtained general and moderate to very heavy rain. The rainfall was excessive in Bihar and North Bengal.

3rd.—From the 19th to 23rd. The rainfall during this period occurred in areas passed over and affected by the second cyclonic storm of the month, *viz.*, Burma, Bihar, Chota Nagpur and the North-Western Provinces. The rainfall was moderately heavy in Bengal, Bihar and Chota Nagpur and moderate to light in the eastern and central districts of the North-Western Provinces.

The rainfall of the month was in general and moderate to large defect over the northern half of the region which obtains its precipitation in the month from the Bombay current, *viz*, the Punjab, Sind, North Bombay, Rajputana and Central India. The deficiency averaged over 50 per cent. in the following rainfall divisions in that area :—South-East Punjab (65 per cent.), South Punjab (59 per cent.) and Sind (51 per cent.).

The rainfall of the month was in large excess over the southern districts of the Bombay rainfall region, *viz.*, Southern India including Mysore, the Deccan and the West Coast districts and was in slight to moderate defect in the intermediate area including Berar and the Central Provinces. The excess in the southern half of the rainfall region of the Bombay current was more than 50 per cent. in the following rainfall divisions :—

Madras South (104 per cent.) Madras South Central (96 per cent.) Mysore (72 per cent.), Madras East Coast South (63 per cent) and Bombay Deccan (55 per cent).

The precipitation in the rainfall region of the Bay current was practically normal in Burma and the North-Western Provinces and was more or less largely in excess in the intermediate area including Bengal, Bihar, Chota-Nagpur and the eastern districts of the North-Western Provinces. The excess was more than 50 per cent. in the following divisions :—

North Bihar (164 per cent.), South Bihar (112 per cent.) North-Western Provinces East Submontane (78 per cent), Central Bengal (66 per cent), North Bengal (57 per cent.) and Bengal hills (51 per cent.).

The chief features of the month were the excessive rainfall in Bihar, the general and favourable rain in the Deccan and Southern India and the scanty rainfall in North-Western and Central India.

The following table gives comparative rainfall data of the month for the 57 meteorological divisions of India :—

Province.	Division.	Number of Rainy days. Average actual, September 1898.	Number of Rainy days. Average normal, September.	Rainfall. Average actual, September 1898.	Rainfall. Average normal, September.	Rainfall. Variation of actual from normal, September 1898.
				Inches.	Inches.	Inches.
Burma	Tenasserim*	?	?	26·80	24·69	+2·11
	Lower Burma (Deltaic)*	?	?	15·93	13·78	+2·15
	Central ditto*	?	?	8·92	8·64	+0·28
	Upper ditto*	?	?	7·26	8·85	—1·59
	Arakan*	?	?	23·99	20·80	+3·19
Bengal and Assam	Eastern Bengal	15·3	12·9	11·70	11·02	+0·68
	Assam (Surma)*	?	?	19·73	19·23	+0·50
	Do. (Hills)*	?	?	22·71	22·60	+0·11
	Do. (Brahmaputra)*	?	?	10·25	11·13	—0·88
	Deltaic Bengal	10·7	11·8	8·09	8·50	—0·41
	Central do.	13·9	11·5	15·36	9·24	+6·12
	North do.	17·7	12·4	24·14	15·38	+8·76
	Bengal Hills	18·3	16·9	30·09	19·53	+10·56
	Orissa	9·0	12·7	8·75	12·70	—3·95
	Chota Nagpur	11·6	11·2	9·84	8·21	+1·63
	Bihar (South)	11·9	9·0	14·77	6·96	+7·81
	Do. (North)	14·6	9·2	24·48	9·27	+15·21
North-Western Provinces and Oudh.	North-Western Provinces (East)	9·6	8·1	8·78	6·89	+1·89
	Oudh (South)	7·1	7·4	4·74	6·52	—1·78
	Do. (North)	8·3	7·2	7·79	7·22	+0·57
	North-Western Provinces (Central)	7·8	6·5	5·75	5·50	+0·25
	Do. do. (West)	5·2	4·8	4·49	4·62	—0·13
	Do. do. (East Submontane)	11·3	7·9	14·10	7·91	+6·19
	Do. do. (West do.)	7·1	6·3	7·20	7·30	—0·10
	Do. do. (Hills)	10·3	9·4	8·18	8·00	+0·18
Punjab	Punjab (South-East)	2·8	4·1	1·46	4·20	—2·74
	Do. (South)	2·3	2·9	0·97	2·38	—1·41
	Do. (Central)	2·4	2·5	1·24	2·33	—1·09
	Do. (Submontane)	5·5	3·7	3·63	3·75	—0·12
	Do. (Hills)	5·6	7·4	3·70	6·40	—2·70
	Do. (North)	4·8	2·7	3·40	1·94	+1·46
	Do. (West)	1·4	1·2	0·93	0·84	+0·09
Bombay and Malabar Coast Districts (Madras).	Malabar	19·0	14·4	13·34	10·18	+3·16
	Travancore	9·4	?	6·24	?	?
	Madras (South Central)	11·7	6·3	8·46	4·32	+4·14
	Coorg	20·8		11·35	?	?
	Mysore*	?	?	8·49	4·95	+3·54
	Konkan	19·5	16·8	20·42	14·96	+5·46
	Bombay Deccan	13·0	8·4	8·55	5·53	+3·02
	Khandesh	11·2	9·2	8·15	7·07	+1·08
Central Provinces and Berar.	Berar	8·3	?	5·97	7·34	—1·37
	Central Provinces (West)	9·1	9·5	5·65	8·80	—3·15
	Do. (Central)	9·6	9·7	6·98	7·95	—0·97
	Do. (East)	9·6	9·5	6·32	7·57	—1·25
Bombay (North)	Gujarat	7·6	8·3	7·58	8·03	—0·45
	Kathiawar	5·3	4·4	4·79	4·70	+0·09
	Sind	0·6	?	0·24	0·49	—0·25
	Baluchistan Hills	0·1	?	0·08	0·16	—0·08
Rajputana and Central India.	Central India (East)	7·7	?	5·46	7·09	—1·63
	Rajputana (East), Central India (West)	4·2	?	2·76	3·84	—1·08
	Rajputana (West)	2·6	?	1·83	1·53	+0·30
Madras	East Coast (North)	8·2	9·1	5·98	6·91	—0·93
	Do. (do.) (a)	15·0	12·4	11·27	8·63	+2·64
	Hyderabad (South)*	?	?	6·69	4·52	+2·17
	Madras (Central)	10·7	7·2	7·84	5·36	+2·48
	East Coast (Central)	8·4	5·5	5·35	3·61	+1·74
	Do. (South)	9·1	6·4	7·97	4·90	+3·07
	Madras (South)	6·7	3·8	4·56	2·23	+2·33

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

The coast districts of Arakan, Lower Burma and Tenasserim received daily rain throughout the month (except from the 21st to the 27th when the rainfall was very scanty), and Central and Upper Burma during four periods, *viz.*, the 2nd to the 5th, the 12th to the 14th, 19th and 20th, and 24th and 25th.

The most noteworthy falls of which were the following :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
AMHERST	Moulmein	11th September	6·03
THARRAWADDY	Nattalin	23rd ,,	5·70
PROME	Paungde	23rd ,,	6·20
PAKOKKU	Pasôk	23rd ,,	6·58
CHIN HILLS	Fort White	21st ,,	5·11
SHWEBO	Kanbalu	19th ,,	5·10
KATHA	Kyaukpazat	25th ,,	5·92
SANDOWAY	Sandoway	23rd ,,	5·62
,,	Taungup	16th ,,	5·80
KYAUKPYU	Ramree	18th ,,	7·32
AKYAB	Maungdaw	24th ,,	5·02
	Rathedaung	15th ,,	5·40

The following table gives comparative data for the five divisions of Burma :—

DIVISION.	NUMBER OF RAINY DAYS.		RAINFALL.			
	Average actual, September 1898.	Average normal, September.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
			Inches.	Inches.	Inches.	
Tenasserim	20·4	?	21·71	24·69	—2·98	—12
Lower Burma (Deltaic).	18·3	?	13·83	13·78	+0·05	0
Central ,,	13·3	?	8·98	8·64	+0·34	+ 4
Upper ,,	11·7	?	9·13	8·85	+0·28	+ 3
Arakan	19·6	?	18·48	20·80	—2·32	—11

The rainfall of the month was normal in Lower, Upper and Central Burma and in slight defect in Tenasserim and Arakan.

Assam obtained rain chiefly during the same periods as Bengal, *viz.*, from the 4th to the 10th, the 13th to the 17th, the 20th to the 23rd, and 25th to the 28th. The Assam hills obtained heavy rain during the first period, and the Cachar and Sylhet districts during the fourth period.

The following gives data for the three divisions of the province :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Assam (Surma)	16·9	16·0	+0·9	16·65	16·46	+0·19	+ 1
,, (Brahmaputra).	14·6	12·9	+1·7	11·09	11·13	—0·04	0
,, (Hill Tracts).	18·8	17·8	+1·0	17·83	20·67	—2·84	—14

The rainfall of the month was hence practically normal but was somewhat irregularly distributed, as is shown by the comparative data for the eight districts in the table given below :—

DISTRICT.	RAINFALL.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Cachar	15·14	12·41	+2·73	+22
Sylhet	18·84	19·93	—1·09	— 5
Goalpara	18·55	12·01	+6·54	+54
Kamrup	7·86	8·30	—0·44	— 5
Darrang	9·36	8·21	+1·15	+14
Nowgong	7·97	11·54	—3·57	—31
Sibsagar	11·07	10·07	+1·00	+10
Lakhimpur	15·65	14·04	+1·61	+11

The province of Bengal received unusually heavy rain, chiefly due to the cyclonic precipitation which occurred in that area during the advance of the two cyclonic storms of the month.

The first period of general rain extended from the 4th to the 10th.

The rainfall during this period was light in East and South-West Bengal, moderate in North and Central Bengal, but very heavy in North Bihar. The following table gives data for this period in the area of excessive rain :—

District.	Average actual rainfall during 24 hours preceding 8 A.M. of							Total of period 4th to 10th September.
	4th September.	5th September.	6th September.	7th September.	8th September.	9th September.	10th September.	
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Saran	1·00	0·95	2·13	2·57	3·55	0·86	0·40	11·46
Champaran	0·82	2·48	1·76	3·00	6·63	1·71	0·56	16·96
Muzaffarpur	1·12	0·81	1·29	2·47	2·37	1·32	0·83	10·21
Darbhanga	0·71	0·70	2·07	0·96	0·40	0·92	1·21	6·97
Purnea	1·58	1·39	0·98	2·42	2·83	4·06	1·58	14·84

Excessive downpours were received at several stations during this period. The following gives the most noteworthy falls in 24 hours :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 8th September 1898.
		Inches.
SARAN	Bhoreh	19·00
CHAMPARAN	Bettiah	12·34
,,	Motihari	8·45
PURNEA	Kaliaganj	8·70

These heavy falls occurred near the Nepal Frontier, and it is probable that they extended into Nepal, more especially as the rivers came in flood and caused serious destruction of crops and property in parts of the Saran and Champaran districts.

Little or no rain fell in Orissa during this period and only light showers in Chota Nagpur.

The second period of rain lasted from the 12th to the 17th and the precipitation accompanied the passage of a cyclonic storm which formed in the north-west angle of the Bay and passed northwards through Orissa, Chota Nagpur, South Bihar into North Bihar where it broke up at the foot of the Sikkim hills. The rainfall was heavy and general over the province and was most excessive in the submontane districts of North Bihar and North Bengal when the storm was breaking up.

This is shown by the following table giving rainfalls in 24 hours exceeding 8 inches :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
PURNEA	Gondwara (Korah)	15th September	18·40
,,	Purnea	,, ,,	8·08
SONTHAL PARGANAS	Sahibganj	,, ,,	11·52
,,	Bario	,, ,,	10·12
,,	Bhagya	,, ,,	9·02
,,	Barharwa	,, ,,	8·05
COOCH BEHAR	Matabhanga	16th ,,	13·10
JALPAIGURI	Fallacotta	,, ,,	10·65
PURNEA	Purnea	,, ,,	12·54
SONTHAL PARGANAS	Sahibganj	,, ,,	10·40
DARJEELING	Siliguri	,, ,,	8·15

The heaviest downpours were hence received at the foot of the Sikkim Himalayas in the Purnea, Cooch Behar and Jalpaiguri districts, and on the plateau of the Sonthal Parganas.

The following is a statement of the daily rainfall in the six rainfall divisions of the province from the 12th to the 17th :—

Division.	Average actual rainfall during 24 hours preceding 8 A.M. of						Total rainfall of period, 12th to 17th September.
	12th September.	13th September.	14th September.	15th September.	16th September.	17th September.	
	Inch.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
South-West Bengal.	0·17	0·41	1·99	1·10	0·19	0·34	4·20
North Bengal	0·11	0·32	0·33	0·96	2·52	1·55	5·79
East ,,	0·18	0·43	0·99	0·99	0·52	0·87	3·98
Bihar	0·07	0·14	0·73	3·21	2·36	0·34	6·85
Orissa	0·44	1·05	3·15	0·16	0·17	0·13	5·10
Chota Nagpur	0·15	0·46	1·30	2·24	0·47	0·16	4·78

The third period of rainfall was from the 18th or 19th to the 22nd. It accompanied the formation of a storm at the head of the Bay and its passage through Chota Nagpur and Bihar into the North-Western Provinces. The rainfall during this period was general over the whole province, but it was more equally distributed than during the preceding period, and was characterized by the absence of heavy downpours such as occurred

during the second period. The heaviest rainfalls in 24 hours exceeding 5 inches were as follows :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Rajshahi	Manda	20th September	5·45
Birbhum	Morari	" "	5·03
Darjeeling	Darjeeling	21st "	6·59
Murshidabad	Jangipur	" "	5·25
Monghyr	Jamalpur	" "	7·24
Do.	Gogri	" "	5·97
Do.	Monghyr	" "	5·70
Patna	Dinapore	" "	5·25
Do.	Patna	" "	5·03
Sonthal Parganas	Pakour	" "	6·25
Ditto	Mohagama	" "	5·50
Ditto	Barkope	" "	5·25
Purnea	Gondwara (Korah)	22nd "	11·00
Monghyr	Begusarai	" "	5·69
Darbhanga	Bahera	" "	5·75
Bhagalpur	Madhipura	" "	5·57
Sonthal Parganas	Sahibganj	" "	5·05

Occasional local showers were received during the remainder of the month but the rainfall was slight and a partial break in the rains obtained from the 23rd to the 30th in Bengal.

The following gives a summary of the rainfall data of the month published in the Calcutta Gazette for the nine divisions of the province :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
East Bengal	15·3	12·9	+2·4	11·70	11·02	+ 0·68	+ 6
Deltaic "	10·7	11·8	—1·1	8·09	8·50	— 0·41	— 5
Central "	13·9	11·5	+2·4	15·36	9·24	+ 6·12	+ 66
North "	17·7	12·4	+5·3	24·14	15·38	+ 8·76	+ 57
Bengal Hills	18·3	16·9	+1·4	30·09	19·53	+10·56	+ 54
Orissa	9·0	12·7	—3·7	8·75	12·70	— 3·95	— 31
Chota Nagpur	11·6	11·2	+0·4	9·84	8·21	+ 1·63	+ 20
South Bihar	11·9	9·0	+2·9	14·77	6·96	+ 7·81	+112
North "	14·6	9·2	+5·4	24·48	9·27	+15·21	+164

The rainfall of the month was in moderate defect in Orissa, normal in Deltaic and East Bengal, in largish excess in Central and North Bengal and Sikkim, and in very large excess in Bihar which received more than double its normal fall.

The rainfall of the month in the North-Western Provinces was practically normal and was well distributed over the whole area. There were three periods of fairly general rain. The first period was from the 3rd to the 10th and was due to a moderately strong burst of monsoon winds from the Bay. The rainfall during this period was heavy in the central, south-western and eastern districts from the 5th to the 7th, more especially in the districts for which data are given below :—

DISTRICT.	AVERAGE ACTUAL RAINFALL DURING 24 HOURS PRECEDING 8 A.M. OF			Total of period, 5th to 7th September.
	5th September.	6th September.	7th September.	
	Inches.	Inches.	Inches.	Inches.
Allahabad	1·84	1·87	0·97	4·68
Hamirpur	4·43	0·31	0·81	5·55
Farukhabad	2·08	0·83	0·22	3·13
Agra	1·72	0·88	0·15	2·75
Muttra	1·25	0·97	0·04	2·26
Aligarh	1·55	0·65	1·23	3·43
Gorakhpur	0·57	1·34	2·33	4·24
Basti	1·24	0·82	0·60	2·66
Azamgarh	1·11	1·53	1·28	3·92
Ballia	0·64	1·73	2·06	4·43

It was also heavy in the hill districts where the following downpours were registered :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 5th September 1898.
		Inches.
DEHRA DUN	Rajpur	7·35
ALMORA	Tanakpur	7·37

The second period was from the 13th to the 17th, when the rainfall was due to the first cyclonic storm of the month. The precipitation during the period was heavy in the eastern districts, moderate to light in the central and western districts, and was practically *nil* in the Bijnor, Muzaffarnaggar and Saharanpur districts.

The third period was from the 20th to the 23rd when the rainfall accompanied the advance of a depression from the Bay through Bihar into the central and eastern districts. The rainfall was heavy in the eastern districts, as shown below :—

District.	Average actual rainfall during 24 hours preceding 8 A.M. of			Total of period, 20th to 22nd September.
	20th September.	21st September.	22nd September.	
	Inches.	Inches.	Inches.	Inches.
Gorakhpur	1·01	2·27	0·30	3·58
Basti	0·63	2·24	1·90	4·77
Azamgarh	0·04	1·42	1·74	3·20
Ballia.	0·76	2·19	1·21	4·16

It was light in the central and south-western districts and *nil* in the western districts, including Agra, Muttra, Aligarh, Bulundshahr and Meerut.

The following is a comparative statement of the rainfall of the month in the eight divisions of the province :—

Division.	Number of rainy days.			Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
North-Western Provinces, East.	9·6	8·1	+1·5	8·78	6·89	+1·89	+27
South Oudh .	7·1	7·4	—0·3	4·74	6·52	—1·78	—27
North „ .	8·3	7·2	+1·1	7·79	7·22	+0·57	+ 8
North-Western Provinces, Central.	7·8	6·5	+1·3	5·75	5·50	+0·25	+ 5
North-Western Provinces, West.	5·2	4·8	+0·4	4·49	4·62	—0·13	— 3
North-Western Provinces, East Submontane.	11·3	7·9	+3·4	14·10	7·91	+6·19	+78
North-Western Provinces, West Submontane.	7·1	6·3	+0·8	7·20	7·30	—0·10	— 1
North-Western Provinces. Hills.	10·3	9·4	+0·9	8·18	8·00	+0·18	+ 2

The Punjab received rain chiefly during three periods. The first period was from the 1st to the 9th. The rainfall in this period occurred chiefly in the submontane, central, north-west and hill districts, more especially Gurgaon, Umballa, Hoshiarpur, Gurdaspur, Sialkot, Rawalpindi, Simla and Kangra. No rain fell in the Dera Ismail Khan, Dera Ghazi Khan, Muzaffargarh and Mooltan districts during this period.

The second period extended from the 13th to the 16th. The southern and south-eastern districts, more especially Hissar, Ferozepore, Ludhiana, Rohtak, Delhi, Umballa, Jullundur, Hoshiapur, Gurdaspur, Rawalpindi, Hazara and the western districts received a moderate burst of rain. The following falls in 24 hours exceeding 2 inches were registered during this period :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Sialkot . . .	Sialkot. . .	13th September	3·64
Gurdaspur . .	Pathankot . .	„ „	2·96
Kangra . . .	Dharamsala . .	„ „	2·50
Hazara . . .	Abbottabad . .	„ „	2·50
Delhi . . .	Ballabgarh . .	14th „	2·18
Jullundur . .	Nakodar . .	„ „	2·16
Dera Ghazi Khan .	Dera Ghazi Khan.	15th „	3·67

The rainfall was, on the other hand, light in the central districts, and practically no rain fell in the Gurgaon and Karnal districts.

The third period of rain was the 26th to the 30th. This rainfall occurred chiefly in the north-west division and in the hill districts. No rain was received in the western, central and south divisions, and in the Gujranwalla, Amritsar, Ludhiana, Jullundur, and Umballa districts. The falls were, however, generally light.

This was the last burst of rain in this province due to the south-west monsoon of 1898. The following table gives comparative rainfall data of the month for the seven divisions of the province :—

Division.	Number of rainy days.			Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
South-East Punjab.	2·8	4·1	—1·3	1·46	4·20	—2·74	—65
South Punjab .	2·3	2·9	—0·6	0·97	2·38	—1·41	—59
Central „ .	2·4	2·5	—0·1	1·24	2·33	—1·09	—47
Punjab Submontane.	5·5	3·7	+1·8	3·63	3·75	—0·12	— 3
Punjab Hills .	5·6	7·4	—1·8	3·70	6·40	—2·70	—42
North Punjab.	4·8	2·7	+2·1	3·40	1·94	+1·46	+75
West „ .	1·4	1·2	+0·2	0·93	0·84	+0·09	+11

The data show that the rainfall of the month was in large excess in the northern districts, chiefly due to the rainfall of the first and third periods. It was normal in the submontane and west divisions, in considerable defect in the south and central divisions, and in large defect in the south-east division. Comparative data for the districts in these three divisions of deficient rain are given below :—

DISTRICT.	RAINFALL.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Hissar	0·59	2·22	—1·63	—73
Ferozepore	0·95	2·58	—1·63	—63
Gurgaon	1·44	4·38	—2·94	—67
Rohtak	1·61	3·36	—1·75	—52
Delhi	1·49	5·21	—3·72	—71
Karnal	1·36	4·06	—2·70	—67
Lahore	0·53	2·43	—1·90	—78

Baluchistan was practically rainless during the month. Some local showers of little importance fell on the 14th.

Rajputana received general and moderate rain on the 1st and 2nd and between the 11th and 15th. The rainfall was heaviest and most general in Kotah, Oodeypore, Jeypore and Ajmere-Merwara. Light showers were received on the 28th and 29th in the eastern and central states.

The rainfall of the month differed very irregularly from the normal over the province, as is shown by the following comparative statement for the larger states :—

STATE.	RAINFALL.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Ulwar	1·20	5·05	—3·85	—76
Bhurtpore	1·30	4·37	—3·07	—70
Dholpur	2·00	?	?	?
Kerowlee	1·19	4·99	—3·80	—76
Tonk	1·24	3·12	—1·88	—60
Deoli	4·17	4·45	—0·28	— 6
Kotah	3·38	4·56	—1·18	—26
Ajmere-Merwara	4·10	2·88	+1·22	+42
Oodeypore	7·76	5·39	+2·37	+44
Sirohee	4·61	6·39	—1·78	—28
Jeypore	2·12	2·95	—0·83	—28
Jodhpore	1·99	1·72	+0·27	+16

Kashmir had light to moderate showers from the 13th to the 15th, and moderate to heavy showers from the 26th to the 29th. Heavy snow fell on the Pir Punjal range during this period bringing the snow line down to about 8,000 feet.

Central India obtained fairly general rain during three periods, *viz.*, the 1st to the 6th, the 7th to the 16th and the 28th and 29th.

The rainfall of the month varied irregularly from the normal but was generally in moderate defect. The following gives comparative data for the larger states or divisions :—

STATE.	RAINFALL.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Bundelkhand	7·04	6·55	+0·49	+ 7
Rewah	7·75	7·24	+0·51	+ 7
Gwalior	4·48	6·15	—1·67	—27
Bhopal	6·89	8·87	—1·98	—22
Indore	4·18	7·63	—3·45	—45
Rutlam	6·34	7·94	—1·60	—20

The rainfall in the Central Provinces was not so abundant as usual in September, due chiefly to the determination of the Bombay current to Southern India, and to the tracks of the cyclonic storms being northerly instead of north-westerly. The province received daily light to moderate rain from the 1st to the 19th, and showers on the 28th, 29th and 30th chiefly in the northern and western districts. The periods of rain in Berar were the 1st to 3rd, the 8th to 17th and the 27th to the 30th. The following gives

comparative data of the rainfall of the month for these two provinces :—

Division.	Number of rainy days.			Rainfall.			
	Average actual, Sept. 1898.	Average normal, Sept.	Variation of actual from normal, Sept. 1898.	Average actual, Sept. 1898.	Average normal, Sept.	Variation of actual from normal, Sept. 1898.	Percentage variation from normal.
				Inches.	Inch.	Inches.	
Central Provinces (East).	9·6	9·5	+0·1	6·32	7·57	—1·25	—17
Central Provinces (Central).	9·6	9·7	—0·1	6·98	7·95	—0·97	—12
Central Provinces (West).	9·1	9·5	—0·4	5·65	8·80	—3·15	—36
Berar . .	8·3	...	...	5·97	7·34	—1·37	—19

The Konkan districts of Bombay received daily rain from the 1st to the 19th. The rainfall was generally moderate in amount but was very heavy in the Kolaba and Thana districts on the 11th. The following gives the most noteworthy falls :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 11th September 1898.
		Inches.
KOLABA	Uran . .	13·54
Do.	Alibag . .	10·38
Do.	Pen. . .	10·10
THANA	Bassein . .	14·11
Do.	Bombay . .	8·64
Do.	Kurla . .	8·50

The rainfall was heavy from the 9th to the 14th. Light showers were received during the last six days of the month. The following gives comparative data for the Konkan districts :—

District.	Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
North Kanara . .	17·06	10·24	+6·82	+67
Savantvadi . . .	24·28	...	...	...
Ratnagiri . . .	19·22	16·52	+2·70	+16
Kolaba . . .	25·52	19·66	+5·86	+30
Thana . . .	19·47	14·64	+4·83	+33

The rainfall of the month was unusually favourable in the Deccan and Khandesh districts. Daily showers were received from the 1st to the 20th followed by a very short break until the 25th when showery weather recommenced and continued until the end of the month. The falls were generally light to moderate in amount, and were on the whole heaviest in Karnatak and the Satara, Sholapur, Poona, Ahmednagar, Nasik and Khandesh districts. The following gives comparative data :—

District.	Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Dharwar . . .	8·58	3·88	+4·70	+121
Bijapur . . .	8·32	5·58	+2·74	+ 49
Belgaum . . .	7·16	4·52	+2·64	+ 58
Kolhapur and other Southern Maratha country states.	7·79	3·37	+4·42	+131
Satara	6·64	4·83	+1·81	+ 37
Sholapur . . .	9·72	7·86	+1·86	+ 24
Poona	9·60	7·50	+2·10	+ 28
Ahmednagar . .	8·67	6·19	+2·48	+ 40
Nasik	8·35	8·04	+0·31	+ 4
Khandesh . . .	7·74	4·49	+3·25	+ 72

Gujarat, Kathiawar and Cutch had light rain on the 1st and 2nd and moderately heavy rain from the 11th to the 17th. The following gives data of this heavy rainfall in these three divisions :—

Division.	Average actual rainfall during 24 hours preceding 8 A.M. of							Total rainfall of period, 11th to 18th Sept.
	11th Sept.	12th Sept.	13th Sept.	14th Sept.	15th Sept.	16th Sept.	17th Sept.	
	Inch.	Inch.	Inches.	Inches.	Inch.	Inches.	Inch.	Inches.
Gujarat .	0·78	0·83	1·29	1·52	0·81	1·22	0·41	6·86
Kathiawar .	0·32	0·67	0·98	0·91	0·73	0·53	0·12	4·26
Cutch . .	0·13	0·18	0·81	0·80	0·55	0	0	2·47

No rain fell in Sind during the month.

The following gives a summary of the rainfall data of the month for the six rainfall divisions of the Presidency :—

Division.	Number of rainy days.			Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Konkan . .	19·5	16·8	+2·7	20·42	14·96	+5·46	+36
Bombay Deccan	13·0	8·4	+4·6	8·55	5·53	+3·02	+55
Khandesh .	11·2	9·2	+2·0	8·15	7·07	+1·08	+15
Gujarat . .	7·6	8·3	—0·7	7·58	8·03	—0·45	— 6
Kathiawar .	5·3	4·4	+0·9	4·79	4·70	+0·09	+ 2
Sind . .	0·6			0·24	0·49	—0·25	—51

The southern and south central districts of Madras received almost daily rain during two periods, *viz.*, the 1st to the 7th and the 18th to the 30th. The rainfall although light to moderate was much more frequent than usual and the total of the month was hence in considerable excess in these districts, as shown below:—

District.	Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Madura	6·55	2·92	+3·63	+124
Tinnevelly	2·03	1·29	+0·74	+ 57
Salem	9·23	5·50	+3·73	+ 68
Coimbatore	7·39	2·92	+4·47	+153

The preceding data indicate that the rainfall was exceptionally abundant in the Madura and Coimbatore districts.

The northern districts received frequent rain during the first two weeks of the month. The falls were generally light. The Ganjam and Vizagapatam districts obtained heavy rain from the 12th to the 14th during the early stages of the existence of the first cyclonic storm of the month. The Ganjam district received an average of 3 inches on the 12th and 13th and the Vizagapatam district of 2·91 inches. The rainfall of the month was practically normal in the northern districts, as shown by the following:—

District.	Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Ganjam	6·71	6·84	—0·13	— 2
Vizagapatam	6·23	7·40	—1·17	—16
Godavari	6·41	6·92	—0·51	— 7
Kistna	4·88	5·73	—0·85	—15

The central and south coast districts obtained unusually frequent rain. The chief periods were the 1st to the 10th, the 17th, the 20th to the 24th and the 30th.

The precipitation was heavy in the North Arcot district on the 6th on which day it received an average of 2·51 inches and in South Arcot on the 6th and 7th when it obtained an average of 3·06 inches. The rainfall of the month was in general excess in these districts, the excess being most marked in the coast districts, as shown below:—

District.	Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Nellore	5·35	3·61	+1·74	+ 48
Chingleput	7·11	4·93	+2·18	+ 44
North Arcot	9·48	5·45	+4·03	+ 74
South Arcot	10·68	5·23	+5·45	+104
Tanjore	5·82	4·27	+1·55	+ 36
Trichinopoly	5·54	4·40	+1·14	+ 26

The periods of most general rainfall in Malabar were from the 1st to the 15th and from the 19th to the end of the month. The rainfall was normal in amount in Malabar and was in large excess in South Canara. That district received an average of 20·14 inches or 72 per cent. in excess. The only period of heavy rainfall was from the 8th to the 12th when an average of 8·34 inches was received.

The rainfall in the Deccan districts occurred practically during the same periods as in the remainder of the Presidency, *viz.*, from the 1st to the 13th and from the 19th to the 30th, chiefly during the three last days of this period. The rainfall was abundant and in large excess in the Bellary and Kurnool districts, as shown below:—

District.	Rainfall.			
	Average actual, September 1898.	Average normal, September.	Variation of actual from normal, September 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Cuddapah	6·03	5·14	+0·89	+1
Anantapore	7·51	5·46	+2·05	+38
Bellary	8·31	5·13	+3·18	+62
Kurnool	9·83	5·77	+4·06	+70

The following table gives comparative data for the eight divisions of the Presidency:—

Division.	Number of rainy days.			Rainfall.			
	Average actual, Sept. 1898.	Average normal, Sept.	Variation of actual from normal, Sept. 1898.	Average actual, Sept. 1898.	Average normal, Sept.	Variation of actual from normal, Sept. 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Madras, South-Central.	11·7	6·3	+5·4	8·46	4·32	+4·14	+96
Malabar	19·0	14·4	+4·6	13·34	10·18	+3·16	+31
Madras, East-Coast, North.	8·2	9·1	—0·9	5·98	6·91	—0·93	—13
Madras, East-Coast, North (a).	15·0	12·4	+2·6	11·27	8·63	+2·64	+31
Madras, Central	10·7	7·2	+3·5	7·84	5·36	+2·48	+46
Madras, East Coast, Central.	8·4	5·5	+2·9	5·35	3·61	+1·74	+48
Madras, East-Coast, South.	9·1	6·4	+2·7	7·97	4·90	+3·07	+63
Madras, South.	6·7	3·8	+2·9	4·56	2·23	+2·33	+104

Table

Abstract of Observations taken at 8 A.M. at 215

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level, in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	+·015	...	...	...	...	...	...	...	86·0	+0·9	75·8	+0·7	80·9	+0·8	10·3	...	...	...	...	16·7
1	Tenasserim and Bay Islands.	Car Nicobars	25	29·845	?	29·798	29·941	6th	29·809	20th	·132	77·7	85·8	?	75·0	?	80·4**	?	10·8	88·5	15th	73·8	7th	14·7
		Port Blair	61	29·830	+·013	29·822	29·903	26th	29·771	22nd	·132	79·7	85·8	?	76·9	?	81·4	?	8·9	89·5	29th	74·2	10th	15·3
		Mergui	96	29·845	?	29·873	29·935	25th	29·737	22nd	·198	78·3	85·3	+1·2	74·1	+2·6	79·7	+1·9	11·2	90·1	28th	72·4	3 days	17·7
		Tavoy	26	29·877	?	29·834	29·973	25th	29·747	22nd	·226	76·9	85·2	+1·0	74·0	+0·4	79·6	+1·0	11·2	89·2	27th	71·5	2 days	17·7
		Moulmein	94	29·787	+·005	29·819	29·908	25th	29·660	22nd	·248	78·2	85·4	+0·9	75·0	+0·9	80·2	+0·9	10·4	90·5	30th	72·3	2 days	18·2
2	Lower Burma	Rangoon	41	29·833	+·013	29·811	29·956	25th	29·724	22nd	·234	78·2	86·2	+0·7	75·4	−0·5	80·8	+0·1	10·8	90·2	30th	73·4	14th	16·8
		Bassein	27	29·845	+·022	29·807	29·974	25th	29·762	22nd	·212	79·1	86·2	+0·9	76·6	+1·1	81·4	+1·0	9·6	89·2	27th	73·5	20th	15·7
		Diamond Island.	41	29·829	+·021	29·805	29·935	26th	29·750	11th	·185	80·7	84·6	−0·2	77·0	?	80·8	?	7·6	86·6	7 days	72·9	2 days	13·7
5	Arakan	Akyab	20	29·813	+·015	29·776	29·955	26th	29·703	18th	·252	80·4	86·1	−0·5	78·2	+0·2	82·2	−0·2	7·9	89·4	12th	76·3	3 days	13·1
3	Central Burma	Toungoo	183	29·674	+·015	29·800	29·796	25th	29·568	23rd	·228	79·1	90·1	+1·5	75·6	+0·2	82·9	+0·9	14·5	97·7	27th	73·7	19th	24·0
	II.—Burma Inland.		...	...	+·022	...	...	...	...	...	...	...	88·9	−2·0	75·4	−0·2	82·2	−1·1	13·6	...	...	...	...	21·5
3	Central Burma	Thayetmy	134	29·714	+·023	29·790	29·845	25th	29·605	18th	·240	80·6	89·3	−0·4	76·2	+0·5	82·8	+0·1	13·1	94·1	23rd	74·1	30th	20·0
4	Upper Burma	Minbu	165	29·671	+·020	29·780	29·787	25th	29·559	18th	·228	79·8	89·9	?	76·7	+0·2	83·3	?	13·2	95·6	23rd	73·6	12th	22·0
		Yamethin	657	29·181	+·016	29·790	29·262	28th	29·081	18th	·181	78·9	89·2	−2·8	74·0	−0·7	81·6	−1·8	15·2	94·0	9th	71·2	3 days	22·8
		Mandalay	250	29·590	+·023	29·787	29·689	25th	29·493	18th	·196	81·2	91·0	−1·8	76·3	−0·4	83·7	−1·1	14·7	94·0	2 days	71·6	16th	22·4
		Maymyo	?	Not recorded.								70·8	78·0	?	61·2	?	69·6	?	16·8	82·0	23rd	57·4	22nd	24·6
		Kindat	377	29·409	?	29·743	29·521	29th	29·277	17th	·244	77·5	86·0	−2·8	74·6	−0·6	80·3	−1·7	11·4	90·8	2 days	72·0	12th	18·8
		Bhamo	381	29·452	+·027	29·791	29·554	28th	29·335	18th	·219	76·7	88·2	−2·0	74·4	+0·1	81·3	−1·0	13·8	94·1	19th	71·1	13th	23·0
4 (a)	Burma Hill Stations.	Taunggyi	?				Not recorded.					67·7	76·3	?	62·6	?	69·5	?	13·7	80·2	3 days	57·0	22nd	23·2
		Lashio	?	27·104	+·041	?	27·190	13th	27·021	16th	·169	70·8	84·4	0	67·3	−0·1	75·9	−0·1	17·1	89·0	23rd	64·0	24th	25·0
	III.—Assam.		...	...	+·011	...	...	...	...	...	...	...	86·0	−2·0	76·0	−0·6	81·0	−1·3	10·0	...	...	...	...	19·0
7	Surma	Silchar	104	29·721	+·027	29·778	29·858	28th	29·620	18th	·238	79·0	88·5	−1·2	76·0	−0·3	82·3	−0·8	12·5	96·6	13th	73·3	14th	23·3
9	Brahmaputra	Sibsagar	333	29·480	+·004	29·771	29·623	28th	29·368	19th	·255	78·2	86·4	−2·2	75·4	−1·1	80·9	−1·7	11·0	92·2	23rd	72·0	28th	20·2
		Dhubri	115	29·673	+·001	29·743	29·810	28th	29·565	19th	·245	78·5	83·1	−2·7	76·7	−0·2	79·9	−1·5	6·4	88·2	2 days	74·8	4 days	13·4
	IV.—Bengal and Orissa.		...	...	+·008	...	...	...	...	...	...	...	87·5	−0·8	77·6	0	82·6	−0·4	9·9	...	...	...	...	17·0
6	East Bengal	Chittagong	87	29·719	+·005	29·755	29·8[illegible]7	25th	29·586	19th	·281	80·1	85·5	−1·1	75·8	−0·4	80·7	−0·7	9·7	90·2	24th	72·6	24th	17·6
		Noakhally	43	29·760	?	29·750	29·898	25th & 28th.	29·639	20th	·259	80·3	85·1	?	75·8	?	80·5	?	9·3	88·5	12th & 24th.	72·8	24th	15·7
		Comilla	36	29·763	?	29·747	29·901	28th	29·643	19th	·258	80·5	87·9	?	76·0	?	82·0	?	11·9	94·8	24th	73·8	14th & 15th	21·0
		Sirajganj	49	29·719	?	29·718	29·867	28th	29·607	19th	·260	80·5	86·3	?	77·7	?	82·0	?	3·6	89·8	26th	73·7	19th	16·1
		Narayanganj	26	29·763	+·018	29·737	29·910	28th	29·645	19th	·265	81·6	87·1	−1·4	78·6	−0·1	82·9	−0·8	8·5	90·1	3rd	75·7	2 days	14·4
		Barisal	13	29·764	+·007	29·722	29·908	25th	29·621	20th	·287	82·0	87·1	−0·4	77·9	+0·2	82·5	−0·1	9·2	90·8	30th	76·1	5 days	14·7
		Mymensingh	59	29·728	+·013	29·739	29·865	28th	29·618	19th	·247	80·7	86·1	−1·5	77·5	+0·4	81·8	−0·6	8·6	89·2	2 days	74·1	19th	15·1
10	Deltaic Bengal	Faridpur	46	29·739	?	29·733	29·883	28th	29·618	20th	·265	81·5	86·7	?	78·8	?	82·8	?	7·9	88·8	4 days	75·9	3 days	12·9
		Jessore	33	29·741	+·006	29·721	29·901	28th	29·615	14th	·286	82·3	89·2	+0·1	78·6	+0·2	83·9	+0·2	10·6	91·5	2 days	74·7	25th	16·8
		Calcutta	21	29·741	+·010	29·708	29·900	28th	29·558	14th	·342	81·9	87·1	−0·3	77·8	0	82·4	−0·2	9·3	90·4	30th	75·7	20th	14·7
		Saugor Island	25	29·724	0	29·693	29·887	28th	29·506	13th	·381	82·6	88·4	+0·6	80·1	+0·7	84·3	+0·7	8·3	90·4	12th	75·6	18th	14·8
		Krishnagar	47	29·719	?	29·714	29·873	28th	29·577	14th	·296	82·3	88·8	?	78·1	?	83·5	?	10·7	91·3	6 days	75·7	20th	15·6
		Midnapore	149	29·601	?	29·697	29·758	28th	29·347	14th	·411	81·7	89·5	?	77·6	?	83·6	?	11·9	93·3	3 days	75·1	18th	18·2

** Mean of 22 days.

tions in India, Burma, etc., in September, 1898.

Wind Direction. Number of winds from N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 30th September 1898.	Normal rainfall for period, 1st June to 30th September.	Variation from normal of period, 1st June to 30th September.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16·09	21·76	−5·15	...	...	...	...	I.—Burma Coast and Bay Islands.		
		Not	recorde	d.				1·7	?	?	94	·895	8·9	17	?	?	11·38	?	?	48·05	?	?	2·34	Car Nicobars	Tenasserim and Bay Islands.	1
...	...	...	3	4	18	11	3	8·0	9·3	− 14	91	·923	8·0	17	?	?	12·43	19·56	−7·13	66·61	69·53	− 2·92	2·68	Port Blair.		
1	...	...	...	...	1	...	1	1·3	1·5	− 13	91	·865	7·2	24	?	?	20·67	28·78	−8·11	111·37	121·25	− 9·88	3·80	Mergui.		
...	..	...	...	...	...	...	1	0·3	?	?	93	·864	6·9	16	?	?	22·21	33·19	−10·98	162·86	163·50	− 0·64	3·47	Tavoy.		
1	2	3	8	4	5	5	2	2·6	2·8	− 7	92	·887	5·0	22	22·36	−0·36	23·94	28·85	−4·91	163·51	149·35	+14·16	3·70	Moulmein.		
3	...	...	...	5	11	9	2	1·8	3·8	− 53	94	·914	9·2	20	19·55	+0·45	12·03	16·04	−4·01	80·44	73·42	+ 7·02	2·84	Rangoon .	Lower Burma.	2
...	1	3	7	4	6	2	1	3·6	3·4	+ 6	93	·929	7·2	18	21·27	−3·27	18·63	16·00	+2·63	106·93	86·69	+20·24	3·90	Bassein.		
1	1	3	4	3	5	6	1	8·9	6·8	+ 31	84	·889	7·8	16	18·90	−2·90	13·98	19·19	−5·21	81·82	91·36	− 9·54	2·97	Diamond Island.		
4	4	12	5	2	1	1	1	2·3	3·0	− 23	94	·973	7·3	18	17·73	+0·27	17·06	22·04	−4·98	182·24	158·83	+23·41	2·92	Akyab. .	Arakan.	5
1	...	1	8	6	1	...	...	1·8	2·8	− 36	90	·913	8·5	16	17·55	−1·55	8·57	12·21	−3·64	62·22	63·23	− 1·01	2·13	Toungoo .	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8·05	8·02	+0·03	...	...	...	...	II.—Burma Inland.		
...	...	2	5	23	...	...	...	13·4	4·7	+185	85	·881	7·4	6	13·36	−7·36	4·91	6·23	−1·32	21·09	26·57	− 5·48	2·22	Thayetmyo .	Central Burma.	3
1	...	5	18	4	1	...	1	7·7	?	?	84	·866	7·2	7	?	?	2·95	5·36	−2·41	18·03	19·92	− 1·89	1·00	Minbu .	Upper Burma.	4
...	...	...	16	7	...	...	2	4·6	?	?	90	·870	6·0	13	?	?	8·00	6·89	+1·11	27·64	20·10	+ 7·54	2·14	Yamethin.		
...	...	...	...	7	3	...	...	1·7	?	?	84	·892	6·4	7	?	?	5·18	6·54	−1·36	15·83	18·45	− 2·62	2·65	Mandalay.		
1	9	1	3	5	6	2	...	?	?	?	86	·648	?	16	?	?	9·01	?	?	9·01*	?	?	1·57	Maymyo.		
3	2	1	2	6	3	3	2	2·3	?	?	94	·892	8·3	16	?	?	13·91	13·27	+0·64	49·2'	53·60	− 4·39	1·93	Kindat.		
1	3	...	...	1	...	2	...	2·0	?	?	94	·856	8·1	15	?	?	13·36	9·84	+3·52	63·92	58·10	+ 5·82	3·91	Bhamo.		
...	1	...	7	12	7	2	...	?	?	?	89	·608	9·7	15	?	?	4·83	7·34	−2·51	39·70	43·10	− 3·40	0·70	Taunggyi .	Burma Hill Stations.	4(a
		Not	recorde	d.				?	?	?	94	·708	9·2	9	?	?	4·83	6·76	−1·93	42·34	42·28	+ 0·06	1·92	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14·37	13·31	+1·06	...	...	...	...	III.—Assam.		
...	1	1	1	...	...	...	...	1·7	2·7	− 37	93	·932	9·1	18	15·85	+2·15	14·52	14·35	+0·17	62·36	73·84	−11·48	2·59	Silchar .	Surma.	7
11	1	...	...	..	5	...	...	2·0	2·5	− 20	95	·917	8·9	18	14·67	+3·33	11·32	12·22	−0·90	57·78	59·20	− 1·42	2·01	Sibsagar .	Brahmaputra.	9
2	6	7	...	...	4	1	1	4·6	3·2	+ 44	92	·904	8·1	17	12·13	+4·87	17·27	13·35	+3·92	68·73	67·81	+ 0·92	3·08	Dhubri.		
...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13·45	11·25	+2·20	...	...	...	...	IV.—Bengal and Orissa.		
...	1	2	15	6	1	..	...	5·8	4·5	+ 29	88	·903	6·9	11	13·76	−2·76	7·67	12·91	−5·24	87·14	78·56	+8·58	2·39	Chittagong .	East Bengal.	6
...	3	4	9	5	7	1	1	3·3	?	?	91	·943	7·0	19	15·42	+3·58	15·20	15·77	−0·57	115·28	88·69	+26·59	2·76	Noakhali.		
...	...	10	10	5	...	...	...	3·3	?	?	84	·875	7·6	14	13·12	+0·88	7·46	10·51	−3·05	55·82	60·94	− 5·12	1·76	Comilla.		
...	1	6	4	8	5	...	1	5·6	?	?	92	·962	6·7	14	11·31	+2·69	8·32	9·10	−0·78	49·11	42·65	+ 6·46	1·61	Sirajganj.		
1	1	2	8	11	5	1	1	7·3	4·6	+ 59	90	·970	8·4	13	11·61	+1·39	10·54	8·51	+2·03	54·89	47·67	+ 7·22	2·83	Narayanganj.		
...	...	...	7	9	2	1	...	?	?	?	87	·957	6·3	10	14·61	−4·61	8·68	10·79	−2·11	54·22	55·10	− 0·88	2·22	Barisal.		
...	...	6	9	2	2	...	...	1·7	?	?	91	·954	7·4	17	14·84	+2·16	12·89	12·94	−0·05	72·85	61·14	+11·71	2·34	Mymensingh		
...	...	1	6	11	1	...	...	1·8	?	?	90	·972	6·2	13	11·76	+1·24	7·16	8·95	−1·79	47·32	45·77	+ 1·55	1·77	Faridpur .	Deltaic Bengal	10
...	...	2	3	2	1	...	...	2·9	3·4	− 15	89	·987	6·6	13	11·96	+1·04	9·39	8·09	+1·30	52·65	43·15	+ 9·50	2·80	Jessore.		
1	...	4	6	9	5	5	...	4·0	4·5	− 11	87	·957	7·5	11	13·73	−2·73	8·00	9·33	−1·33	47·58	45·48	+ 2·10	1·94	Calcutta.		
...	3	3	2	10	8	3	...	13·1	10·1	+ 29	87	·971	8·4	9	13·53	−4·53	7·94	11·23	−3·29	44·56	51·63	− 7·07	2·03	Saugor Island.		
...	...	4	8	9	2	5	2	4·6	?	?	87	·962	7·1	9	10·34	−1·34	9·35	7·31	+2·04	48·68	37·80	+10·88	2·76	Krishnagar.		
3	1	...	2	14	...	...	...	2·2	?	?	86	·936	3·9	8	12·07	−4·07	8·82	7·66	+1·16	50·70	41·04	+ 9·66	3·57	Midnapore.		

* For September only.

Table

Abstract of Observations taken at 8 A.M. at 21

Number of District.	Meteorological Province or District.	Station.	Elevation of Bar-Cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura	298	29·420	?	29·669	29·577	28th	29·161	14th	·416	80·1	88·8	?	77·1	?	83·0	?	11·7	93·1	30th	74·6	20th	18·5
		Raniganj	334	29·409	?	29·692	29·573	28th	29·182	14th	·391	80·0	88·3	?	76·9	?	82·6	?	11·4	91·2	3rd & 30th	74·4	20th	16·8
		Burdwan	99	29·662	+·003	29·709	29·818	25th	29·487	14th	·331	81·9	88·5	−1·0	78·8	+0·1	83·7	−0·5	9·7	92·4	2 days	75·8	2 days	16·6
		Naya Dumka	489	29·254	?	29·702	29·412	28th	29·070	14th	·342	80·5	87·2	?	75·5	?	81·4	?	11·7	90·5	4 days	73·3	23rd & 29th.	17·2
		Berhampore	67	29·694	+·003	29·709	29·846	28th	29·548	14th	·298	81·5	87·2	−1·6	78·9	+0·5	83·0	−0·6	8·3	91·2	30th	75·3	5th	15·9
		Rampur Boalia.	70	29·692	?	29·711	29·834	28th	29·592	19th	·242	82·1*	87·2†	?	78·6†	?	82·9†	?	8·6†	90·6	30th	75·6	6th	15·0
		Malda	72	29·680	?	29·703	29·824	28th	29·578	19th	·246	81·0	88·3	?	77·7	?	83·0	?	10·6	92·1	3rd & 30th	75·0	10th	17·1
		Bogra	61	29·712	?	29·725	29·853	28th	29·605	19th	·248	80·4	87·1	−0·9	77·2	0	82·2	−0·5	9·9	90·2	3 days	74·7	2 days	15·5
12	North Bengal	Dinajpur	123	29·648	+·012	29·726	29·789	28th	29·547	19th	·242	79·8	86·7	−1·8	76·4	−1·1	81·6	−1·5	10·3	91·3	25th	73·7	10th	17·6
		Rangpur	123	29·656	?	29·734	29·791	28th	29·544	19th	·247	79·7	85·8	?	76·5	?	81·2	?	9·3	90·7	2nd & 3rd	71·2	6th	19·5
		Jalpaiguri	284	29·492	−·006	29·737	29·615	28th	29·387	19th	·228	77·0	84·2	−3·1	74·5	−0·8	79·4	−2·0	9·7	91·4	1st	72·1	5 days	19·3
		Cooch Behar	156	29·621	?	29·733	29·753	28th	29·513	16th & 19th.	·240	78·6	85·2	?	75·9	?	80·6	?	9·3	91·4	1st & 25th	73·1	10th & 17th	18·3
17	North Bihar	Purnea	125	29·636	+·008	29·716	29·773	28th	29·505	15th	·268	79·5	86·2	−2·7	76·3	−1·0	81·2	−1·9	9·9	91·2	1st	71·7	15th	19·5
14	Orissa	Balasóre	46	29·705	+·021	29·698	29·873	26th	29·458	14th	·415	81·5	88·6	+1·0	77·6	+0·1	83·1	+0·6	11·0	92·4	1st	75·3	19th	17·1
		False Point.	21	29·733	+·010	29·696	29·914	26th	29·371	13th	·543	83·4	88·0	+0·2	78·3	+0·3	83·2	+0·3	9·7	91·5	18th	74·1	20th	17·4
		Cuttack	80	29·674	+·014	29·697	29·851	26th	29·377	13th	·474	81·7	91·3	+1·5	78·1	+0·2	84·7	+0·9	13·2	95·4	30th	74·2	20th	21·2
		Shortt's Island.	?	29·718	?	?	29·890	20th	29·390	13th	·500	83·7	88·4	?	80·2	?	84·3	?	8·2	91·4	25th	74·6	21st	16·8
		Puri	20	29·738	?	29·701	29·925	26th	29·409	13th	·516	83·5	90·1	?	80·2	?	85·2	?	9·9	93·2	22nd & 25th	73·6	19th	19·6
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·003	...	...	...	...	...	...	...	87·8	−1·3	75·9	−0·6	81·9	−1·0	11·9	...	...	...	...	21·5
15	Chota Nagpur	Hazaribagh.	2,007	27·733	−·012	29·690	27·910	28th	27·484	15th	·426	75·3	83·4	−1·0	72·2	+0·1	77·7	−0·5	11·2	87·2	3rd & 29th.	69·8	23rd	17·4
		Ranchi	2,128	27·622	+·001	29·694	27·797	28th	27·286	14th	·511	75·4	83·8	+0·6	71·6	+0·8	77·8	+0·7	12·2	86·7	3rd & 10th.	69·4	20th	17·2
		Daltonganj	730?	29·003	?	29·692	29·177	28th	28·711	15th	·466	78·3	88·8	?	74·7	?	81·8	?	14·1	93·1	3rd & 30th.	71·0	23rd	22·1
		Chaibassa	760	28·971	?	29·682	29·143	28th	28·523	14th	·620	79·3	88·9	+0·2	75·7	0	82·3	+0·1	13·2	92·4	3 days	73·0	18th	19·4
16	South Bihar	Gaya	375	29·343	−·015	29·673	29·514	28th	28·977	15th	·537	80·7	90·2	−0·6	76·8	−1·1	83·4	−0·9	13·4	95·4	29th	73·8	2 days	21·6
		Dehri‡	351	29·361	?	29·667	29·529	28th	28·938	15th	·591	81·3	88·0	?	77·2	?	82·6	?	10·8	93·3	29th	72·0	16th	21·3
		Patna	183	29·544	−·016	29·680	29·708	28th	29·266	15th	·442	81·3	86·5	−3·7	77·9	−1·2	82·2	−2·5	8·6	92·0	2 days	73·2	16th	18·8
		Arrah	190	29·523	?	29·665	29·684	29th	29·200	15th	·484	81·1	88·3	?	77·0	?	82·7	?	11·3	93·4	29th	72·0	16th	21·4
		Buxar	239	29·480	?	29·675	29·643	28th	29·161	15th	·482	80·8	87·4	?	77·0	?	82·2	?	10·4	92·5	29th	72·1	16th	20·4
17	North Bihar	Bhagalpur	160	29·577	?	29·691	29·729	25th	29·403	15th	·326	81·2	87·4	?	77·3	?	82·4	?	10·1	92·2	30th	74·6	3 days	17·6
		Darbhanga	166	29·569	−·016	29·689	29·710	28th	29·374	15th	·336	79·8	85·3	−2·9	77·1	−1·7	81·2	−2·3	8·2	91·3	3rd	72·5	22nd	18·8
		Muzaffarpur.	178	29·545	?	29·678	29·700	28th	29·283	16th	·417	79·9	85·7	?	76·4	?	81·1	?	8·3	92·2	29th & 30th.	71·2	22nd	21·0
		Motihari‡	224	29·526	?	29·709	29·686	28th	29·337	16th	·349	79·5	85·6	?	74·7	?	80·2	?	10·9	93·0	3rd	70·8	11th & 16th.	22·2
		Chapra	181	29·549	?	29·685	29·715	28th	29·266	15th	·449	80·7	87·2	?	77·3	?	82·2	?	9·9	92·8	29th	73·1	16th	19·7
18	N.-W. Provinces (East).	Benares	267	29·468	+·009	29·691	29·625	29th & 30th.	29·252	15th	·373	80·1	89·1	−1·8	76·1	−1·4	82·6	−1·6	13·0	95·3	30th	72·7	16th	22·6
		Allahabad	309	29·424	+·005	29·688	29·584	30th	29·294	15th	·290	81·5	90·3	−0·6	76·5	−0·3	83·4	−0·5	13·8	96·1	29th	71·3	22nd	24·8
23	N.-W. Provinces (East Sub-Montane).	Gorakhpur	256	29·471	−·002	29·686	29·614	25th	29·212	15th	·302	80·0	?	?	76·2	−1·7	?	?	?	?	...	71·7	22nd	?
19	South Oudh	Lucknow	368	29·358	−·001	29·686	29·520	28th	29·243	4th & 15th.	·277	80·5	90·1	−1·6	76·1	−0·3	83·1	−1·0	14·0	95·3	28th	70·3	22nd	25·0
20	North Oudh	Bahraich	403	29·329	?	29·694	29·484	28th	29·173	15th	·311	80·5	89·2	?	75·2	?	82·2	?	14·0	94·4	3rd	68·0	22nd	26·4
21	N.-W. Provinces (Central).	Cawnpore	416	29·315	+·016	29·686	29·473	29th	29·210	4th	·263	80·8	90·8	−1·5	75·8	−0·9	83·4	−1·2	15·0	95·8	28th	70·5	22nd	25·3
		Mainpuri	516	29·208	?	29·685	29·360	29th	29·093	4th	·267	79·6	90·0	?	75·2	?	82·6	?	14·8	95·8	29th	69·5	30th.	26·3

* Mean of 21 days. † Mean of 29 days. ‡ Observations of 29 days.

I—*continued.*

stations in India, Burma, etc., in September, 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 30th September 1898.	Normal rainfall for period, 1st June to 30th September.	Variation from normal of period, 1st June to 30th September.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
17	...	1	3	6	3	...	...	...	4·0	?	?	89	·920	6·0	13	12·69	+0·31	10·03	8·03	+ 2·00	56·77	43·56	+13·21	2·18	Bankura	Central Bengal.	11
18	...	2	4	1	2	3	...	...	1·4	?	?	90	·929	5·5	11	11·76	−0·76	12·92	7·33	+5·59	60·87	43·05	+17·82	4·97	Raniganj.		
24	...	...	2	...	2	2	...	...	1·2	3·1	−61	88	·960	7·1	13	12·19	+0·81	13·32	8·04	+5·28	57·00	40·04	+16·96	4·05	Burdwan.		
9	...	2	3	4	6	4	1	1	2·7	?	?	88	·920	8·2	16	13·32	+2·68	16·66	9·53	+7·13	60·33	46·09	+14·24	2·81	Naya Dumka.		
7	1	1	4	2	12	3	...	...	4·2	3·7	+14	89	·962	8·3	15	12·61	+2·39	11·62	10·13	+1·49	60·12	41·99	+18·13	1·98	Berhampore.		
12	...	...	3	3	8	4	...	...	4·8	?	?	90*	·987*	6·2	14	12·12	+1·88	14·21	10·38	+3·83	51·34	42·89	+8·45	2·75	Rampore Boalia.		
...	2	1	4	4	17	...	2	...	2·6	?	?	89	·944	8·1	13	11·35	+1·65	18·28	10·85	+7·43	44·80	43·49	+1·31	3·72	Malda.		
			Not	re	cord	ed.			?	?	?	91	·947	7·2	16	12·04	+3·96	13·13	10·88	+2·25	50·23	49·90	+0·33	3·38	Bogra.		
...	1	4	10	6	3	4	...	2	4·2	?	?	90	·923	8·3	18	12·31	+5·69	20·42	11·39	+9·03	60·42	53·82	+6·60	3·62	Dinajpur	North Bengal.	12
19	1	2	2	2	1	1	2	...	2·3	?	?	91	·923	7·8	20	13·04	+6·96	19·78	13·72	+6·06	71·12	61·05	+10·07	2·76	Rangpur.		
2	2	6	10	2	1	1	4	2	2·4	?	?	93	·868	5·0	21	15·04	+5·96	34·49	22·37	+12·12	113·45	103·77	+9·68	5·66	Jalpaiguri.		
21	2	2	3	1	1	...	...	...	1·3	?	?	91	·892	9·6	18	?	?	37·45	22·61	+14·84	101·55	102·73	−0·78	7·03	Cooch Behar.		
5	1	8	9	1	3	1	1	1	4·1	2·0	+120	92	·934	8·1	16	11·15	+4·84	34·25	13·28	+20·97	58·60	53·01	+5·59	12·54	Purnea	North Bihar.	17
10	...	2	1	...	4	10	2	1	3·4	?	?	87	·946	5·8	14	14·00	0	11·33	12·95	−1·62	33·67	47·05	−13·38	2·84	Balasore	Orissa.	1
1	...	...	2	4	6	6	9	2	7·9	7·9	0	86	·980	7·3	10	13·23	−3·23	6·18	11·56	−5·38	42·02	47·90	−5·88	1·83	False Point.		
8	...	3	2	...	3	8	3	3	2·7	2·4	+13	85	·919	5·7	7	13·15	−6·15	6·26	11·07	−4·81	34·98	47·88	−12·90	2·73	Cuttack.		
...	1	...	3	2	11	8	4	1	17·3	?	?	82	·945	5·7	10	?	?	9·43	11·40	−1·97	48·85	40·24	+8·61	3·26	Shortt's Island.		
5	2	2	1	1	1	11	4	3	11·9	?	?	83	·958	4·5	7	13·11	−6·11	5·84	10·36	−4·52	27·97	38·60	−10·63	2·47	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13·13	7·49	+5·64	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
...	2	1	2	3	6	10	4	2	8·3	7·0	+19	87	·761	7·8	10	12·35	−2·35	15·83	8·76	+7·07	50·94	43·66	+7·28	5·79	Hazaribagh	Chota Nagpur.	15
...	1	2	1	1	9	10	2	4	8·1	?	?	87	·762	6·1	12	14·50	−2·50	9·79	9·62	+0·17	51·18	46·24	+4·94	3·06	Ranchi.		
18	...	1	2	1	4	2	2	...	4·5	?	?	86	·839	3·8	11	10·73	+0·27	8·07	7·79	+0·28	37·55	39·10	−1·55	2·90	Daltonganj.		
8	...	1	2	...	1	9	4	5	1·5	?	?	87	·878	4·1	11	12·31	−1·31	10·96	8·05	+2·91	42·74	43·10	−0·36	2·12	Chaibassa.		
8	...	3	2	4	3	8	2	...	9·0	2·3	+291	86	·901	5·4	10	9·31	+0·69	12·96	6·89	+6·07	41·48	39·05	+2·43	4·96	Gaya	South Bihar.	16
1	...	1	4	1	8	10	3	1	9·0	?	?	84	·897	4·4	7	10·07	−3·07	8·31	6·81	+1·50	47·79	37·07	+10·72	2·23	Dehri.		
2	1	2	12	3	2	2	4	2	6·3	2·9	+117	88	·937	6·8	11	9·65	+1·35	17·39	7·40	+9·99	56·89	37·79	+19·10	5·03	Patna.		
3	2	2	5	5	5	3	2	3	3·9	?	?	88	·938	5·3	12	9·81	+2·19	14·52	7·19	+7·33	52·28	36·95	+15·33	3·24	Arrah.		
4	2	...	10	3	2	2	5	2	4·4	?	?	87	·921	6·0	9	9·19	−0·19	11·41	7·17	+4·24	43·28	35·38	+7·90	2·71	Buxar.		
13	...	3	6	3	3	2	...	...	2·5	?	?	88	·934	7·1	12	9·42	+2·58	23·13	7·37	+15·76	60·23	38·44	+21·79	5·85	Bhagalpur	North Bihar.	17
...	...	1	13	9	3	...	2	2	5·3	3·6	+47	90	·921	6·4	16	9·16	+6·84	21·65	8·91	+12·71	44·56	41·36	+3·20	3·81	Darbhanga.		
12	...	3	9	2	1	...	1	1	5·4	?	?	91	·928	5·2	18	8·96	+9·04	24·10	8·92	+15·18	58·57	39·31	+19·26	4·26	Muzaffarpur.		
...	1	6	16	...	...	1	1	4	7·3	?	?	89	·899	3·8	15	9·04	+5·96	29·88	9·45	+20·43	57·34	41·21	+13·13	8·45	Motihari.		
11	...	1	8	5	1	...	3	1	3·5	?	?	88	·919	6·2	14	8·38	+5·62	16·12	6·94	+9·18	52·99	35·65	+17·34	3·58	Chapra.		
11	1	1	2	3	2	4	4	2	2·3	3·9	−41	87	·909	5·4	9	8·91	+0·09	7·35	6·59	+0·76	45·52	34·29	+11·23	1·56	Benares	N.-W. Provinces (East).	18
1	...	4	4	2	2	3	11	3	5·8	5·3	+ 9	85	·912	5·7	6	7·73	−1·73	4·84	6·05	−1·21	51·79	35·17	+16·62	1·90	Allahabad.		
2	5	10	6	4	...	...	...	3	1·7	2·1	−19	89	·903	6·2	13	8·55	+4·45	18·93	8·56	+10·37	57·73	45·84	+13·89	5·87	Gorakhpur	N.-W. Provinces (East Submontane).	23
17	1	2	5	2	1	...	2	...	1·3	2·8	−54	88	·913	4·9	7	7·55	−0·55	5·42	6·27	−0·85	36·03	34·73	+1·30	2·33	Lucknow	South Oudh.	19
12	...	2	8	5	...	...	...	3	1·8	?	?	85	·839	3·1	6	?	?	5·61	7·45	−1·84	32·15	35·08	−2·93	2·83	Bahraich	North Oudh.	20
14	...	...	5	1	...	4	5	1	2·0	?	?	84	·883	4·7	7	6·80	+0·20	3·98	5·06	−1·03	40·18	28·02	+12·16	1·62	Cawnpore	N.-W. Provinces (Central).	21
3	3	...	6	3	3	2	9	1	2·1	?	?	85	·867	5·4	7	?	?	5·54	6·09	−0·55	35·55	30·00	+5·55	1·27	Mainpuri.		

Table

Abstract of Observations taken at 8 A.M. at 215

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas		...	...	+ 001	..	...	...	...	...	...	...	92·1	−0·9	73·8	−0·2	82·9	−0·6	18·3	...	...	...	...	0·6
24	N.-W. Provinces (West Submontane).	Bareilly	568	29·164	+·017	29·700	29·317	25th	29·034	4th	·283	79·2	89·6	−0·7	75·2	−0·7	82·4	−0·7	14·4	94·4	29th	69·1	30th	25·3
		Dehra Dun	2,233	27·534	+·001	29·723	27·693	29th	27·405	4th	·293	72·8	83·4	−0·9	68·6	−1·7	76·0	−1·3	14·8	88·0	1st & 7th.	61·0	30th	27·0
		Roorkee	887	28·840	0	29·699	28·994	28th	28·695	4th	·298	77·7	90·3	−0·9	72·4	−1·3	81·4	−1·1	17·9	94·7	29th	64·8	30th	29·9
22	N.-W. P. (West)	Meerut	738	28·987	+·007	29·693	29·142	28th	28·859	4th	·283	79·2	90·8	−0·7	74·2	−0·5	82·5	−0·6	16·6	95·2	29th	67·0	30th	28·2
26	South-East Punjab.	Delhi	718	29·001	−·004	29·681	29·158	29th	28·884	4th	·274	81·8	94·0	+1·4	77·3	+0·8	85·7	+1·1	16·7	99·2	28th	72·4	22nd & 23rd	26·8
28	Central Punjab.	Lahore	702	28·997	−·008	29·668	29·238	29th	28·849	5th	·389	82·1	96·5	−0·3	76·8	?	86·7	?	19·7	100·6	25th & 26th.	70·1	29th & 30th.	30·5
27	South Punjab	Sirsa	662	29·051	0	29·675	29·236	29th	28·933	5th	·303	84·1	101·0	+2·8	77·6	+2·6	89·3	+2·7	23·4	106·3	11th	70·3	30th	36·0
		Patiala	818	28·901	?	29·686	29·095	29th	28·763	4th	·332	80·8	93·4	?	74·2	?	83·8	?	19·2	98·5	13th	64·9	30th	33·6
29	Punjab (Submontane).	Ludhiana	812	28·903	−·009	29·687	29·110	29th	28·767	4th	·343	78·8	92·9	−1·9	74·3	−0·6	83·6	−1·3	18·6	96·6	5th & 26th.	66·1	30th	30·5
		Sialkot	830	28·888	+·011	29·692	29·129	29th	28·729	5th	·400	78·7	92·1	−3·2	73·2	−0·1	82·7	−1·7	18·9	97·1	25th	62·1	30th	35·0
		Umballa	892	28·832	?	29·692	29·006	29th	28·686	4th	·320	77·2	91·2	?	73·1	?	82·1	?	18·1	95·0	5th & 28th.	66·5	20th	28·5
31	North Punjab	Rawalpindi	1,643	28·050	−·009	29·680	28·273	29th	27·902	5th	·371	73·8	89·7	−3·7	68·3	−0·4	79·0	−2·1	21·4	95·1	5th	59·6	29th & 30th.	35·5
	VII.—Indus Valley and North-West Rajputana.		...	...	−·012	...	...	...	...	...	...	...	98·2	+0·8	76·3	+1·3	87·3	+1·1	21·9	...	...	...	...	34·8
31	North Punjab	Peshawar	1,110	28·613	−·018	29·657	28·864	29th	28·468	5th	·396	79·1	94·2	−1·5	71·5	+1·5	82·9	0	22·7	100·5	12th	61·5	29th	39·0
32	West Punjab	Khushab	612	29·090	?	29·671	29·330	29th	28·924	5th	·406	82·8	99·1	?	75·3	?	87·2	?	23·8	104·3	8th	67·8	3 days.	36·5
		Montgomery	558	29·129	−·013	29·650	29·355	29th	28·977	5th	·378	85·7	102·2	+0·6	76·9	+0·9	89·6	+0·8	25·3	108·5	2nd & 12th	68·0	30th	40·5
		D. I. Khan	594	29·116	−·011	29·654	29·394	29th	28·923	5th	·471	83·1	99·1	−0·7	76·6	+1·2	87·9	+0·3	22·5	106·2	11th	66·5	30th	39·7
		Mooltan	420	29·256	−·023	29·614	29·504	30th	29·093	5th	·411	84·4	101·8	+2·1	79·1	+1·7	90·4	+1·9	22·7	111·4	2nd	72·0	30th	39·4
47	Sind	Jacobabad	186	29·485	−·022	29·632	29·704	30th	29·340	5th	·364	83·0	104·8	+1·8	77·5	+1·6	91·2	+1·7	27·3	110·3	2nd	72·6	18th	37·7
		Hyderabad	96	29·627	+·012	29·676	29·782	30th	29·500	6th	·282	80·9	97·7	+0·5	76·0	−0·2	86·9	+0·2	21·7	103·1	16th	71·0	30th	32·1
		Kurrachee	30	29·736	−·008	29·717	29·890	25th	29·628	6th	·262	80·8	88·9	?	77·2	+0·2	83·1	?	11·7	90·4	3 days	73·0	30th	17·4
51	West Rajputana	Bickaneer	771	28·957	?	29·692	29·130	30th	28·859	12th	·271	85·1	100·9	+3·0	79·4	+2·7	90·2	+2·9	21·5	109·0	13th	75·0	29th & 30th.	34·0
		Pachpadra	380	29·375	?	29·717	29·514	29th	29·287	3 days	·227	80·0	96·6	?	74·5	?	85·6	?	22·1	102·1	12th & 26th.	68·0	24th	34·1
		Jodhpore	782	28·971	?	29·716	29·102	25th	28·882	13th	·220	80·7	95·1	?	95·2	?	85·2	?	19·9	102·2	12th	69·3	3 days.	32·9
	VIII.—East Rajputana, Central India and Gujarat.		...	...	+·003	...	...	...	...	...	...	...	90·4	+1·1	74·1	+0·6	82·3	+0·9	16·3	...	...	...	...	26·9
50	East Rajputana	Jeypore	1,431	28·341	+·001	29·730	28·494	29th	28·256	11th	·238	80·3	94·6	+1·8	74·3	+1·8	84·5	+1·8	20·3	99·5	10th & 28th.	70·0	26th & 30th	29·5
		Kotah	?	28·919	?	?	29·067	29th	28·810	1st	·257	81·7	92·2	?	76·6	?	84·4	?	15·6	98·0	27th & 28th.	73·6	1st	24·4
		Sambhar	1,254	28·499	+·004	29·711	28·640	19th	28·414	11th	·226	82·0	96·0	+4·4	76·0	+2·1	86·0	+3·3	20·0	101·5	28th	70·5	25th & 30th.	31·0
		Ajmere	1,611	28·161	+·001	29·735	28·794	29th	28·080	11th	·214	79·3	91·5	+1·1	76·3	+3·4	83·9	+2·3	15·2	97·4	28th	71·6	30th	25·8
		Oodeypore	1,925	27·865	?	29·744	27·994	26th	27·779	15th	·215	77·8	88·0	?	70·1	?	79·1	?	17·9	94·0	27th	65·0	20th & 22nd.	29·0
		Deesa	466	29·325	+·001	29·749	29·462	29th	29·193	13th	·269	80·3	93·5	+1·2	73·2	−0·5	83·4	+0·4	20·3	100·4	27th	64·0	30th	36·4
46	Kathiawar and Cutch.	Bhuj	395	29·402	+·010	29·751	29·545	25th	29·265	14th	·280	80·4	92·3	+0·6	73·6	−1·1	83·0	−0·3	18·7	97·8	9th	69·4	30th.	28·4
		Rajkot	429	29·348?	?	29·732	29·471	28th	29·244	14th	·227	78·2	91·4	+0·5	71·7	−0·9	81·6	−0·2	19·7	95·9	8th & 28th	66·9	23rd	29·0
		Veraval	?	29·801	?	29·761	29·923	25th	29·705	13th	·218	78·0	82·6	?	74·9	?	78·8	?	7·7	86·1	28th	71·8	21st & 30th	14·3
		Bhavnagar Para.	35	29·778	?	29·758	29·888	25th & 26th	29·660	13th	·228	79·7	90·5	?	74·3*	?	82·6*	?	16·2	98·1	10th	70·3	30th	27·8
49	Central India	Nowgong	757	28·996	+·011	29·714	29·144	29th	28·912	4th & 15th	·232	78·6	88·1	?	75·0	+0·2	81·6	?	13·1	93·0	28th	71·0	30th	22·0
		Indore	1,823	27·978	+·011	29·762	28·106	28th	27·859	12th	·247	74·3	85·3	+0·5	70·2	+0·1	77·8	+0·3	15·1	91·7	26th & 27th	64·1	22nd	27·6
		Neemuch	1,630	28·167	+·006	29·757	28·295	29th	28·082	12th	·213	77·8	88·5	+1·1	70·9	+0·3	79·7	+0·7	17·6	94·3	27th & 28th.	66·7	21st & 26th.	27·6
45	Gujarat	Surat	39	29·781	−·015	29·763	29·891	29th	29·670	13th	·221	80·2	89·4	?	75·3	?	82·4	?	14·1	96·2	27th	71·5	5 days.	24·7
		Ahmedabad	164	29·634	?	29·746	29·745	29th	29·497	13th	·248	80·0	90·8	?	75·6	?	83·2	?	15·2	96·2	10th & 27th	71·1	30th	25·1
22	N.-W. P. (West)	Agra	555	29·176	−·001	29·692	29·354	29th	29·061	4th	·293	81·2	93·1	+0·8	77·0	+0·6	85·1	+0·7	16·1	101·5	28th	70·9	30th	30·6
21	N.-W.P. (Central)	Jhansi	858	28·897	+·008	29·715	29·067	29th	28·806	4th	·267	79·8	89·8	−1·1	75·3	+0·2	82·6	−0·5	14·5	95·6	28th & 29th	71·4	30th	24·2

* Mean of 25 days.

I—*continued.*

stations in India, Burma, etc., in September, 1898—continued.

Wind Direction. Number of winds from									Wind Velocity.			Hygrometry, 8 A.M.		Mean cloud amount.	Rainfall.												
Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Mean velocity in miles per hour.	Normal.	Percentage variation.	Mean humidity.	Mean vapour tension.		Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 30th September 1898.	Normal rainfall for period, 1st June to 30th September.	Variation from normal of period, 1st June to 30th September.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·88	5·07	+1·13	...	...	...	...	VI.—Upper Sub-Himalayas.		
16	...	4	1	4	...	3	...	2	1·0	3·0	− 67	87	·870	4·7	6	6·73	− 0·73	4·91	8·00	−3·09	34·17	44·36	−10·19	1·63	Bareilly .	N.-W. Provinces (West, Sub-montane).	24
25	...	...	1	2	1	1	...	...	0·9	1·1	− 18	84	·684	5·8	12	10·30	+ 1·70	23·11	10·38	+12·73	109·88	78·88	+31·00	5·97	Dehra Dun.		
18	1	...	1	9	1	...	...	...	1·6	2·0	− 20	82	·773	4·3	6	5·55	+ 0·45	3·70	7·17	−3·47	36·16	37·92	−1·76	1·65	Roorkee.		
18	...	1	3	2	...	2	1	3	1·2	2·1	− 43	78	·771	3·2	5	4·55	+ 0·45	9·24	5·74	+3·50	19·33	28·31	−8·98	2·83	Meerut. .	N.-W. P. (West).	22
2	1	...	4	9	2	...	8	4	3·9	3·8	+ 3	68	·742	3·6	3	4·09	− 1·09	1·04	4·23	−3·19	13·28	26·15	−12·87	0·66	Delhi . .	South-East Punjab.	26
4	4	2	9	7	2	...	1	1	2·6	2·0	+ 30	68	·750	1·3	1	2·55	− 1·55	0·65	2·49	−1·84	13·70	16·83	−3·13	0·60	Lahore .	Central Punjab.	28
...	...	1	...	12	...	7	5	5	7·6*	3·6	+111	56	·663	3·3	2	2·73	− 0·73	1·23	1·79	−0·56	6·40	12·39	−5·99	1·12	Sirsa .	South Punjab.	27
9	...	21	...	...	...	...	...	...	2·8	?	?	81	·859	2·5	6	?	?	2·42	?	?	15·58	?	?	0·96	Patiala.		
13	...	...	1	9	3	1	1	2	1·9	1·1	+ 73	78	·770	3·5	6	3·36	+ 2·64	3·30	4·38	−1·08	18·31	24·06	−5·75	0·73	Ludhiana .	Punjab (Sub-montane).	29
2	5	10	7	3	1	...	1	1	3·3	1·6	+106	80	·793	2·9	6	2·82	+ 3·18	5·69	3·11	+2·58	24·37	25·58	−1·21	3·64	Sialkot.		
26	...	...	2	...	...	...	...	2	0·8	?	?	86	·811	3·5	5	?	?	4·46	5·31	−0·85	22·05	27·75	−5·70	2·20	Umballa.		
15	7	1	4	...	1	...	...	2	1·7	1·3	+ 31	81	·692	4·8	13	4·27	+ 8·73	10·78	3·13	+7·65	25·86	22·75	+3·11	2·41	Rawalpindi .	North Punjab.	8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·82	0·89	−0·07	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
14	6	2	...	1	2	1	...	4	2·4	3·1	− 23	71	·704	2·5	2	1·82	+ 0·18	1·41	0·64	+0·77	6·08	5·48	+0·60	0·83	Peshawar .	North Punjab.	31
3	1	14	10	...	...	1	...	1	8·8	?	?	62	·705	2·3	1	1·60	− 0·60	0·41	1·41	−1·00	8·76	6·98	+1·78	0·41	Khushab .	West Punjab.	32
2	2	1	3	3	3	13	3	...	7·7	?	?	53	·657	0·5	2	1·40	+ 0·60	1·21	0·99	+0·22	3·42	7·97	−4·55	0·84	Montgomery.		
7	1	14	1	6	1	...	...	...	3·1	1·7	+ 82	69	·787	0·4	2	0·73	+ 1·27	0·59	0·23	+0·36	1·17	5·07	−3·90	0·36	D. I. Khan.		
4	...	2	...	6	3	14	...	1	2·9	2·8	+ 4	66	·766	0·5	1	0·55	+ 0·45	0·35	0·42	−0·07	1·59	5·53	−3·94	0·35	Mooltan.*		
7	1	1	5	13	3	...	...	...	2·2	3·1	− 29	76	·819	0·6	0	0·18	− 0·18	0	0·06	−0·06	2·90	2·73	+0·17	0	Jacobabad .	Sind.	17
1	...	...	...	...	1	27	...	1	?	12·5	?	67	·695	2·7	0	0·80	− 0·80	0	0·52	−0·52	3·20	6·03	−2·83	0	Hyderabad.		
...	...	...	...	...	...	4	21	5	11·7	14·9	− 21	75	·789	4·2	1	0·82	+ 0·18	0·57	0·54	+0·03	2·81	6·08	−3·27	0·57	Kurrachee.		
...	1	...	1	1	6	15	6	...	8·6	5·6	+ 54	64	·768	2·2	1	?	?	1·54	1·19	+0·35	5·20	9·64	−4·44	1·52	Bikaneer .	West Rajputana	51
...	1	...	...	1	6	12	9	1	9·2	6·1	+ 50	71	·726	3·0	2	?	?	0·50	1·72	−1·22	11·17	8·83	+2·34	0·33	Pachpadra.		
3	...	...	1	...	2	17	7	...	3·3	?	?	70	·724	3·6	5	?	?	2·40	2·04	+0·36	8·68	12·79	−4·11	1·02	Jodhpore.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·27	4·84	+0·02	...	...	...	...	VIII.—East Rajputana, Central India and Gujarat		
3	...	2	1	3	2	3	8	8	3·5	5·2	− 33	70	·732	3·7	6	5·00	+ 1·00	3·02	4·40	−1·38	17·94	26·33	−8·39	1·32	Jeypore .	East Rajputana	50
3	3	2	4	3	1	3	6	5	4·4	?	?	71	·769	3·0	5	?	?	7·46	5·16	+2·30	20·50	27·50	−7·00	3·76	Kotah.		
5	...	1	1	2	2	1	16	2	6·2	7·2	− 14	69	·719	3·6	2	3·50	− 1·50	0·55	3·33	−2·78	9·80	20·44	−10·64	0·25	Sambhar.		
5	...	1	...	...	3	1	19	1	6·0	5·0	+ 20	75	·742	3·8	6	3·18	+ 2·82	2·86	2·53	+0·33	11·93	19·73	−7·80	1·21	Ajmere.		
12	2	1	1	...	...	5	8	1	3·1	?	?	75	·710	3·4	9	?	?	6·89	?	?	16·45	?	?	1·99	Oodeypore.		
...	3	2	1	1	2	7	8	6	6·5	8·5	− 24	77	·784	4·0	5	3·73	+1·27	2·38	4·83	−2·45	15·57	25·58	−10·01	0·95	Deesa.		
...	1	...	...	...	...	2	18	9	11·9	11·3	+ 5	75	·774	3·8	3	?	?	2·82	1·96	+0·86	13·20	13·54	−0·34	1·29	Bhuj . .	Kathiawar and Cutch.	46
1	3	...	...	...	...	...	21	5	16·5	8·5	+ 91	81	·779	4·6	7	5·73	+ 1·27	6·07	4·25	+1·82	15·35	27·42	−12·07	2·48	Rajkot.		
2	6	...	...	1	1	6	9	5	5·6	?	?	87	·833	5·1	6	?	?	4·02	1·85	+2·17	12·36	18·96	−6·60	2·31	Veraval.		
...	1	2	...	...	...	7	13	7	7·2	?	?	78	·790	3·6	6	?	?	9·70	?	?	30·27	?	?	3·63	Bhavnagar Para.		
8	2	...	1	...	1	5	11	2	1·5	2·4	− 38	88	·868	5·6	6	6·91	− 0·91	6·44	6·32	+0·12	59·11	40·79	+18·32	2·30	Nowgong .	Central India.	49
10	4	3	...	...	1	2	7	3	2·4	4·8	− 50	90	·769	7·2	7	8·91	− 1·91	4·18	8·48	−4·30	39·13	31·61	+7·52	1·20	Indore.		
2	1	3	1	1	...	8	12	2	4·8	10·2	− 53	77	·742	3·1	7	6·91	+0·09	12·28	5·35	+6·93	26·97	30·06	−3·09	5·24	Neemuch.		
8	4	1	...	1	3	4	6	3	2·4	9·2	− 74	82	·851	6·1	8	7·55	+ 0·45	4·47	8·07	−3·60	30·70	44·36	−13·66	2·18	Surat . .	Gujarat.	45
7	3	...	...	...	...	4	5	11	3·6	?	?	80	·798	5·7	5	?	?	8·68	4·34	+4·34	33·60	28·81	+4·79	3·07	Ahmedabad.		
...	...	3	...	8	...	11	...	8	6·7	4·1	+ 63	79	·836	3·6	3	5·45	− 2·45	4·03	4·91	−0·88	21·92	26·62	−4·80	2·34	Agra . .	N.-W. P. (West).	22
2	1	...	4	1		8	8	6	3·2	3·2	0	79	·813	3·6	9	7·00	+ 2·00	3·69	6·80	−3·11	34·33	36·79	−2·46	0·67	Jhansi. .	N.-W.P. (Central)	21

* Mean of 26 days.

Table

Abstract of Observations taken at 8 A.M. at 215 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan	...	...	...	+·008	...	...	...	...	...	...	...	87·0	+0·5	72·7	+0·5	79·5	+0·5	15·0	...	...	...	...	23·7
38	Bombay Deccan	Belgaum	2,539	27·324	−·008	29·809	27·392	30th	27·234	7th	·158	70·1	79·7	+1·2	65·6	+0·4	72·7	+0·8	14·1	84·2	4 days	62·9	21st	21·3
		Sholapur	1,590	28·247	−·007	29·795	28·344	29th	28·136	12th	·208	75·3	87·1	−0·9	71·2	+1·0	79·2	+0·1	15·9	91·7	26th	68·5	20th	22·2
		Poona	1,840	28·004	−·011	29·803	28·108	29th	27·906	11th	·202	73·4	83·9	+0·1	69·0	+0·3	76·5	+0·2	14·9	90·0	26th	66·4	19th & 20th	23·6
		Bijapur	1,946	27·900	?	29·799	28·001	29th	27·801	11th	·200	73·6	86·2	?	69·2	?	77·7	?	17·0	90·2	2nd&23rd	66·5	18th	23·7
40	Khandesh	Malegaon	1,430	28·376	−·012	29·766	28·484	29th	28·264	12th	·220	76·2	87·9	+0·8	69·8	−0·2	78·9	+0·3	18·1	94·4	27th	61·9	20th	32·5
		Ahmednagar	2,152	27·690	?	29·791	27·788	29th	27·593	11th	·195	73·9	84·9	?	68·5	?	76·7	?	16·4	90·3	4th & 27th	61·0	20th	29·3
41	Berar	Akola	930	28·866	+·008	29·751	28·986	29th	28·740	11th	·246	77·9	90·2	+1·9	72·1	−0·3	81·2	+0·8	18·1	95·9	27th	63·8	22nd	32·1
		Amraoti	1,215	28·581	+·022	29·761	28·711	29th	28·464	11th	·247	75·7	89·3	+1·6	71·8	+0·1	80·5	+0·9	17·5	94·2	26th & 27th	67·8	23rd	26·4
42	Central Provinces (West).	Khandwa	1,044	28·757	+·021	29·765	28·885	29th	28·643	11th	·242	77·5	87·6	+0·2	73·3	+0·4	80·5	+0·3	14·3	94·2	27th	67·6	22nd	26·6
		Hoshangabad	1,006	28·781	+·028	29·754	28·932	29th	28·671	14th	·261	76·9	87·8	−0·2	74·0	+0·8	80·9	+0·3	13·8	90·7	27th & 28th	69.2	22nd & 23rd	21·5
		Nagpur	1,025	28·754	+·020	29·740	28·926	29th	28·638	12th	·288	77·7	88·8	?	73·8	?	81·3	?	15·0	93·1	20th	70·1	22nd & 23rd	23·0
43	Central Provinces (Central).	Chanda	634	29·178	+·012	29·760	29·341	29th	29·039	12th	·302	79·1	89·1	+0·3	74·8	+0·6	82·0	+0·5	14·3	94·2	20th	71·2	23rd	23·0
		Seoni	2,033	27·756	+·021	29·733	27·923	29th	27·633	14th	·290	75·6	84·8	−0·5	69·6	?	77·2	?	15·2	88·0	21st & 29th	64·9	23rd	23·1
		Jubbulpur	1,327	28·431	+·007	29·718	28·591	28th & 29th	28·315	14th	·276	77·8	86·8	−0·2	72·6	−0·2	79·7	−0·2	14·2	90·4	28th	68·6	23rd	21·8
		Saugor	1,807	27·976	+·007	29·737	28·124	29th	27·889	14th	·235	76·8	85·6	−0·4	72·0	+1·0	78·8	+0·3	13·6	91·3	28th	69·1	22nd	22·2
49	Central India	Sutna	1,040	28·697	+·005	29·700	28·856	28th	28·601	15th	·255	79·3	87·4	+0·3	75·4	+1·1?	81·5	+0·7?	12·0	91·9	29th	71·1	21st	20·8
44	Central Provinces (East).	Raipur	970	28·798	+·025	29·720	28·970	28th	28·630	14th	·340	79·3	86·6	+1·1	75·0	+0·5	81·8	+0·8	13·6	91·8	21st	71·1	14th	20·7
		Sambalpur	486	29·278	+·001	29·713	29·446	29th	29·035	14th	·411	81·3	89·1	+0·1	76·7	−0·5	82·9	−0·2	12·4	92·1	30th	74·7	22nd & 23rd	17·4
51	Hyderabad (North).	Aurangabad	1,865	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Indur	?			Not recorded.						77·8	86·9	?	72·9	?	79·9	?	14·0	91·1	30th	70·4	30th	20·7
		Bidar	2,165?	27·660	?	29·767	27·765	29th	27·553	11th & 12th	·212	74·4	84·5	?	65·0	?	74·8	?	19·5	88·5	26th & 30th	62·4	29th	26·1
53	Hyderabad (South).	Gulbarga	1,502	28·357	?	29·817	28·454	30th	28·242	12th	·212	75·7	87·2	?	70·8	?	79·0	?	16·4	93·0	27th	67·5	21st	25·5
		Raichur	1,309	28·523	?	29·789	28·635	29th	28·413	12th	·222	75·4	87·0	?	72·1	?	79·6	?	14·9	91·6	18th	69·1	29th	22·5
		Hyderabad (Dn).	1,690	28·138	0	29·779	28·267	29th	28·009	12th	·258	76·3	86·5	+0·2	72·0	+1·6	79·3	+0·9	14·5	91·4	30th	69·2	21st	22·2
		Secunderabad	1,787	28·040	−·002	29·778	28·172	29th	27·914	12th	·258	75·5	87·9	+1·6	71·8	+1·4	79·8	+1·5	16·1	92·6	5th	69·5	13th	23·1
		Hanamconda	?	28·934	?	?	29·085	29th	28·778	12th	·307	79·2	88·1	?	73·9	?	81·1	?	14·2	92·0	26th	70·3	11th	21·7
	X.—West Coast	...	...	...	−·018	...	...	...	...	...	...	...	83·1	−0·1	74·7	+0·4	78·9	+0·2	8·4	...	...	...	...	14·6
37	Konkan	Bombay	37	29·815	−·015	29·792	29·903	29th	29·722	11th	·181	79·1	84·5	+0·2	76·6	+0·3	80·6	+0·3	7·9	87·5	28th	74·0	11th & 13th	13·5
		Ratnagiri	110	29·749	−·007	29·797	29·840	29th	29·662	7th	·178	78·3	83·9	0	74·7	+0·5	79·3	+0·3	9·2	86·4	23rd & 24th	69·4	12th	17·0
		Mormugao	60	29·832	?	29·827	29·901	17th	29·735	8th	·166	77·7	82·5	?	74·8	?	78·7	?	7·7	86·0	1st	72·4	12th	13·6
		Goa	199	29·680	−·010	29·817	29·749	30th	29·596	9th	·153	78·3	82·0	?	75·2	?	78·6	?	6·8	86·0	26th	73·0	3 days	13·0
		Karwar	44	29·837	−·021	29·813	29·908	29th	29·751	7th	·157	76·8	82·0	−0·6	74·2	+0·7	78·1	+0·1	7·8	84·7	30th	72·5	3 days	12·2
33	Malabar	Cochin	10	29·906	−·030	29·844	29·952	15th	29·855	6th	·097	78·1	85·1	+0·8	74·3	+0·1	79·7	+0·5	10·8	88·5	17th	71·2	2nd	17·3
		Calicut	27	29·884	−·028	29·841	29·931	15th	29·829	20th	·102	76·7	83·4	−0·8	74·1	+0·2	78·8	−0·3	9·3	86·3	4 days	70·5	7th	15·8
		Mangalore	65	29·850	−·018	29·848	29·906	17th	29·790	7th	·116	77·0	81.6	−1·6	73·5	?	77·6	?	8·1	85·3	30th	70·5	18th	14·8
		Trivandrum	198	29·719	?	29·849	29·761	15th & 25th	29·654	6th & 7th	·107	77·5	82·9	?	75·0	?	78·9	?	7·9	86·5	12th	72·0	25th	14·5
	XI.—South India	...	...	...	−·005	...	...	...	...	...	...	...	89·3	−0·9	73·8	+0·2	81·6	−0·4	15·4	...	...	...	...	23·6
57	Madras (South)	Pamban	37	29·837	?	29·801	29·927	26th	29·751	7th	·176	84·1	90·2	?	77·1	?	83·7	?	13·1	92·3	10th & 12th	75·2	26th & 27th	17·1
		Tinnevelly	168	29·707	?	29·804	29·776	29th	29·637	6th	·139	84·2	97·1	?	78·1	?	87·6	?	19·0	101·4	17th & 19th	71·9	14th	29·5
		Madura	447	29·414	−·015	29·798	29·481	29th	29·333	7th	·148	80·8	92·5	?	74·5	?	83·5	?	18·0	98·5	17th	69·1	30th	29·4

I—continued.

in India, Burma, etc., in September, 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 30th September 1898.	Normal rainfall for period, from 1st June to 30th September.	Variation from normal of period, 1st June to 30th September.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7·64	7·53	+0·13	...	...	...	...	IX.—Deccan.		
4	3	1	...	...	...	1	12	9	?	16·7	?	91	·669	8·0	14	10·18	+3·82	9·26	4·64	+4·62	39·78	35·34	+4·44	2·00	Belgaum	Bombay Deccan.	38
4	...	2	1	3	...	3	6	11	12·1	9·9	+22	76	·656	7·4	13	9·72	+3·28	14·76	8·16	+6·60	30·68	24·85	+5·83	5·21	Sholapur.		
3	2	...	1	3	1	3	12	5	10·2	11·4	−11	85	·699	8·1	12	8·18	+3·82	8·34	5·21	+3·13	23·72	20·03	+3·69	1·77	Poona.		
6	...	...	...	...	...	9	12	3	5·4	?	?	87	·725	7·0	11	8·60	+2·40	6·73	3·39	+3·34	12·10	9·55	+2·55	1·77	Bijapur.		
5	...	...	...	1	...	7	12	5	11·8	7·6	+55	77	·686	5·5	7	8·64	−1·64	3·33	6·92	−3·59	14·91	20·46	−5·55	0·63	Malegaon	Khandesh.	40
3	5	4	...	1	...	4	5	8	11·3	?	?	82	·680	7·4	14	?	?	8·65	6·79	+1·86	14·86	18·51	−3·65	1·79	Ahmednagar.		
5	...	...	2	...	...	1	10	12	5·0	5·8	−14	80	·763	6·5	8	10·18	−2·18	2·94	7·22	−4·28	19·25	30·94	−11·69	0·71	Akola	Berar.	41
...	1	...	5	...	3	5	12	4	6·1	4·4	+39	90	·803	6·4	8	8·27	−0·27	4·05	6·94	−2·89	20·68	31·20	−10·52	1·01	Amraoti.		
3	1	...	...	2	...	1	16	7	5·3	6·2	−15	83	·779	5·4	7	7·55	−0·55	4·37	7·56	−3·19	26·21	29·57	−3·36	1·30	Khandwa	Central Provinces (West).	42
11	...	...	1	...	2	8	8	...	2·3	2·5	− 8	90	·833	6·5	9	10·18	−1·18	6·39	11·61	−5·22	58·20	51·92	+7·28	1·71	Hoshangabad		
19	1	1	...	1	...	1	3	4	4·0	6·1	−34	86	·811	6·7	9	10·64	−1·64	9·64	10·13	−0·49	48·86	43·85	+5·01	2·00	Nagpur.		
9	2	1	2	2	...	4	8	2	2·5	4·1	−39	84	·841	7·0	8	?	?	6·61	10·75	−4·14	55·81	51·35	+4·46	1·92	Chanda	Central Provinces (Central)	43
...	5	2	2	1	4	8	4	4	1·1	3·9	−72	86	·762	4·3	12	11·73	+0·27	13·80	10·45	+3·35	52·06	52·07	−0·01	3·59	Seoni.		
1	1	2	1	4	4	7	8	2	2·3	3·4	−32	85	·814	5·1	10	9·36	+0·64	12·51	8·77	+3·74	65·93	54·79	+11·14	3·66	Jubbulpore.		
...	1	3	1	1	5	4	14	1	5·5	3·3	+67	83	·788	5·0	11	8·64	+2·36	5·50	8·19	−2·69	60·97	44·22	+16·75	1·29	Saugor.		
3	3	2	1	3	1	3	11	3	4·9	6·5	−25	84	·837	4·0	13	8·36	+4·64	5·10	6·96	−1·86	56·61	40·74	+14·87	0·96	Sutna	Central India.	49
12	2	1	...	1	1	8	4	1	7·4	5·9	+25	85	·842	6·5	11	10·45	+0·55	5·62	8·46	−2·64	39·75	46·51	−6·76	1·25	Raipur	Central Provinces (East).	44
...	1	1	4	9	4	8	3	...	5·0	2·2	+127	83	·831	5·8	10	?	?	6·50	10·07	−3·57	52·13	60·45	−8·32	1·89	Sambalpur.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7·44	...	...	26·71	...	...	Aurangabad	Hyderabad (North).	38
8	1	...	...	1	...	2	10	8	5·3	?	?	83	·790	7·6	11	?	?	9·79	6·91	+2·88	40·89	32·34	+8·55	4·48	Indur.		
...	5	1	...	1	4	5	8	6	7·2	?	?	83	·707	5·4	14	?	?	7·68	8·94	−1·26	28·38	34·38	−6·00	1·38	Bidar.		
6	3	2	...	1	1	1	5	11	14·8	?	?	81	·719	5·5	14	?	?	11·56	6·44	+5·12	30·62	22·58	+8·04	2·13	Gulbarga	Hyderabad (South).	53
...	3	2	...	...	...	11	9	5	9·9	?	?	84	·738	5·7	17	?	?	12·43	5·54	+6·89	25·11	20·45	+4·66	4·77	Raichur.		
6	...	...	1	2	2	...	18	1	4·8	?	?	82	·743	6·7	8	?	?	3·38	5·99	−2·61	20·87	25·91	−5·04	0·97	Hyderabad (Deccan).		
2	...	1	1	2	...	2	10	12	4·6	7·0	−34	78	·698	6·1	7	?	?	4·61	5·99	−1·38	25·60	25·91	−0·31	1·47	Secunderabad		
7	2	...	...	3	6	...	7	5	6·9	?	?	81	·811	5·5	9	?	?	7·35	?	?	27·61	?	?	1·34	Hanamconda		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14·53	9·30	+5·24	...	...	...	..	X.—West Coast.		
1	1	6	3	4	1	2	8	4	9·2	11·7	−21	88	·887	7·6	15	14·18	+0·82	20·21	1·81	+8·40	73·15	69·78	+3·37	6·46	Bombay	Konkan.	37
7	2	3	1	6	2	3	2	4	4·6	8·2	−44	89	·857	7·5	18	16·09	+1·91	14·61	13·18	+1·43	116·96	104·60	+12·36	3·57	Ratnagiri.		
5	8	...	...	1	1	4	...	10	6·4	?	?	93	·885	7·5	19	?	?	14·99	6·55	+8·44	97·81	81·26	+16·55	2·62	Mormugao.		
3	3	3	4	1	3	3	6	4	?	?	?	89	·857	8·5	20	?	?	16·66	8·57	+8·09	105·22	92·68	+12·54	2·13	Goa.		
7	9	...	...	...	...	2	8	4	3·5	?	?	89	·816	7·0	21	16·09	+4·91	21·74	13·75	+7·99	127·00	114·41	+12·59	4·19	Karwar.		
5	12	4	...	...	1	1	2	5	5·6	?	?	86	·836	7·3	18	13·73	+4·27	11·34	9·38	+1·96	75·13	72·61	+2·52	2·81	Cochin	Malabar.	33
8	3	...	4	2	2	2	1	8	9·0	?	?	90	·831	8·0	15	10·13	+4·87	7·07	6·16	+0·91	81·64	84·55	−2·91	0·89	Calicut.		
20	1	2	...	1	1	1	3	1	1·7	2·1	−29	90	·836	8·2	20	16·60	+3·40	20·37	10·14	+10·23	103·53	102·39	+1·14	2·82	Mangalore.		
2	15	...	...	...	...	...	1	12	6·0	?	?	82	·781	7·5	5	?	?	3·80	4·13	−0·33	24·70	29·07	−4·37	1·70	Trivandrum.		
...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	7·13	4·35	+2·78	...	...	...	...	XI.—South India		
4	...	1	...	...	4	16	2	3	11·1	?	?	75	·882	3·0	7	1·80	+5·20	2·64	1·44	+1·20	2·96	2·42	+0·54	1·54	Pamban	Madras (South)	
...	2	...	...	2	2	4	10	10	6·8	?	?	65	·769	4·0	1	1·90	−0·90	0·26	1·01	−0·75	2·33	2·36	−0·03	0·21	Tinnevelly.		
2	10	3	...	...	...	2	1	12	3·4	3·4	0	72	·766	5·3	13	6·09	+6·91	11·59	4·23	7·36	16·50	12·01	+4·49	5·17	Madura.		

Table

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Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras, South Central.	Salem	940	28·953	−·020	29·840	29·014	26th & 28th.	28·888	8th	·126	77·5	89·9	−1·5	72·4	+1·1	81·1	−0·2	17·5	93·4	17th	70·0	30th	23·4
		Coimbatore	1,348	28·527	−·017	29·828	28·598	29th	28·465	8th	·133	75·4	89·1	−0·4	70·9	+0·4	80·0	0	18·2	92·9	21st	68·8	7th	24·1
35	Coorg	Mercara	3,781	26·189	−·023	?	26·242	28th	26·118	7th	·124	64·7	71·6	−0·8	62·6	+0·9	67·2	+0·1	9·0	76·5	26th & 30th	60·7	7th & 30th	15·8
36	Mysore	Chitaldroog	2,405	27·479	?	29·819	27·549	29th	27·396	7th	·153	71·6	82·8	?	67·7	?	75·3	?	15·1	87·6	24th	64·4	30th	23·2
		Bangalore	3,021	25·898	−·020	29·828	26·964	26th & 29th.	26·834	8th	·130	69·6	80·9	−1·0	66·0	+1·0	73·5	0	14·9	84·3	17th	63·8	15th & 16th	20·5
		Hassan	3,091	28·838	?	29·844	26·894	29th.	26·781	8th	·113	70·4	79·0	?	64·9	?	71·9	?	14·1	85·2	2nd	62·6	15th	22·6
		Mysore	2,518	27·402	?	29·852	27·459	17th	27·341	8th	·118	71·2	82·4	?	66·5	?	74·5	?	15·9	86·9	17th & 19th	64·0	16th & 18th	22·9
56	Madras, East Coast, South.	Negapatam	31	29·829	−·018	29·789	29·897	26th & 28th.	29·747	7th	·150	81·3	82·4	?	76·6	+0·3	84·5	?	15·8	96·0	16th	72·9	18th	23·1
		Cuddalore	12	29·838	?	29·779	29·922	26th & 28th.	29·766	6th	·156	80·5	90·8	?	73·6	?	82·2	?	17·2	93·8	13th	71·2	5 days	22·6
		Trichinopoly	255	29·609	−·016	29·797	29·683	26th	29·535	6th	·148	80·2	94·7	−0·6	75·6	+0·1	85·2	−0·3	19·1	99·1	18th	73·4	22nd	25·7
		Madras	22	29·827	−·005	29·780	29·928	28th	29·739	7th	·189	81·2	91·3	−1·9	76·2	−0·9	83·8	−1·4	15·1	96·0	16th	73·0	6th & 22nd	23·0
55	Madras, East Coast, Central.	Nellore	71	29·758	?	29·763	29·873	28th	29·654	12th	·219	82·0	93·4	?	77·0	?	85·2	?	16·4	103·3	24th	72·1	7th & 19th	31·2
		Masulipatam	15	29·804	+·023	29·754	29·945	28th	29·676	12th	·269	82·1	90·0	−1·3	77·4	0	83·7	−0·7	12·6	94·6	1st & 21st	74·1	8th	20·5
54	Madras, Central	Cuddapah	433	29·415	−·009	29·789	29·502	28th	29·318	12th	·184	80·5	93·1	+0·6	75·6	−0·3	84·4	+0·2	17·5	99·2	2nd	71·7	26th	27·5
		Kurnool	923	28·907	−·011	29·780	29·024	29th	28·792	12th	·232	76·8	88·8	−0·5	72·8	−0·4	80·9	−0·5	16·0	93·2	1st	67·9	7th	25·2
		Bellary	1,475	28·378	−·007	29·805	28·473	29th	28·283	7th	·190	76·6	88·9	−1·7	73·2	+0·4	81·0	−0·7	15·7	94·7	2nd	70·2	23rd	24·5
52	Madras, East Coast, North.	Cocanada	26	29·775	+·032	29·736	29·938	28th	29·610	13th	·328	82·0	89·8	? +1·2	78·3	+0·3?	84·1	+0·8?	11·5	96·6	22nd	75·0	10th	21·6
		Vizagapatam	31	29·752	+·022	29·721	29·932	28th	29·547	13th	·385	83·1	89·5	−1·4	77·7	?	83·6	?	11·8	94·7	18th	74·9	12th & 13th	19·8
		Waltair	?	Not recorded								82·5	88·9	?	78·0	?	83·5	?	10·9	95·1	18th & 22nd	73·3	13th	21·8
		Gopalpur	21	29·742	?	29·703	29·923	28th	29·487	13th	·436	82·5	88·5	?	77·7	?	83·1	?	10·8	91·8	22nd	74·1	20th	17·7
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·706	?	?	25·880	30th	25·580	5th	·300	79·9	95·0	?	62·9	?	79·0	?	32·1	100·1	6th	55·0	17th	45·1
		Pishin	?				Not recorded.					?	88·0	?	44·2	?	66·2	?	43·8	97·0	1st	32·9	29th	64·1
		Quetta	5,502	24·592	−·002	?	24·720	29th	24·501	5th	·219	65·9	87·7	+2·4	48·5	−1·9	68·1	+0·3	39·2	95·1	1st	39·3	28th & 29th	55·8
		Kalat	?				Not recorded					68·9	85·9	?	40·3	?	63·1	?	45·6	94·9	4th	32·0	21st	62·9
		Chaman	4,311	25·608	?	?	25·795	28th	25·442	5th	·353	74·5	92·6	?	62·8	?	77·7	?	29·8	101·2	11th	51·1	29th & 30th	50·1
30	Punjab	Leh	11,503	19·731	+·003	?	19·844	30th	19·647	15th	·197	51·1	72·2	+0·9	42·0	+0·4	57·1	+0·7	30·2	84·7	2nd	27·5	30th	57·2
		Srinagar	5,204	24·838	?	?	25·041	29th	24·696	5th	·345	59·6	79·5	?	52·6	?	66·1	?	26·9	91·3	12th	42·8	26th & 29th	48·5
		Gulmarg (Kashmir)*	?	21·830	?	?	21·897	2nd	21·772	5th	·125	56·6	65·8	?	45·8	?	55·8		20·0	71·9	12th	37·8	14th	34·1
		Skardu	?	22·856†	?	?	22·973	26th	22·734	9th	·239	61·3	80·3	?	59·3‡	?	70·8‡	?	21·0	93·6	1st	49·8	24th	43·8
		Dras	?	20·739	?	?	20·874	30th	20·656	15th	·218	53·3	73·3	?	38·5	?	55·9	?	34·8	86·0	2nd	13·1	30th	72·9
		Gilgit	?	25·025	?	?	25·247	30th	24·847	4th	·400	73·1	84·4	?	65·5	?	74·9	?	18·9	95·9	4th	52·7	30th	43·2
		Chitral	?	24·000	?	?	24·800	3 days	24·500	12 days	·300	67·8	89·4	?	58·1	?	73·8	?	31·3	99·2	11th	44·0	29th & 30th	55·2
		Kilta Drosh	?				Not recorded.					70·6	90·2	?	65·2	?	77·7	?	25·0	99·4	3rd	51·3	19th	48·1
		Para Chinar	6,000	24·407	?	?	24·539	29th	24·289	5th	·250	70·0	82·3	?	59·9	?	71·1	?	22·4	89·4	8th	50·5	28th & 30th	38·9
		Cherat	?	25·619	?	?	25·785	29th	25·498	5th	·287	70·0	82·2	?	64·0	?	73·1	?	18·2	87·9	10th	51·6	28th	36·3
		Murree	6,334	23·776	−·040	?	23·894	29th	23·679	5th	·215	61·7	70·8	−3·2	57·8	−1·1	64·3	−2·2	13·0	76·7	11th	44·9	18th & 27th	31·8
		Poo	?				Not recorded.					?	76·6	?	52·3	?	64·5	?	24·3	84·2	2nd	43·0	26th & 30th	41·2
		Simla	7,224	23·097	0	?	23·223	28th	23·002	16th	·221	58·7	65·3	−2·4	55·5	−1·6	60·4	−2·0	9·8	69·5	1st	47·8	29th	21·7
25	N.-W. Provinces.	Chakrata	7,022	23·263	+·013	?	23·397	28th	23·165	16th	·232	60·3	67·2	−1·8	56·0	−1·1	61·6	−1·5	11·2	71·7	24th	51·7	21st	20·9
		Mussooree	6,705	23·515	?	?	23·688	28th	23·426	4th & 16th.	·232	60·2	66·7	−1·3	57·0	−0·5	61·9	−0·9	9·7	69·8	1st	49·0	20th	20·8

* Mean of 15 days. † Mean of 26 days. ‡ Mean of 27 days.

I—*continued.*

in India, Burma, etc., in September, 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean Humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 30th September 1898.	Normal rainfall for period 1st June to 30th September.	Variation from normal of period, 1st June to 30th September.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of Districts.
5	...	...	...	...	1	18	6	...	5·6	3·7	+51	84	·802	6·8	13	6·91	+6·09	8·60	5·63	+2·97	19·79	20·93	−1·14	2·02	Salem	Madras (South Central).	34
...	...	1	3	2	5	14	5	...	2·5	6·6	−62	86	·766	7·5	7	2·18	+4·82	2·55	1·13	+1·42	4·15	4·98	−0·83	0·89	Coimbatore.		
2	3	1	1	...	...	1	19	3	8·6	7·9	+ 9	95	·590	8·6	25	17·10	+7·90	14·33	10·98	+3·35	91·06	105·44	−14·38	1·76	Mercara	Coorg.	35
1	...	...	...	1	...	9	16	3	9·2	?	?	85	·658	9·2	11	?	?	8·56	3·56	+5·00	13·90	12·24	+1·66	2·05	Chitaldroog	Mysore	36
1	...	...	...	...	1	8	15	5	7·7	6·7	+15	88	·643	8·5	11	8·36	+2·64	11·93	4·72	+7·21	18·76	18·56	+0·20	2·57	Bangalore.		
...	...	2	3	1	...	4	12	8	3·5	?	?	84	·625	8·8	18	?	?	7·15	2·72	+4·43	14·46	14·71	−0·25	0·94	Hassan.		
1	...	1	1	...	...	12	13	2	9·5	?	?	85	·644	8·6	14	?	?	10·49	3·87	+6·62	17·16	11·46	+5·70	2·32	Mysore.		
1	...	...	...	...	2	17	9	1	7·0	5·2	+35	78	·827	5·5	6	6·36	−0·36	4·66	3·04	+1·62	12·35	10·89	+1·46	2·21	Negapatam	Madras, East Coast South.	56
...	2	...	...	1	2	8	12	5	0·8	?	?	86	·893	4·6	11	6·40	+4·60	9·07	5·34	+3·73	20·97	14·66	+6·31	2·50	Cuddalore.		
7	...	...	...	...	...	4	18	1	5·2	7·1	−27	74	·766	6·5	6	4·91	+1·09	3·25	3·21	+0·04	7·74	11·00	−3·26	1·23	Trichinopoly.		
2	1	1	...	...	1	7	9	9	5·1	6·5	−22	80	·860	7·1	9	6·45	+2·55	8·20	4·69	+3·51	20·82	15·23	+5·59	3·21	Madras.		
16	...	...	...	...	1	...	6	7	6·1	?	?	79	·865	8·1	7	5·30	+1·70	7·96	3·44	+4·52	11·92	10·84	+1·08	2·54	Nellore	Madras, East-Coast, Central.	55
9	...	1	...	...	1	1	10	8	6·9	6·4	+ 8	86	·943	6·3	8	8·80	−0·80	4·98	5·70	−0·72	29·17	23·95	+5·22	2·35	Masulipatam.		
...	...	5	...	...	...	13	3	9	?	?	?	77	·801	7·0	13	6·70	+6·30	7·85	5·48	+2·37	12·59	19·87	−7·28	1·52	Cuddapah	Madras, Central.	54
5	...	...	...	...	1	2	19	3	?	?	?	81	·743	7·9	16	7·83	+8·17	14·25	6·54	+7·71	28·01	21·25	+6·76	2·88	Kurnool.		
6	...	...	...	...	...	2	13	9	8·6	9·3	− 8	65	·594	8·6	8	6·27	+1·73	5·47	4·09	+1·38	8·53	10·50	−1·97	1·46	Bellary.		
...	5	1	...	...	1	7	9	7	5·8	?	?	77	·849	4·0	9	9·10	−0·10	5·72	5·73	−0·01	29·27	23·48	+5·79	1·53	Cocanada.	Madras, East Coast, North.	52
13	...	...	...	...	...	4	12	1	?	2·2	?	80	·907	6·5	9	10·91	−1·91	11·15	8·27	+2·88	26·29	22·74	+3·55	5·39	Vizagapatam.		
...	...	...	1	...	3	7	18	1	12·3	?	?	82	·913	6·5	No	rain	gauge.								Waltair.		
3	6	2	...	...	2	11	1	5	12·2	7·2	+69	83	·903	2·1	7	9·33	−2·33	3·38	7·51	−4·13	18·16	29·63	−11·47	1·24	Gopalpur.		
																									XII.—Hill Stations.		
3	11	...	1	4	2	2	1	6	4·5	?	?	38	·402	0·3	0	?	?	0·07	0·54	−0·47	5·23	6·44	−1·21	0·05	Sharigh	Baluchistan.	48
...			Not	rec	orde	d.			?	?	?	?	?	?	...	...	...	...	0·01	...	...	0·49	...	...	Pishin.		
30	...	...	...	...	...	...	...	...	1·2	3·5	−66	54	·349	0·1	0	0·55	−0·55	0	0·16	−0·16	0·52	2·19	−1·67	0	Quetta.		
...	14	...	9	...	1	...	4	2	?	?	?	37	·266	?	0	?	?	0	0·05	−0·05	0·29	1·30	−1·01	0	Kalat.		
...	1	1	8	8	1	10	1	...	9·7	?	?	29	·244	0	0	?	?	0	0	0	0	0·42	−0·42	0	Chaman.		
...	...	...	1	...	...	...	25	4	2·7	1·7	+59	43	·161	3·7	0	?	?	0·04	0·23	−0·19	0·73	1·42	−0·69	0·04	Leh	Punjab.	30
14	1	1	3	4	2	1	2	2	5·6	?	?	86	·454	3·7	5	?	?	2·45	2·86	−0·41	6·74	22·03	−15·29	0·92	Srinagar.		
2	...	3	4	2	...	2	2	...	3·1	?	?	81	·377	4·3	4	?	?	2·07	?	?	12·60	?	?	0·74	Gulmarg.*		
8	1	5	1	...	...	5	3	2	3·3	?	?	75	·399	2·6	1	?	?	5·08	0·03	+5·05	5·67	2·15	+3·52	5·08	Skardu.		
26	...	...	1	...	...	1	1	1	7·0	?	?	60	·244	3·0	2	?	?	2·51	0·63	+1·88	4·81	?	?	1·44	Dras.		
26	...	...	2	1	...	...	1	...	0·8	?	?	44	·357	3·3	1	?	?	0·23	0·19	+0·04	1·47	1·65	−0·18	0·14	Gilgit.		
...	...	...	1	1	6	8	12	2	5·7	?	?	55	·380	2·0	1	?	?	0·30	?	?	0·97	?	?	0·30	Chitral		
9	...	...	...	...	...	...	21	...	?	?	?	49	·381	2·0	2	?	?	1·14	?	?	2·06	?	?	0·70	Killa Drosh.†		
...	1	2	7	7	4	5	2	2	5·0	?	?	53	·390	1·6	8	?	?	4·00	?	?	13·97	?	?	1·08	Para Chinar.		
5	6	...	2	4	9	1	1	2	10·5	?	?	72	·521	3·9	3	?	?	0·86	2·60	−1·74	10·13	11·14	−1·01	0·49	Cherat.		
21	4	1	1	1	1	...	1	...	5·5	5·4	+2	73	·409	3·1	13	6·55	+6·45	8·13	6·16	+1·97	42·02	34·56	+7·46	1·11	Murree.		
...	1	...	3	2	2	5	13	4	?	?	?	?	?	2·9	0	?	?	0	0·45	−0·45	0·61	2·31	−1·70	0	Poo.		
6	10	6	1	4	3	...	...	...	4·2	1·7	+147	76	·383	4·3	8	8·36	−0·36	2·72	6·56	−3·84	40·94	48·88	−7·94	0·81	Simla.		
13	6	...	...	1	5	...	...	...	8·8	4·7	+87	82	·430	5·8	5	?	?	3·94	6·92	−2·98	57·94	51·84	+6·10	1·25	Chakrata	North-Western Provinces.	25
...	2	1	8	4	...	1	4	10	?	8·1	?	85	·450	6·0	15	10·09	+4·91	12·93	10·26	+2·67	101·48	83·22	+18·26	2·79	Mussooree.		

Table

Abstract of Observations taken at 8 A.M. at 215 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	N.-W. Provinces—*concld.*	Ranikhet	6,069	24·068	+·011	?	24·212	28th	23·971	16th	·241	63·6	71·8	−0·6	59·3	−0·7	65·5	−0·7	12·5	75·0	1st	54·5	21st	20·5
		Muktesar	?	22·829	?	?	22·955	28th	22·747	4th	·211	59·1	67·7	?	55·3	?	61·5	?	12·4	71·5	4th & 19th	51·1	26th	20·4
13	Bengal	Yatung	10,480?				Not	recorded.				?	58·8	?	45·4	?	52·1	?	13·4	64·0	2nd, 3rd 13th,	34·9	16th & 17th	29·1
		Darjeeling	7,409	22·965	−·025	?	23·055	28th	22·901	18th	·154	57·7	63·2	−1·6	56·0	+0·9	59·6	−0·4	7·2	68·2	2 days	53·2	16th	15·0
		Gantok	5,660	24·432	?	?	24·501	1st	24·374	19th	·127	62·3	71·3	?	47·8	?	59·6	?	23·5	80·4	13th	44·8	16th	35·6
	Central India	Mount Abu	3,945	25·965	−·017	?	26·103	26th	25·873	13th & 14th	·230	69·2	74·5	−0·5	64·5	−0·3	69·7	−0·4	10·4	81·2	27th	60·4	3 days	20·8
		Pachmarhi	3,528	26·364	+·011	?	26·505	29th	26·255	14th	·250	71·1	77·0	0	66·3	+0·1	71·7	+0·1	10·7	79·7	12th & 20th	60·2	23rd	19·5
	South India	Wellington	6,200	24·204	−·024	?	24·260	29th	24·140	7th	·120	62·9	70·0	−1·0	56·4	+0·7	63·2	−0·2	13·6	74·7	15th	52·2	15th	22·5
	XIII.—Extra India.																							
	Ceylon	Trincomalee	12	29·847	?	29·785	29·914	29th	29·777	7th	·137	80·6	91·6	?	76·8	?	84·2	?	14·8	95·0	15th	74·0	30th	21·0
		Colombo	40	29·883	−·032	29·850	29·927	28th	29·824	7th	·103	80·5	86·3	?	76·6	?	81·5	?	9·7	88·5	16th & 18th	74·0	9th & 29th	14·5
	Persia	Meshed	3,104				Not	recorded				66·1	?	?	54·7	?	?	?	?	?	?	39·9	30th	?
		Resht	?	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Teheran*	?	25·981† / 25·343†	? / ?	? / ?	26·190 / 25·510	28th / 28th	25·760 / 25·200	9th / 9th 4th 6th 8th & 10th	·430 / ·310	75·9	91·0	?	64·8	?	77·9	?	26·2	99·4	8th	54·8	30th	44·6
		Ispahan	?	24·379†	?	?	24·570	26th	24·300		·270	72·7	92·7	?	56·6	?	74·7	?	36·1	97·9	9th	50·2	28th	47·7
		Bushire	14	29·686	−·039	29·659	29·882	25th	29·531	7th	·351	86·3	94·6	+0·4	80·5	+1·7	87·6	+1·1	14·1	99·0	5th	71·6	27th	27·4
		Jask	?	29·786	?	?	29·985	29th	29·654	11th	·331	83·9	90·2	?	79·7	?	85·0	?	10·5	95·8	20th	70·7	30th	25·1
	Arabia	Muscat	20	29·740	?	29·708	29·937	29th,	29·616	7th	·321	84·1	86·0	?	82·2	?	84·1	?	3·8	94·7	20th	77·3	30th	17·4
		Baghdad	220	29·638	−·035	29·831	29·837	26th	29·520	16th	·317	80·3	105·7	+4·8	73·5	+2·4	89·6	+3·6	32·2	111·9	2nd	65·7	25th	46·2
		Aden	94	29·697	−·051	29·722	29·861	26th	29·576	7th	285	85·2	93·2	−0·4	82·7	+0·6	88·0	+0·1	10·5	96·3	4th & 15th	79·8	4 days	16·5
		Perim	?	29·558	?	?	29·711	26th	29·450	1st	·261	84·4	94·1	?	84·4§	?	89·3§	?	9·7	98·5	3rd	80·6	14th	17·9
	Afghanistan	Kabul	?				Not re	corded.				59·3	88·8	?	51·1	?	70·0	?	37·7	96·1	1st & 11th	39·2	29th	56·9
	Central Asia	Kashgar	?	25·626‡	?	?	25·943	29th	25·351	14th	·592	65·8	79·5	?	56·5	?	68·0	?	23·0	92·3	3rd	41·6	30th	50·7
	Arabian Sea Islands.	Amini Devi	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Minicoy	10	29·878	?	29·813	29·927	23rd	29·805	5th	·122	80·9	85·5	?	?	?	?	?	?	88·3	1st	?	?	?
	Africa	Zanzibar	73	30·034	−·033	30·034	30·098	19th	29·942	13th	·156	76·4	82·7	?	74·1	?	78·4	?	8·6	86·0	24th	72·6	11th	13·4
		Durga (Zanzibar).	?				Not re	corded.				76·5	87·3	?	67·2	?	77·3	?	20·1	92·6	2nd & 3rd	63·9	8th	28·7

* All Means are of 29 days except Velocity.

† Aneroid uncorrected.

‡ Aneroid corrected.

§ Mean of 26 days.

NOTE.—When a query is inserted against any reading or in the variation returns for any station, the data for

I—*concluded.*

in India, Burma, etc., in September 1898—concluded.

Wind Direction. Number of winds from: Calms	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind velocity: Mean velocity in miles per hour.	Normal.	Percentage variations.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st June to 30th September 1898.	Normal rainfall for period 1st June to 30th September.	Variation from normal of period, 1st June to 30th September.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of Districts.
23	...	...	...	...	...	2	5	...	2·1	1·9	+11	81	·474	5·0	10	7·73	+2·27	4·23	8·02	−3·79	42·74	41·15	+ 1·59	0·86	Ranikhet.	N.-W. Provinces—*concld.*	
...	...	2	...	11	1	1	1	14	0·3	?	?	79	·400	5·3	12	?	?	4·79	?	?	46·91	?	?	1·09	Muktesar.		
			Not	reco	rded				?	?	?	?	?	?	20	?	?	11·56	6·42	+ 5·14	34·58	?	?	2·68	Yatung .	Bengal.	13
12	...	1	5	4	...	1	4	3	4·3	3·0	+43	95	·457	8·4	18	18·04	−0·04	38·55	17·31	+21·24	114·70	99·06	+15·64	7·04	Darjeeling.		
25	1	1	...	1	...	1	1	...	2·1	?	?	92	·518	7·1	25	?	?	22·88	20·93	+ 1·95	85·65	90·01	− 4·35	2·32	Gantok.		
5	2	2	...	1	...	13	6	1	5·7	7·3	−22	77	·540	4·5	10	7·40	+2·60	6·25	10·71	− 4·46	30·33	63·65	−33·32	1·59	Mount Abu.	Central India.	
19	...	...	...	...	...	3	5	3	7·5	5·6	+34	86	·656	5·5	15	12·55	+2·45	8·03	15·97	− 7·94	68·96	72·20	− 3·24	1·07	Pachmarhi.		
19	1	1	...	...	...	7	1	1	2·3	3·5	−34	76	·441	7·4	17	9·22	+7·78	10·03	4·49	+ 5·54	18·76	16·16	+ 2·60	2·07	Wellington .	South India.	
																									XIII.—Extra India.		
...	...	...	...	...	...	30	...	...	11·5	?	?	84	·872	1·7	7	?	?	5·46	5·81	− 0·35	11·88	15·59	− 3·71	2·12	Trincomalee	Ceylon.	
2	...	...	...	1	3	16	7	1	8·8	8·7	+ 1	85	·891	6·0	16	?	?	7·33	5·29	+ 2·04	24·89	22·27	+ 2·62	1·27	Colombo .		
			Not	reco	rded				?	?	?	47	·313	0·3	0	?	?	0	0·10	− 0·10	0·30	0·37	− 0·07	0	Meshed .	Persia.	
...	...	...	...	...	...	...	...	...	...	...	—	...	...	...	...	...	...	...	...	...	...	...	...	...	Resht .		
18	1	7	...	...	1	1	1	...	3·3	?	?	39	·342	0·3	0	?	?	0	0·02	− 0·02	0·09	0·63	− 0·54	0	Teheran.		
17	...	1	...	1	...	3	5	3	2·0	?	?	49	·400	0·3	0	?	?	0	0	0	0	0·10	− 0·10	0	Ispahan.		
4	3	8	6	8	...	...	...	1	5·4	7·7	−30	70	·889	0·5	0	?	?	0	?	?	0	?	?	0	Bushire.		
...	1	1	22	5	1	...	...	...	12·1	?	?	74	·865	3·8	0	?	?	0	0	0	0·77	?	?	0	Jask.		
3	2	...	2	9	2	1	2	9	3·8	?	?	78	·912	1·6	0	?	?	0	0	0	2·52	0·08	+ 2·44	0	Muscat .	Arabia.	
9	9	...	...	...	...	...	2	10	3·2	?	?	34	·351	0·3	0	?	?	0	0	0	2·92	0·14	+ 2·78	0	Baghdad.		
4	...	3	6	2	6	7	1	1	10·3*	8·5	+21	73	·921	5·7	0	?	?	0·07	0·21	−0·14	0·07	0·43	− 0·36	0·07	Aden.		
...	1	...	6	1	1	12	6	3	11·61	?	?	72	·944	5·6	0	?	?	0·09	0	+0·09	0·63	0·40	+ 0·23	0·09	Perim.		
10	1	1	2	...	3	3	9	1	?	?	?	47	·253	0	0	?	?	0	0	0	0·10	0·93	− 0·83	0	Kabul .	Afghanistan.	
17	...	...	5	...	3	...	4	1	2·7	?	?	47	·296	4·1	3	?	?	1·61	0·13	+ 1·48	1·90	1·59	+ 0·31	0·80	Kashgar .	Central Asia.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Amini Devi.	Arabian Sea Islands.	
1	...	...	...	...	...	1	16	12	8·3	?	?	81	·853	5·8	15	?	?	11·04	?	?	23·44	?	?	3·75	Minicoy .		
...	...	...	...		20	5	1	...	5·2	?	?	83	·749	7·8	8	?	?	1·58	1·56	+ 0·02	6·01	6·75	− 0·74	0·31	Zanzibar .	Africa.	
...	...	2	5	7	6	6	3	1	6·1	?	?	82	·746	6·0	7	?	?	2·42	?	?	8·10	?	?	0·43	Dunga (Zanzibar).		

*Not station are not utilized in calculating the provincial variations.

? Mean of 28 days.

Table

Abtract of Observations recorded at 10 A.M. and 4 P.M. at

Meteorological Province	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·842	29·741	·101	29·794	+·014	29·786	86·2	76·9†	9·3	91·2	74·2	17·0	82·6	83·3	80·5†	+1·0	75·0	78·9	78·9	77·6
	Rangoon	...	·845	·733	·112	·790	+·009	·768	86·2	75·4	10·8	90·2	73·6	16·6	80·9	81·5	78·9	+0·2	74·3	78·1	78·1	76·8
	Diamond Island	...	·848	·747	·101	·800	+·017	·776	84·6	76·9	7·7	86·8	72·8	14·0	82·6	81·4	79·6	+0·8	74·7	78·6	77·3	76·9
	Cocos Island	111	·766	·672	·094	·721	+·017	·764	85·7	77·0	8·7	88·7	72·8	15·9	82·6	82·1	80·1	+0·8	74·4	78·9	78·1	77·1
	Akyab	...	·830	·716	·114	·777	+·016	·740	86·2	78·2	8·0	89·4	76·2	13·2	82·5	83·4	81·3	−0·1	76·3	80·1	80·4	78·9
Assam.	Silchar	...	·731	·602	·129	·672	+·019	·726	88·7	76·0	12·7	96·8	73·2	23·6	83·0	85·1	81·0	−0·6	74·6	78·9	79·3	77·6
	Sibsagar	...	·488	·365	·123	·428	+·005	·715	86·4	75·4	11·0	91·2	72·1	19·1	81·1	85·2	79·5	−1·2	78·4	78·1	80·1	78·9
	Dhubri	...	·690	·565	·125	·634	+·006	·703	82·9	76·7	6·2	88·2	74·8	13·4	79·4	81·5	78·2	−1·1	75·2	77·0	77·8	76·7
Bengal and Orissa.	Chittagong	...	·733	·621	·112	·681	+·004	·715	85·6‡	75·8	9·8	90·0	72·6	17·4	82·8	83·2	80·0‡	−0·6	74·9	78·6	78·7	77·4
	Narayanganj	...	·774	·663	·111	·724	+·019	·698	87·3	78·6	8·7	90·1	75·6	14·5	83·8	84·8	82·6	−0·4	76·5	79·8	79·9	78·7
	Calcutta (Allpore)	...	·751	·644	·107	·700	+·015	·667	87·3	77·8	9·5	90·9	75·5	15·4	84·1	84·0	82·2	−0·3	76·6	79·2	78·7	78·2
	Saugor Island	...	·737	·629	·108	·685	+·005	·654	88·4	80·1	8·3	91·1	75·7	15·4	84·9	85·8	83·2	+0·6	77·3	80·8	80·4	79·5
	Burdwan	...	·670	·556	·114	·616	+·004	·662	88·7	78·8	9·9	93·4	75·8	17·6	84·9	86·2	82·8	−0·6	77·3	79·8	79·8	79·0
	Berhampore	...	·701	·595	·106	·651	+·007	·666	87·2	78·7	8·5	91·2	75·1	16·1	83·6	85·3	82·2	−0·7	76·3	79·7	79·9	78·6
	False Point	...	·742	·641	·101	·694	−·002	·656	88·1	78·3	9·8	92·5	74·1	18·4	85·7	85·7	82·2	+0·4	76·7	80·5	80·5	79·2
	Cuttack	...	·682	·570	·112	·630	+·001	·652	91·3	78·2	13·1	95·3	74·1	21·2	86·0	87·3	83·5	+0·9	76·6	79·1	79·2	78·3
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·746	27·650	·096	27·702	−·008	·643	83·5	72·2	11·3	87·2	70·0	17·2	79·1	79·1	76·4	−0·6	70·4	73·5	72·9	72·3
	Patna	...	29·558	29·453	·105	29·511	−·003	·646	86·5	77·8	8·7	92·0	73·0	19·0	83·3	83·8	81·0	−2·5	76·2§	78·9	78·7	77·9
	Darbhanga	...	·580	·476	·104	·533	−·008	·653	85·2	77·1	8·1	91·3	72·5	18·8	81·9	82·9	80·1	−2·7	75·5	78·5	78·7	77·6
	Allahabad	...	·436	·322	·114	·382	+·006	·642	90·2	76·5	13·7	96·0	71·5	24·5	85·7	88·0	82·3	−0·9	74·5	79·3	79·3	77·7
	Lucknow	...	·371	·263	·108	·320	−·003	·643	90·3	76·1	14·2	95·4	70·3	25·1	85·0	86·6	82·3	−1·5	74·6‡‡	79·1	78·9	77·5
Upper Sub-Himalayan.	Denra Dun	...	27·555	27·460	·095	27·500	−·002	·675	83·4	68·6	14·8	87·8	61·1	26·7	77·4	79·4	74·7	−2·2	66·3	71·9	72·5	70·2
	Roorkee	...	28·855	28·747	·108	28·794	0	·638	90·3	72·4	17·9	94·9	64·7	30·2	83·3	88·0	80·5	−1·3	70·4	75·7	75·9	74·0
	Meerut	...	29·004	·901	·103	·944	+·004	·640	90·8	74·2	16·6	95·1	67·9	28·1	84·7	88·8	82·0	−0·8	72·9	75·8	76·2	75·0
	Lahore	...	29·010	·913	·097	·955	−·012	·611	96·5	76·8	19·7	100·6	70·0	30·6	88·3	95·4	86·2	+2·3	71·3	75·6	76·7	74·6
	Ludhiana	...	28·922	·823	·099	·867	−·003	·636	93·0	74·4	18·6	97·0	66·1	30·9	85·1	90·3	82·8	−0·7	71·2	75·9	76·2	74·4
Indus Valley and N.-W. Rajputana.	Peshawar	...	·626	·524	·102	·569	−·013	·642	93·8	71·6	22·2	100·8	61·5	39·3	86·1	91·2	81·9	−0·1	67·5	74·9	75·0	72·5
	Mooltan	...	29·278	29·171	·107	29·219	−·014	·596	101·4	79·1	22·3	111·2	71·8	39·4	91·8	98·9	89·4	+2·0	71·1	77·7	80·0	76·3
	Jacobabad	...	·503	·384	·119	·437	−·027	·576	104·7	77·5	27·2	110·2	72·6	37·6	91·6	103·0	90·5	+1·8	?	?	?	?
	Kurrachee	...	·746	·660	·086	·705	−·014	·685	88·9	77·2	11·7	90·6	72·9	17·7	84·9	85·1	81·9	+0·3	73·4	76·2	76·9	75·5
E. Rajputana, Central India, and Gujarat.	Jeypore	...	28·352	28·243	·109	28·294	+·001	·658	94·7	74·2	20·5	99·5	69·7	29·8	86·5	92·3	83·2	+1·3	70·4	74·3	74·7	73·1
	Ajmere	...	·171	·074	·097	·117	−·007	·665	91·5	76·3	15·2	97·4	71·8	25·6	84·5	89·2	82·9	+1·4	71·1	75·7	77·1	74·6
	Oodeypore	...	27·874	27·784	·090	27·829	?	·685	88·1	70·1	18·0	94·1	65·1	29·0	82·8	84·6	78·2	?	68·0	72·6	72·9	71·2
	Deesa	...	29·333	29·220	·113	29·275	−·006	·689	93·6	73·2	20·4	100·4	64·1	36·3	85·4	92·2	82·5	+0·6	70·8	75·6	76·2	74·1
	Nowgong	...	·007	28·907	·100	28·959	+·016	·666	88·2	75·0	13·2	92·9	71·0	21·9	83·3	85·8	80·5	−1·4	73·4	78·0	78·2	76·5
	Agra	...	·190	29·076	·114	29·127	−·011	·635	93·2	77·0	16·2	101·6	70·9	30·7	87·0	89·5	84·5	+1·0	73·0	78·5	78·9	76·8
Deccan.	Belgaum	...	27·331	27·232	·099	27·283	−·017	·760	79·7	65·6	14·1	84·3	63·0	21·3	73·7	74·0	70·8	+0·5	65·5	69·7	69·8	68·3
	Sholapur	...	28·252	28·118	·134	28·196	−·009	·721	87·1	71·1	16·0	91·7	68·5	23·2	79·6	83·4	77·5	−0·1	68·7	71·2	71·8	70·6
	Poona	...	·007	27·907	·100	27·952	−·012	·739	84·1	69·0	15·1	90·2	66·3	23·9	77·7	79·5	74·6	+0·2	67·6	71·3	71·4	70·1
	Akola	...	·870	28·739	·131	28·805	−·006	·680	90·6	72·1	18·5	96·0	63·8	32·2	83·5	87·4	80·6	+0·8	70·8	75·4	75·4	73·6
	Buldana	2,132	27·697	27·588	·109	27·643	0	·702	83·0	69·0	14·0	88·8	64·3	24·5	77·7	80·5	75·4	−0·1	67·0	71·8	71·9	70·2
	Khandwa	...	28·760	28·646	·114	28·704	+·006	·698	87·5	73·3	14·2	94·2	67·6	26·6	82·1	85·8	79·2	7·25	70·7	75·2	70·0	74·0

† Mean of 22 days.
‡ ,, of 27 days.

II.

86 stations in India, Burma, etc., for September, 1898.

Vapour Tension. From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Humidity. From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Cloud. Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Mean wind direction.	Normal mean wind direction of month.	Wind Steadiness. Average percentage.	Normal percentage.	Wind Velocity. Mean velocity in miles per diem.	Normal.	Rainfall. Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·847†	·943	·931	·907	+·014	92†	85	82	86	−1	8·1	7·9	8·0	+0·7	2	...	...	...	10	7	15	22	4	S. 53° W.	S. 52° W.	60	74	191	228	...	...	Port Blair	Burma Coast and Bay Islands.
·836	·922	·919	·892	−·001	95	88	86	90	+1	8·9	9·3	9·1	+0·9	...	1	2	...	2	16	22	14	3	S. 46° W.	S. 23° W.	67	49	45	89	...	...	Rangoon	
·833	·927	·884	·881	+·010	90	83	83	85	−2	7·9	8·6	8·3	+0·8	5	1	1	3	9	7	17	7	9	S. 41° W.	S. 45° W.	37	55	225*	182	...	...	Diamond Island,	
·819	·941	·908	·889	−·002	88	84	83	85	−1	6·6	7·3	7·0	−0·4	...	1	...	...	7	13	18	14	7	S 47° W	S. 44° W.	60	74	?	447	9·64	2·50	Cocos Island	
·881	1·000	1·001	·961	+·041	91	90	87	89	+3	7·8	7·3	7·6	+0·4	...	...	2	11	11	21	8	5	2	S. 14° E.	S. 8° E.	55	42	54	74	...	...	Akyab	
·842	·934	·924	·900	−·006	94	83	78	85	+1	8·7	8·6	8·7	+1·4	36	3	2	4	2	...	1	4	8	N. 24° W.	N. 87° W.	15	5	71*	53	...	...	Silchar	Assam.
·865	9·26	·961	·917	−·004	98	87	80	88	+2	8·4	5·9	7·2	−0·5	13	19	9	...	...	...	18	1	...	N. 31° W.	N. 81° E.	25	17	60*	59	...	...	Sibsagar	
·856	9·00	·907	·888	−·009	93	90	85	89	+2	7·5	7·5	7·5	+0·9	7	2	11	13	2	7	13	2	3	S. 59° E.	S. 78° E.	18	22	119*	99	...	...	Dhubri	
·853	9·25	·922	·900	−·016	95	83	81	86	0	7·6	7·1	7·4	+0·5	7	...	2	1	13	12	16	4	5	S. 15° W.	S. 22° E.	47	37	141*	102	...	...	Chittagong	Bengal and Orissa.
·885	·966	·958	·936	−·020	90	84	81	85	0	8·3	8·1	8·2	+1·2	...	1	2	5	20	15	8	5	4	S. 13° E.	S. 12° E.	52	58	173	118	...	...	Narayanganj	
·900	·933	·913	·915	−·028	94	80	78	84	−2	7·7	8·6	8·2	+0·9	3	2	1	9	7	18	15	3	2	S. 1° W.	S. 23° E.	49	42	94	98	...	...	Calcutta (Alipore),	
·903	·999	·967	·956	−·020	88	83	78	83	−3	8·2	8·0	8·1	+1·0	1	...	4	4	9	19	17	5	1	S. 8° W.	S. 2° W.	57	49	282	257	...	...	Saugor Island	
·918	·950	·934	·934	+·009	93	79	75	82	+1	7·0	7·4	7·2	−0·2	32	...	...	4	3	14	7	...	...	S. 3° E.	S. 27° E.	35	36	31	74	...	...	Burdwan	
·874	·962	·951	·929	−·006	89	84	79	84	−1	7·2	7·9	7·6	−0·3	11	...	2	17	4	17	5	4	...	S. 32° E.	S. 38° E.	43	35	102*	88	...	...	Berhampore	
·901	·976	·973	·950	+·021	93	79	79	84	0	7·7	7·5	7·6	+0·6	...	1	...	11	9	18	11	8	2	S. 1° E.	S. 20° W.	50	37	192*	205	...	...	False Point	
·894	·903	·889	·895	0	93	73	70	79	−1	5·8	6·0	5·9	−0·7	6	5	6	3	1	12	16	6	5	S. 49° W.	S. 23° W.	28	19	66	59	...	...	Cuttack	
·725	·757	·733	·738	−·016	92	76	75	81	−3	8·6	8·9	8·8	+0·8	3	8	2	3	5	8	13	9	9	S. 73° W.	S. 52° E.	28	10	174*	178	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·883	·932	·913	·909	−·003	92	82	79	84	+4	6·9	7·1	7·0	+0·1	5	2	4	21	10	5	3	4	6	S. 76° E.	S. 89° E.	35	37	151*	86	...	...	Patna	
·864	·933	·928	·908	−·027	93	86	83	87	+5	6·0	5·9	6·0	+0·7	...	1	4	21	19	4	3	5	3	S. 64° E.	S. 81° E.	52	49	126	96	...	...	Darbhanga	
·832	·920	·888	·880	−·005	91	75	68	78	−1	5·9	6·1	6·0	+0·7	1	3	7	8	4	3	5	14	15	N. 53° W.	N. 8° W.	26	13	155*	128	...	...	Allahabad	
·838‡†	·917	·886	·880	+·042	92‡‡	76	71	80	+7	6·2	6·3	6·3	+0·9	35	7	1	3	8	3	...	3	...	S. 83° E.	N.	12	18	26*	71	...	...	Lucknow	
·623	·716	·713	·684	−·014	88	76	72	79	+1	5·3	5·0	5·2	+0·4	10	1	1	6	17	8	6	7	3	S. 15° E.	N. 75° W.	36	20	23‡	25	...	...	Dehra Dun	Upper Sub-Himalayas.
·725	·787	·738	·750	−·018	91	69	56	72	0	4·2	3·1	3·7	−0·1	27	2	...	...	17	2	...	1	11	S. 37° E.	S. 14° W.	12	7	37	48	...	...	Roorkee	
·800	·776	·742	·773	+·011	94	65	56	72	+2	3·3	2·5	2·9	−0·8	34	...	1	5	6	...	3	5	6	S. 45° W.	N. 49° W.	3	19	36*	46	...	...	Meerut	
·704	·726	·675	·702	−·012	75	54	41	57	0	2·0	1·4	1·7	+0·2	7	9	7	17	6	4	...	7	3	N. 66° E.	N. 55° E.	32	7	63	50	...	...	Lahore	
·728	·779	·717	·741	−·014	85	65	51	67	+1	3·3	3·2	3·3	+0·3	24	3	3	...	21	1	2	2	4	S. 49° E.	N. 44° W.	23	14	45	31	...	...	Ludhiana	
·640	·735	·677	·684	+·092	80	58	47	62	+8	2·0	2·6	2·3	+0·6	15	12	20	5	...	...	1	3	4	N. 24° E.	N. 39° E.	52	51	56*	73	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·660	·766	·777	·734	−·052	66	51	42	59	−1	0·4	0·8	0·6	−0·3	10	...	4	...	8	5	33	...	...	S. 25° W.	S. 29° W.	59	38	78	60	...	...	Mooltan	
?	?	?	?	?	?	?	?	?	?	0·6	0·5	0·6	0	20	...	1	5	18	14	1	...	1	S. 33° E.	S. 32° E.	52	45	59*	72	...	...	Jacobabad	
·772	·789	·817	·793	−·048	83	66	68	72	−5	2·9	2·0	2·5	−1·3	...	...	...	...	...	...	23	36	1	S. 73° W.	S. 67° W.	92	87	351*	356	...	...	Kurrachee	
·701	·699	·650	·683	0	82	56	43	60	−4	3·6	5·1	4·4	+0·4	2	2	8	4	3	2	8	17	14	N. 69° W.	N. 39° W.	37	43	85	108	...	...	Jeypore	
·701	·780	·780	·754	+·016	77	66	58	67	0	2·8	4·4	3·6	+0·3	3	1	4	...	5	...	11	32	4	S. 83° W.	N. 84° W.	62	51	160	133	...	...	Ajmere	E. Rajputana, Central India, and Gujarat.
·512	·679	·667	·619	?	88	62	58	69	?	3·5	4·4	4·0	?	5	4	3	2	4	6	16	12	8	S. 69° W.	?	40	?	75	?	...	...	Oodeypore	
·729	·757	·694	·727	+·004	89	63	47	66	0	4·2	4·1	4·2	−0·6	...	10	2	1	...	4	6	19	18	N. 64° W.	S. 69° W.	62	53	156	200	...	...	Deesa	
·801	·892	·868	·854	+·059	92	78	71	80	+7	5·6	5·8	5·7	+0·1	4	5	1	4	1	3	3	33	6	N. 83° W.	N. 68° W.	55	34	37	57	..	...	Nowgong	
·767	·866	·848	·827	+·038	82	68	62	71	+3	3·8	3·1	3·5	−0·3	...	...	8	...	12	...	12	...	28	N. 60° W.	N. 44° W.	28	25	188*	104	...	...	Agra	
·627	·675	·678	·660	+·019	99	81	81	87	+2	7·9	8·2	8·1	+0·6	Out of order.									?	S. 78° W.	?	75	?	385	...	...	Belgaum	Deccan.
·672	·661	·636	·656	−·006	88	66	56	70	0	7·1	8·0	7·6	−0·4	4	4	5	2	4	4	9	13	15	N. 77° W.	N. 69° W.	37	67	217*	245	...	...	Sholapur	
·660	·690	·669	·673	+·007	93	73	68	78	+2	7·9	8·0	8·0	+0·3	1	...	2	...	5	1	11	30	10	S. 84° W.	W.	67	77	273*	259	...	...	Poona	
·741	·774	·721	·745	+·006	94	67	56	73	−1	6·4	7·3	6·9	+0·3	9	1	3	1	2	...	2	17	25	N. 60° W.	N. 59° W.	60	68	124‖	155	...	...	Akola	
·6	·706	·678	·674	−·006	0	75	66	77	−1	7·4	7·41	7·4	+0·8	5	8	2	...	—	1	3	20	21	N. 59° W.	N. 47° W.	69	68	150*	200	5·84	1·60	Buldana	
72	·789	·777	·763	+·022	88	72	64	75	0	6·1	6·3	6·2	+0·7	1	7	5	2	1	2	3	13	26	N. 48° W.	N. 66° W.	60	67	127	154	...	...	Khandwa	

‡ Mean of 29 days. ‖ Mean of 28 days. * Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S.L. and for gravity 45° Lat.	Temperature of air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—c.n.M.	Hoshangabad	...	28·791	28·673	·118	28·733	+·023	29·692	88·0	73·8	14·2	90·9	69·4	21·5	81·6	84·7	79·4	0	72·2	76·5	77·1	75·3
	Nagpur	...	·763	·645	·118	·705	+·027	·680	89·0	73·6	15·4	93·1	70·1	23·0	81·9	83·8	80·0	−0·3	72·1	75·6	75·3	74·3
	Do. (Sanitary Commr.'s Office).	...	·772	·652	·120	·713	?	·676	90·2	73·6	16·6	93·8	70·0	23·8	83·9	84·9	80·5	?	72·1	77·1	76·7	75·3
	Jubbulpore	...	·441	·328	·113	·386	+·009	·659	86·9	72·7	14·2	90·3	68·5	21·8	81·8	83·0	78·1	−0·4	71·9	75·9	75·8	74·5
	Saugor	...	27·989	27·887	·102	27·939	+·009	·679	85·9	71·9	14·0	91·5	69·1	22·4	81·1	82·9	77·5	+0·2	70·4**	74·4	74·3	73·0
	Sutna	...	28·700	28·595	·105	28·650	0	·642	87·7	75·4	12·3	92·0	71·1	20·9	83·8	84·6	80·2	−0·1	73·1	77·0	76·2	75·4
	Raipur	...	·810	·692	·118	·752	+·022	·653	88·6	75·0	13·6	91·6	71·1	20·5	83·0	85·0	80·9	+0·4	72·7	76·8	76·1	75·2
	Hyderabad (Deccan.)	...	·139	·016	·123	·083	+·002	·701	86·8	72·0	14·8	91·9	69·2	22·7	80·6	84·5	78·8	+1·2	70·3	73·7	74·7	72·9
West Coast.	Bombay	...	29·822	29·722	·100	29·769	−·017	·746	84·5	76·6	7·9	87·4	73·9	13·5	80·9	82·5	80·1	+0·4	73·4	77·5	77·6	76·2
	Ratnagiri	...	·754	·663	·091	·705	−·021	·753	83·9	74·5	9·4	87·4	68·9	18·5	81·1	80·5	78·4	−0·2	73·2	77·1	76·8	75·7
	Karwar	...	·847	·747	·100	·794	−·026	·770	82·2	74·2	8·0	85·5	72·5	13·0	79·4	80·3	77·7	0	72·7	75·2	75·4	74·4
	Cochin	...	·915	·837	·078	·873	−·019	·811	85·2	74·3	10·9	88·5	71·3	17·2	81·3	81·8	78·9	−0·1	73·0	76·5	76·5	75·3
South India.	Salem	...	28·955	28·813	·142	28·897	−·020	·769	89·8	72·3	17·5	93·4	70·0	23·4	81·7	85·5	78·6	−0·8	71·1	74·9	76·1	74·0
	Mercara	...	26·202	26·111	·091	26·170	−·022	?	71·8	62·6	9·2	76·6	60·5	16·1	67·0	67·0	66·0	+0·1	61·7	65·7	65·5	64·3
	Chitaldroog	...	27·481	27·361	·120	27·430	−·010	·746	82·9	67·7	15·2	87·7	64·3	23·4	75·9	79·9	74·6	+0·1	65·6	70·0	70·8	68·8
	Bangalore	...	26·905	26·783	·122	26·855	−·020	·755	80·8	66·0	14·8	84·2	63·8	20·4	74·2	78·3	72·8	+0·5	65·3	69·2	70·1	68·2
	Hassan	...	·844	·746	·098	·806	−·018	·785	78·9	64·9	14·0	85·2	62·6	22·6	74·1	74·1	71·0	+0·3	64·1	68·3	68·6	67·0
	Mysore	...	27·404	27·281	·123	27·343	−·012	·768	82·4	66·4	16·0	87·1	64·0	23·1	76·3	78·4	73·4	−1·2	65·3	69·7	70·2	68·4
	Trichinopoly	...	29·613	29·473	·140	29·556	−·009	·740	94·6	75·6	19·0	99·3	73·4	25·9	86·7	91·2	82·9	−0·3	72·3	75·1	76·8	74·7
	Madras	...	·829	·704	·125	·774	0	·725	91·1	76·0	15·1	96·1	73·0	23·1	85·6	85·8	82·2	−1·6	?	77·6	78·4	77·4
	Bellary	...	28·384	28·243	·141	28·323	−·017	·729	88·8	73·1	15·7	94·9	70·2	24·7	80·8	85·7	79·5	−0·6	67·2	69·5	70·7	69·1
	Cocanada	...	29·778	29·657	·121	29·720	+·019	·682	89·9	78·3	11·6	96·6	75·0	21·6	85·4	87·3	83·4	+0·3	75·6	77·4	77·2	76·7
	Vizagapatam	...	·759	·644	·115	·704	+·011	·672	89·6	77·7	11·9	94·8	74·2	20·6	86·9	86·8	83·9	−0·2	76·0	79·3	79·5	78·2
Hill Station, Baluchistan.	Quetta	...	24·599	24·517	·082	24·550	−·006	?	87·0	48·5	38·5	94·2	39·4	54·8	77·2	84·9	67·3	+0·7	41·8	57·7	59·2	52·9
Hill Stations, Punjab.	Leh	...	19 720	19·618	·102	19·677	−·009	?	71·4	42·0	29·4	84·7	27·5	57·2	60·0	67·1	56·1	+2·3	36·5†	44·4	46·8	42·6
	Srinagar	...	24·846	24·756	·090	24·793	+·006	?	79·0	52·4	26·6	91·1	42·8	48·3	67·5	77·2	65·2	−0·5	51·6	62·7	71·6†	62·0
	Murree	...	23 798	23·760	·038	23·771	−·041	?	70·3	57·7	12·6	76·5	44·9	31·6	64·5	68·4	63·3	−2·1	52·1	58·6	62·0	57 6
	Kailang	10,087	20·750?	20·677?	·073	20·720?	−·031?	?	70·9	42·0‡	28·3	80·6	29·0	51·6	61·8	63·0	53·9‡	+0·2	39·7†	51·2†	50·5‖	47·1
	Simla (Ridge)	...	23·112	23·061	·051	23·079	−·001	?	65·2	55·3	9·9	67·9	47·8	20·1	60·8	62·4	59·4	−2·1	51·9	55·8	57·9	55·2
Hill Stations, N.-W.P.	Chakrata	...	·277	·215	·062	·238	−·008	?	67·4	55·9	11·5	71·8	51·7	20·1	63·9	62·9	60·3	−1·4	52·0¶	59·4	59·4	56·9
	Ranikhet	...	24·085	24·004	·081	24·030	0	?	71·7	59·3	12·4	74·7	54·4	20·3	67·4	69·0	64·6	−0·9	57·2†	61·8	62·9	60·6
	Mukteesar	...	22·849	22·779	·070	22·814	?	?	67·6	55·3	12·3	71·6	51·1	20·5	62·8	63·6	60·5	?	52·1	57·3	59·4	56·3
Hill Station, Nepal.	Katmandu	4,388	25·484	25·402	·082	25·446	?	?	78·9	63·7	15·2	85·2	58·6	26·6	72·8	75·4	70·4	−3·2	62·6	67·6	68·9	66·4
Hill Station, Bengal.	Darjeeling	...	22·979	22·905††	·074	22·944††	−·024	?	63·1	56·2	6·9	68·1	53·2	14·9	59·3	60·1††	58·8††	+0·1	54·4	58·5	58·8††	57·2
Hill Stations, Central India.	Mount Abu	...	25·879	25·811	·068	25·844	−·014	?	75·1	64·5	10·6	81·2	60·2	21·0	72·4	72·6	69·2	+0·1	60·9	65·4	66·1	64·1
	Pachmarhi	...	26·382	26·290	·092	26·338	+·006	?	77·2	66·3	10·9	79·9	60·4	19·5	73·6	74·2	70·5	0	65·5	69·2	69·4	68·0
	Chikalda	3,642	·267	·173	·094	·221	+·005	?	75·8	65·3	10·5	81·2	62·9	19·2	71·0	74·2	69·6	+0·7	64·3	68·0	69·8	67·4

† Mean of 29 days. ‡ Approximate mean obtained from Leh register. ‖ Mean of 28 days. ¶ Mean of 19 days. ** Mean of 22 days. †† Mean of 27 days.

II—*continued.*

at 86 stations in India, Burma, etc., for September, 1898—continued.

Vapour Tension. From minimum.	Vapour Tension. Mean 10 hours.	Vapour Tension. Mean 16 hours.	Vapour Tension. Mean daily.	Vapour Tension. Variation from normal.	Humidity. From minimum.	Humidity. Mean 10 hours.	Humidity. Mean 16 hours.	Humidity. Mean daily.	Humidity. Variation from normal.	Cloud. Mean 10 hours.	Cloud. Mean 16 hours.	Cloud. Mean daily.	Cloud. Variation from normal.	Wind Direction. Number of winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Wind Steadiness. Average percentage.	Wind Steadiness. Normal percentage.	Wind Velocity. Mean velocity in miles per diem.	Wind Velocity. Normal.	Rainfall. Total rainfall for the month.	Rainfall. Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%							
·770	·852	·841	·821	+·030	92	79	71	81	+ 2	6·3	6·7	6·5	+0·5	23	2	2	...	1	2	16	11	3	S. 69° W.	S. 87° W.	40	46	54	63	...	...	Hoshangabad	Deccan—*contd.*
·770	·810	·772	·734	+·017	92	74	68	78	+ 3	6·7	8·1	7·4	+0·1	21	5	1	...	3	4	8	8	10	N. 87° W.	N. 52° W.	30	37	95	147	...	...	Nagpur	
·771	·847	·817	·812	?	93	73	69	78	?	6·2	7·3	6·8	?	6	10	1	2	...	11	12	4	14	N. 87° W.	?	(E) 33	?	35*	?	...	...	Do. (Sanitary Commr.'s Office).	
·775	·824	·806	·802	+·028	96	76	72	81	+ 3	5·2	7·3	6·3	+0·2	3	5	5	2	3	4	9	18	11	N. 81° W.	N. 71° W.	42	36	55	74	...	...	Jubbulpore	
** ·728	·768	·744	·747	+·009	** 92	73	67	77	0	4·9	6·8	5·9	+1·3	3	7	4	2	4	4	6	21	6	N. 83° W.	N. 79° W.	42	44	148*	90	...	...	Saugor	
·791	·847	·801	·813	+·039	90	73	68	76	+ 2	3·9	5·5	4·7	−0·3	5	4	7	1	4	...	2	23	14	N. 60° W.	N. 49° W.	48	38	122*	152	...	...	Sutna	
·775	·838	·787	·800	−·004	89	74	67	77	− 1	6·8	7·5	7·2	+0·4	21	5	2	3	3	3	11	6	6	S. 79° W.	S. 84° W.	20	27	133*	146	...	...	Raipur	
·720	·745	·737	·734	−·001	92	72	63	76	− 2	6·7	5·6	6·2	−0·1	24	...	...	1	2	2	...	28	3	S. 87° W.	N. 71° W.	47	61	116*	150	...	...	Hyderabad (Deccan).	
·780	·897	·884	·854	−·011	85	85	80	83	− 2	7·3	7·3	7·3	−0·1	...	3	4	5	1	1	6	22	18	N. 67° W.	N. 84° W.	55	52	216	267	...	...	Bombay	West Coast.
·803	·878	·874	·852	+·016	94	83	84	87	+ 3	6·8	7·8	7·3	+1·3	1	6	...	...	1	...	14	21	17	N. 80° W.	N. 81° W.	71	59	173*	178	...	...	Ratnagiri	
·785	·819	·816	·807	−·010	93	82	79	85	− 1	6·1	6·9	6·5	+0·8	4	3	...	...	...	...	3	21	29	N. 64° W.	N. 80° W.	81	78	81	58	...	...	Karwar	
·802	·849	·841	·831	−·004	94	79	78	84	− 1	6·0	8·0	7·0	+1·7	3	2	1	...	...	1	...	25	28	N. 64° W.	N. 76° W.	82	66	135	118	...	...	Cochin	
·747	·775	·776	·766	+·020	94	72	65	77	+ 5	6·8	8·3	7·6	+2·0	5	3	2	2	...	5	19	15	9	S. 76° W.	S. 63° W.	53	69	134	82	...	...	Salem	
·539	·617	·613	·590	+·019	95	93	92	93	+ 3	8·2	9·5	8·9	+0·4	...	...	...	1	...	...	2	53	4	N. 89° W.	S. 86° W.	95	80	193*	182	...	...	Mercara	South India.
·606	·659	·642	636	+·044	89	74	64	76	+ 7	8·7	7·9	8·3	+0·6	3	3	2	4	2	1	13	21	11	N. 89° W.	N. 87° W.	52	78	196*	228	...	...	Chitaldroug	
·615	·656	·643	·638	+·035	96	78	67	80	+ 4	8·1	8·5	8·3	+2·0	...	2	5	3	1	1	15	20	13	N. 86° W.	S. 85° W.	55	84	182*	167	...	...	Bangalore	
·593	·626	·636	·618	+·040	96	75	76	82	+ 6	8·8	9·0	8·9	+1·0	...	...	5	5	2	1	7	28	12	N. 82° W.	N. 79° W.	53	79	84*	91	...	...	Hassan	
·611	·643	·639	·631	+·036	94	71	66	77	+ 6	9·2	9·2	9·2	+1·6	1	4	3	3	...	...	18	27	4	S. 85° W.	N. 87° W.	63	68	229*	226	...	...	Mysore	
·749	·716	·729	·731	+·013	85	57	51	64	+ 2	4·7	6·8	5·8	−0·9	18	2	3	...	...	...	10	25	2	S. 87° W.	N. 80° W.	50	73	126	161	...	...	Trichinopoly	
?	·841	·871	·882	+·059	?	69	71	80	+ 7	7·0	6·5	6·8	+0·7	...	1	...	8	11	5	11	18	6	S. 43° W.	S. 56° W.	35	52	117	149	...	...	Madras	
·593	·579	·564	·579	−·075	73	55	47	58	− 6	8·9	9·0	9·0	+1·5	4	1	2	1	1	1	6	27	17	N. 78° W.	N. 78° W.	68	75	117*	223	...	...	Bellary	
·851	·834	·799	·828	−·027	88	69	64	74	− 2	4·4	3·5	4·0	−2·2	...	...	4	6	10	5	16	15	4	S. 37° W.	S. 48° W.	37	63	140*	169	...	...	Cocanada	
·875	·900	·910	·895	+·031	92	71	72	78	+ 4	6·9	6·5	6·7	+0·6	4	...	1	...	...	20	18	17	...	S. 42° W.	S. 61° W.	77	52	?	49	...	...	Vizagapatam	
·204	·281	·236	·240	−·012	57	30	19	35	− 4	0·1	0·6	0·4	−0·1	41	1	...	...	...	...	3	9	6	N. 79° W.	N. 60° W.	27	42	15*	62	...	...	Quetta	Hill Station, Baluchistan.
·174†	·161	·149	·161	−·011	63†	32	23	39	− 2	3·9	4·4	4·2	+0·1	...	...	...	1	...	...	2	51	6	N. 87° W.	S. 58° W.	94	39	69	42	...	...	Leh	Hill Stations, Punjab.
·385	·534	·739†	·553	+·060	95	77	75	82	+ 4	3·0	2·9	3·0	−0·6	8	8	5	1	4	3	2	10	19	N. 45° W.	N. 24° W.	42	12	101*	76	...	...	Srinagar	
·339	·440	·499	·403	−·015	70	72	71	71	+ 6	1·6	2·7	2·2	−1·2	39	4	2	...	3	10	1	...	1	S. 17° E.	S. 5° W.	12	9	129*	138	...	...	Murree	
·199†	·289†	·258‖	·249	+·004	80§	50†	44‖	58	− 1	4·0	5·9	5·0	+·2	...	5	...	...	...	14	20	13	8	S. 62° W.	S. 57° W.	62	61	58	38	0·22	0·11	Kailang	
·358	·400	·439	·399	−·042	80	74	77	77	− 1	5·2	6·2	5·7	−0·1	15	18	15	1	...	9	2	...	...	N. 29° E.	S. 81° W	35	17	100	99	...	...	Simla (Ridge)	
·365¶	·465	·475	·435	−·037	¶ 84	79	83	82	− 2	6·1	6·7	6·4	+0·1	3	4	...	...	2	49	2	...	...	S.	S. 73° W.	80	37	209	128	...	...	Chakrata	Hill Stations, N.-W. P.
·350†	·497	·514	·487	−·021	88†	74	73	78	− 3	5·8	5·1	5·5	−0·5	30	...	...	...	...	3	5	18	4	S. 81° W.	S. 55° W.	42	37	57*	52	...	...	Ranikhet	
·362	·417	·460	·413	?	82	73	79	78	?	6·3	7·3	6·8	?	...	1	5	...	14	3	5	...	32	N. 50° W.	?	27	?	7*	?	...	...	Muktesar	
·558	·617	·635	·603	−·028	94	77	73	81	+ 2	6·5	6·7	6·6	+0·3	...	2	2	24	7	2	1	18	4	S. 81° E	N. 80° W.	15	14	20	17	13·60	2·54	Katmandu	Hill Station, Nepal.
·407	·484	††·486	·459	−·019	90	95	††93	93	− 1	?	?	?	?	8	3	7	9	7	3	3	7	10	N. 27° E.	S. 58° E	11	6	107	85	...	...	Darjeeling	Hill Station, Bengal.
·498	·550	·569	·539	−·008	82	71	72	75	− 2	4·0	4·8	4·4	−1·0	1	5	3	...	2	4	34	10	1	S. 55° W	S. 73° W.	63	34	144*	183	...	...	Mount Abu	Hill Stations, Central India.
·621	·666	·667	·651	+·027	95	80	79	85	+ 3	5·9	6·6	6·3	−0·9	38	...	...	...	...	1	3	11	7	N. 84° W.	N. 59° W.	30	45	135*	145	...	...	Pachmarhi	
·595	·651	·679	·642	+·013	95	86	81	87	− 2	7·7	7·5	7·6	+0·2	15	25	3	...	1	1	2	1	12	N. 14° W.	N. 23° W.	56	66	241*	244	10·42	3·30	Chikalda	

** Mean of 23 days.
(E) " 24 days.

* Corrected.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Provinces.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S.L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, S. India.	Wellington . .	...	24·212	24·132	·080	24·172	−·024	P	69·9	56·3	13·6	74·6	52·2	22·4	67·0	64·7	61·8	−0·4	55·2	61·3	60·2	58·9
Extra India.	Aden . . .	...	29·708	29·581	·127	29·638	−·040	29·661	93·1	82·7	10·4	96·5	79·8	16·7	89·3	90·7	87·5	+0·4	74·8	80·8	78·5	78·0
	Perim . . .	...	·577	·444	·133	·504	−·050	P	94·3	84·4‡	9·9	98·5	80·6	17·9	90·7	91·3	88·5‡	−0·1	76·9¶	81·0	81·0	79·6
	Minicoy . .	...	·887	·796	·091	·844	P	·779	85·3	P	P	88·3	P	P	83·0	82·7	P	P	P	77·3	76·8	P
	Zanzibar . .	...	30·046	·931	·115	·988	−·031	·989	82·6	74·1	8·5	86·0	72·6	13·4	77·6	82·2	78·2	+0·7	70·3	73·1	73·1	72·2
	Port Victoria (Seychelles).	15	29·985	·903	·082	·944	−·036	·883	81·2	75·2	6·0	82·6	69·7	12·9	79·9	80·4	78·0	−1·0	71·5	74·6	74·7	73·6
	Mauritius .	181	P	P	P	·962	−·053	30·093	P	P	P	82·4	53·8	28·6	P	P	69·8	−0·8	P	P	P	P

‡ Mean of 26 days. ¶ Mean of 28 days.

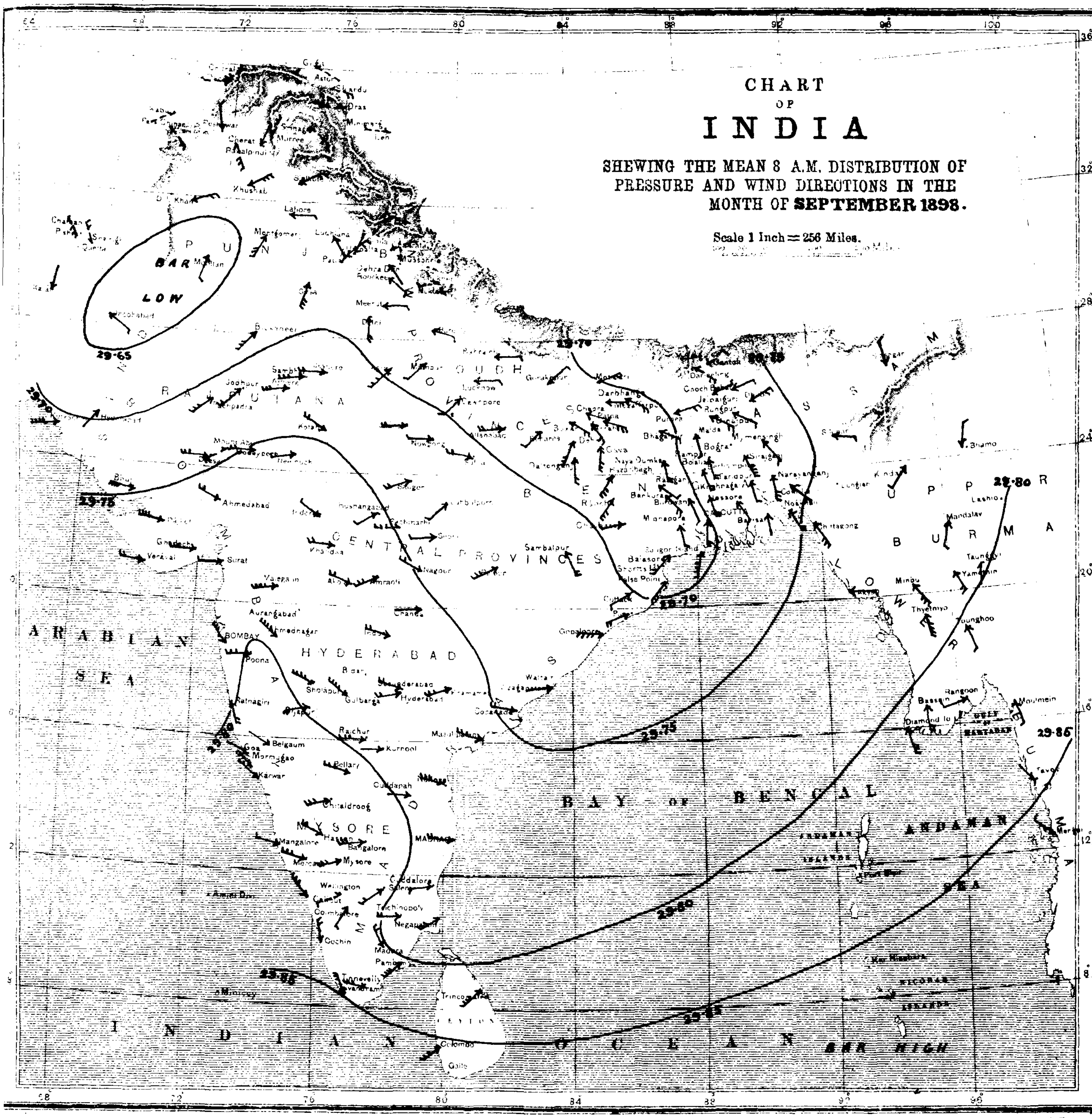
II—*concluded.*

at 86 stations in India, Burma, etc., for September, 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from										Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									°/₀	°/₀						
·425	·486	·480	·464	+·036	93	74	79	82	+ 6	8·7	9·3	9·0	+1·9	10	3	2	...	13	5	22	...	5	S. 21° W.	S. 56° W.	38	33	56	70	...	...	Wellington.	Hill Station, S. India.
·758	·93	·815	·836	−·013	68	68	57	64	− 2	3·7	2·2	3·0	+0·7	1	1	1	8	9	21	17	2	.	S. 2° E.	S. 23° E.	63	50	238†	220	...	...	Aden.	Extra India.
·826‖	·928	·921	·892	+·045	70‖	65	63	66	+ 4	3·3	5·9	4·6	+1·8	...	5	7	10	4	3	10	5	13	N. 46° W.	N. 42° E.	15	28	279	276	...	...	Perim.	
?	·862	·817	?	?	?	77	76	?	?	5·7	5·9	5·8	?	1	...	...	...	...	...	10	33	16	N. 85° W.	?	87	?	199*	?	...	...	Minicoy.	
·693	·756	·695	·715	−·012	83	80	64	76	− 2	6·5	4·8	5·7	+0·9	...	4	...	2	12	27	9	4	2	S. 2° W.	S. 8° E.	60	63	123*	138	...	...	Zanzibar.	
·725	·787	·783	·765	+·012	83	77	76	79	+ 4	7·2	6·9	7·1	1·5	4	1	...	4	41	10	...	...	...	S 41° E	S. 41° E.	85	90	275	292	5·41	1·35	Port Victoria (Seychelles).	
?	?	?	·532	?	?	?	?	76	+ 4	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	259	288	1·34	0·90	Mauritius.	

G. I. C. P. O.—No. 59 Meteor.—24-1-99.—385.

‖ Mean of 21 days. † Mean of 29 days. * Corrected.



LITHO. BY J. N. MUNDLE

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dalias, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2 miles per hour	.	one feather added to the wind arrow
,, ,,	2 to 5 ,, ,, ,,	.	two feathers ,, ,, ,, ,,
,, ,,	5 to 10 ,, ,, ,,	.	three ,, ,, ,, ,, ,,
,, ,,	10 to 20 ,, ,, ,,	..	four ,, ,, ,, ,, ,,
	over 20 ,, ,, ,,	..	five ,, ,, ,, ,, ,,

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

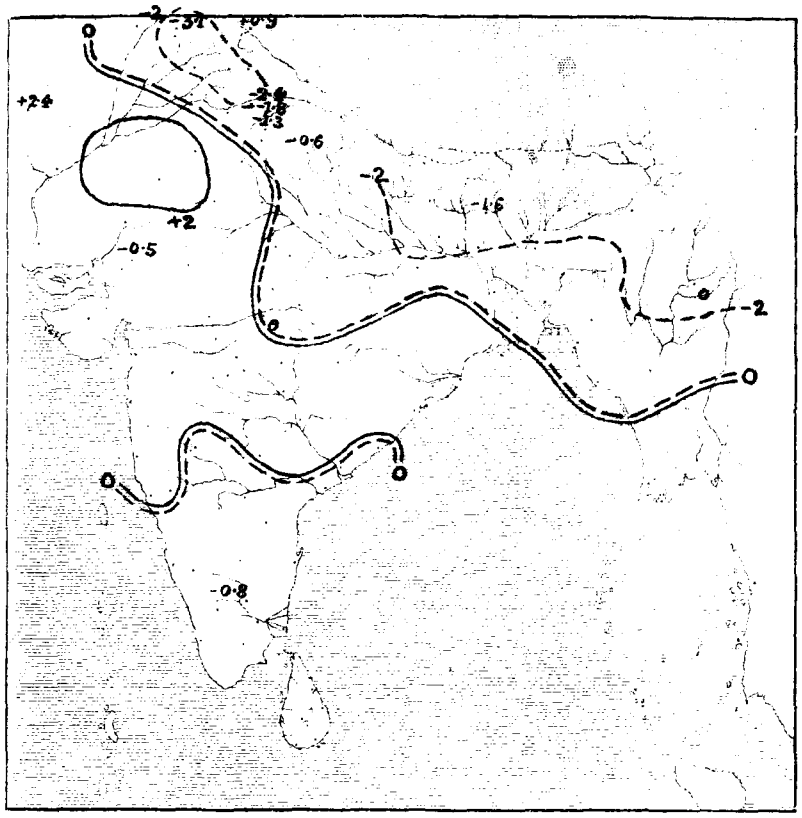
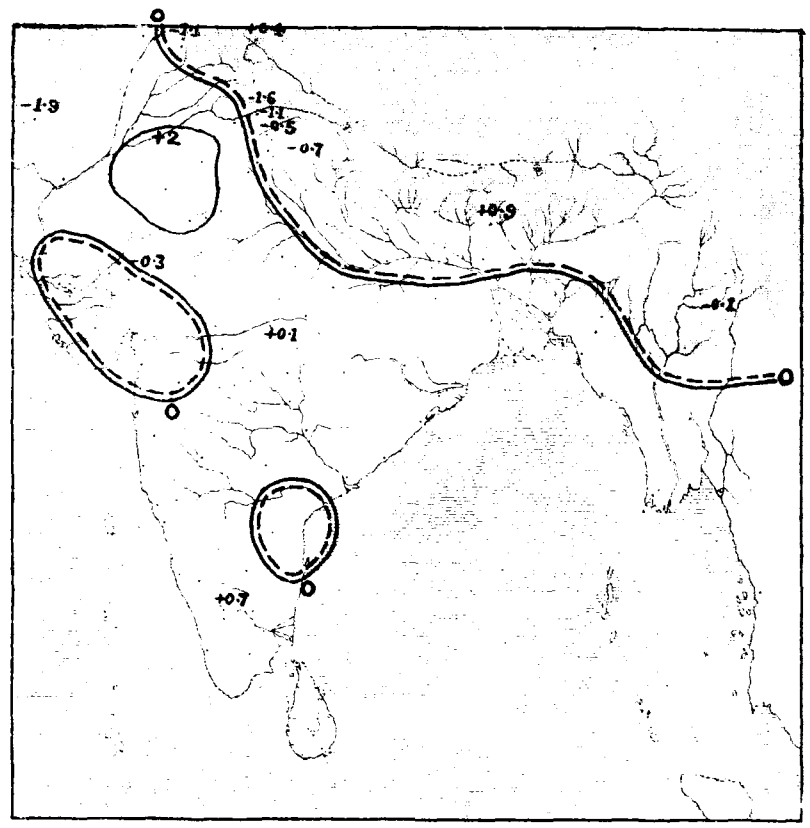


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

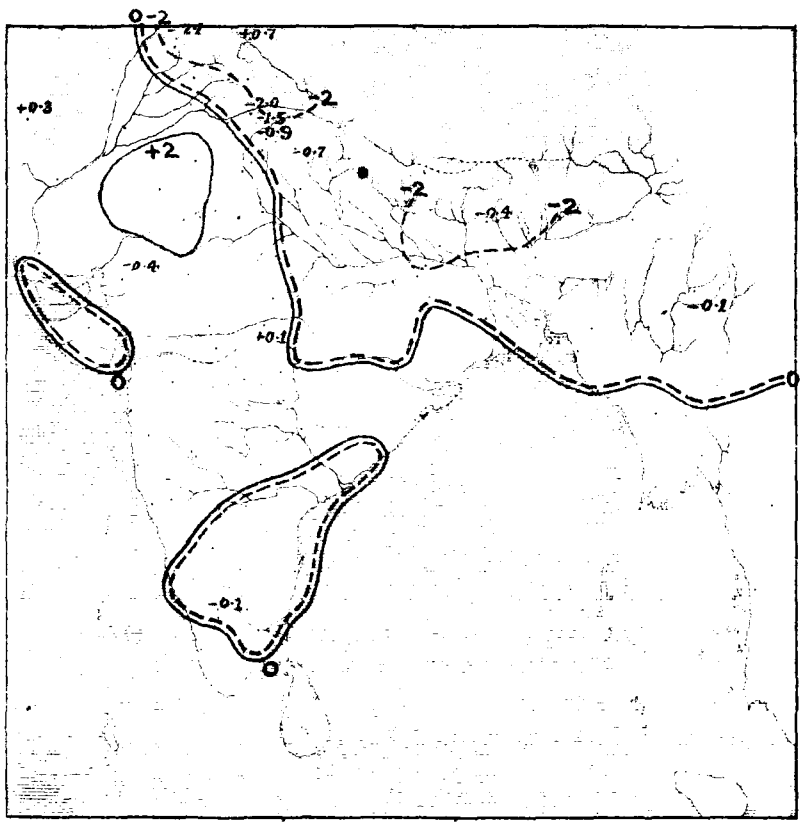
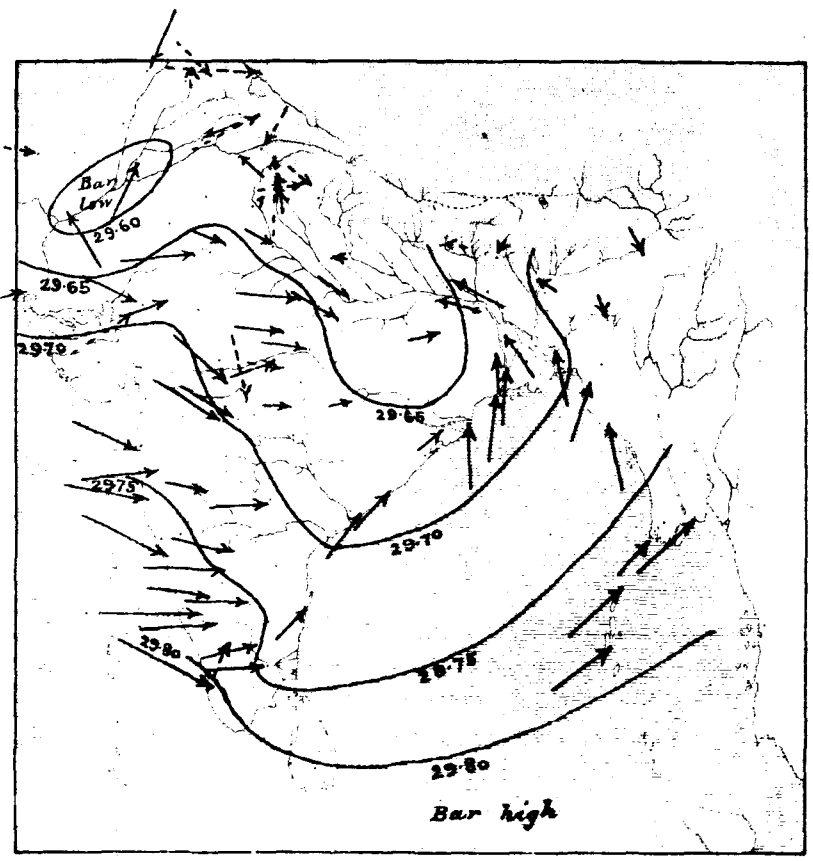


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF SEPTEMBER 1898.



LITHO. BY J.N. MUNDLE.

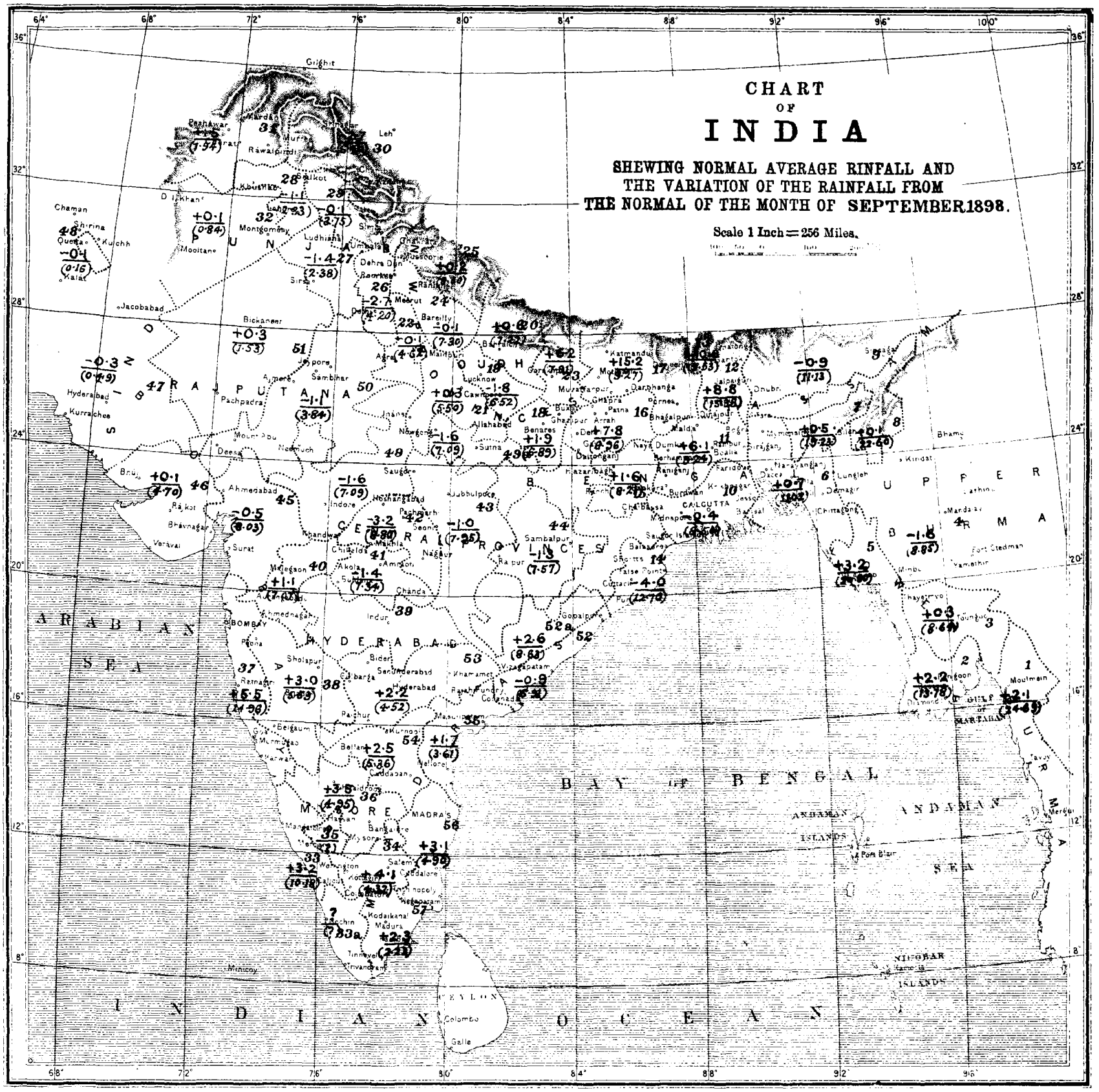
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of $\frac{1}{8}$th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this Chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in Elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Reg. No. 243, Wr., I.—June 98.—52,50.

LITHO. BY Ziegler, Reid & Co., Calcutta.

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma, Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North Punjab
32. West do.
33. Malabar
33a Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do. do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, OCTOBER, 1898.

INTRODUCTION.

THIS Review of the weather in India during the month of October 1898 is based on observations taken daily at 8 A.M. at 214 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 86 stations. The rainfall summary is based on the rainfall data of the meteorological observatories and on the weekly rainfall telegrams received during the month from the District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the publication of the review. A summary of the weather in the Bay of Bengal and the Arabian Sea, based on information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of October 1898.

October is pre-eminently a month of transition. The south-west monsoon winds usually begin to retreat from North-Western India before the end of September and withdraw from Northern India, the north of the Bay and the north and centre of the Arabian Sea before the end of the month of October. South-west humid winds continue to blow with more or less steadiness in the south of the Arabian Sea and the south and centre of the Bay. These south-west winds in the Bay are deflected through south, south-east and east and blow as north-east winds on the Coromandel Coast. As long as south-west winds continue to prevail in the south of the Bay (which is usually until the middle or end of December), the north-east winds blowing across the Coromandel coast give more or less frequent rain to Southern India which is heaviest in the coast districts. In Northern India light variable winds or calms generally prevail. The mean air movement is, however, from the west down the Gangetic Plain. In the Peninsula winds range between east and north-east. The mean air motion over the whole of the Indian area, except the southern portions of the Bay of Bengal and Arabian Sea, although generally feeble, is opposite in direction to that which obtains in September. These changes in the mean wind directions accompany corresponding changes of pressure. Pressure rises rapidly in North-Western India, Assam and Upper Burma and moderately in Central India and the north of the Peninsula. Before the end of the month pressure is usually highest in Upper India, and is lowest in the centre or south of the Bay. The range of pressure is, however, small and baric gradients very slight. The most important feature of the pressure distribution during the month is hence its approximate uniformity. Pressure is slightly higher in the interior than in the coast districts, and is lowest in the Bay and the south of the Peninsula. Temperature begins to fall rather rapidly in Sind, West Rajputana and the South-West Punjab, which are dry hot areas during the rains. The mean temperature conditions of the month, like the mean pressure conditions, are more uniform in October than in any other month of the year. The mean temperature of the month varies from 73° (in the North Punjab) to 85° (in Central Rajputana), and the daily range of temperature from 35° in

Upper Sind and West Rajputana to 10° in the coast districts of Bengal and Madras. The amount of aqueous vapour in the air diminishes rather rapidly in North-Western and Central India during the month. The decrease in humidity is usually greater in the North-Western Provinces, East Rajputana and Central India than in the Punjab, in consequence of the greater fall of temperature in the latter area. Rain is chiefly received in Bengal, Burma, Madras and the Deccan. In Bengal and Burma it occurs usually during the first-half of the month and in the Peninsula during the second-half of the month. One of the most important meteorological features of the month is the tendency to the formation of extensive and intense cyclones in the Bay. These appear to require a considerable period for their development, and the conditions of uniform temperature and pressure of the month are especially favourable to their growth, provided the humid south-west current in the south of the Bay be strong enough to ensure abundant supplies of aqueous vapour, the condensation of which undoubtedly supplies the motive power of these storms.

The month may be divided into four periods, *viz.*, from the 1st to the 8th, the 9th to the 16th, the 17th to the 21st and the 22nd to the end of the month. During the first of these periods fairly general rain fell over the south and centre of the peninsula. The chief feature of the meteorology of the second period was a cyclonic storm of considerable intensity which gave a heavy burst of rain to North Madras and North-Eastern India and reduced temperature largely below the normal in the latter area. The third period was characterized by fine dry weather over the whole of India. During the fourth period Southern India received a moderately heavy burst of rain, which was heaviest in the South Coromandel coast districts and the southern districts of Madras.

At the commencement of the month fine dry weather obtained over the whole of Northern and Central India. Weather was showery in some parts of the Peninsula and Burma. Pressure was above the normal in North-Western and Central India and in moderate defect in South Madras, Ceylon and the south of the Bay. The changes of pressure slightly emphasized the deficiency of pressure in the south-west of the Bay and Southern India during the next three days. Rain fell in moderate amounts in Burma and Southern India from the 2nd to the 5th. Pressure increased considerably on the 5th and 6th in Burma and rain ceased in that area whilst it increased slightly in Southern India and the South Deccan. The most important effect of these changes of pressure was to form a large area of shallow depression in the Bay, in the centre of which a storm began to form on the 9th.

Temperature during the period from the 1st to the 5th was in moderate to slight defect over the greater part of North-Western India, due to the cool wave which followed the snowfall in Kashmir during the last week of September. The following gives data :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	1st October.	2nd October.	3rd October.	4th October.	5th October.	6th October.
	°	°	°	°	°	°
Baluchistan (Quetta)	−5·5	−7·2	−6·6	−5·7	−3·8	−1·6
Punjab	−3·9	−2·6	−1·4	−0·6	−0·3	+0·4
Upper Sind	−2·3	+1·4	+2·5	+0·7	−0·5	+0·3
Rajputana	−0·3	+0·1	+1·8	+3·6	+2·0	+2·1

Temperature increased in North-Eastern India, Kathiawar, Gujarat and the Deccan, and was in slight to moderate excess from the 4th to the 9th in the areas for which data are given below :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	4th October.	5th October.	6th October.	7th October.	8th October.	9th October.
	°	°	°	°	°	°
Kathiawar	+3·1	+4·9	+4·6	+4·5	+2·5	+1·7
Rajputana	+3·6	+2·0	+2·1	+2·3	+1·2	+1·7
Bombay Deccan	+1·5	+1·7	+2·8	+1·7	+2·9	−0·3
Bengal and Assam	+1·3	+1·2	+1·1	+0·9	+1·1	+1·3
Burma	+2·1	+1·3	+0·5	+0·8	+1·0	+0·5

The variations of temperature during this period were hence not large or important.

The weather in India during the second period was determined by a cyclonic storm, which formed in the centre of the Bay nearly midway between the Andamans and the Circars coast on the 8th and 9th. It developed rather rapidly on the 10th and began to move in a west-north-west direction towards the Circars coast. The centre crossed the coast a little to the south of Masulipatam about 9 A.M. or 10 A.M. of the 11th and passed over Bezwada about 1 P.M. It then recurved sharply and apparently advanced north-eastwards along the eastern flank of the East Ghats through the Godavari, Vizagapatam and Ganjam districts and Orissa during the next two days, giving excessively heavy rain in the advancing quadrant. It passed into South-West Bengal on the 14th

and was central near Midnapore at 8 A.M. of that date. The centre continued to advance in the same direction during the next 24 hours, and was in Central Bengal to the north-west of Sirajganj at 8 A.M. of the 15th.

Very heavy rain fell in Orissa on the 11th and 12th, and in Bengal on the 13th, 14th and 15th in front of the storm centre. The storm filled up rapidly on the 15th and rain ceased in Bengal on that day. The residual depression affected Assam and Upper Burma during the next 24 hours and rain continued to fall in these areas until the morning of the 17th when fine dry weather set in over the whole of North-Eastern India.

The rainfall accompanying the storm was very heavy. The following gives a summary :—

District or Area.	Average actual rainfall during 24 hours preceding 8 A.M. of							Total of period 10th to 16th October 1898.
	10th October.	11th October.	12th October.	13th October.	14th October.	15th October.	16th October.	
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Kistna . .	0·07	2·71	1·21	0·09	0	0·01	0	4·09
Godavari .	0·27	1·67	1·57	0·72	0	0·01	0	4·24
Ganjam. .	1·84	2·69	1·00	2·40	0·43	0	0·04	8·40
Vizagapatam.	0·79	1·01	1·35	0·65	0·04	0·03	0	3·87
Orissa . .	1·03	3·56	1·61	1·23	1·26	0·01	0·14	8·84
Chota Nagpur	0·08	0·16	0·17	0·27	1·04	0·36	0	2·08
Bihar . .	0·04	0·06	0·09	0·10	0·45	0·45	0·03	1·22
South-West Bengal.	0·21	0·54	0·90	0·62	2·40	1·21	0	5·88
North Bengal	0	0	0·33	0·70	1·55	2·63	0·01	5·22
East Bengal .	0·04	0·09	0·59	2·63	2·46	1·94	0·56	8·31
Assam, Surma	0·11	0·18	0·69	1·13	1·54	0·57	0·52	4·74
„ Brahmaputra.	0·02	0·10	0·46	0·72	1·67	1·90	0·48	5·35
„ Hills .	0·12	0·11	0·35	1·17	2·72	2·84	1·86	9·17

The rainfall was general and fairly uniform in the storm area. Amounts in twenty-four hours exceeding ten inches were received in a few cases. This downpour formed the termination of the monsoon rains in North-Eastern India.

The rainfall caused a large reduction of temperature in North-Eastern India, very large in the day temperature and moderate in the night temperature. The following gives the mean variations from the normal, day by day, from the 10th to the 16th in North Madras and North-Eastern India :—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	10th October.	11th October.	12th October.	13th October.	14th October.	15th October.	16th October.
	°	°	°	°	°	°	°
North Madras	−1·0	−3·9	−2·9	−2·7	−0·9	+1·9	+1·6
Orissa . .	+0·7	−5·1	−6·6	−3·2	−3·5	+0·5	−0·2
Chota Nagpur	+2·2	−0·1	−4·2	−3·7	−3·8	−1·9	−3·1
Bihar . .	+2·1	+1·4	+0·3	−1·2	−5·7	−8·3	−4·2
Bengal . .	+0·6	−0·2	−3·7	−4·7	−4·8	−4·9	−3·2
Assam . .	+0·4	+0·6	−0·8	−5·4	−7·6	−7·4	−5·8

Fine dry weather held steadily during this period in North-Western and Central India and the Deccan. Occasional local showers were received in Southern India. Temperature was in slight to considerable excess in these areas throughout the period. The following gives data for Baluchistan, the Punjab, Sind, Rajputana and the Deccan, where the excess was greatest :—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of							
	10th October.	11th October.	12th October.	13th October.	14th October.	15th October.	16th October.	17th October.
	°	°	°	°	°	°	°	°
Baluchistan (Quetta).	+0·4	+0·1	+0·8	+2·9	+2·1	+2·7	+5·7	+5·9
Punjab . .	+0·7	+0·7	+0·6	+0·9	+1·9	+1·8	+2·4	+3·0
Sind and Rajputana.	+1·1	+1·4	+1·6	+0·8	+1·9	+1·5	+3·8	+3·6
Deccan . .	−0·1	+0·7	+1·4	+2·5	+3·2	+3·3	+2·6	+2·2

The dispersion of the storm was followed by a short period of fine dry weather over the whole of India lasting from the 17th to the 21st. During this period temperature slowly increased in North-Eastern India and was normal at the end of the period. It was above the normal elsewhere, the excess being most marked in Baluchistan, the Punjab, Sind, Rajputana, the Deccan and the Madras coast districts, for which variation data are given below :—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	17th October.	18th October.	19th October.	20th October.	21st October.
	°	°	°	°	°
Baluchistan (Quetta) .	+5·9	+4·3	+7·0	+3·7	+3·7
Punjab . . .	+3·0	+4·4	+5·1	+3·6	+3·0
Sind and Rajputana .	+3·6	+3·2	+3·4	+3·9	+3·0
Deccan . . .	+2·2	+2·4	+2·6	+1·6	+2·6
Madras Coast . .	+2·5	+2·6	+1·9	+2·8	+2·3

The changes of pressure during this period were not large but modified its distribution considerably. At the end of this period pressure was lowest in the centre, south and south-west of the Bay. Humid north-east winds set in on the Madras coast and gave daily rain during the remainder of the month, the fourth period of the month. The rainfall was moderate to heavy in the South Coromandel coast districts. The following table gives average district rainfalls in 24 hours exceeding one inch and shows the distribution of the heaviest and most general rain during the period :—

DISTRICT.	Date.	Average rainfall of 24 hours preceding 8 A.M. in district.	Heaviest rainfall in district.
		Inches.	Inches.
Nellore	26th October	2·34	5·21
Chingleput	25th ,,	1·80	3·60
,,	26th ,,	3·25	6·60
,,	30th ,,	2·62	6·76
,,	31st ,,	2·69	5·64
South Arcot	24th ,,	1·33	3·72
,,	25th ,,	1·66	4·22
,,	26th ,,	1·06	2·35
,,	28th ,,	1·04	2·77
Tanjore	24th ,,	1·00	3·35
,,	28th ,,	1·15	3·46
Madura	28th ,,	1·10	3·62
,,	29th ,,	1·28	3·98
Tinnevelly	26th ,,	1·09	4·90
,,	29th ,,	1·52	3·97
Malabar	28th ,,	1·05	4·05
South Canara	27th ,,	1·05	2·82
Nilgiris	28th ,,	1·32	2·40

Temperature decreased considerably in Southern India with the recommencement of rain and was in slight to moderate defect during the remainder of the month. A feeble cool wave affected Baluchistan and Upper India on the 24th and 25th following slight disturbance and snowfall in Kashmir and Chitral. Dry westerly winds extended down the Gangetic Plain into Bengal at the same time and the cool wave extended eastwards on the 27th and 28th into Bengal. The following gives variation data showing the progress of this cool wave:—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF							
	23rd October.	24th October.	25th October.	26th October.	27th October.	28th October.	29th October.	30th October.
	°	°	°	°	°	°	°	°
Baluchistan (Quetta)	+5·3	−3·5	−4·2	−3·1	−4·1	−3·1	−4·1	−2·9
Punjab	+5·6	+1·8	0	−0·8	−1·6	−1·7	−1·0	−2·1
Sind and Rajputana	+3·0	+3·0	+1·3	−0·7	−1·6	−1·3	−0·7	−0·1
North-Western Provinces and Oudh.	+1·7	+1·7	+1·4	−0·4	−2·1	−2·4	−2·2	−2·0
Central India and Gujarat.	+1·2	+1·1	+1·0	+0·6	−0·7	−0·6	+0·4	+0·1
Bihar	+1·4	+1·6	+1·2	+0·1	−0·4	−2·4	−2·6	−2·4
Chota Nagpur	−1·1	−0·5	+0·8	−0·3	−0·9	−3·2	−3·9	−4·0
Bengal	+0·8	+1·3	+1·0	+1·1	−0·2	−1·0	−2·6	−2·8

The reduction of temperature was chiefly exhibited in the night temperature. Thus on the 29th the mean minimum temperature in Bengal averaged 4°·3 below the normal, and the mean maximum temperature only 0°·6 below it.

Temperature was in moderate excess during this period in the Deccan. Fine dry weather with clear skies obtained during this period over the whole of India with the exception of Southern India, the Deccan and parts of Burma where skies were more or less clouded.

A noteworthy feature of the meteorology of the month was the steady prevalence of unusually fine dry weather over the whole of North-Western and Central India. The following gives examples of the low humidities recorded in that area :—

STATION.	Date.	RELATIVE HUMIDITY AT	
		10 A.M.	4 P.M.
		%	%
Meerut	3rd October 1898	...	12
Oodeypore	9th ,, ,,	...	10
Peshawar	23rd ,, ,,	...	13
Kurrachee	24th ,, ,,	15	...
Do.	25th ,, ,,	15	...
Jeypore	25th ,, ,,	...	9
Ludhiana	26th ,, ,,	...	12
Deesa	27th ,, ,,	7	8
Saugor	30th ,, ,,	...	13

Pressure.—The mean pressure of the Indian land area for the month was ·006″ below the normal.

Relatively to the general condition, pressure was in defect, or the pressure anomalies were negative, in North-West India, the west and south of the Peninsula, the

southern half of the Bay and Lower Burma. The deficiency was moderate in amount in Malabar, Ceylon and the south and south-east of the Bay and was absolutely greatest at Colombo and Calicut (each —·028″) and perhaps at Tavoy (—·028″). Pressure was relatively in excess over the remainder of India and the north of the Bay. The excess was greatest in Cachar and Upper Burma where it was slightly over ·02″. The vertical pressure anomalies in Northern India were positive and moderate in amount. Pressure was in excess at Baghdad, and normal at Aden and Bushire.

The following table gives the mean pressure variations and anomalies of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of October 1898.	Pressure anomaly, October 1898.
	″	″
Burma Coast and Bay Islands	—·014	—·008
Burma Inland	+·003	+·009
Assam	+·009	+·015
Bengal and Orissa	+·001	+·007
Gangetic Plain and Chota Nagpur	—·001	+·005
Upper Sub-Himalayas	—·008	—·002
Indus Valley and North-West Rajputana	—·015	—·009
East Rajputana, Central India and Gujarat	—·008	—·002
Deccan	+·001	+·007
West Coast	—·024	—·018
South India	—·012	—·006

Temperature.—The variations of the mean day temperature from the normal were much larger than in October 1897. The mean maximum temperature was in considerable to large excess in the large area of decreased humidity and cloud and deficient rain including Sind, Rajputana, Central India, Berar, Khandesh, the western half of the Central Provinces and the greater part of the Deccan. The excess ranged between 2° and 6° in that area and was absolutely greatest at Deesa (+5°·8) and Akola (+4°·5). The maximum temperature of the month was in slight defect in Assam, Bengal, Bihar, Chota Nagpur and Upper Burma and also in South Madras.

The night temperature varied little from the normal over the greater part of the country. The mean night temperature was in defect in Northern and Central India, Berar and the Central Provinces, and in excess in the Peninsula (south of Lat. 20° N.) and Burma. The variations were generally small and exceeded 2° at only eight stations, *viz.*, Quetta (—3°·1), Chanda (—2°·9), Pachmarhi (—2°·6), Jubbulpore and Seoni (—each 2°.5), Khandwa (—2°·4), Sambalpur (—2°·3), and perhaps Ratnagiri (+3°·1).

The mean temperature of the month was very slightly below the normal in Assam, Upper Burma, Bengal, Bihar, Chota Nagpur, Orissa and the eastern districts of the Central Provinces, and also locally at Madura and Madras, and above it over the remainder of the country. The positive variations in the areas of increased temperature were small, except in two areas, for which data are given below :—

AREA.	STATION.	MEAN DAILY TEMPERATURE. Actual, October 1898.	Normal, October.	Variation of actual from normal.
		°	°	°
FIRST AREA	Sambhar	80·5	78·1	+2·4
	Deesa	84·0	81·5	+2·5
SECOND AREA	Hyderabad	80·5	77·3	+3·2
	Kurnool	82·7	80·3	+2·4
	Bombay	84·1	81·7	+2·4
	Ratnagiri	83·7	80·8	+2·9
	Amraoti	80·6	78·5	+2·1

The following gives temperature variation data of the month for the eleven meteorological provinces of India :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF Mean maximum temperature, October 1898.	Mean minimum temperature, October 1898.	Mean daily temperature, October 1898.
	°	°	°
Burma Coast and Bay Islands	+2·0	+1·1	+1·6
Burma Inland	+0·1	+0·7	+0·4
Assam	—0·1	—0·4	—0·2
Bengal and Orissa	—0·6	—0·4	—0·5
Gangetic Plain and Chota Nagpur	+0·3	—1·0	—0·4
Upper Sub-Himalayas	+1·4	—0·2	+0·6
Indus Valley and North-West Rajputana.	+2·4	—0·6	+0·9
East Rajputana, Central India and Gujarat.	+3·9	—0·4	+1·8
Deccan	+2·5	—1·1	+0·7
West Coast	+1·9	+1·5	+1·7
South India	+0·6	+0·9	+0·8

Winds.—The air movement of the month was normal in the Arabian Sea, but slightly feebler than usual in the Bay. The variations of the air movement over India from its normal character were chiefly dependent upon or related to the abnormal features of the pressure conditions. Winds were on the mean of the month more westerly than usual at Port Blair and the Burma coast stations and also in Bengal.

Winds were much more steady and westerly than usual in Bengal, due to the termination of the monsoon rains a

fortnight earlier than the normal and to the early extension of north-westerly winds from the Gangetic Plain into Bengal. Winds were also generally steadier but weaker than usual in the Gangetic Plain. Winds were more westerly than usual in the East Punjab, and varied very irregularly from the normal in Upper Sind and the West Punjab. They were of normal strength, but steadier than usual in Rajputana and Central India. In Berar, the Central Provinces and Deccan winds were on the mean of the month more easterly and stronger than usual. They were also much less variable than is usual in October. Winds were very steady on the Coromandel coast. They were more westerly than usual on the Bombay coast. Winds at the Seychelles and Zanzibar were of normal strength and slightly less easterly than usual.

Humidity.—The air was damper and contained more aqueous vapour than usual in the lower air strata in Southern India. Humidity was most largely in excess at Madras (+7). The air also contained slightly more vapour than usual in Arakan, Upper Burma and Assam and humidity was normal or in very slight excess. The air was drier than usual over the remainder of India. The deficiency in the amount of aqueous vapour was considerable in the South Punjab, Rajputana, Berar, the Central Provinces and the Deccan, averaging about 15 per cent. of the total amount. As temperature was above the average in these districts, the mean humidity of the month was largely below the normal, ranging between 10 and 15 in amount in the districts represented by the stations of Mooltan, Jeypore, Ajmere, Mount Abu, Akola and Sholapur. The air was, as usual in October, absolutely driest in Rajputana, Sind and the South-West Punjab.

The following table gives the variations of the mean absolute and relative humidities of the month from the normal in ten meteorological provinces :—

Meteorological Province.	Mean absolute humidity.		Mean relative humidity.	
	Average actual, October 1898.	Variation of actual, from normal, October 1898.	Average actual, October 1898.	Variation of actual from normal, October 1898.
	"	"	%	
Burma Coast and Bay Islands	·909	+·022	82	—3
Assam	·791	+·002	82	0
Bengal and Orissa	·804	—·012	78	0
Gangetic Plain and Chota Nagpur	·609	—·029	63	—4
Upper Sub-Himalayas	·428	—·041	51	—4
Indus Valley and North-West Rajputana.	·458	—·051	47	—8
East Rajputana, Central India and Gujarat.	·415	—·051	41	—7
Deccan	·517	—·058	57	—6
West Coast	·833	+·012	77	—3
South India	·704	+·026	75	+2

Cloud.—The variations in the amount of cloud corresponded closely with the variations in the amount of aqueous vapour present in the air. Cloud was in slight to moderate excess in the area of increased rainfall in Southern India (or the Peninsula to the south of Lat., 6° N). It was also above the normal at Port Blair and in Lower Bengal. There was less cloud than usual in October over the remainder of India and the deficiency was large and marked in the Gangetic Plain, Rajputana, Central India, the Central Provinces and Deccan, and was absolutely greatest in Berar and the North Konkan. Skies were practically clear during the month in three meteorological divisions, *viz.*, the Upper Sub-Himalayas, Indus Valley and North-West Rajputana and East Rajputana, Central India and Gujarat (and also in Baluchistan) :—

Meteorological Province.	Mean cloud amount.	
	Average actual, October 1898.	Variation of actual from normal, October 1898.
Burma Coast and Bay Islands	5·7	+0·1
Assam	4·0	—0·6
Bengal and Orissa	4·0	—0·4
Gangetic Plain and Chota Nagpur	1·5	—1·3
Upper Sub-Himalayas	0·3	—0·6
Indus Valley and North West Rajputana	0·2	—0·6
East Rajputana, Central India and Gujrat	0·3	—1·3
Deccan	2·2	—1·3
West Coast	4·3	—0·2
South India	6·5	+0·4

Rainfall.—The precipitation of the month occurred chiefly during three periods. In the first of these, lasting from the 1st to the 8th, it was received chiefly in the Madras Presidency and was due to a feeble determination of humid winds from the Bay across the Coromandel coast. Madras and Burma obtained light to moderate rain during this period.

The second period extended from the 10th to the 16th. The rainfall of this period was due to and accompanied the march of the only cyclonic storm of the month. The storm advanced first in a north-westerly direction to the delta of the Godaveri, and then recurved to north-east marching parallel to the East Ghats through the northern districts of Madras and Orissa into Bengal and broke up in Central Bengal on the 16th. It gave a heavy burst of rain to the districts through which it passed. North Madras, Orissa, Bengal and Cachar hence received heavy rain. Chota Nagpur, Bihar and Upper Burma obtained light to moderate rain, and the Central Provinces and North-Western Provinces light showers.

The third period extended from the 22nd to the end of the month. A moderate burst of north-east humid winds from the Bay gave general and moderately heavy rain over Southern India (or the Peninsula south of Lat. 16° N). The rainfall was heavy in the Nellore, Chingleput, South Arcot, Tanjore and Madura districts, and moderate in the remaining districts of that area. The rainfall of the month was normal in the west coast division, in slight excess in Southern India and in largish excess in Bengal and Orissa. Practically no rain fell over the whole of North-Western and Central India. The rainfall of the month was in moderate to largish defect in Bihar, the North-Western Provinces, the Central Provinces and Burma, and in small defect in the areas of no rainfall.

The deficiency was greatest in absolute amount in Lower Burma, which received 4·55 inches less than its normal average amount (9·57 inches) and the Deccan which obtained an average of 1·19 inches or 2·02 inches less than the normal.

The following table gives rainfall data of the month for the eleven meteorological provinces:—

METEOROLOGICAL PROVINCE.	RAINFALL.		
	Mean actual for October 1898.	Mean normal for October.	Variation from normal.
	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	5·81	9·57	—4·55*
Burma Inland	3·44	4·50	—1·06
Assam	4·28	5·00	—0·72
Bengal and Orissa	8·22	5·14	+3·08
Gangetic Plain and Chota Nagpur	1·16	2·56	—1·40
Upper Sub-Himalayas	0	0·46	—0·46
Indus Valley and North-West Rajputana.	0	0·06	—0·06
East Rajputana, Central India and Gujarat.	0·04	0·66	—0·61*
Deccan	1·19	3·08	—2·02*
West-Coast	7·89	7·80	+0·09
South India	7·94	7·35	+0·59

* A reference to table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with figures in column I.

Atmospheric Pressure.

The mean pressure of the Indian land area was ·006″ below the normal, and was hence in slight defect.

Pressure was, relatively to the general condition, in local defect or the anomalies were negative in Upper India, the west, centre and south of the Peninsula and Lower Burma. The local deficiency was generally small in amount, but exceeded ·02″ in the South Konkan, Malabar and Ceylon, and perhaps the south and south-east of the Bay. The following gives data for stations in these areas at which the negative anomalies were more than ·02″ in amount:—

AREA.	STATION.	Variation from normal of mean 8 A.M. pressure of October 1898.	Pressure anomaly, October 1898.
		″	″
KONKAN	Karwar	—·028	—·022
MALABAR	Calicut	—·034	—·028
	Cochin	—·033	—·027
	Mangalore	—·030	—·024
CEYLON	Colombo	—·034	—·028
TENASSERIM AND BAY ISLANDS.	Tavoy	—·034	—·028
	Port Blair	—·008	—·002

The deficiency was hence moderate in Malabar, Ceylon and the south of the Bay, and formed an important feature of the pressure distribution of the month.

Pressure was in excess, relatively to the general condition, over the remainder of India. The excess was generally small in amount, but exceeded ·02″ at the stations for which data are given below:—

AREA.	STATION.	Variation from normal of mean 8 A.M. pressure of October 1898.	Pressure anomaly, October 1898.
		″	″
BURMA	Bhamo	+·019	+·025
ASSAM	Silchar	+·018	+·024
CENTRAL PROVINCES	Khandwa	+·016	+·022
	Sambalpur	+·016	+·022

The mean pressure of the month was very uniform over the land area and was very slightly lower in the centre and south of the Bay of Bengal than elsewhere. It was lowest in the centre of the Bay. The total range of the mean 8 A.M. pressure of the month was only ·11″ and of the mean pressure (deduced from the 10 and 16 hours readings) about ·10″.

Pressure was in defect at the hill stations, but by smaller amounts than at the neighbouring plain stations, and hence the vertical anomalies were generally positive in Northern India and generally moderate in amount. The following gives data for ten pairs of stations :—

HILL STATION.	Variation of actual from normal pressure, October 1898.	PLAIN STATION.	Variation of actual from normal pressure, October 1898.	Vertical pressure anomaly (Hill—Plain).
	"		"	"
Quetta	+·014	Jacobabad	—·020	+·034
Leh	+·063	Lahore	—·012	+·075
Murree	—·021	Peshawar	—·023	+·002
Simla	—·001	Ludhiana	—·011	+·010
Chakrata	+·022	Roorkee	—·009	+·031
Ranikhet	+·020	Bareilly	+·010	+·010
Darjeeling	—·018	Dhubri	—·008?	—·010?
Pachmarhi	+·002	Hoshangabad	+·014	—·012
Wellington	—·025	Coimbatore	—·018	—·007
Mount Abu	—·010	Deesa	—·010	0

The chief abnormal features of the pressure conditions were similar in character to those of the preceding month. Pressure in both months was, relatively to the general condition, locally in excess in North-Eastern India, Upper Burma, North Madras and the Central Provinces, and in slight to moderate local defect in Southern India and the south of the Bay. The pressure conditions in October were, it may be noted, favourable to the occurrence of rain in the southern districts of the Peninsula.

The chief features of the pressure distribution of October 1898 were :—

(1) Slight general deficiency of pressure in the Indian area, averaging ·006" in amount.

(2) The mean pressure of the month was very uniform in amount over the greater part of the area. It was slightly lower in the centre and south of the Bay than elsewhere.

(3) Relatively to the general condition, pressure was locally in slight excess in North-Eastern India the Central Provinces and Upper Burma. The excess was greatest in the Cachar and Upper Burma districts.

(4) Pressure was locally in slight to moderate defect in North-Western India, the west, centre and south of the Peninsula, and perhaps the south and south-east of the Bay. The variations were small except in Malabar and Ceylon where they slightly exceeded ·02".

(5) The vertical pressure anomalies in Northern India were moderate in amount and positive.

Barometric depressions and cyclonic storms of the month.

At the commencement of the month pressure was in slight excess in North-Western and Central India and was in moderate to considerable defect in Southern India and the south of the Bay. Weather was generally fine and dry but was showery in Southern India. Pressure increased in India generally on the 2nd and 3rd, more rapidly in Northern than in Southern India, thus further emphasizing the pressure conditions prevailing on the 1st. The rainfall increased in amount and extended over the whole area to the south of Lat. 18° N in the Peninsula on the 3rd. Rain also recommenced in Burma. Conditions were practically unchanged on the 4th, 5th and 6th and rain continued in the same districts as on the 3rd but in smaller amounts. Pressure increased in North-Eastern India and Burma relatively to the remainder of India on the 6th and 7th and rain ceased in Burma on the 7th, but continued steadily in the southern half of the Peninsula. The pressure changes were small on the 7th and 8th, pressure increasing slightly in Northern India and decreasing slightly in the Peninsula, and the centre and south of the Bay. The most important effect of these changes was to give slightly lower pressure in the Bay than in India. A storm rapidly formed in the centre of this large shallow depression which formed the chief feature of the meteorology of India from the 9th to the 15th.

Cyclonic storm of the 9th to the 15th.—The conditions under which the depression in which this storm originated have been already stated. Pressure had been for some days previously in moderate excess over the greater part of Northern and Central India. It had also increased on the 6th and 7th in North-Eastern India and Burma after a moderate burst of rain in the latter area. Pressure on the 8th was hence in slight to moderate excess in the greater part of Northern India, the Central Provinces, and Upper Burma and was in slight defect in the southern half of the Bay and of the Peninsula. Weather had improved in the latter area and was generally fine, but local showers continued to be received in the coast districts. The weather in the Bay on the 8th is indicated by the following summary

of observations taken on board ships and at Port Blair and Cocos Island :—

NAME OF VESSEL OR STATION.	8 A.M. POSITION.		Barometer corrected.	WIND		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S. S. *Brindisi* .	5·47	89·34	29·879	WSW	4	4 A.M. squally.
S. S. *Malta* .	8·15	82·36	·829	W	4	Moderate sea and fine. 8 P.M. squally.
Port Blair .	...	...	·764	ESE	6*	
Cocos Island †	...	...	·803	ESE	...	Overcast.
S. S. *Okara*.	15·11	85·38	·794	Variable	2	
S. S. *Nurani*	18·45	85·15	·797	ENE	3	Noon, passing showers.
S. S. *Africa*.	19·30	90·2	·812	SE	2	Cloudy.
S. S. *Deepdale*	20·20	87·14	·807	NE	2	Fine.
F. L. V. *Torch*	Mutlah.		·821	E	1	Long south swell. Heavy rain shower at 1-30 P.M.

* Velocity.
† 10 A.M. observations.

The data when charted show that a large shallow depression area extended across the centre of the Bay from the Andamans to the Madras coast. Moderate to fresh westerly winds obtained to the south of the depression in the south of the Bay and light easterly to north-easterly winds to the north-east and north of the depression over the north of the Bay. Weather was showery and squally in the south and south-east of the Bay. 3·2 inches of rain were registered at Port Blair at 8 A.M. Weather was generally fine and clear over the north and north-east of the Bay. Only one vessel was in the depression area (as defined by the isobar of 29·80), *viz.*, the *Okara*. She had light variable airs and unsteady winds during the day, as is shown by the following extracts from her log :—

HOUR.	NAME OF VESSEL.	POSITION.		Barometer corrected.	WIND	
		Lat. N.	Long. E.		Direction.	Force.
		° ′	° ′	″		
4 A. M.	S. S. *Okara*.	...	...	...	ESE	2
8 A. M.	"	15·11	85·38	29·794	Variable	2
Noon.	"	14·45	85·26	...	ESE	2
4 P. M.	"	...	...	...	SE	2
8 P. M.	"	...	...	...	ESE	2
Midnight.	"	...	...	...	SW by W	2

It is noteworthy that the *S. S. Okara* was the only vessel in the Bay which reported variable winds during the day.

9th October.—Pressure had increased slightly to briskly in Northern India and Burma and had fallen slightly in the south-west of the Bay and Southern India. These changes had further emphasized the depression in the Bay, which was, as on the 8th, defined by the isobar of 29·80″. Light showers had fallen in Orissa and the North Madras coast but rain had practically ceased in Southern India. The following gives data taken from the logs of ships showing the weather in the Bay at 8. A M.:—

NAME OF VESSEL OR STATION.	8 A.M. POSITION.		Barometer corrected.	WIND		WEATHER.
	Lat. N.	Long E.		Direction.	Force.	
	° ′	° ′	″			
S. S. *Kt. Commander*.	9·36	83·14	...	WNW	5	Moderate sea and showery.
S. S. *Clan Mackensie*	10·24	81·03	29·789	W	4	Moderate sea and passing showers.
Port Blair .	...	...	29·800	SSE	* 10	
S. S. *Okara*.	12·16	84·13	·753	Var	1	4 P.M. cloudy.
R. I. M. S. *Canning*	12·37	90·16	·779	S	2	Drizzling.
S. S. *Malta*.	12·41	85·01	·777	Var	1	Overcast; noon, squally.
S. S. *Ootobaria*	13·09	91·02	·815	SE	2	Slight SE sea and showery.
S. S. *Chanda*	13·44	80·44	·785	Var	2	Drizzling rain.
Cocos Island.	...	...	·823	SE	...	...
S. S. *Africa*.	16·51	93·16	·809	E	5	Moderate sea and fine.
S. S. *Mount Hebron*.	18·52	87·24	·829	NE	2	Smooth sea. Midnight, heavy rain squalls.
S. S. *Maharani* .	19·45	89·26	·847	ENE	4	Fine and clear. Midnight, squally.
F. L. V. *Hesperus*.	Intermediate station		·860	SE	1	...

* Velocity.

The data indicate that a shallow depression extended across the Bay from the Andamans to the Madras coast. Moderate to fresh westerly winds with much rain obtained to the south, increasing south-easterly winds with moderate rain and occasional squalls to the east, and cloudy showery weather to the north of the central depression. Two vessels, the S. S. *Okara* and *Malta* were near the centre of the depression. The following gives complete

extracts from their logs of the weather experienced during the day :—

Hour.	Name of Vessel.	8 A.M. Position. Lat. N.	Long. E.	Barometer corrected	Wind Direction.	Force.	Weather.
		° ′	° ′	″			
4 A.M.	S.S. *Okara*	...	...	...	Var.	1	
8 „	„	12 16	84 13	29·753	Var.	1	
Noon	„	11 46	83 58	...	Var.	1	
4 P.M.	„	...	...	...	WSW	2	Cloudy.
8 „	„	...	...	...	W	2	
Midnight.	„	...	...	...	SW	2	
4 A.M.	S.S. *Malta*	...	...	...	Var.	3	Cloudy.
8 „	„	12 41	85 01	29·777	Var.	1	Overcast.
Noon	„	13 25	85 25	...	NE by N	2	Squally.
4 P.M.	„	...	...	...	N	5	Overcast.
8 „	„	...	...	...	SSE	4	Confused sea.
Midnight.	„	...	...	...	SE	5	Passing clouds.

10th October.—Pressure had again increased in Northern India and had fallen slightly in the Peninsula. It had fallen briskly to rapidly in the centre of the Bay and the depression had intensified and concentrated considerably during the previous 24 hours. Weather was cloudy and showery in the coast districts and a heavy easterly swell had set in on the North Madras coast. The following gives 8 A.M. data of the Bay taken from the logs of ships :—

Name of Vessel.	8 A.M. Position. Lat. N.	Long. E.	Barometer corrected.	Wind Direction.	Force.	Weather.
	° ′	° ′	″			
S.S. *Okara*	9 36	83 23	29·713	WSW	4	
R. I. M. S. *Canning.*	10 36	87 32	·767	SW	4	Squally.
S.S. *Ockenfels*	11 14	80 43	·726	NW	1	
S.S. *Oolobaria*	11 20	88 20	·771	SSW	4	Moderate sea. Midnight, sharp squalls.
S.S. *Kt. Commander.*	13 51	85 03	...	Var.	...	Smooth sea. Midnight, hard squalls.
S.S. *Mount Hebron.*	16 43	86 23	·719	E	4	Moderate sea and heavy rain squalls.
S.S. *Malta*	17 23	86 31	·756	SE by E	4	E. swell. 4 A.M. rainy.
S.S. *Kt. Templar.*	18 51	89 47	...	SE	4	Noon, heavy rain squalls.
F. L. V. *Torch*	Mut	lah.	·876	E	3 to 5	Rough sea and heavy rain squalls.
F. L. V. *Hesperus*	Interme	diate.	·864	ENE	3	Slight S.E. swell and squalls from S. E.
F. L. V. *Comet*	Long	sands.	·851	E	4 to 5	Very high sea and squally with rain.

The data when charted show that there was now a well defined depression and cyclonic circulation lying over the centre and south-west of the Bay in which weather was very squally with heavy rain. The centre of the depression at 8 A.M. was in about Lat. 14°N. and Long. 84°¾E, not far from the position of the S. S. *Kt. Commander.* The log of the vessel shows that at that hour she had light variable airs and a smooth sea, and hence the character of the weather in the central area of the depression was the same as was experienced by the *Okara* on the 8th and the *Okara* and *Malta* on the 9th. The *Kt. Commander* passed into the northern quadrant of moderate easterly winds during the day. The following gives extracts from her log :—

Hour.	Name of Vessel.	8 A.M. Position. Lat. N.	Long. E.	Wind Direction.	Force.	Weather.
		° ′	° ′			
4 A.M.	S.S. *Kt. Commander.*	...	...	Var.	1 to 0	
8 „	„	13 51	85 3	Var.	2	Sea smooth and cloudy.
Noon	„	14 34	85 20	E	5	Cloudy and squally.
4 P.M.	„	...	...	E	2	Showery and squally.
8 „	„	...	...	E	4	Squally.
Midnight.	„	...	...	E	5	Hard squalls of wind and rain and heavy sea.

11th October.—Pressure had decreased in the whole Indian area. The changes were generally small in amount in Northern India and Burma. The fall was large in the East Deccan and the North Coromandel coast, and was greatest at Musulipatam where pressure at 8 A.M. was ·37″ lower than at 8 A.M. of the 10th. The depression had intensified very considerably during the previous 24 hours and was now a severe cyclonic storm. The centre of the storm crossed the coast a little to the south of Masulipatam. The following gives 8 A.M. data of the land stations within the storm area at 8 A.M. :—

Station.	Pressure. 8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Wind. Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	Weather.
	″	″	″				Inches	
Vizagapatam	29·687	—·080	—·116	N	...	9	2·51	Continuous rain.
Cocanada	·656	—·053	—·143	ESE	32	9	2·64	Gale.
Masulipatam	·359	—·367	—·447	ESE	19	10	2·80	Severe gale.
Hyderabad (Deccan)	·696	—·110	—·139	NE	8	9	...	
Kurnool	·679	—·120	—·159	Calm.	...	10	...	
Cuddapah	·688	—·100	...	NNW	...	10	0·17	Light wind.
Nellore	·645	—·105	...	Calm.	6	10	1·74	Continuous rain.
Madras	·701	—·050	—·122	S	4	10	0·12	Showery and sea slight.

Heavy rain had fallen in the coast districts to the north of the central depression, *i.e.*, in Orissa, Ganjam and the Circars, and light showers in Central and South Madras.

The following give the most noteworthy falls during the previous 24 hours:—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 11th October 1898.
		Inches.
KISTNA	Bapatla	7·97
"	Nizampatam	6·94
"	Sattenapalle	6·25
GANJAM	Rambah	8·05
"	Sompet	6·56
CUTTACK	False Point	7·01
BALASORE	Chandbali	6·60

The following gives the average rainfall in the North Madras districts and Orissa during the preceding 24 hours:—

AREA.	DISTRICT.	Average actual rainfall during 24 hours preceding 8 A.M. of 11th October 1898.
		Inches.
MADRAS	Kistna	2·71
	Godavari	1·67
	Vizagapatam	1·01
	Ganjam	2·69
ORISSA	Puri	4·15
	Cuttack	2·99
	Balasore	3·55

The following gives a summary of the special observations recorded during the storm by the observer at Masulipatam:—

DATE.	HOUR.	Barometer corrected to sea-level and constant gravity at Lat. 45°.	WIND		Humidity.	Cloud.	Rainfall.	WEATHER.
			Direction.	Velocity in miles per hour.				
		"					Inch	
10th October	6 P.M.	29·577	NNE	14	90	10	...	Wind increasing in force and coming in squalls.
" "	8 "	·603	NNE	21	90	10	0·65	Drizzling.
11th "	1 A.M.	·510	...	...	...	...	...	
11th October	2 A.M.	·508	NNE	21	99	10	1·03	Heavy rain, stormy towards east.
" "	4 "	·464	...	...	...	...	...	Wind very severe.
" "	6 "	·456	ESE	26	92	10	...	Hard gale.
" "	7 "	·416	ENE	44	92	10	...	Hard gale.
" "	8 "	·359	ESE	50	92	10	2·80	Wind more violent.
" "	9 "	·349	ESE	50	95	10	...	
" "	2 P.M.	·504	SSW	34	83	10	0·02	
" "	3 "	·504	SSW	24	83	10	...	
" "	6 "	·579	SSW	15	89	10	...	
" "	8 "	·639	SSW	15	87	10	0·01	

No observations were taken between 9 A.M. and 2 P.M. It is probable that the storm centre passed a little to the south of Masulipatam about 9 A.M. or 10 A.M. and that its average rate of movement was 12miles per hour during the previous 24 hours. The observer states that a number of trees were blown down and cargo boats and native craft wrecked.

The following observations taken at Bezwada by the Executive Engineer, Kistna Division, give the next position of the storm centre:—

DATE.	HOUR.	ANEROID BAROMETER.		Wind direction	WEATHER.
		Actual reading.	Corrected probable.		
		"	"		
10th October	3 P.M.	30·12	29·62	N	Fresh breeze; raining.
11th "	9-30 A.M.	29·90	·40	N	Raining. Strong gale growing more violent till 0-30 P.M.
" "	0-45 P.M.	·82	·32	Calm.	Wind dropped suddenly.
" "	1-30 "	·82	·32	Calm.	Clouds broke and complete calm.
" "	2-30 "	·88	·38	W	Sun not visible; from 0-30 P.M. the wind freshened gradually from west.
" "	4-30 "	·90	·40	W	Strong wind and rain.
" "	6 "	30·03	·53	W	Gale and rain.

The data indicate that the storm centre passed over Bezwada between 0-45 P.M. and 1-30 P.M. The Executive Engineer, Mr. Lewis, appends the following remarks to the observations :—

"The barometric readings were taken with a pocket aneroid which I am afraid is somewhat out of adjustment. There is no mercurial barometer in this station.

The rainfall was not excessively heavy here. The storm at about noon was violent, breaking off branches and blowing down some trees but the damage was not great.

The storm came up apparently from south-east, and when the lull occurred it seemed to be breaking up owing to its coming against the range of low hills close to Bezwada on the west, and it appeared to me that it gradually gathered energy again and moved off to the northward."

The observations recorded at Bezwada and Cocanada indicate that the storm centre after passing over Bezwada recurved and advanced during the evening and night in a northerly direction. The only vessel within the storm area in the Bay during the day was the S.S. *Mount Hebron*. She was at 8 A.M. about 200 miles to the east-south-east of the storm centre. The following gives the weather she experienced during the day :—

Hour.	Name of Vessel.	8 A.M. Position.		Barometer, corrected.	Wind.		Weather.
		Lat. N.	Long. E.		Direction.	Force.	
		° ′	° ′	″			
4 A.M.	S.S. *Mount Hebron*	...	...	...	S	5	Heavy rain squalls and confused sea.
8 „	„	14·11	84·47	29·709	S	5	Rising head sea and heavy rain squalls.
Noon.	„	13·48	84·35	...	S	5	Rising head sea and heavy rain squalls.
4 P.M.	„	...	...	...	S	5	Showery and high confused sea.
8 „	„	...	...	...	S	5	Showery and high confused sea.
Midnight.	„	...	...	...	S	5	Showery and high confused sea.

12th October.—Pressure had fallen slightly in Northern India and had risen briskly to very rapidly in the area covered by the storm on the previous day. The following gives 8 A.M. data of stations within the storm area at that hour of the 12th :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	″	″	″				Inches	
Masulipatam	29·703	+·344	—·101	SSW	16	10	0·50	Distant lightning and raining.
Cocanada	·707	+·051	—·093	SW	11	9	1·22	Sea falling.
Vizagapatam.	·719	+·032	—·084	SW	...	10	4·92	Raining.
Raipur	·747	—·046	—·106	NE	14	10	...	Gale.
Chanda	·718	—·048	—·155	N	2	10	0·10	
Hyderabad (Deccan.)	·723	+·027	—·116	NW	8	10	...	
Hanamconda.	·649	—·014	...	WNW	17	9	2·52	Continuous rain.
Kurnool	·732	+·053	—·103	W	...	10		Gentle wind.

The data are insufficient to locate the position of the centre with accuracy. They, however, show that the storm had filled up considerably and was now of slight or moderate intensity and that it lay over the most eastern districts of Hyderabad and the neighbouring hill districts, including the native states of Jeypore and Bastar and the coast districts of North Madras.

The observations fail to indicate whether the storm centre was to the east or west of the main line of hills, but it is probable that it was over or little to the east of the main range.

13th October.—Pressure continued to fall in Northern India. It was steady in the west of the Peninsula and was rising in the south. It had fallen briskly in Orissa, North Madras and the south-eastern districts of the Central Provinces. The storm had advanced north-eastwards during the preceding 24 hours, and was, as on the previous day, of slight intensity. The following gives 8 A.M. observations taken at stations in the storm area :—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	″	″	″				Inches	
Vizagapatam	29·672	—·047	—·135	Calm	...	10	0·81	Thunderstorm.
Gopalpur	·670	—·076	...	S	15	8	3·86	Showery.
Cuttack	·721	—·038	—·107	E	5	10	1·30	Raining.
Raipur	·705	—·042	—·154	ENE	15	10	1·07	Drizling.
Chanda	·755	+·037	—·118	NNW	2	5	0·02	
Hanamconda.	·707	+·058	...	NNW	12	6	0·02	
Masulipatam	·714	+·011	—·093	WNW	4	10	0·32	Distant lightning.

The depression at 8 A.M. covered the Vizagapatam and Ganjam districts of North Madras, the Sambalpur district of the Central Provinces, and the hill states of Jeypore, Bastar and Patna.

It is probable that the storm had rolled along the eastern face of the East Ghats, and that the centre was in about Lat. 19½° N. and Long. 83¾ E. or 84° E. No special observations were taken by any of the observers at this time, and hence the progress of the storm cannot be traced accurately.

Heavy rain had been received in Ganjam, Orissa and South Bengal, and hence continued to occur chiefly in the advancing quadrant of the cyclone. Heavy falls had also been experienced in some parts of East Bengal. The following gives the most noteworthy falls registered at 8 A.M of this day :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 13th October 1898.
		Inches.
Ganjam	Sompet	10·21
Do.	Rambah	7·50
Faridpur	Faridpur	11·36
Noakhali	Lakhimpur	6·62
Do.	Noakhali	5·58
Dacca	Manikganj	5·70
Mymensingh	Atia (Tangail)	5·06
Tippera	Nasirnagar	5·15
Puri	Bhanpur	5·82

The weather at the Mutlah Light Station is described in the following terms by Captain Beahan :—

"*13th*, 2 A.M.—A very hard squall from the south-south-west, force 10, with heavy rain ; moderate rain continued with a fresh south-south-west breeze up to 10 A.M. From 10 A.M. up to 3 P.M. continuous heavy rain. At this latter hour wind fell light and shifted to the east-south-east. Rain fell in torrents at intervals. A moderate swell from south-east and south-south-west.

"*4* P.M.—A strong south breeze and moderate south-south-east sea, sky overcast and moderate continuous rain. Between sunset and midnight very heavy rain squalls. The squalls were accompanied by heavy thunder and vivid lightning very close to the vessel between 8 and 9 P.M."

14th October.—Pressure had increased over the whole of India, excepting Chota Nagpur, South-West Bengal and South Bihar where it had fallen slightly to briskly. The depression had advanced rather rapidly along the Ganjam and Orissa Hills, and the central depression lay over North Orissa, the western districts of South-West Bengal and the south-eastern districts of Chota Nagpur. The following observations sow its position and character at 8 A.M. :—

STATION.	PRESSURE.			WIND.				WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.	Cloud.	Rainfall.	
	"	"	"				Inches	
False Point	29·735	+·003	—·097	WSW	15	10	2·38	Continuous rain.
Balasore	·689	—·066	—·143	SW	1	6	1·40	Showery.
Saugor Island.	·714	—·046	—·125	SSE	17	10	3·67	Sea very rough.
Calcutta	·723	—·046	—·125	SE	5	10	3·10	Continuous rain.
Burdwan	·691	—·069	—·167	ENE	1	10	1·50	Heavy rain
Midnapore.	·660	—·098	—·194	S	2	5	2·33	
Berhampore	·777	—·011	—·082	ENE	4	10	0·73	Raining.
Bankura	·638	—·103	...	NE	7	10	1·37	Raining.
Chaibassa	·692	—·066	...	NW	3	7	2·80	Showery.

The centre of the depression at 8 A.M. was to the west of Midnapur in about Lat. 22½° N. and Long. 86¾° or 87° E., and had advanced about 290 miles during the previous 24 hours.

Pressure was about two-tenths of an inch below the normal at the centre and gradients were steepest in the northern and eastern quadrants. General rain had been received over the whole of Orissa, Bengal, Chota Nagpur and Bihar. It was heaviest in the Burdwan, Bankura, Midnapore, Howrah, Hooghly and Murshidabad districts and the 24-Parganas. Heavy rain had also fallen in the Backerganj district of East Bengal. The following gives comparative data of the rainfall in these districts during the previous 24 hours:—

DISTRICT.	Average rainfall of 24 hours preceding 8 A.M. in district.	Heaviest rainfall in district.
	Inches.	Inches.
Midnapore	3·25	6·23
24-Parganas	2·97	9·71
Howrah	3·19	3·41
Hooghly	3·34	3·78
Bankura	2·28	3·38
Burdwan	2·99	3·95
Murshidabad	2·56	7·80
Backergunge	4·47	9·26

The rainfall was hence heaviest in the advancing or north-east quadrant of the depression.

The following gives comparative data for the six divisions of the province of Bengal :—

DIVISION.	Average actual rainfall during 24 hours preceding 8 A.M. of 14th October 1898.
	Inches.
Orissa	1·26
Chota Nagpur	1·04
Bihar	0·45
South-West Bengal	2·40
North Bengal	1·55
East Bengal	2·46

Rain had temporarily ceased in Burma and Southern India and fine dry weather held steadily in North-West India.

Weather was stormy with heavy to terrific squalls in the north-west angle of the Bay.

The following gives 8 A.M. data for that area :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND.		WEATHER.
	Lat. N.	Long E.		Direction.	Force.	
	° ′	° ″	″			
S.S. *Clan Mackenzie.*	18·41	86·19	29·759	SSW	5	Rough sea. 4 P.M. frequent heavy squalls of rain.
S.S. *Newshera*	20·14	87·38	·739	S	4	Moderate sea and swell with passing clouds. Noon, frequent heavy squalls and thick with rain
F.L.V. *Torch*	Mutlah.		·722	S	6 to 7	Rough sea. 4 A.M. passing rain squalls.
F.L.V. *Hesperus.*	Intermediate.		·703	S	6	Ugly with moderate sea and swell.
S.S. *Maharaja.*	21·30	88·40	·746	SSE	8	Noon, terrific squalls and rain.
F.L.V. *Comet*	Long sands.		·707	S	4 to 5	Raining with very high sea.

Captain Beahan describes the weather experienced at the Mutlah Light Station as follows :—

"*14th October*, 4 A.M.—Heavy southerly sea with passing rain squalls. During the squalls the force of the wind was 9.

"8 A.M.—A gentle to a moderate gale with high southerly sea. 10 A.M. strong south breeze and less sea, very heavy bank between south-west and north. Direction of upper pallio-cumulus and cirro-cumulus and lower fracto-cumulus from south-west towards north-east. Noon, gentle south-south-west gale with high confused south and south-west sea and swell from the south-east. Every appearance of heavier weather. 4 P.M.—A moderate to a fresh south-south-west gale and high confused south-south-west and south-west sea and passing heavy rain squalls. Heavy masses of heavy pallium thunder headed cloud to the westward. Direction of upper pallio-cumulus from north-east. Lower fracto-cumulus from north-north-east. Sunset, sky clear low down between west and north-west, then pallio-cirrus, cirro-stratus and cirrus above of many colors, such as pink, light green, olive and red in elongated formation north and south. From south-west to east a heavy bank of pallium and pallio-cumulus. Force of wind 6 to 5 and very much less sea.

From 8 A.M. to midnight a fresh south-west breeze and moderate south-south-west sea, the latter going down fast. Lightning from south-south-east round to north-east."

The storm continued to advance in a north-easterly direction during the day and was central in about Lat. 23½° or 23¾° N. and Long. 88° E or 88¼° E at 4 P.M. Gradients were remarkably steep in the eastern quadrant and very strong easterly winds were blowing over the whole of East and North Bengal. At Dhubri the wind velocity during the day averaged 27 miles per hour.

15th October.—Pressure had increased briskly to rapidly in the area covered by the storm on the previous day and had fallen briskly to rapidly in Assam and North-East Bengal.

The following gives data of the storm area at 8 A.M. :—

STATION.	PRESSURE.			WIND		Cloud.	Rainfall.	WEATHER
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	″	″	″				Inches	
Berhampore	29·805	+·028	—·062	NNW	9	10	6·85	Showery.
Jessore	·806	+·042	—·058	NW ?	5	9	0·92	
Rampur Boalia.	·794	—·005	—·060	N	7	9	5·11	Drizzling rain.
Krishnagar	·811	+·070	...	WNW	11	9	0·23	
Mymensingh	·787	—·076	—·071	SSW	7	8	2·53	Continuous rain.
Sirajganj	·766	—·072	—·098	SSW	8	10	5·00	
Rungpore	·806	—·063	—·073	ENE	12	8	1·73	
Dhubri	·804	—·086	—·085	E	28	8	1·14	Gale.
Dinajpur	·820	—·030	—·049	NE	15	5	1·31	Duststorm with rain.
Malda	·822	+·003		NNE	8	5	1·95	
Jalpaiguri	·824	+·029	—·056	ESE	8	4	0·55	Severe gale of wind.
Darjeeling	...	—·031	—·093	Calm.	4	9	0·98	

The centre at 8 A.M. was to the north-west of Sirajganj in about Lat. 24¾° N. and Long. 89½° E. It had hence advanced in a north-easterly direction about 230 miles during the previous 24 hours.

The storm had given excessive rain in the Murshidabad, Rajshahi, Dinajpur, Bogra, Rungpur and Mymensingh districts, as shown by the following data :—

DISTRICT.	Average actual rainfall during 24 hours preceding 8 A.M. of 15th October.
	Inches.
Murshidabad	4·38
Rajshahi	5·00
Dinajpur	1·64
Bogra	4·78
Rungpur	3·35
Mymensingh	4·09

The heaviest rain had hence been received in the advancing quadrant. The following gives a statement of the rainfall in six divisions of the province of Bengal during the previous 24 hours :—

DIVISION.	Average actual rainfall during 24 hours preceding 8 A.M. of 15th October 1898.
	Inches.
Orissa	0·01
Chota Nagpur	0·36
Bihar	0·45
South-West Bengal	1·21
North Bengal	2·63
East Bengal	1·94

Very strong winds had prevailed in the storm area, chiefly in the northern and eastern quadrants. The character of the storm is shown very clearly by the fact that the rainfall above 5,000 feet in Sikkim was very small in amount, and that the air movement at Darjeeling was very feeble. The wind instruments at that station are in a very exposed position on the crest of a ridge. On the 14th a calm was reported at 8 A.M. and again at 10 A.M., and on the 15th a calm at 8 A.M. The total amount of wind recorded by the anemometer between 10 A.M. and 4 P.M. of the 15th was only 13 miles, giving a mean velocity of 2 miles per hour.

Weather at the Head of the Bay improved rapidly during the day. This is fully shown by the following extract from Captain Beahan's report :—

"*15th.*—A slight south-south-west swell and sky overcast. A moderate to a gentle south-west breeze up to noon when the wind hauled into the west-north-west. A short sharp swell from the south-south-west and heavy bank of cumulus and pallium from west round to south-east during the afternoon."

16th October.—The depression had filled up rapidly during the previous 24 hours, and had practically disappeared at 8 A.M. A feeble residual circulation was shown at that hour in North and Central Bengal, as is indicated by the following data :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.		
	"	"	"				Inch.
Narayanganj	29·772	—·025	—·091	W	3	10	...
Mymensingh	·776	—·011	—·087	Calm.	1	8	...
Sirajganj	·775	+·009	—·094	NNW	2	7	...
Dhubri	·787	—·017	—·103	ENE	13	10	0·10
Dinajpur	·794	—·026	—·078	N	6	10	...
Bogra	·784	+·003	...	...	...		0·05
Rampur Boalia	·789	—·005	—·071	Calm.	1	4	0·01

Light rain had fallen in parts of North and East Bengal and Assam, as is shown by the following data for nine divisions:—

DIVISION.	Average actual rainfall during 24 hours preceding 8 A.M. of 16th October 1898.
	Inches.
Orissa	0.14
Chota Nagpur	0
Bihar	0·03
South-West Bengal	0
North Bengal	0·01
East Bengal	0·56
Assam, Surma	0·52
" Brahmaputra	0·48
" Hills	1·86

Skies were now clearing rapidly and were at 8 A.M. lightly clouded in South and Central Bengal. Weather continued to improve rapidly during the day and fine weather with clear skies obtained in Bengal on the morning of the 17th. Assam and Burma obtained moderate rain on the 17th, but fine weather with lightly clouded skies set in on the 18th also in these areas.

The storm resembled in its more important features the Vizagapatam Cyclone of October 1876, more especially in its recurvature from west-north-west to north-east after it crossed the coast, in its rolling along the East Ghats and eastern edge of the plateau of the Sonthal Parganas into Bengal and in the excessive burst of rain which accompanied it, and which was throughout in both cases heaviest in the advancing quadrant.

The storm formed in an area of light variable airs in the centre of the Bay and advanced along the normal track of October cyclones until it crossed the coast (*viz.*, west-north-west). It was throughout a storm of low elevation as shown by its failure to cross the East Ghats fully and its movement along the East Ghats north-eastwards until it passed into Bengal, and also by the slight rainfall and feeble winds at Darjeeling when the storm was in Central and North Bengal.

The following gives a statement of the position and rate of advance of the storm from the 11th to the 15th :—

Date.	Position of centre at 8 A.M.		Distance travelled during interval.	Average hourly rate of motion.
	Lat. N.	Long. E.		
	° ′	° ′	Miles.	Miles.
10th October 1898 . . .	13 50	84 45		
11th " " . . .	15 45	81 0	300	13
12th " " . . .	17 45	81 40	190	8
13th " " . . .	19 30	83 45	180	8
14th " " . . .	22 30	86 45	290	12
15th " " . . .	24 45	89 30	230	10

A summary of the rainfall due to the storm is given below:—

Division.	Average actual rainfall during 24 hours preceding 8 A.M. of								Total rainfall of period 10th to 17th Octo. 1898.
	10th Oct.	11th Oct.	12th Oct.	13th Oct.	14th Oct.	15th Oct.	16th Oct.	17th Oct.	
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inch.	Inches.
North Madras .	0·74	2·02	1·28	0·97	0·12	0·01	0·01	0	5·15
Orissa . .	1·03	3·56	1·61	1·23	1·26	0·01	0·14	0·01	8·85
Chota Nagpur .	0·08	0·16	0·17	0·27	1·04	0·36	0	0	2·08
Bihar . .	0·04	0·06	0·09	0·10	0·45	0·45	0·03	0	1·22
South-West Bengal.	0·21	0·54	0·90	0·62	2·40	1·21	0	0	5·88
North Bengal .	0	0	0·33	0·70	1·55	2·63	0·01	0	5·22
East Bengal .	0·04	0·09	0·59	2·63	2·46	1·94	0·56	0·01	8·32
Assam, Surma .	0·11	0·18	0·69	1·13	1·54	0·57	0·52	0·04	4·78
" Brahmaputra.	0·02	0·10	0·46	0·72	1·67	1·90	0·48	0·36	5·71
Assam Hills .	0·12	0·11	0·35	1·17	2·72	2·84	1·86	0·12	9·29

The disappearance of the storm was followed by a general rise of pressure over the Indian area on the 18th and 19th, of which the following gives data :—

Division.	Mean Pressure changes during 24 hours preceding 8 A.M. of the	
	18th.	19th.
	"	"
Punjab	+·098	+·087
Rajputana	+·073	+·075
North-Western Provinces and Oudh . .	+·111	+·035
Central India	+·080	+·058
Central Provinces	+·070	+·040
Bengal	+·081	+·039
Madras	+·030	+·024
Bombay	+·033	+·019

The pressure changes were small on the 20th and 21st, and fine dry weather held over the whole of India from the 18th to the 21st. Light showers were received in Burma on the 22nd, the last of importance in that area due to the monsoon of 1898.

The pressure changes on the 22nd and 23rd were not large but were important. Pressure increased in Northern India and Burma and fell in the Peninsula and south of the Bay. These changes gave the highest pressure in North-Western India and the lowest in the centre and south of the Bay. The distribution of pressure was hence favourable to rainfall in Southern India. Showery weather set in on the 22nd and continued until the end of the month. The rainfall was heavy in the Coromandel coast districts on the 26th. No important change occurred in the pressure distribution during the remainder of the month, except that the area of highest pressure was transferred eastwards o Upper Burma, Assam, Bengal and the Central Provinces.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-west of India.

The only report received relating to snowfall in the month of October is for Ladakh and is given below :—

I.—Kashmir and Punjab Himalayas.

Ladakh.—On the 23rd October snow fell on all the mountains surrounding Leh and came down to the height of about 12,500 feet.

During the night of the 23rd snow fell in Leh and the Indus Valley to a depth of one inch. It melted rapidly on the afternoon of the 24th and disappeared before the morning of the 25th.

On the 31st the snow line was at a height of about 15,000 feet.

Summary of special storm reports.

Cyclonic storms are of occasional occurrence in October and are sometimes of exceptional intensity. One storm appeared in the Bay during the month. Several reports of this storm were received, and the information they contained is incorporated in the pressure section. Thunderstorms are of occasional occurrence in October, more especially in Southern India. The following gives a statement of the four storms of which special reports were received:—

6th.—Thunderstorm at Salem from 5-15 P.M. to 5-55 P.M.

14th.—Severe thunderstorm at Salem from 1-30 P.M. to 2-40 P.M.

16th.—Thunderstorm at Salem from 4-30 P.M. to 5-10 P.M.

31st.—Thunderstorm at Salem from 4 P.M. to 4-30 P.M.

The following reports of earthquake during the month have been received:—

15th.—Earthquake at Mount Abu at 9-14 A.M. (Madras time). The shock was of moderate severity and accompanied by a rattling noise.

Earthquake at Deesa at 8-35 A.M. (local time).

Earthquake at Jodhpur at 9-10 A.M. (Madras time). The shock lasted two minutes and passed from west to east.

Earthquake at Kotah about 9 A.M.

18th.—Slight shock of earthquake at Mount Abu at 9-45 P.M. It lasted about 15 seconds.

25th.—Earthquake at Deesa at 9-14 P.M. The shock lasted 5 seconds and appeared to pass from north to south.

28th.—Slight shock at Mount Abu at 8-15 A.M., lasting about 5 seconds.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Exceedingly unsteady winds obtained over the whole of this area to the north of Lat. 9° or 10° N. during the first twenty-two days of the month and north-easterly to easterly winds during the last nine days. To the south of the parallel of 9° N., on the other hand, westerly winds (south west to north-west) prevailed steadily throughout the month. Weather was fine except in the south-east, where it was more or less squally and showery on most days. Winds were strongest on the 24th when they averaged 3·2 in force and feeblest on the 17th and 18th when their mean intensity was 1·9. On the mean of the whole month the air movement in the Arabian Sea was of normal intensity, *viz.*, 2·7.

Bay of Bengal.—Pressure was remarkably uniform over the whole Bay area during the first five days of the month and winds were hence very light and variable except in the extreme south where west to south-west winds, force 2 to 6, prevailed. The mean air movement ranged between 2·3 and 2·0 during the period as compared with 3·1, its normal intensity in October. Weather was cloudy with occasional squalls and rain in the region of westerly winds and fine over the remainder of the Bay. Important pressure changes occurred during the next two days which resulted in the establishment of a large shallow low pressure area over the Bay, slightly deeper over the centre of the Bay than elsewhere. On the 8th winds were irregularly cyclonic over the Bay and were strongest in the south where they were of force 4 to 5. Weather was showery and squally in the south and centre and fine with partially clouded skies in the north and west. The mean wind force as derived from the data of 20 vessels was 3·2 at 8 A.M. of that day. A storm was generated within the large shallow low pressure area during the next twenty-four hours. It intensified considerably on the 9th and 10th and, marching in a west-north-west direction, crossed the Circars coast near Masulipatam on the morning of the 11th. There were no vessels in the central area of the storm and hence it is not possible to form an accurate estimate of its intensity on this day, but judging from the weather experienced at the coast stations, it is almost certain that it was a severe cyclonic disturbance. The wind force in the Bay averaged 3·7 both on the 10th and 11th. The storm marched north-eastwards parallel to the East Ghats during the next three days, and hence continued to influence to a large extent the winds and weather in the neighbourhood of the Ganjam and Orissa coasts. The strongest winds during the existence of the storm experienced by the vessels in the Bay were of force 10 on board the F. L. V. *Torch* on the 13th.

The mean air movement which was 3·9 on the 12th diminished to 3·5 on the 14th and 2·8 on the 15th. Very feeble gradients from south to north obtained over the northern half of the Bay on the 17 th and 18th, and winds were westerly over the southern half of the Bay on these two days and variable over the northern half. The mean strength of the winds at

8 A. M. of the 18th was only 2·4. The distribution of pressure changed slowly during the next three days to that characteristic of the retreating south-west monsoon period. The period from the 19th to the 21st, while these changes were in progress, was characterised by the prevalence of light irregular winds and fine weather over the Bay. Northerly winds set in on the 22nd over the north of the Bay and, extending southwards, were established over the whole of the Bay to the north of Lat. 9° N. on the 24th. To the south of Lat. 9° N. unsteady westerly winds and showery weather prevailed. The mean intensity of the air movement varied between 2·0 and 2·6 during this period. Moderate gradients for northerly winds obtained over the Bay during the remainder of the month and fine weather with light to moderate north-east winds obtained generally except at the entrance to the Bay where winds remained very unsteady. The mean force of the winds over the Bay for the whole of the month was 2·8 or 0·3 below the normal.

Equatorial Belt.—The information for this region is very meagre. It however indicates that the south-east trades were moderate to strong in the western half of this area, except during the period from the 15th to the 22nd when the air movement was very feeble. The data for the Seychelles and Zanzibar show that winds were below their normal intensity and less easterly than usual in direction at both these stations. A noteworthy feature of the month was the scanty rainfall at Zanzibar, which obtained 2·41 inches less than its normal, *viz.*, 3·72 inches.

Temperature of the Air.

The mean maximum temperature of the month was above the normal over the greater part of India. It was in defect in two areas. The first included Upper Burma, Assam, Bengal, Orissa, Chota Nagpur and parts of Bihar, in which, however, the deficiency was small in amount and exceeded 1° only at Jessore (—1°·3), Narayanganj (—1°·2) and perhaps Kindat (—1°·1).

The second area included a portion of Southern India defined by the stations of Madras (—0°·8), Coimbatore (—0°·1) and Madura (—2°·4).

The day temperature was on the average of the month above the normal over the remainder of the country, and the variations were greater than 2° in amount over a large area including Sind, Rajputana, North Bombay, Central India, the Central Provinces, Berar and the Deccan. They were more than 4° in the central area defined by the stations for which data are given below :—

Station.	Mean maximum temperature.		
	Actual October 1898.	Normal, October.	Variation actual fro of normal.
	°	°	°
Deesa	101·8	96·0	+5·8
Sambhar	96·6	91·6	+5·0
Akola	94·6	90·1	+4·5
Neemuch	94·2	89·9	+4·3
Khandwa	94·1	89·9	+4·2
Malegaon	93·7	89·6	+4·1

The mean minimum temperature of the month was below the normal in Baluchistan, Northern and Central India and the Central Provinces and above in the Peninsula south of Lat. 20° N. The variations were generally small in amount. The deficiency was more than 2° in amount at stations, for which data are given below :—

Station.	Mean minimum temperature.		
	Actual, October 1898.	Normal, October.	Variation of actual from normal.
	°	°	°
Quetta	36·1	39·2	—3·1
Chanda	65·6	68·5	—2·9
Pachmarhi	57·3	59·9	—2·6
Jubbulpore	61·7	64·2	—2·5
Seoni	61·8	64·3	—2·5
Khandwa	63·7	66·1	—2·4
Sambalpur	69·7	72·0	—2·3

The mean temperature of the month was in slight defect over the greater part of the Central Provinces and in North-Eastern India and Upper Burma. The

deficiency was small in amount, exceeding 1° only at the stations for which data are given below :—

Station.	Mean daily temperature. Actual, October 1898.	Normal, October.	Variation of actual from normal.
	°	°	°
Benares	77·7	79·3	—1·6?
Calcutta	79·3	80·5	—1·2
Sambalpur	79·2	80·4	—1·2
Patna	79·4	80·5	—1·1
Jessore	80·7	81·8	—1·1

The mean temperature of the month was also in slight defect locally at Madura and Madras.

The mean temperature of the month was higher than usual over the remainder of India. The variations were, however, less than 2°, except in two areas defined by the stations, for which data are given below :—

Area.	Station.	Mean daily temperature. Actual, October 1898.	Normal, October.	Variation of actual from normal.
		°	°	
First area	Sambhar	80·5	78·1	+2·4
	Deesa	84·0	81·5	+2·5
	Mount Abu	74·0	71·5	+2·5
	Bhuj	85·5	83·5	+2·0
Second area	Ratnagiri	83·7	80·8	+2·9
	Bombay	84·1	81·7	+2·4
	Secunderabad	80·0	77·4	+2·6
	Kurnool	82·7	80·3	+2·4
	Cuddapah	83·9	81·9	+2·0
	Poona	78·9	76·9	+2·0

The chief features of the mean temperature conditions of the month were hence as follows :—

(1) Slight deficiency of temperature by day and night and hence also of the mean temperature in North-Eastern India and Upper Burma.

(2) Increased temperature, both by day and night, over the remainder of India. The excess was moderate in amount in the Konkan and Deccan and the area represented by the stations of Sambhar, Deesa and Bhuj, and was chiefly due to higher day temperature than usual.

The following table gives temperature data of the month for the 57 meteorological divisions of the Empire :—

Province.	Division.	Actual temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	89·5	74·1	81·9	15·4	21·5	+2·0	+1·2	+0·8
	Lower Burma (Deltaic)	88·7	77·1	82·9	11·7	17·3	+1·8	+1·5	+0·3
	Central do.	92·7	74·8	83·8	18·0	24·3	+2·8	+0·5	+2·3
	Upper do.	89·9	73·3	81·6	16·6	26·4	—0·3	+0·7	—1·0
	Arakan	88·4	77·5	83·0	10·9	15·1	+0·5	+0·7	—0·2
Bengal and Assam	Eastern Bengal	86·7	73·5	80·1	13·2	25·4	—0·8	+0·1	—0·9
	Assam (Surma)	89·5	72·1	80·8	17·4	30·6	+0·7	—0·3	+1·0
	Do. (Brahmaputra)	84·6	71·5	78·1	13·1	24·6	—0·5	—0·5	0
	Deltaic Bengal	86·9	73·2	80·1	13·7	29·6	—0·8	—1·4	+0·6
	Central do.	87·3	72·3	79·8	15·0	30·1	—0·7	—0·4	—0·3
	North do.	86·5	71·6	79·1	14·9	27·3	—0·4	+0·4	—0·8
	Bengal Hills	65·8	47·6	56·7	18·3	29·9	—0·4	+3·6	—4·0
	Orissa	88·5	75·3	81·9	13·2	28·5	—0·1	—0·5	+0·4
	Chota Nagpur	85·3	65·9	75·7	19·4	35·1	—0·3	—0·9	+0·6
	Bihar (South)	88·4	70·0	79·2	18·4	33·0	—0·6	—1·0	+0·4
	Do. (North)	87·4	71·1	79·3	16·3	31·2	—0·1	—0·2	+0·1

Province.	Division.	Actual Temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
North-Western Provinces and Oudh.	North-Western Provinces (East)	91·0	65·5	78·3	25·5	41·4	+1·8	—1·9	+3·7
	Oudh (South)	91·3	65·5	78·4	25·8	41·6	+0·4	—0·1	+0·5
	Do. (North)	90·6	67·3	79·0	23·3	38·9	...	...	...
	North-Western Provinces (Central)	93·1	65·6	79·4	27·5	40·7	+2·2	—1·8	+4·0
	Do. do. (West)	93·7	64·6	79·2	29·2	43·1	+2·2	—0·7	+2·9
	Do. do. (Submontane, West)	87·7	61·5	74·6	26·2	39·7	+1·0	—1·0	+2·0
	Do. do. (Hills)	67·2	51·9	59·6	15·3	26·2	+1·0	+0·5	+0·5
Punjab	Punjab (South-East)	93·6	67·7	80·7	25·9	43·3	+1·7	—0·3	+2·0
	Do. (South)	95·0	62·1	78·6	32·9	50·8	+1·8	—0·2	+2·0
	Do. (Central)	94·1	62·0	78·1	32·1	49·4	+0·9	+2·0	—1·1
	Do. (Submontane)	92·9	61·7	77·4	31·2	46·8	+1·2	+0·6	+0·6
	Do. (Hills)	70·2	45·2	57·7	25·0	42·1	+0·7	+0·9	—0·2
	Do. (North)	89·9	56·7	73·3	33·2	48·8	+1·7	+0·1	+1·6
	Do. (West)	96·3	61·8	79·1	34·5	52·1	+2·3	0	+2·3
Bombay and Malabar Coast Districts (Madras).	Malabar	85·8	75·1	80·5	10·7	16·0	+1·3	+0·7	+0·6
	Madras (South Central)	88·6	71·8	80·2	16·8	25·1	—0·1	+1·2	—1·3
	Coorg	76·4	63·6	70·0	12·8	19·3	+1·0	+1·5	—0·5
	Mysore	82·9	67·0	75·0	15·8	23·6	+1·3	+1·7	—0·4
	Konkan	88·1	76·4	82·3	11·6	18·5	+2·4	+2·3	+0·1
	Bombay Deccan	89·0	67·4	78·2	21·6	31·7	+2·9	+0·8	+2·1
	Hyderabad (North)	88·4	66·1	77·3	22·3	35·1	...	...	...
	Khandesh	91·5	63·7	77·6	27·8	39·7	+4·1	—0·9	+5·0
Central Provinces and Berar.	Berar	94·6	64·5	79·5	30·1	41·4	+4·5	—1·5	+6·0
	Central Provinces (West)	92·4	65·2	78·8	27·2	39·2	+3·6	—2·1	+5·7
	Do. (Central)	89·0	63·0	76·0	26·0	40·2	+1·6	—2·6	+4·2
	Do. (East)	88·7	69·2	79·0	19·6	34·3	+0·5	—1·8	+2·3
Bombay (North)	Gujarat	97·8	71·6	84·8	26·2	31·7	...	...	...
	Kathiawar & Cutch	97·4	70·2	83·9	27·2	35·1	+3·5	—0·2	+3·7
	Sind	98·7	67·5	83·2	31·2	48·5	+2·6	—0·9	+3·5
	Baluchistan Hills	80·1	39·9	60·1	40·2	58·8	+2·7	—3·1	+5·8
Rajputana and Central India.	Central India (East)	90·9	63·6	77·3	27·3	41·7	+3·1	—1·0	+4·1
	Rajputana (East), Central India (West)	96·6	65·0	80·8	31·6	45·2	+4·3	—0·3	+4·6
	Do. (West)	99·9	66·3	83·1	33·6	48·0	+3·4	—1·1	+4·5
Madras	East Coast (North)	88·6	76·0	82·3	12·5	23·3	+0·4	+1·5	—1·1
	Hyderabad (South)	89·9	70·7	80·4	19·2	29·3	+3·4	+1·8	+1·6
	Madras (Central)	92·0	73·0	82·5	19·0	32·0	+2·5	+0·9	+1·6
	East Coast (Central)	88·1	76·0	82·0	12·1	23·3	+0·6	+0·7	—0·1
	Do. (South)	88·9	74·8	81·9	14·2	24·7	—0·5	+0·2	—0·7
	Madras (South)	89·8	75·6	82·7	14·2	22·6	—2·4	+0·5	—2·9

The chief feature at the commencement of the month was the cool wave in North-Western India, which was due to a heavy fall of show in the Chitral, Kashmir and Punjab hill districts during the last week of September. Temperature was in slight excess in North-Eastern India and normal in the Peninsula. The following variation

data for the 24 hours preceding 8 A.M. of the 1st indicate the temperature conditions prevailing at the beginning of the month :—

POLITICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 1st October	Mean minimum temperature, 1st October	Mean temperature, 1st October.
	°	°	°
Burma	+1·4	+1·6	+1·5
Bengal and Assam	+1·5	+1·4	+1·5
North-Western Provinces and Oudh	−0·4	−3·5	−2·0
Punjab	−3·7	−4·0	−3·9
Sind and Rajputana	−0·7	−0·5	−0·6
Central India and Gujarat	−0·3	−0·6	−0·5
Central Provinces and Berar	−0·2	−0·1	−0·2
Bombay	+0·9	+0·6	+0·8
Madras	−0·2	+0·6	+0·2

The cool dry wave affected the temperature in North-Western India during the next four days. The following gives variation data for the period, the 1st to the 6th, in the areas in which it reduced temperature below the normal :—

POLITICAL PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	1st October.	2nd October.	3rd October.	4th October.	5th October.	6th October.
	°	°	°	°	°	°
Baluchistan (Quetta)	−5·5	−7·2	−6·6	−5·7	−3·8	−1·6
Punjab	−3·9	−2·6	−1·4	−0·6	−0·3	+0·4
Sind and Rajputana	−0·6	+0·2	+1·4	+2·8	+2·1	+2·1
Central India and Gujarat.	−0·5	−0·6	+0·2	+1·4	+2·6	+2·1
North-Western Provinces and Oudh.	−2·0	−2·9	−2·3	−1·5	−1·1	−0·4
Bihar	+0·2	+0·7	−0·1	−1·0	−0·8	−0·4
Chota Nagpur	+1·8	+2·9	+0·8	−0·2	−0·5	−0·7

During this period temperature was steadily normal or in slight excess in Bengal, as shown below :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	1st October.	2nd October.	3rd October.	4th October.	5th October.	6th October.
	°	°	°	°	°	°
Bengal	+1·8	+1·6	+2·0	+1·9	+1·6	+1·7

Temperature differed to no important extent from the normal during the next three days, *i.e.*, from the 7th to the 9th. The conditions at the end of this period are shown by the following variation data for the 9th :—

POLITICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 9th October.	Mean minimum temperature, 9th October.	Mean temperature, 9th October.
	°	°	°
Burma	+0·5	+0·5	+0·5
Bengal and Assam	+1·2	+1·4	+1·3
North-Western Provinces and Oudh	+1·6	+1·5	+1·5
Punjab	+2·3	−1·2	+0·6
Sind and Rajputana	+4·2	−3·6	+0·3
Central India and Gujarat	+4·1	−1·4	+1·4
Central Provinces and Berar	+1·9	−2·0	−0·1
Bombay	+1·6	−0·7	+0·5
Madras	−0·2	+1·4	+0·6

During the second period of the month, from the 10th to the 15th, a cyclonic storm gave heavy rainfall over North Madras and the provinces of Bengal and Assam. This reduced temperature very largely in the areas of rainfall. The following gives data for these areas from the 10th to the 16th :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF—						
	10th October.	11th October.	12th October.	13th October.	14th October.	15th October.	16th October.
	°	°	°	°	°	°	°
North Madras	−1·0	−3·9	−2·9	−2·7	−0·9	+1·9	+1·6
Orissa	+0·7	−5·1	−6·6	−3·2	−3·5	+0·5	−0·2
Chota Nagpur	+2·2	−0·1	−4·2	−3·7	−3·8	−1·9	−3·1
Bihar	+2·1	+1·4	+0·3	−1·2	−5·7	−8·3	−4·2
Bengal	+0·6	−0·2	−3·7	−4·7	−4·8	−4·9	−3·2

The reduction was, as usual during rainfall, chiefly in the day temperature, as is shown by the following data for the two stations at which the depression of temperature

bellow the normal was greatest on each day during the period :—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
11th October	Cuttack	—10·7	—1·7	—6·2
" "	Saugor Island	— 7·9	—4·2	—6·1
12th "	Saugor Island	— 9·8	—4·7	—7·3
" "	Balasore	—11·7	—2·7	—7·2
13th "	Jessore	—11·4	—3·3	—7·4
" "	Sibsagar	—10·8	—3·9	—7·4
14th "	Sibsagar	—11·8	—4·7	—8·3
" "	Silchar	—12·6	—2·3	—7·5
15th "	Jalpaiguri	—12·5	—5·6	— 9·1
" "	Darbhanga	—13·4	—4·3	—8·9
" "	Patna	—14·5	—3·1	—8·8
16th "	Sibsagar	—13·8	—2·6	—8·2
" "	Dhubri	— 8·3	—2·0	—5·2

Temperature was during this period in slight to considerable excess in North-Western and Central India and the Deccan, as shown below :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF						
	10th October.	11th October.	12th October.	13th October.	14th October.	15th October.	16th October.
	°	°	°	°	°	°	°
Baluchistan (Quetta)	+0·4	+0·1	+0·8	+2·9	+2·1	+2·7	+5·7
Punjab	+0·7	+0·7	+0·6	+0·9	+1·9	+1·8	+2·4
Sind and Rajputana	+1·1	+1·4	+1·6	+0·8	+1·9	+1·5	+3·8
Central India and Gujarat	+0·2	+1·0	+1·8	+1·6	+1·3	+0·8	+1·6
Bombay	+0·3	+1·3	+2·3	+2·2	+1·9	+1·8	+2·0
Madras	+0·4	—0·9	—0·1	+1·8	+2·0	+2·4	+2·7

The following variation data for the 17th illustrate the temperature conditions obtaining at the end of this period :—

POLITICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 17th October.	Mean minimum temperature, 17th October.	Mean temperature 17th October.
	°	°	°
Burma	—0·5	+1·4	+0·5
Bengal and Assam	—2·6	—0·9	—1·8
North-Western Provinces and Oudh	+2·5	+0·1	+1·3
Punjab	+1·5	+4·4	+3·0
Sind and Rajputana	+3·1	+4·1	+3·6
Central India and Gujarat	+3·4	0	+1·7
Central Provinces and Berar	+4·7	—2·8	+1·0
Bombay	+2·0	+0·3	+1·2
Madras	+4·2	—0·4	+1·9

Fine dry weather prevailed over the whole of India from the 17th to the 21st. Temperature increased in Burma and North-Eastern India with the cessation of rainfall, and was in excess over practically the whole of India at the end of the period, the excess being most marked in North-Western India and Madras. The following gives comparative data for the 17th and 21st, which show the change of the temperature conditions that occurred during this period :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF		Change of temperature from 17th to 21st October 1898.
	17th October 1898.	21st October 1898.	
	°	°	°
Burma	+0·5	+2·0	+1·5
Bengal and Assam	—1·8	+0·4	+2·2
North-Western Provinces and Oudh	+1·3	+1·6	+0·3
Punjab	+3·0	+3·0	0
Sind and Rajputana	+3·6	+3·0	—0·6
Central India and Gujarat	+1·7	+0·9	—0·8
Central Provinces and Berar	+1·0	+1·8	+0·8
Bombay	+1·2	+1·2	0
Madras	+1·9	+3·0	+1·1

During the fourth period of the month, lasting from the 22nd to the end of the month, fine dry weather held steadily in the whole of India to the north of Lat. 18° N. Daily rain was received in Southern India. The precipitation was heaviest in the Coromandèl Coast districts, and was most general and largest in amount on the 24th, 25th and 26th.

This rainfall reduced temperature below the normal to a moderate extent in Southern India. The following

gives variation data for the stations daily during the period from 23rd to the 29th at which the reduction was greatest:—

Date.	Station.	Variation from normal of Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
23rd October 1898	Madras	—8·3	—1·6	—5·0
" "	Trichinopoly	—7·1	+0·5	—3·3
24th "	Madura	—9·6	—0·8	—5·2
" "	Trichinopoly	—9·3	+0·2	—4·6
25th "	Madura	—6·1	—0·1	—3·1
" "	Salem	—4·7	+0·4	—2·2
26th "	Madras	—6·4	—1·1	—3·8
" "	Trichinopoly	—5·4	—0·8	—3·1
27th "	Bellary	—6·9	—3·0	—5·0
" "	Madras	—8·6	+0·1	—4·3
28th "	Trichinopoly	—2·4	+0·5	—1·0
29th "	Madura	—3·4	—0·4	—1·9
" "	Coimbatore	—3·2	0	—1·6

Weather was feebly unsettled in Kashmir and Chitral on the 23rd, when snow fell on the higher elevations. A cool dry wave appeared in Baluchistan (probably advancing from Persia) on the 24th and gradually advanced across Northern India during the next five or six days. The following data illustrate its progress:—

Province.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 23rd October.	24th October.	25th October.	26th October.	27th October.	28th October.	29th October.	30th October.
	°	°	°	°	°	°	°	°
Baluchistan (Quetta)	+5·3	—3·5	—4·2	—3·1	—4·1	—3·1	—4·1	—2·9
Punjab	+5·6	+1·8	0	—0·8	—1·6	—1·7	—1·0	—2·1
Sind and Rajputana	+3·0	+3·0	+1·3	—0·7	—1·6	—1·3	—0·7	—0·1
North-Western Provinces and Oudh.	+1·7	+1·7	+1·4	—0·4	—2·1	—2·4	—2·2	—2·0
Central India and Gujarat.	+1·2	+1·1	+1·0	+0·6	—0·7	—0·6	+0·4	+0·1
Bihar	+1·4	+1·6	+1·2	+0·1	—0·4	—2·4	—2·6	—2·4
Chota Nagpur	—1·1	—0·5	+0·8	—0·3	—0·9	—3·2	—3·9	—4·0
Bengal	+0·8	+1·3	+1·0	+1·1	—0·2	—1·0	—2·6	—2·8

The reduction of temperature due to this wave was much more strongly shown in the night than the day temperature.

Temperature was steadily in slight to moderate excess in North Bombay and the Deccan during this period, as shown below:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 23rd October.	24th October.	25th October.	26th October.	27th October.	28th October.	29th October.	30th October.
	°	°	°	°	°	°	°	°
Kathiawar	+0·1	+0·3	+1·0	+1·2	+3·6	+3·6	+5·0	+5·1
Khandesh	+1·6	+1·8	+1·4	+1·6	+2·6	+2·4	+3·9	+2·8
Konkan	+3·7	+4·3	+2·9	+2·4	+2·4	+3·6	+3·7	+2·9
Bombay Deccan	+2·8	+2·2	+2·1	+2·0	+2·3	+3·8	+4·5	+2·3
Berar	+3·5	+1·9	+3·1	+3·2	+2·5	+2·2	+1·2	—0·7
Madras Deccan	+2·5	+1·5	+1·1	—1·5	—3·2	+0·8	+2·0	+2·8

The conditions obtaining at the end of this period are shown below by the variation data of the 24 hours preceding 8 A.M. of the 31st:—

Province.	Variation from normal of Mean maximum temperature, 31st October 1898.	Mean minimum temperature, 31st October 1898.	Mean temperature, 31st October 1898.
	°	°	°
Burma	+2·2	—0·2	+1·0
Bengal and Assam	—0·8	—3·9	—2·4
North-Western Provinces and Oudh	—0·1	—3·9	—2·0
Punjab	—1·0	—2·4	—1·7
Sind and Rajputana	+2·5	—0·3	+1·1
Central India and Gujarat	+2·3	+1·0	+1·7
Central Provinces and Berar	+1·1	—3·2	—1·1
Bombay	+2·5	+1·4	+2·0
Madras	+0·1	+0·1	+0·1

The following table gives the variations of the mean temperature week by week during the month and also for the whole month:—

Province.	Variation from normal of mean temperature for week ending 8th October.	15th October	22nd October.	29th October.	For whole month.
	°	°	°	°	°
Burma	+1·4	—0·1	+1·0	+1·6	+1·0
Bengal and Assam	+1·3	—2·1	—0·7	0	—0·5
North-Western Provinces and Oudh.	—1·0	+1·0	+1·7	—0·3	+0·3
Punjab	—0·5	+1·0	+3·6	+0·4	+1·0
Sind and Rajputana	+1·5	+1·2	+3·4	+0·4	+1·4
Central India and Gujarat	+1·3	+1·2	+1·1	+0·4	+1·5
Central Provinces and Berar	+0·3	+0·8	+0·8	+0·4	0
Bombay	+1·7	+1·5	+1·5	+2·3	+1·7
Madras	+0·7	+0·9	+2·3	+0·2	+0·9

Winds.

As October is a month of slow transition from the south-west monsoon proper, to the north-east or cold weather monsoon, and is characterized by marked uniformity of pressure and temperature conditions, the air movement of the period is feeble and more irregular than in any other month of the year. It was even feebler than usual over Northern India in October 1898, and the variations of the air movement in that area were directly related to the abnormal pressure conditions of the month, the chief of which were excess pressure in North-Eastern India, and deficient pressure in Upper, Western and Southern India.

Winds were practically normal in strength at Port Blair and Rangoon and were more easterly than usual. The following gives data for four stations:—

Station.	Mean wind direction.		
	Actual, October, 1898.	Normal, October.	Easterly deflection.
Port Blair	S 11° E	S 1° W	+12
Diamond Island	N 80° E	S 56° E	+44
Cocos Island	N 62° E	S 67° E	+51
Rangoon	S 46° E	S 36° E	+10

The increased easting in the winds at Port Blair and Cocos Island was evidently related to and determined by the pressure conditions in the south of the Bay.

Winds were on the whole of normal strength and more steady than usual in Bengal. The chief abnormal feature was the strong westerly component in the mean wind directions of the month. The following data for five stations illustrate these features:—

Station.	Mean steadiness.			Mean wind direction.		
	Actual percentage, October 1898.	Normal percentage, October.	Variation from normal.	Actual, October 1898.	Normal, October.	Westerly deflection.
Chittagong	22	13	+ 9	N 11° W	N 11° W	0
Narayanganj	31	3	+28	N 19° W	S ? 9° E	Large.
Berhampore	11	17	— 6	N 72° W	N 35° W	+37
Burdwan	29	26	+ 3	N 8° W	N 10° E	+18
Saugor Island	39	13	+26	N 43° W	N 8° W	+35

Winds were also steadier than usual in the Gangetic Plain and approximately normal in direction. The following gives data for four stations in illustration:—

Station.	Mean steadiness.			Mean wind direction.	
	Actual percentage, October 1898.	Normal percentage, October.	Variation from Normal.	Actual, October 1898.	Normal, October.
Hazaribagh	21	24	— 3	N 35° W	N 35° W
Darbhanga	26	1	+25	S 15 W	S 4° W
Allahabad	39	18	+21	N 37° W	N 49° W
Meerut	40	35	+ 5	N 88° W	N 55°W

Winds were slightly weaker than usual in the Punjab and Sind, and were very unsteady in the former area. They were much steadier than usual and slightly below their normal strength in Rajputana and Central India and slightly more westerly than usual. The following gives comparative data for five stations in that area:—

Station.	Mean steadiness.			Mean wind direction.		
	Actual percentage, October 1898.	Normal percentage, October.	Variation from normal.	Actual, October 1898.	Normal October.	Westerly deflection.
Jeypore	58	37	+21	N 65° W	N 22° W	+43
Nowgong	37	39	— 2	N 52° W	N 55°W	— 3
Agra	45	45	0	N 74° W	N 66° W	+ 8
Deesa	29	12	+17	N 42° E	N 82° E	+40
Ajmere	43	28	+15	N 82° W	N 73° W	+ 9

The following gives comparative data of steadiness and of the mean velocity of the air movement in different provinces of Northern and Central India during the month:—

Province or Division.	Mean velocity in miles per diem.				Mean steadiness.		
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.	Actual percentage, October 1898.	Normal percentage, October.	Variation from normal.
Bengal	71	78	— 7	— 9	26	14	+12
Chota Nagpur	117	124	— 7	— 6	21	24	— 3
Bihar	63	51	+12	+24	18	3	+15
North-Western Provinces and Oudh.	50	50	0	0	30	28	+ 2
Punjab	31	41	—10	—24	17	21	— 4
Rajputana	88	101	—13	—13	43	26	+17
Central India	46	68	—22	—32	52	43	

Winds were more steady than usual at the hill stations in Upper India, more especially at Leh, Srinagar and Chakrata. They were also less variable than usual at Darjeeling where the percentage of steadiness was 47, 26 above the normal. Northerly winds were prevalent to an unusual extent at that station and the mean wind direction, as determined from the 10 and 16 hours observations, was N 52° E, the normal being S 78° W.

The air movement varied very irregularly from the normal at the Himalayan stations. The following gives data for four typical stations :—

STATION.	MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.			
	Actual percentage, October 1898.	Normal percentage, October.	Variation from normal.	Actual, October 1898.	Normal, October.	Variation from normal.	Percentage Variation from normal.
Leh	92	42	+50	68	44	+24	+55
Murree	16	16	0	128	158	−30	−19
Chakrata	95?	32	+ 63 ?	238	129	+109	+84
Darjeeling	47	21	+26	59	85	−26	−31

Northerly winds with a stronger easterly or diminished westerly element prevailed in the Central Provinces and Deccan. Winds were steadier and stronger than usual in these areas, as is shown by the following data :—

DIVISION.	MEAN STEADINESS.			MEAN WIND VELOCITY IN MILES PER DIEM.			
	Actual percentage, October 1898.	Normal percentage, October.	Variation from normal.	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
Berar	43	41	+ 2	107	104	+ 3	+ 3
Central Provinces.	37	31	+ 6	77	70	+ 7	+10
Bombay Deccan	45	21	+24	189	166	+23	+14
Madras Deccan	37	14	+23	111	104	+ 7	+ 7

The following gives data for six stations showing the increased easting or diminished westing of the mean winds of the month in this area :—

STATION.	MEAN WIND DIRECTION.		
	Actual, October 1898.	Normal, October.	Easterly deflection.
Poona	N 86° E	N 37° E	+49
Khandwa	N 53° E	N 22° E	+31
Akola	N 35° E	N 16° E	+19
Jubbulpore	N 27° E	N 9° E	+18
Hyderabad Deccan	S 84° E	S 80° E	+ 4
Bellary	N 73° E	N 42° E	+31

Winds were slightly below their normal strength on the Konkan and Malabar coasts and were more westerly than usual in the Konkan, but less westerly at the South Malabar coast stations.

Winds were much steadier on the mean of the month in the Madras coast districts and Mysore. They were generally stronger than the normal, although lighter locally at Madras. The following data illustrate the increased steadiness of the winds in that area :—

STATION.	MEAN STEADINESS.		
	Actual percentage, October 1898.	Normal percentage, October.	Variation of actual from normal.
Cocanada	53	32	+21
Madras	53	17	+36
Bangalore	34	8	+26
Salem	11	29	−18

The following table gives comparative data of the air-movement in the Peninsula :—

DIVISION OR AREA.	MEAN STEADINESS.			MEAN VELOCITY IN MILES PER DIEM.		
	Actual percentage, October 1898.	Normal percentage, October.	Variation, from normal.	Average actual, October 1898.	Average normal, October.	Variation from normal.
Berar	43	41	+ 2	107	104	+ 3
Central Provinces	37	31	+ 6	77	70	+ 7
West Coast	51	41	+10	129	136	− 7
Deccan	42	22	+20	145	133	+12
Mysore	45	15	+30	131	124	+ 7
Madras Coast	46	20	+26	148	148	0

The abnormal pressure conditions of the month were hence associated with abnormal features of the air-movement which were evidently directly related to them.

It may be noted that the mean strength of the air-movement in the Arabian Sea was 2·7, identical with the normal, and in the Bay of Bengal 2·8, or 0·3 below the normal.

The following gives a comparison of the direction and velocity of the air-movement of the month at Zanzibar and the Seychelles with October 1897 :—

STATION.	MEAN WIND DIRECTION.		MEAN STEADINESS.		MEAN WIND VELOCITY IN MILES PER DIEM.	
	Actual, October 1898.	Actual, October 1897.	Actual percentage, October 1898.	Actual percentage, October 1897.	Actual, October 1898.	Actual, October 1897.
Zanzibar	S 7° W	S 55° E	31	45	103	95
Seychelles	S 31° E	S 31° E	61	55	163	193

Humidity and Cloud.

One of the more important features of the month was the great dryness of the air over the greater part of North-Western and Central India and the north-west of the Peninsula.

The mean humidity of the month was slightly higher than usual in the southern half of the Peninsula (to the south of Lat. 15°N.) and the North Madras and Orissa coast districts. The excess was generally small but was 4 or upwards at stations for which data are given below :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, October 1898.	Normal, October.	Variation from normal.	Actual, October 1898.	Normal, October.	Variation from normal.
	"	"	"	%	%	
Madras	·898	·833	+·065	87	80	+7
Chitaldroog	·624	·566	+·058	70	65	+5
Vizagapatam	·831	·780	+·051	76	72	+4

Humidity was also very slightly above the normal in the Assam Valey and Arakan but the variations were small and of little importance.

The air was drier than usual over the remainder of India. Over the large area including the South Punjab, Sind, Rajputana, the southern districts of the North-Western Provinces, North Bombay, Central India, the Central Provinces, Berar and the North Deccan, the mean humidity of the month was 5 or upwards in defect. The following gives comparative data for these areas :—

Division.	Absolute humidity.			Relative humidity.		
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Average actual, October 1898.	Average normal, October.	Variation from normal.
	"	"	"	%	%	
South-West Punjab	·391	·518	—·127	38	53	—15
Sind	·609	·646	—·037	57	63	— 6
Rajputana	·346	·435	—·089	34	45	—11
North-Western Provinces (East).	·532	·620	—·088	55	66	—11
Central India	·527	·532	—·005	56	58	— 2
Central Provinces	·517	·582	—·065	56	62	— 6
Berar	·439	·548	—·109	56	60	— 4
North Deccan	·553	·592	—·039	57	64	— 7

There were in this large area of decreased humidity, two areas in which the mean humidity of the month was from 10 to 15 below the normal, and where the air was hence abnormally dry throughout the month. The following gives data for the stations in these two areas :—

Area.	Station.	Absolute humidity.			Relative humidity.		
		Actual, October 1898.	Normal, October.	Variation from normal.	Actual, October 1898.	Normal, October.	Variation from normal.
		"	"	"	%	%	
First area	Mount Abu	·258	·177	—·081	30	45	—15
	Mooltan	·391	·518	—·127	38	53	—15
	Jeypore	·289	·406	—·117	29	43	—14
	Allahabad	·532	·620	—·088	55	66	—11
	Ajmere	·395	·461	—·066	39	49	—10
Second area	Akola	·472	·571	—·099	49	60	—11
	Sholapur	·511	·579	—·068	52	62	—10

The variations were moderate in the Andamans and Lower Burma, as shown by the following data :—

Station.	Absolute Humidity.			Relative Humidity.		
	Actual, October 1898.	Normal, October.	Variation from normal.	Actual, October 1898.	Normal, October.	Variation from normal.
	"	"	"	%	%	
Diamond Island	·886	·867	+·019	77	83	—6
Rangoon	·877	·888	—·011	80	84	—4
Port Blair	·925	·911	+·014	83	86	—3

Humidity was below the normal to a slight extent in Bengal, Chota Nagpur, Bihar, and the submontane districts of the North-Western Provinces and the North Punjab. The following gives comparative data for these areas :—

Area.	Absolute Humidity.			Relative Humidity.		
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Average actual, October 1898.	Average normal, October.	Variation from normal.
	"	"	"	%	%	
Bengal	·801	·821	—·020	78	80	—2
Bihar	·715	·726	—·011	70	72	—2
Chota Nagpur	·502	·539	—·037	59	64	—5
North-Western Provinces (Submontane).	·501	·508	—·007	59	61	—2
North Punjab	·373	·363	+·010	45	47	—2

The air was slightly drier than usual at the hill stations in Northern India except at Srinagar and Leh. The mean humidity of the month was 11 below the normal at Kailang, 6 at Murree and 4 at Quetta. It was 4 in excess at Leh.

The following gives a brief summary of the mean hygrometric conditions of the month in India :—

(1) The air was slightly damper than usual in the Assam Valley, Arakan and Upper Burma.

(2) It was also damper in Southern India and the Northern Madras and Orissa coast districts. The excess was not large and was greatest at Madras where the mean humidity of the month was 7 above the normal.

(3) The air was drier on the mean of the month over the remainder of India. The variations from the normal conditions were moderately large over the greater part of the area and were very large in the South-West Punjab, Rajputana, Berar and parts of the Bombay Deccan where the mean humidity of the month was from 10 to 15 below the normal.

The variations of the cloud amount were similar in character to those of the humidity at the majority of stations, a deficiency in one element accompanying a deficiency in the other element of observation, and *vice versâ*.

The mean cloud amount was larger than usual at Port Blair and Diamond Island and in South Bengal. The following gives data in illustration :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, October 1898.	Normal, October.	Variation from normal.
Port Blair	7·5	6·0	+1·5
Diamond Island	6·1	5·7	+0·4
Saugor Island	4·8	4·7	+0·1
Calcutta	4·3	4·1	+0·2
Narayanganj	5·0	4·2	+0·8

There was also more cloud than usual in the Peninsula to the south of Lat. 16°N. The following gives comparative data for stations in that area at which the excess was more than 1·0 :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, October 1898.	Normal, October.	Variation from normal.
Salem	7·7	5·8	+1·9
Bellary	8·2	6·5	+1·7
Cochin	7·4	5·9	+1·5
Mysore	7·7	6·6	+1·1

The excess was largest in amount in Malabar and the interior of Madras.

There was less cloud than usual over the remainder of India. The following gives comparative data for this large area of decreased cloud :—

PROVINCE.	MEAN CLOUD AMOUNT.		
	Actual, October 1898.	Normal, October.	Variation from normal.
Baluchistan (Quetta)	0·3	0·6	—0·3
Punjab	0·2	0·9	—0·7
Sind	0·1	0·7	—0·6
Rajputana	0·3	1·6	—1·3
Central Provinces	1·3	2·8	—1·5
Central India	0·7	2·5	—1·8
Berar	1·5	3·5	—2·0
North-Western Provinces and Oudh	0·4	1·2	—0·8
Bihar	1·7	3·0	—1·3
Bengal	4·0	4·3	—0·3
Assam	4·0	4·6	—0·6
Chota Nagpur	3·0	4·4	—1·4
Burma	5·1	5·5	—0·4
North Madras	3·5	4·3	—0·8
Bombay Deccan	4·5	5·5	—1·0

The deficiency was greatest (ranging between 1·0 and 2·6) in Chota Nagpur, South Bihar, the Central Provinces, Central India, Rajputana, Berar and the greater part of the Bombay Deccan and probably North Bombay. It was absolutely greatest at stations for which comparative data are given below :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, October 1898.	Normal, October.	Variation from normal.
Buldana	1·1	3·7	—2·6
Bombay	1·6	4·1	—2·5
Chikalda	1·5	3·7	—2·2
Khandwa	0·5	2·4	—1·9
Hoshangabad	0·6	2·5	—1·9
Nagpur	2·0	3·8	—1·8
Nowgong	0·8	2·6	—1·8

Skies were practically clear throughout the month in the Punjab, Sind, the greater part of the North-Western

Provinces, Rajputana, Baluchistan, Persia and parts of Central India and the Central Provinces. The following gives comparative data for stations at which the mean cloud amount was 0·3 or less :—

PROVINCE OR AREA.	STATION.	MEAN CLOUD AMOUNT.		
		Actual, October 1898.	Normal, October.	Variation from normal.
NORTH-WESTERN PROVINCES AND OUDH.	Lucknow	0·2	1·8	—1·6
	Agra	0·1	0·9	—0·8
	Meerut	0	0·7	—0·7
PUNJAB	Lahore	0·1	0·7	—0·6
	Ludhiana	0·1	1·0	—0·9
	Mooltan	0·2	0·4	—0·2
SIND	Jacobabad	0·1	0·4	—0·3
	Kurrachee	0·1	0·9	—0·8
BALUCHISTAN	Quetta	0·3	0·6	—0·3
RAJPUTANA	Oodeypore	0·2	...	...
	Deesa	0·1	1·8	—1·7

Cloud was in moderate to large defect at the hill stations in the North-Western Himalayas and at Mount Abu, Pachmarhi and Chikalda, but was larger in amount than usual in the Sikkim Himalayas.

The following gives comparative data for five hill stations :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual October 1898.	Normal, October.	Variation from normal.
Leh	2·6	3·8	—1·2
Chakrata	1·2	1·7	—0·5
Mount Abu	0·4	1·9	—1·5
Pachmarhi	1·5	3·2	—1·7
Darjeeling	7·8	5·8	+2·0

The following is a brief summary of the mean distribution of cloud in October 1898 :—

(1) Cloud was in large excess at Port Blair and in slight excess in South Bengal.

(2) It was in moderate to large excess in the southern half of the peninsula, the excess being greatest in the interior of Madras and in Malabar.

(3) Cloud was in defect over the remainde rof India, the deficiency being generally large in amount. The deficiency was largest in Chota Nagpur, South Bihar, the Central Provinces, Central India, North Bombay, Berar and the greater part of the Bombay Deccan, ranging between 1·0 and 2·6.

(4) Cloud was in moderate to large defect in the North-Western Himalayas and in large excess in Sikkim.

Rainfall.

The rainfall of October is due to the retreating south-west monsoon current. Over the whole of North-Western and Central India the average rainfall of the month is less than two inches, and diminishes in amount westwards to the Indus Valley, in which it is less than two-tenths of an inch. In the North and Central Deccan, the Central Provinces, Bengal, and the greater part of Burma, the average rainfall ranges between two and five inches, whilst in Lower Burma and the Peninsula south of Lat. 13° N., it varies between five and thirteen inches, and is greatest in amount in the Madras coast districts from Vizagapatam to Cuddalore.

The rainfall of October 1898 occurred chiefly during three periods. The following gives a brief account of these periods :—

1st.—From the 1st to the 8th, during which Madras, Mysore, Malabar, and the greater part of the Deccan received light to moderate rain.

2nd.—From the 10th to 16th. This rainfall was due to a cyclonic storm of moderate intensity which advanced by a somewhat unusual path from the Bay to the Circars coast, and thence through North Madras, Orissa, South-West and Central Bengal to North Bengal. North Madras and Orissa received moderate to heavy rain from the 10th to the 14th, and Bihar and Bengal from the 12th to the 16th. This rainfall was heavy in the districts passed over by the storm and in Cachar and the Assam hills.

3rd.—From the 22nd to the 31st, when Southern India obtained moderate to heavy rain.

No rain fell in Baluchistan, the Punjab, Rajputana, Central India and North Bombay (including Sind, Cutch, Kathiawar and Gujarat) during the month. The only storm of the month gave a heavy burst of rain during the period 10th to the 16th in North-Eastern India and North Madras. During the remainder of the month the humid current of the Bay was chiefly determined to South India.

The rainfall of the month was actually or practically *nil* in Baluchistan, the Punjab Rajputana, Central India, Kathiawar, Gujarat and the eastern and western divisions of the North-Western Provinces. As the average rainfall

of the month in these areas ranges between a tenth of an inch and an inch and a half, the deficiency was not large in actual amount.

The rainfall of the month was in considerable to large defect in the central division of the North-Western Provinces, Bihar, Chota Nagpur, the Central Provinces, Berar, Khandesh, the North Konkan and the greater part of the Deccan, and also in Lower and Central Burma and Tenasserim. The deficiency exceeded 50 per cent. in the following divisions:— Central Burma (62 per cent.) Bihar (61 per cent.), Khandesh (74 per cent.), Berar (85 per cent.), Madras Central (67 per cent.), the North-Western Provinces in which it averaged 85 per cent. and the Central Provinces in which it averaged 69 per cent.

The rainfall in the month was in moderate to considerable excess in the Madras coast districts and South Madras, and in considerable to large excess in the districts which received heavy rain from the cyclonic storm in the month, including Orissa, East, South and Central Bengal and Assam.

The following table gives comparative rainfall data of the month for the 57 meteorological divisions into which India is divided:

Province.	Division.	Number of rainy days. Average actual, October 1898.	Number of rainy days. Average normal, October.	Rainfall. Average actual, October 1898.	Rainfall. Average normal, October.	Rainfall. Variation of actual, from normal, October 1898.
				Inches.	Inches.	Inches.
Burma	Tenasserim*	...	..	5·47	10·88	— 5·41
	Lower Burma (Deltaic)*	...	...	4·77	9·01	— 4·24
	Central do.*	...	...	2·36	6·17	— 3·81
	Upper do.*	...	...	5·05	4·94	+ 0·11
	Arakan*	...	...	6·85	9·70	— 2·85
Bengal and Assam	Eastern Bengal	5·6	5·9	9·01	5·62	+ 3·39
	Assam (Surma)*	...	...	7·41	6·94	+ 0·47
	Do. (Hills)*	...	...	11·88	7·28	+ 4·60
	Do. (Brahmaputra)*	...	...	5·85	4·26	+ 1·59
	Deltaic Bengal	5·3	5·5	6·97	4·51	+ 2·46
	Central do.	3·3	4·4	4·93	3·51	+ 1·42
	North do.	3·1	4·1	3·89	4·54	— 0·65
	Bengal Hills	4·9	6·7	2·78	7·19	— 4·41
	Orissa	5·3	6·7	9·14	5·85	+ 3·29
	Chota Nagpur	2·7	3·9	2·02	2·92	— 0·90
	Bihar (South)	1·9	2·8	1·12	2·62	— 1·50
	Do. (North)	1·6	2·8	0·95	2·85	— 1·90
North-Western Provinces and Oudh.	North-Western Provinces (East)	0·2	2·0	0·06	2·18	— 2·12
	Oudh (South)	0·5	1·6	0·45	1·60	— 1·15
	Do. (North)	0·2	1·5	0·11	1·61	— 1·50
	North-Western Provinces (Central)	0·4	1·2	0·23	1·04	— 0·81
	Do. do. (West)	0	0·7	0	0·54	— 0·54
	Do. do. (Submontane, East)	0·4	2·1	0·16	2·87	— 2·71
	Do. do. (do. West)	0·2	0·8	0·08	0·83	— 0·75
	Do. do. (Hills)	0·9	1·6	0·55	1·51	— 0·96
Punjab	Punjab (South-East)	0	0·5	0	0·36	— 0·36
	Do. (South)	0	0·5	0	0·21	— 0·21
	Do. (Central)	0	0·6	0	0·35	— 0·35
	Do. (Submontane)	0	0·6	0	0·38	— 0·38
	Do. (Hills)	0·2	1·3	0·06	0·90	— 0·84
	Do. (North)	0	0·9	0	0·48	— 0·48
	Do. (West)	0	0·3	0	0·10	— 0·10
Bombay and Malabar Coast Districts, (Madras).	Malabar	15·3	12·0	12·01	10·04	+ 1·97
	Travancore	17·8	...	13·84	...	...
	Madras (South Central)	10·7	8·2	6·49	5·92	+ 0·57
	Coorg	15·4	...	8·58	...	
	Mysore*	...	...	6·29	5·79	+ 0·50
	Konkan	5·3	7·6	3·35	5·52	— 2·17
	Bombay Deccan	5·6	7·4	4·09	5·00	— 0·91
	Khandesh	0·5	5·6	0·21	3·61	— 3·40

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Province.	Division.	Number of rainy days. Average actual, October 1898.	Number of rainy days. Average normal, October.	Number of rainy days. Average actual, October 1898.	Rainfall. Average normal, October.	Rainfall. Variation of actual from normal, October 1898.
				Inches.	Inches	Inches.
Central Provinces and Berar.	Berar	0·6	...	0·28	2·49	— 2·21
	Central Provinces (West)	0·4	2·6	0·13	2·08	— 1·95
	Do. do. (Central)	0·5	2·4	0·30	1·85	— 1·55
	Do. do. (East)	1·6	2·6	1·44	2·06	— 0·62
Bombay (North)	Gujarat	0	2·3	0	1·36	— 1·36
	Kathiawar	0	0·5	0	0·69	— 0·69
	Sind	0	...	0	0·03	— 0·03
	Baluchistan Hills	0	...	0	0·10	— 0·10
Rajputana and Central India.	Central India (East)	0·1	...	0·02	1·57	— 1·55
	Rajputana (East) and Central India (West)	0	...	0	0·34	— 0·34
	Rajputana (West)	0	...	0	0·07	— 0·07
Madras	East Coast (North)	6·2	7·6	6·36	5·76	+ 0·60
	Do. (do.) (a)	7·5	6·7	3·65	4·76	— 1·11
	Hyderabad (South) *	...	...	0·68	2·54	— 1·86
	Madras (Central)	4·5	6·6	1·82	5·55	— 3·73
	East Coast (Central)	7·8	8·4	10·45	9·75	+ 0·70
	Do. (South)	12·4	9·3	10·19	8·34	+ 1·85
	Madras (South)	12·9	7·8	10·00	6·04	+ 3·96

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Assam received general and heavy rain from the 12th to the 17th, due to the cyclonic storm of the month. The rainfall was very heavy in Cachar and the Assam hills. Cherra Punji received a total of 41·18 inches in the period from the 13th to the 16th, the heaviest fall in 24 hours being 13·28 inches on the 16th.

No rain fell during the remainder of the month, and the monsoon rains of 1898 hence terminated in Assam, as in Bengal, on the 17th of October.

The following gives comparative data for the eight plains districts in Assam :—

District.	Rainfall. Average actual, October 1898.	Rainfall. Average normal, October.	Rainfall. Variation from normal.	Rainfall. Percentage variation from normal.
	Inches.	Inches.	Inches.	
Sylhet	5·42	6·80	—1·38	— 20
Cachar	6·13	4·76	+1·37	+ 29
Goalpara	5·82	4·15	+1·67	+ 40
Kamrup	9·23	3·04	+6·19	+204
Darrang	6·11	3·21	+2·90	+ 90
Nowgong	9·02	3·26	+5·76	+177
Sibsagar	5·81	4·30	+1·51	+ 35
Lakhimpur	3·99	4·84	—0·85	— 18

The eastern districts of Bengal, including Chittagong, Noakhali and Tipperah, had light to moderate showers from the 5th to the 8th. The whole province received rain from the cyclonic storm of the month. The rainfall in Orissa lasted from the 9th to the 14th, in South-West Bengal from the 10th to the 15th, in Central Bengal from the 11th to the 15th, in North Bengal from the 12th to the 15th, and in East Bengal from the 12th to the 16th. Bihar received showers on the 14th and 15th and Chota Nagpur from the 10th to the 15th.

The rainfall was excessively heavy in the districts through which the central depression of the storm passed. A statement of the daily rainfall is given in the history of the storm. The following gives the most noteworthy rainfalls in 24 hours which occurred during the period :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of
			Inches.
Cuttack	Jagatsinghpur	10th Oct. 1898.	7·63
"	False Point	11th "	7·01
24-Parganas	Saugor Island	12th "	9·71
Faridpur	Faridpur	13th "	11·36
Backergange	Bauphal	14th "	9·26
"	Patuakhali	" "	7·03
Murshidabad	Lalbagh	" "	7·80
Mymensingh	Durgapur	15th "	10·50
"	Sherepur	" "	7·95

The following gives comparative data of the rainfall of the month for the nine rainfall divisions of the province :—

Division.	Number of rainy days.			Rainfall.			
	Average actual, October 1898.	Average normal, October.	Variation of actual from normal, October 1898.	Average actual, October 1898.	Average normal, October.	Variation of actual from normal, October 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Eastern Bengal	5·6	5·9	—0·3	9·01	5·62	+3·39	+60
Deltaic "	5·3	5·5	—0·2	6·97	4·51	+2·46	+55
Central "	3·3	4·4	—1·1	4·93	3·51	+1·42	+40
North "	3·1	4·1	—1·0	3·89	4·54	—0·65	—14
Bengal Hills	4·9	6·7	—1·8	2·78	7·19	—4·41	—61
Orissa	5·3	6·7	—1·4	9·14	5·85	+3·29	+56
Chota Nagpur	2·7	3·9	—1·2	2·02	2·92	—0·90	—31
South Bihar	1·9	2·8	—0·9	1·12	2·62	—1·50	—57
North "	1·6	2·8	—1·2	0·95	2·85	—1·90	—67

The rainfall of the month was in moderate to very large defect in the districts to the west of the track of the storm depression, including the whole of Bihar and Chota Nagpur. The deficiency was more than 50 per cent. in the districts for which comparative data are given below :—

Division.	District.	Rainfall.			
		Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
		Inches.	Inches.	Inches.	
Bihar	Saran	0·35	3·46	—3·11	—90
	Champaran	0·54	3·46	—2·92	—84
	Shahabad	0·52	2·98	—2·46	—83
	Bhagalpur	0·78	2·79	—2·01	—72
	Monghyr	0·88	2·37	—1·49	—63
	Patna	1·23	2·84	—1·61	—57
	Sonthal Parganas	1·87	3·85	—1·98	—51
Chota Nagpur	Palamau	1·20	2·64	—1·44	—55

It was also in considerable to large defect in Sikkim and the submontane districts of North Bengal, as shown below :—

District.	Rainfall.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Darjeeling	3·02	7·19	—4·17	—58
Cooch Behar	2·07	5·54	—3·47	—63
Jalpaiguri	2·04	4·83	—2·79	—58
Dinajpur	2·37	4·51	—2·14	—47

The rainfall of the month was more or less in excess over the remainder of the province. The excess was, relatively to the normal, greatest in the districts for which comparative data are given below :—

District.	Rainfall.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Bogra	13·57	3·89	+9·68	+249
Murshidabad	9·13	3·74	+5·39	+144
Rajshahi	9·20	3·81	+5·39	+141
Faridpur	9·71	4·32	+5·39	+125
Mymensingh	11·58	5·30	+6·28	+118
Howrah	6·92	3·66	+3·26	+ 89
Balasore	10·31	5·51	+4·80	+ 87
Backergunge	10·24	5·92	+4·32	+ 73
Cuttack	9·01	5·49	+3·52	+ 64
Pabna	6·76	4·14	+2·62	+ 63
Dacca	6·54	4·26	+2·28	+ 54
24-Parganas	7·28	4·79	+2·49	+ 52
Jessore	6·71	4·41	+2·30	+ 52

These districts, with the exception of Backergunge, were traversed by the central storm area and the heaviest rainfall in these areas was received whilst they were in the advancing quadrant.

The eastern, central, submontane and hill districts of the North-Western Provinces had light local showers, chiefly on the 13th, 14th and 15th. The rainfall was light and sporadic, and hence the total of the month was

in large defect for the whole province, as is shown by the following comparative data :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
North-Western Provinces (East).	0·2	2·0	—1·8	0·06	2·18	—2·12	— 97
South Oudh . .	0·5	1·6	—1·1	0·45	1·60	—1·15	— 72
North „ . .	0·2	1·5	—1·3	0·11	1·61	—1·50	— 93
North-Western Provinces (Central).	0·4	1·2	—0·8	0·23	1·04	—0·81	— 78
North-Western Provinces (West).	0	0·7	—0·7	0	0·54	—0·54	—100
North-Western Provinces (East Submontane).	0·4	2·1	—1·7	0·16	2·87	—2·71	— 94
North-Western Provinces (West Submontane).	0·2	0·8	—0·6	0·08	0·83	—0·75	— 90
North-Western Provinces Hills.	0·9	1·6	—0·7	0·55	1·51	—0·96	— 64

No rain fell in the Punjab, Baluchistan, Rajputana and Central India during the month. The normal rainfall is small in these areas, being barely half an inch in the Punjab and Rajputana, and 1·5 inches in Central India. There were two periods of very slight disturbance and rain in Kashmir, *viz.*, from the 10th to the 12th, and the 23rd and 24th. The rainfall was, however, of no importance. Snow fell in Ladakh and the higher ranges during these two periods.

The Central Provinces, chiefly the eastern division, received local showers between the 12th and the 14th. These showers apparently accompanied thunderstorms, and were in some cases heavy. The following gives the most noteworthy falls :—

DISTRICT.	STATION.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
Chanda	Sironcha . .	12th October	4·54
Raipur	Dhamtari . .	13th „	3·75
Sambalpur	Raigarh . .	„ „	3·07
Do.	Sarangarh . .	12th „	3·00

Berar received showers during the same period. Hyderabad obtained light to moderate showers during the first five days of the month, and light to moderate showers on the 12th and 13th.

The following gives comparative data for these provinces :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.			
	Average actual, October 1898.	Average normal, October.	Variation of actual, from normal, October 1898.	Average actual October 1898.	Average normal, October.	Variation of actual from normal, October 1898.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Central Provinces, West.	0·4	2·6	—2·2	0·13	2·08	—1·95	—94
Central Provinces, Central.	0·5	2·4	—1·9	0·30	1·85	—1·55	—84
Central Provinces, East.	1·6	2·6	—1·0	1·44	2·06	—0·62	—30
Berar . .	0·6	...	...	0·28	2·49	—2·21	—89
Hyderabad, North.	1·9	...	...	0·72	2·75	—2·03	—74
Hyderabad, South.	2·5	...	...	1·22	3·07	—1·85	—60

The rainfall of the month was hence in considerable to very large defect in the six divisions, by percentage amounts ranging between 30 per cent. in the eastern division of the Central Provinces, and 94 per cent. in the western division.

No rain fell in Sind, Cutch, Kathiawar, Gujarat and Khandesh during the month. The Deccan districts of Bombay obtained daily moderate rain from the 1st to the 6th. The southern districts, including Dharwar, Bijapur, Belgaum and Kolhapur also received light rain on the 14th and 15th and moderate rain from the 25th to the 27th. The rains ceased in the northern districts, including Poona, Sholapur, Ahmednagar and Nasik on the 5th of the month. The following gives comparative data for the districts in the three divisions including Karnatak, South Deccan and Khandesh :—

DISTRICT.	RAINFALL.			
	Actual, October 1898.	Normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Dharwar . . .	6·59	5·71	+0·88	+15
Bijapur	3·93	4·81	—0·88	—18
Belgaum . . .	6·50	5·90	+0·60	+10
Kolhapur and Southern Maratha States.	5·31	5·24	+0·07	+ 1
Satara	2·94	4·54	—1·60	—35
Sholapur . . .	2·70	4·16	—1·46	—35
Poona	1·47	4·44	—2·97	—67
Ahmednagar . .	0·59	3·50	—2·91	—83
Nasik	0·20	3·87	—3·67	—95
Khandesh . . .	0·01	1·89	—1·88	—99

The rainfall was practically normal in the southern districts, in very large defect in the northern districts and in moderate defect in the intermediate districts.

The districts of Thana and Kolaba in the North Konkan received light showers from the 2nd to the 5th, and the rainfall of the month was in very large defect. The southern districts of the Konkan, *viz.*, North Kanara, Ratnagiri and Savantvadi obtained moderate rain from the 1st to the 9th, the 14th to the 17th and the 24th to the 27th. The rainfall of the month was in moderate defect in Ratnagiri and in slight excess in North Kanara. The following gives comparative data for the Konkan districts :—

District.	Rainfall.			
	Actual, October 1898.	Normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Thana	0·57	3·47	—2·90	—84
Kolaba	1·15	5·13	—3·98	—78
Ratnagiri . . .	3·60	5·70	—2·10	—37
North Kanara . .	7·69	7·21	+0·48	+ 7

The distribution of the rainfall in these districts corresponded to that in the Deccan districts, being in very large defect in the northern districts and normal in the southern districts.

The following gives a summary of the rainfall data of the month for the seven divisions of the Presidency :—

Division.	Number of rainy days.			Rainfall.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Konkan . .	5·3	7·6	—2·3	3·35	5·52	—2·17	— 39
Bombay Deccan	5·6	7·4	—1·8	4·09	5·00	—0·91	— 18
Khandesh .	0·5	5·6	—5·1	0·21	3·61	—3·40	— 94
Gujarat .	0	2·3	—2·3	0	1·36	—1·36	—100
Kathiawar .	0	0·5	—0·5	0	0·69	—0·69	—100
Sind . .	0	...	...	0	0·03	—0·03	—100
Baluchistan Hills.	0	...	...	0	0·10	—0·10	—100

The Madras Presidency received rain chiefly during two periods, *viz.*, from the 1st to the 13th, and again from the 22nd to the end of the month. The rainfall from the 1st to the 7th was very irregularly distributed, and was, on the whole, heaviest and most general in Malabar and South Madras. The only district rainfalls during this period exceeding one inch are given in the following table :—

District.	Date.	Average rainfall of 24 hours preceding 8 A.M. in district.	Heaviest rainfall in district.
		Inches.	Inches.
Travancore	5th Oct.	1·26	3·76
"	6th "	1·13	4·03
Malabar	5th "	1·08	2·50
"	6th "	2·05	5·05
Nilgiris	4th "	1·31	3·12
"	7th "	1·01	2·65
Coorg	2nd "	1·08	2·12

Light showers were received in the southern districts and Malabar from the 8th to the 13th. The northern districts obtained very heavy rain during the earlier stages of the cyclonic storm of the month which advanced into the Nellore, Kistna and Godaveri districts and marched north-eastwards through the Vizagapatam and Ganjam districts. The following gives the average rainfalls in these districts due to the storm :—

District.	Average actual rainfall during 24 hours preceding 8 A.M. of					Total rainfall of period 9th to 13th October 1898.
	9th October.	10th October.	11th October.	12th October.	13th October.	
	Inch.	Inches.	Inches.	Inches.	Inches.	Inches.
Chingleput . .	0·79	0·53	0·05	0·90	0·30	2·57
Nellore . . .	0·27	1·89	1·51	0·13	0	3·80
Kistna . . .	0·11	0·07	2·71	1·21	0·09	4·19
Godavari . . .	0·26	0·27	1·67	1·57	0·72	4·49
Vizagapatam . .	0·15	0·79	1·01	1·35	0·65	3·95
Ganjam . . .	0·33	1·84	2·69	1·00	4	8·26

The following gives the most noteworthy falls in 24 hours exceeding 6 inches :—

District.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of
			Inches.
Nellore	Kavali . .	10th Oct.	6·55
" . . .	Iskapalle . .	" "	6·02
Ganjam	Rambah . .	11th "	8·05
"	Sompet . .	" "	6·56
Kistna	Bapatla . .	" "	7·97
"	Nizampatam . .	" "	6·94
"	Sattenapalle . .	" "	6·25
Ganjam	Sompet . .	13th "	10·21
"	Rambah . .	" "	7·50

Fine dry weather prevailed between the 14th and 21st. The second burst of rain was due chiefly to humid north-east winds advancing from the Bay into Southern India, and was hence heaviest in the Coromandel coast districts. The following gives district rainfalls averaging over one inch:—

DISTRICT.	Date.	Average rainfall of 24 hours preceding 8 A.M. in district.	Heaviest rainfall in district.
		Inches.	Inches.
NELLORE	26th Oct.	2·34	5·21
CHINGLEPUT	25th "	1·80	3·60
"	26th "	3·25	6·60
"	30th "	2·62	6·76
"	31st "	2·69	5·64
SOUTH ARCOT	24th "	1·33	3·72
"	25th "	1·66	4·22
"	26th "	1·06	2·35
"	28th "	1·04	2·77
TANJORE	24th "	1·00	3·35
"	28th "	1·15	3·46
MADURA	28th "	1·10	3·62
"	29th "	1·28	3·98
TINNEVELLY	26th "	1·09	4·90
"	29th "	1·52	3·97
MALABAR	28th "	1·05	4·05
SOUTH CANARA	27th "	1·05	2·82
NILGIRIS	28th "	1·32	2·40

The rainfall was hence heaviest from the 24th to the 26th and again from the 29th to the 31st. The Nellore, Chingleput and South Arcot districts obtained the largest amounts.

The rainfall of the month was in moderate excess in Ganjam, but in moderate defect in the remaining districts of the East Coast North division, as is shown by the following data:—

DISTRICT.	RAINFALL.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Ganjam	9·24	7·87	+1·37	+17
Vizagapatam	5·07	6·47	−1·40	−22
Godavari	5·80	7·71	−1·91	−25
Kistna	5·54	6·35	−0·81	−13

The rainfall of the month was in moderate to large excess generally in the districts of the Central East Coast division, and in Tanjore, due to the heavy rainfall of the second period, as shown below:—

DISTRICT.	RAINFALL.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Nellore	10·45	9·75	+0·70	+ 7
Madras	16·31	10·99	+5·32	+48
Chingleput	17·80	9·89	+7·91	+80
North Arcot	5·90	7·23	−1·33	−18
South Arcot	9·83	8·79	+1·04	+12
Tanjore	10·43	8·92	+1·51	+17
Trichinopoly	5·90	7·06	−1·16	−16

The districts of Madura and Tinnevelly and the Malabar districts, including South Canara and Malabar, received more abundant rain than usual. The following gives data:—

DISTRICT.	RAINFALL.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Madura	10·93	6·34	+4·59	+72
Tinnevelly	8·83	5·63	+3·20	+57
Malabar	11·98	9·48	+2·50	+26
South Canara	12·07	10·84	+1·23	+11

The rainfall of the month was in moderate excess in Coimbatore and Nilgiris, but was below the normal in the remaining central districts including Salem, Cuddapah, Anantapur, Bellary and Kurnool. The deficiency was

very large in the districts of Cuddapah, Kurnool and Anantapur. The following gives data for these districts:—

DISTRICT.	RAINFALL.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Coimbatore	7·97	5·50	+2·40	+44
Nilgiris	12·26	9·24	+3·02	+33
Salem	5·42	6·26	—0·84	—13
Cuddapah	2·45	6·53	—4·08	—62
Anantapur	1·08	5·46	—4·38	—80
Bellary	2·30	4·76	—2·46	—52
Kurnool	1·31	5·27	—3·96	—75

The following gives comparative data for the rainfall divisions of the Madras Presidency:—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.			
	Average actual, October 1898.	Average normal, October.	Variation from normal.	Average actual, October 1898.	Average normal, October.	Variation from normal.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Malabar	15·3	12·0	+3·3	12·01	10·04	+1·97	+20
Madras (South-Central.)	10·7	8·2	+2·5	6·49	5·92	+0·57	+10
Madras (East-Coast, North.)	6·2	7·6	—1·4	6·36	5·76	+0·60	+10
Madras (East-Coast, North) (a).	7·5	6·7	+0·8	3·65	4·76	—1·11	—23
Madras (Central.)	4·5	6·6	—2·1	1·82	5·55	—3·73	—67
Madras (East-Coast, Central).	7·8	8·4	—0·6	10·45	9·75	+0·70	+ 7
Madras (East-Coast, South.)	12·4	9·3	+3·1	10·19	8·34	+1·85	+22
Madras (South)	12·9	7·8	+5·1	10·00	6·04	+3·96	+66

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·014	...	...	...	...	...	...	...	89·0	+2·0	75·9	+1·1	82·5	+1·6	13·0	...	...	...	...	18·6
1	Tenasserim and Bay Islands.	Car Nicobars	25	29·849	?	29·802	29·962	14th	29·817	11th & 28th	·145	77·5	85·2	?	75·2	?	80·2	?	10·0	89·1	16th	73·5	24th	15·6
		Port Blair	61	29·843	−·011	29·835	29·924	14th	29·772	2nd & 8th	·152	81·0	87·9	?	77·9†	?	82·9†	?	10·0	91·2	1st	76·2	29th	15·0
		Mergui	96	29·847	?	29·874	29·927	10th	29·764	1st	·163	79·9	88·8	+2·0	73·9	+2·6	81·4	+2·3	14·9	90·6	3 days	70·9	31st	19·7
		Tavoy	26	29·886	−·034	29·843	29·964	14th	29·804	1st	·160	78·5	89·7	+2·2	73·2	+0·1	81·5	+1·2	16·5	91·7	2 days	68·0	31st	23·7
		Moulmein	94	29·821	−·025	29·852	29·898	10th	29·739	2nd	·159	79·1	90·1	+1·9	75·3	+0·9	82·7	+1·4	14·8	92·5	2 days	71·3	11th	21·2
2	Lower Burma	Rangoon	41	29·877	−·016	29·855	29·948	10th	29·788	1st	·160	83·2	89·8	+2·6	75·4	?	82·6	?	14·4	92·2	28th	72·9	2 days	19·3
		Bassein	27	29·895	−·005	29·857	29·964	14th	29·799	17th	·165	80·5	88·8	+1·8	76·5	+1·5	82·7	+1·7	12·3	91·2	2 days	73·7	22nd	17·5
		Diamond Island	41	29·871	−·007	29·847	29·946	14th	29·795	17th	·151	83·6	87·6	+1·2	79·3	?	83·5	?	8·3	91·1	27th	75·9	3 days	15·2
5	Arakan	Akyab	20	29·894	−·003	29·857	29·949	10th	29·810	17th	·139	80·0	88·4	+0·5	77·5	+0·7	83·0	+0·6	10·9	90·4	8th	75·3	30th	15·1
3	Central Burma	Toungoo	183	29·731	−·013	29·857	29·803	10th	29·644	17th	·159	80·1	93·5	+3·8	75·2	+0·7	84·4	+2·3	18·3	95·7	21st	72·2	24th	23·5
	II.—Burma Inland		...	...	+·003	...	...	...	...	...	...	...	90·3	+0·1	73·5	+0·7	81·9	+0·4	16·8	...	...	...	...	26·2
3	Central Burma	Thayetmyo	134	29·785	−·007	29·861	29·867	10th	29·684	2nd	·183	81·1	91·9	+1·8	74·3	+0·3	83·1	+1·1	17·6	95·1	2 days	70·1	30th	25·0
4	Upper Burma	Minbu	165	29·756	−·006	29·865	29·831	10th	29·648	17th	·183	79·2	91·3	0	75·1	+0·7	83·2	+0·4	16·2	94·6	2nd	69·6	31st	25·0
		Yamethin	657	29·244?	−·024?	29·861?	29·334	10th	29·043	20th	·291	80·1	92·6	+0·3	74·4	+1·2	83·5	+0·8	18·2	95·0	6 days	70·2	31st	24·8
		Mandalay	250	29·674	+·006	29·874	29·760	14th	29·580	17th	·180	80·8	91·6	0	75·0	+0·3	83·3	+0·2	16·6	95·0	4th	69·7	31st	25·3
		Kindat	377	29·562	?	29·899	29·648	14th	29·458	16th	·190	76·1	86·1	−1·1	72·4	+1·0	79·3	−0·1	13·7	93·3	4th	68·0	31st	25·3
		Bhamo	381	29·558	+·019	29·900	29·646	14th	29·425	4th	·221	74·9	88·1	−0·7	69·6	+0·4	78·9	−0·2	18·5	94·6	4th	63·1	2 days	31·5
(a)	Burma Hill Stations.	Maymyo	?			Not	recorde	d.				70·3	79·1	?	56·5	?	67·8	?	22·6	81·2	4th	48·6	31st	32·6
		Taunggyi	?			Not	recorde	d.				68·1	77·8	?	58·6	?	68·2	?	19·2	81·2	28th	52·0	30th	29·2
		Lashio	?	27·185	+·015	?	27·248	11th	27·094	17th	·154	66·4	85·0	+2·3	62·7	+0·2	73·9	+1·3	22·3	88·5	3 days	56·0	31st	32·5
	III.—Assam		...	...	+·009	...	...	...	...	...	...	...	86·2	−0·1	71·7	−0·4	79·0	−0·2	14·5	...	...	...	...	26·6
2	Surma	Silchar	104	29·831	+·018	29·889	29·894	10th	29·730	1st	·164	77·4	89·5	+0·7	72·1	−0·3	80·8	+0·2	17·4	94·0	11th	63·4	31st	30·6
8	Brahmaputra	Sibsagar	333	29·617	−·001	29·914	29·699	14th	29·496	1st	·203	73·3	84·3	−0·8	70·1	−0·8	77·2	−0·8	14·2	92·2	4th	64·5	29th	27·7
		Dhubri	115	29·807	?	29·879	29·832	28th	29·704	1st	·178	76·1	84·9	−0·1	72·9	−0·1	78·9	−0·1	12·0	89·2	3rd	67·7	31st	21·5
	IV.—Bengal and Orissa		...	...	+·001	...	...	...	...	...	...	...	87·2	−0·6	73·1	−0·4	80·1	−0·5	14·1	...	...	...	...	28·3
6	East Bengal	Chittagong	87	29·822	−·007	29·857	29·885	29th	29·723	1st	·162	78·4	85·9	−0·5	72·7	−1·0	79·3	−0·8	13·2	90·7	3rd	65·1	3 days	25·6
		Noakhali	43	29·866	?	29·857	29·928	28th	29·764	1st	·164	79·5	85·5	?	72·1	?	78·8	?	13·4	91·0	5th	63·9	3 days	27·1
		Comilla	36	29·879	?	29·863	29·945	28th	29·775	1st	·170	79·7	90·2	?	72·2	?	81·2	?	18·0	96·3	4th & 10th	66·8	29th & 31st	29·5
		Sirajganj	49	29·856	?	29·855	29·936	28th	29·758	13th	·178	77·9	85·9	?	73·4	?	79·6	?	12·5	90·2	3 days	64·8	30th	25·5
		Narayanganj	26	29·885	+·005	29·860	29·957	28th	29·787	1st	·170	79·8	86·8	−1·2	75·7	+0·6	81·3	−0·3	11·1	91·7	3rd	69·2	31st	21·9
		Barisal	13	29·868	−·019	29·826	29·953	19th	29·777	13th	·176	81·0	86·8	−0·7	74·4	0	80·6	−0·4	12·4	92·3	2 days	67·1	2 days	25·2
		Mymensingh	59	29·840	−·004	29·852	29·918	10th	29·751	1st	·167	78·6	85·9	−0·9	73·7	+0·6	79·8	−0·2	12·2	91·2	5th	68·1	31st	23·1
10	Deltaic Bengal	Faridpur*	46	29·865	?	29·859	29·962	28th	29·763	13th	·199	78·7	86·0	?	73·9	?	79·9	?	12·1	90·3	3rd & 4th	65·5	31st	24·8
		Jessore	33	29·881	+·001	29·861	29·974	28th	29·784	2 days	·190	79·9	87·3	−1·3	74·1	−0·8	80·7	−1·1	13·2	93·0	5th	63·2	29th	29·8
		Calcutta	21	29·892	+·002	29·859	29·996	28th	29·757	14th	·239	78·4	85·8	−0·8	72·7	−1·7	79·3	−1·3	13·1	91·4	4th	63·2	2 days	28·2
		Saugor Island	25	29·874	−·008	29·844	29·969	28th	29·745	14th	·224	79·7	86·6	−0·2	74·4	−1·7	80·5	−1·0	12·2	91·9	9th	63·1	2 days	28·8
		Krishnagar	47	29·867	?	29·863	29·968	28th	29·745	14th	·223	79·3	87·3	?	72·1	?	79·7	?	15·2	92·3	4th & 5th	60·7	29th	31·6
		Midnapore	149	29·757	?	29·855	29·861	28th	29·564	14th	·297	78·3	88·5	?	72·1	?	80·3	?	16·4	94·3	5th & 6th	60·2	29th	34·1

* Observations of 29 days.
† Mean of 28 days.

I.

in India, Burma, etc., in October 1898.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st October 1898.	Normal rainfall for period, 1st to 31st October.	Variation from normal of period, 1st to 31st October.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5·81	9·57	—4·55	...	...	...	...	I.—Burma Coast and Bay Islands.		
				Not	rec	orded.			1·7	?	?	94	·890	8·9	19	?	?	12·94	?	?	12·94	?	?	2·34	Car Nicobars.¶	Tenasserim and Bay Islands.	1
4	1	...	3	5	4	2	5	7	6·0	?	?	89	·939	6·9	11	?	?	6·78	12·17	— 5·39	6·78	12·17	— 5·39	3·20	Port Blair .		
30	...	...	...	...	...	...	...	1	1·0	1·5	— 33	86	·864	4·1	10	?	?	7·64	14·32	— 6·68	7·64	14·32	— 6·68	1·80	Mergui.		
29	...	1	...	1	...	...	...	...	0·8	?	?	87	·845	0·8	5	?	?	2·24	10·13	— 7·89	2·24	10·13	— 7·89	0·84	Tavoy.		
...	3	10	7	5	3	1	2	...	1·9	1·7	+ 12	89	·881	4·3	5	11·55	—6·55	6·19	8·10	— 1·91	6·19	8·10	—1·91	2·35	Moulmein.		
...	1	5	8	5	5	5	1	1	1·8	3·2	— 44	89	·924	4·2	7	9·09	—2·09	3·23	6·74	— 3·51	3·23	6·74	— 3·51	0·99	Rangoon .	Lower Burma.	2
5	3	1	6	5	1	1	1	8	3·3	2·5	+ 32	90	·941	3·7	12	12·18	—0·18	7·68	8·21	— 0·53	7·68	8·21	— 0·53	2·21	Bassein.		
2	4	8	9	3	...	2	2	1	8·9	6·4	+ 39	80	·932	4·9	8	11·60	—3·60	2·83	9·22	— 6·39	2·83	9·22	— 6·39	1·16	Diamond Island.		
...	9	9	9	3	...	...	...	1	1·8	2·3	— 22	92	·940	5·5	8	8·64	—0·64	6·83	10·44	— 3·61	6·83	10·44	— 3·61	2·80	Akyab .	Arakan.	5
22	...	2	1	1	3	1	...	1	0·9	1·8	— 50	87	·906	4·6	5	10·55	—5·55	1·72	6·76	— 5·04	1·72	6·76	— 5·04	0·44	Toungoo .	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·44	4·50	—1·06	...	...	...	...	II.—Burma Inland.		
...	7	3	5	2	10	...	2	2	10·4	3·1	+235	82	·871	5·3	6	7·91	—1·91	1·96	4·24	— 2·28	1·96	4·24	— 2·28	0·60	Thayetmyo.	Central Burma.	3
7	1	...	...	6	4	1	4	8	6·4	?	?	84	·852	5·6	5	?	?	3·47	3·04	+ 0·43	3·47	3·04	+ 0·43	1·08	Minbu .	Upper Burma.	4
9	2	5	...	10	3	...	...	2	2·0	?	?	91	·945	3·3	3	?	?	3·01	4·74	— 1·73	3·01	4·74	— 1·73	2·09	Yamethin.		
29	1	...	...	...	1	...	...	...	0·1	?	?	84	·883	4·1	4	?	?	3·34	5·08	— 1·74	3·34	5·08	— 1·74	1·26	Mandalay.		
11	12	2	...	1	...	1	1	3	1·9	?	?	93	·843	7·2	10	?	?	6·57	6·15	+ 0·42	6·57	6·15	+ 0·42	1·62	Kindat.		
21	...	8	...	...	1	...	...	1	2·0	?	?	88	·763	4·7	3	?	?	2·30	3·76	— 1·46	2·30	3·76	— 1·46	1·32	Bhamo.		
10	2	4	2	2	3	4	2	2	?	?	?	82	·611	?	9	?	?	6·18	?	?	6·18	?	?	1·59	Maymyo.	Burma Hill Stations.	4(a)
3	...	2	1	9	10	6	...	...	?	?	?	85	·584	7·1	6	?	?	3·20	5·59	— 2·39	3·20	5·59	— 2·39	1·81	Taunggyi.		
				Not	recor	ded.			?	?	?	95	·620	8·9	5	?	?	1·90	3·19	— 1·29	1·90	3·19	— 1·29	1·16	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4·28	5·00	—0·72	...	...	...	...	III.—Assam.		
28	...	...	3	...	...	...	...	...	1·0	2·1	— 52	89	·853	5·3	6	7·75	—1·75	3·54	6·65	— 3·11	3·54	6·65	— 3·11	1·15	Silchar .	Surma.	7
18	5	2	...	...	...	5	1	...	1·5	2·0	— 25	97	·806	5·3	6	7·30	—1·30	5·30	4·84	+ 0·46	5·30	4·84	+ 0·46	1·71	Sibsagar .	Brahmaputra.	9
1	2	9	13	2	1	2	1	...	5·2	2·9	+ 79	88	·802	3·1	6	3·93	+2·07	3·99	3·50	+ 0·49	3·99	3·50	+ 0·49	1·68	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8·22	5·14	+3·08	...	...	...	...	IV.—Bengal and Orissa.		
17	1	4	2	5	2	...	...	...	3·2	3·0	+ 7	90	·812	4·7	9	7·00	+2·00	5·93	6·24	— 0·31	5·93	6·24	— 0·31	1·69	Chittagong	East Bengal.	6
...	6	15	3	3	...	...	1	3	1·8	?	?	88	·894	3·5	7	7·31	—0·31	11·98	7·70	+ 4·28	11·98	7·70	+ 4·28	5·58	Noakhali.		
23	2	1	4	...	1	...	...	...	1·0	?	?	83	·839	3·6	7	5·83	+1·17	9·85	5·20	+ 4·65	9·85	5·20	+ 4·65	3·56	Comilla.		
...	11	3	3	2	2	3	3	4	1·6	?	?	87	·838	2·3‡	5	4·88	+0·12	11·08	4·23	+ 6·85	11·08	4·23	+ 6·85	5·00	Sirajganj.		
7	5	3	3	3	2	1	2	5	3·2	2·3	+ 39	85	·864	4·9	5	5·46	—0·46	6·00	4·42	+ 1·58	6·00	4·42	+ 1·58	2·43	Narayanganj		
16	2	3	2	1	2	1	2	2	1·3	?	?	83	·885	3·1	6	6·23	—0·23	8·29	5·61	+ 2·68	8·29	5·61	+ 2·68	3·05	Barisal.		
27	...	...	1	2	...	1	...	...	0·6	?	?	88	·861	4·3	4	5·77	—1·77	12·96	5·62	+ 7·34	12·96	5·62	+ 7·34	5·80	Mymensingh		
24	1	...	1	1	1	...	1	...	1·5	?	?	88	·872	2·8	7	5·23	+1·77	14·72	4·09	+10·63	14·72	4·09	+10·63	11·36	Faridpur .	Deltaic Bengal.	10
27	...	...	1	1	...	...	...	2	1·8	2·1	— 14	85	·874	3·4	5	5·92	—0·92	5·44	4·55	+ 0·89	5·44	4·55	+ 0·89	1·74	Jessore.		
12	4	3	2	1	1	1	3	4	1·7	3·2	— 47	83	·818	3·0	6	6·04	—0·04	6·48	4·39	+ 2·09	6·48	4·39	+ 2·09	3·10	Calcutta.		
...	8	7	3	...	2	2	2	7	7·6	6·5	+ 17	85	·862	4·1	6	8·15	—2·15	20·28	9·14	+11·14	20·28	9·14	+11·14	9·71	Saugor Island.		
...	2	3	6	2	3	3	7	5	2·8	?	?	81	·817	2·7	5	5·35	—0·35	5·55	4·22	+ 1·33	5·55	4·22	+ 1·33	3·65	Krishnagar		
15	7	2	...	...	1	1	...	5	0·8	?	?	79	·778	1·8	3	5·15	—2·15	4·93	4·30	+ 0·63	4·93	4·30	+ 0·63	2·33	Midnapore.		

‡ Mean of 30 days. ¶ Variables 31.

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura†	298	29·575	?	29·828	29·662	29th	29·385	14th	·277	77·0	88·0	?	72·3	?	80·2	?	15·7	93·1	3 days	61·2	29th	31·9
		Raniganj	334	29·574	?	29·864	29·681	28th	29·419	14th	·262	75·6	87·7	?	70·5	?	79·2	?	17·2	92·2	7th	59·1	28th	33·1
		Burdwan	99	29·817	+·002	29·864	29·933	28th	29·643	14th	·290	79·2	88·3	−0·4	73·3	−1·4	80·8	−0·9	15·0	93·9	3rd	62·8	2 days	31·1
		Naya Dumka	489	29·417	?	29·873	29·511	28th	29·304	13th	·207	77·1	86·8	?	69·8	?	78·3	?	17·0	91·0	3 days	59·0	29th & 30th	32·0
		Berhampore	67	29·846	−·005	29·863	29·947	28th	29·723	13th	·224	79·1	86·7	−1·0	74·0	−0·5	80·4	−0·8	12·7	91·7	8th	64·7	30th	27·0
		Rampur Boalia.	70	29·836	?	29·856	29·926	28th	29·722	13th	·204	80·2	86·8	?	73·6	?	80·2	?	13·2	91·6	4th	64·6	30th	27·0
		Malda	72	29·838	?	29·863	29·926	28th	29·726	1st	·200	78·2	87·5	?	71·7	?	79·6	?	15·8	92·6	4th	61·0	31st	31·6
		Bogra	61	29·851	?	29·865	29·946	28th	29·746	1st	·200	78·2	86·2	−0·7	73·0	+0·7	79·6	0	13·2	91·2	2 days	64·2	30th	27·0
12	North Bengal	Dinajpur	123	29·798	+·009	29·872	29·879	28th	29·688	1st	1·91	78·4	87·2	−0·2	71·7	−0·4	79·5	−0·3	15·5	92·3	4th	61·8	30th	30·5
		Rangpur	123	29·794	?	29·874	29·870	28th	29·689	1st	·181	78·2	86·4	?	72·7	?	79·6	?	13·7	91·7	4th	64·7	30th	27·0
		Jalpaiguri	284	29·632	+·003	29·879	29·720	31st	29·522	2nd	·198	75·2	85·7	−0·6	70·4	+1·2	78·1	+0·3	15·3	90·4	2 days	65·1	3 days	25·3
		Cooch Behar	156	29·765	?	29·879	29·850	28th	29·649	1st	·201	76·3	86·6	?	71·5	?	79·1	?	15·1	91·4	3 days	65·1	31st	26·3
17	North Bihar	Purnea	125	29·800	+·014	29·881	29·890	28th	29·691	1st	·199	76·1	87·0	−0·5	71·2	0	79·1	−0·3	15·8	91·2	3 days	60·3	31st	30·9
14	Orissa	Balasore	46	29·867	+·014	29·860	29·983	28th	29·698	14th	·285	78·0	87·7	−0·1	72·4	−0·7	80·1	−0·4	15·3	92·4	7 days	60·6	2 days	31·8
		False Point	21	29·887	+·001	29·850	29·995	28th	29·769	13th	·226	80·1	87·3	0	73·8	−0·9	80·6	−0·5	13·5	92·5	5 days	62·0	30th	30·5
		Cuttack	80	29·832	+·004	29·855	29·937	28th	29·699	13th	·238	78·1	89·8	−0·1	74·6	+0·1	82·2	0	15·2	95·4	2 days	63·7	30th	31·7
		Shortt's Island	?	29·874	?	?	29·999	28th	29·745	14th	·254	82·6	87·8	?	78·7	?	83·2	?	9·1	93·0	1st	71·4	30th	21·6
		Puri	20	29·890	?	29·853	30·002	28th	29·742	13th	·260	81·6	89·9	?	77·1	?	83·5	?	12·8	95·7	1st	68·6	30th	27·1
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·001	...	...	...	...	...	...	...	88·5	+0·3	68·0	−1·0	78·3	−0·4	20·5	...	...	...	...	35·4
15	Chota Nagpur	Hazaribagh	2,007	27·889	−·008	29·869	27·976	28th	27·772	14th	·204	72·4	82·9	−0·2	65·7	−1·1	74·4	−0·7	17·2	87·9	7th	57·7	3 days	30·2
		Ranchi	2,128	27·778	+·007	29·870	27·864	28th	27·643	14th	·221	73·5	82·2	−0·5	64·8	−0·6	73·6	−0·6	17·4	88·2	7th	56·0	28th	32·2
		Daltonganj	730?	29·178	?	29·884	29·250	23rd & 28th	29·075	14th	·175	70·1	88·3	?	64·0	?	76·2	?	24·3	93·1	3 days	51·0	3 days	42·1
		Chaibassa	760	29·143	?	29·864	29·253	28th	28·972	14th	·281	75·0	87·9	−0·2	69·2	−1·1	78·6	−0·7	18·7	92·9	3 days	57·0	29th	35·9
13	South Bihar	Gaya	375	29·528	−·005	29·865	29·623	28th	29·433	17th	·190	75·3	89·3	0	69·9	−1·0	79·6	−0·5	19·4	93·4	2 days	59·7	31st	33·7
		Dehri	351	29·547	?	29·860	29·650	28th	29·439	17th	·211	75·5	88·0	?	69·9	?	79·0	?	18·1	91·8	7th	61·1	31st	30·7
		Patna	183	29·729	−·004	29·868	29·817	28th	29·625	17th	·192	77·4	87·1	−1·2	71·6	−0·9	79·4	−1·1	15·5	90·0	5 days	60·8	31st	29·2
		Arrah	190	29·711	?	29·857	29·812	27th	29·601	17th	·211	76·1	88·7	?	69·0	?	78·9	?	19·7	92·9	3rd	57·0	28th & 31st	35·9
		Buxar	239	29·653	?	29·852	29·758	28th	29·540	17th	·218	76·1	88·9	?	69·6	?	79·3	?	19·3	92·5	21st	57·0	31st	35·5
17	North Bihar	Bhagalpur	160	29·749	?	29·864	29·846	28th	29·644	1st	·202	78·2	87·8	?	70·3	?	79·1	?	17·5	91·2	4th & 7th	58·7	31st	32·5
		Darbhanga	166	29·741	−·011	29·864	29·831	28th	29·631	1st	·200	77·8	86·7	+0·4	73·0	−0·4	79·9	0	13·7	91·3	3rd	63·4	30th	27·9
		Muzaffarpur*	178	29·731	?	29·865	29·832	28th	29·616	1st	·216	78·3	87·7	?	71·5	?	79·6	?	16·2	91·2	3rd	60·3	30th	30·9
		Motihari	224	29·696	?	29·882	29·776	28th	29·589	17th	·187	76·1	86·9	?	69·6	?	78·3	?	17·3	91·0	3rd	57·9	31st	33·1
		Chapra	181	29·737	?	29·875	29·830	28th	29·628	17th	·202	76·9	88·1	?	71·0	?	79·6	?	17·1	91·3	3rd	59·6	31st	31·7
18	N.-W. Provinces East.	Benares	267	29·646	+·009	29·875	29·746	28th	29·530	17th	·216	73·8	90·1	+0·2	65·3	?	77·7	?	24·8	93·8	19th & 20th	53·2	28th & 31st	40·6
		Allahabad	309	29·598	0	29·867	29·692	28th	29·483	17th	·209	75·9	91·8	+1·8	65·7	−1·9	78·8	−0·1	26·1	95·1	20th	52·9	31st	42·2
23	N.-W. Provinces (East Sub-Montane).	Gorakhpur	256	29·642	0	29·861	29·737	28th	29·530	17th	·207	77·4	?	?	69·4	−0·8	?	?	?	?	?	56·1	28th & 31st	?
19	South Oudh	Lucknow	368	29·533	0	29·868	29·630	28th	29·396	17th	·234	73·9	91·2	+0·3	65·5	−0·1	78·4	+0·1	25·7	93·8	4 days	54·2	31st	39·6
20	North Oudh	Bahraich	403	29·501	?	29·872	29·588	23th	29·366	1st	·222	76·6	90·6	?	67·3	?	79·0	?	23·3	93·4	3 days	54·5	26th	38·9
21	N.-W. Provinces (Central).	Cawnpore	416	29·487	−·002	29·866	29·577	28th	29·368	17th	·209	75·4	92·6	+2·2	64·3	−1·8	78·5	+0·2	28·3	94·8	5 days	53·0	3 days	41·8
		Mainpuri	516	29·375	?	29·864	29·462	27th	29·259	17th	·203	72·3	92·9		63·5	?	78·2	?	29·4	96·3	20th	52·6	31st	43·7

* Observations of 30 days. † Observations of 29 days.

I—*continued.*

in India, Burma, etc., in October 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st October 1898.	Normal rainfall for period, 1st to 31st October.	Variation from normal of period, 1st to 31st October.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
23	...	2	1	...	...	...	2	1	2·5	?	?	81	·757	2·2	5	5·19	− 0·19	2·70	3·82	− 1·12	2·70	3·82	− 1·12	1·37	Bankura	Central Bengal	11
16	1	1	2	1	...	...	3	7	1·2	?	?	82	·734	2·0	5	4·35	+ 0·65	3·24	3·31	− 0·07	3·24	3·31	− 0·07	2·25	Raniganj.		
15	3	...	1	...	...	1	6	5	0·3	2·1	−86	80	·808	2·1	3	4·27	− 1·27	3·22	3·61	− 0·39	3·22	3·61	− 0·39	1·50	Burdwan.		
22	1	...	3	1	...	...	1	3	1·3	?	?	80	·750	2·3	3	4·83	− 1·83	1·28	4·22	− 2·94	1·28	4·22	− 2·94	0·71	Naya Dumka		
16	1	2	3	...	2	2	3	2	1·7	2·1	−19	81	·812	2·1	4	5·43	− 1·43	9·18	3·83	+ 5·35	9·18	3·83	+ 5·35	6·85	Berhampore.		
23	1	...	3	...	2	...	1	1	1·5	?	?	82	·850	2·2	3	5·19	− 2·19	8·61	4·11	+ 4·50	8·61	4·11	+ 4·50	5·11	Rampur Boalia.		
...	7	6	3	3	3	2	3	4	1·6	?	?	83	·805	2·1	4	4·62	− 0·62	3·89	4·42	− 0·53	3·89	4·42	− 0·53	1·95	Malda.		
		Not	recor	ded.					?	?	?	85	·828	2·3	4	5·00	− 1·00	15·02	3·74	+11·28	15·02	3·74	+11·28	5·43	Bogra.		
...	3	7	7	1	2	1	6	4	3·7	?	?	81	·788	2·6	3	3·46	− 0·46	2·32	4·55	− 2·23	2·32	4·55	− 2·23	1·31	Dinajpur	North Bengal.	12
22	...	5	3	...	...	...	...	1	2·0	?	?	86	·824	3·5‡	4	4·00	0	5·89	5·44	+ 0·45	5·89	5·44	+ 0·45	2·10	Rangpur.		
2	3	7	7	1	...	...	6	5	1·9	?	?	91	·797	1·4	3	4·81	− 1·81	1·76	5·32	− 3·56	1·76	5·32	− 3·56	0·55	Jalpaiguri.		
10	...	8	7	5	1	...	...	...	1·8	?	?	86	·782	4·4	2	?	?	1·83	5·98	− 4·15	1·83	5·98	− 4·15	1·19	Cooch Behar		
7	2	4	5	1	2	5	2	3	2·5	1·4	+78	87	·793	2·4	3	3·46	− 0·46	1·49	3·57	− 2·08	1·49	3·57	− 2·08	0·67	Purnea	North Bihar.	17
18	4	1	1	...	1	1	...	5	0·7	?	?	84	·812	2·7	4	6·74	− 2·74	12·78	6·13	+ 6·65	12·78	6·13	+ 6·65	6·78	Balasore	Orissa.	14
3	9	...	2	...	...	1	4	12	4·0	6·1	−39	86	·892	3·9	8	7·92	+ 0·08	19·51	9·19	+10·32	19·51	9·19	+10·32	7·01	False Point.		
13	2	4	3	1	...	1	5	2	2·0	1·9	+5	83	·810	2·5	5	6·38	− 1·38	8·11	5·64	+ 2·47	8·11	5·64	+ 2·47	4·52	Cuttack.		
...	7	3	2	1	1	1	8	8	9·3	?	?	74	·832	2·9	7	?	?	19·87	3·84	+16·03	19·87	3·84	+16·03	8·08	Shortt's Island.		
10	11	5	1	...	...	1	1	2	7·8	?	?	80	·874	2·2	6	8·62	− 2·62	10·52	8·90	+ 1·62	10·52	8·90	+ 1·62	5·16	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·16	2·56	−1·40	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
7	1	1	3	2	5	7	4	1	4·9	5·0	−2	70	·564	1·8	2	4·69	− 2·69	2·04	3·41	− 1·37	2·04	3·41	− 1·37	1·36	Hazaribagh.	Chota Nagpur.	15
8	2	2	4	...	3	4	2	6	3·7	?	?	70	·586	2·3	5	4·73	+ 0·27	2·40	2·95	− 0·55	2·40	2·95	− 0·55	1·75	Ranchi.		
4	2	2	3	...	8	7	4	1	3·3	?	?	82‡	·616‡	1·2	3	3·19	− 0·19	0·94	2·50	− 1·56	0·94	2·50	− 1·56	0·59	Daltonganj.		
18	...	2	2	...	...	4	3	2	0·4	?	?	83	·731	1·6	3	4·46	− 1·46	3·28	2·72	+ 0·56	3·28	2·72	+ 0·56	2·80	Chaibassa.		
6	...	5	1	2	10	7	...	...	6·8	1·5	+353	76	·674	1·9	1	2·96	− 1·96	2·05	2·27	− 0·22	2·05	2·27	− 0·22	1·86	Gaya	South Bihar.	16
...	...	...	5	1	9	14	1	1	4·8	?	?	73	·654	1·1	4	2·77	+ 1·23	1·84	2·63	− 0·79	1·84	2·63	− 0·79	0·77	Dehri.		
5	...	2	6	2	4	6	5	1	3·0	1·9	+58	76	·725	1·4	3	3·19	− 0·19	2·26	3·25	− 0·99	2·26	3·25	− 0·99	0·96	Patna.		
8	...	...	5	2	4	6	5	1	1·7	?	?	84	·760	1·1	1	3·62	− 2·62	1·26	2·99	− 1·73	1·26	2·99	− 1·73	1·21	Arrah.		
4	...	...	5	3	2	4	11	2	2·9	?	?	75	·681	1·3	1	3·04	− 2·04	0·30	3·26	− 2·96	0·30	3·26	− 2·96	0·18	Buxar.		
1	1	1	3	2	6	4	...	...	1·4	?	?	76	·739	2·2	3	3·12	− 0·12	0·60	2·80	− 2·20	0·60	2·80	− 2·20	0·35	Bhagalpur.	North Bihar.	17
4	1	1	7	6	3	4	4	1	2·2	2·2	0	83	·799	1·6	2	3·08	− 1·08	1·64	2·84	− 1·20	1·64	2·84	− 1·20	1·46	Darbhanga.		
22	...	...	4	2	...	...	1	1	2·6	?	?	82	·799	0·9	1	2·81	− 1·81	0·61	3·11	− 2·50	0·61	3·11	− 2·50	0·61	Muzaffarpur		
...	2	8	11	1	...	3	2	4	3·6	?	?	88	·793	0·4	2	2·58	− 0·58	0·58	3·39	− 2·81	0·58	3·39	− 2·81	0·38	Motihari.		
20	...	...	4	4	2	1	...	...	1·0	?	?	78	·732	1·0	2	2·85	− 5	0·59	3·08	− 2·49	0·59	3·08	− 2·49	0·46	Chapra.		
13	...	...	5	1	...	9	3	...	1·6	2·6	−38	76	·644	1·0	0	2·45	− 2·45	0·04	2·30	− 2·26	0·04	2·30	− 2·26	0·04	Benares	N.-W. Provinces East.	18
3	2	2	4	2	1	5	8	4	3·8	2·8	+32	67	·621	1·0	0	1·64	− 1·64	0	1·83	− 1·83	0	1·83	− 1·83	0	Allahabad.		
4	6	8	...	3	4	4	1	1	1·1	1·3	−15	77	·742	1·4	0	2·64	− 2·64	0·05	3·77	− 3·72	0·05	3·77	− 3·72	0·05	Gorakhpur	N.-W. Provinces (East Sub-montane).	23
23	2	...	1	...	...	2	2	1	1·1	1·9	−42	74	·626	0·4	1	1·36	− 0·36	3·71	0·83	+ 2·88	3·71	0·83	+ 2·88	3·71	Lucknow	South Oudh.	19
22	...	...	5	2	1	...	...	1	0·8	?	?	72	·669	0·4	0	?	?	0·01	1·69	− 1·68	0·01	1·69	− 1·68	0·01	Bahraich	North Oudh.	20
14	2	...	1	1	...	6	6	1	1·4	?	?	63	·565	0·2	1	1·60	− 0·60	0·11	1·37	− 1·26	0·11	1·37	− 1·26	0·11	Cawnpore	N.-W. Provinces (Central).	21
14	2	...	1	1	3	2	6	2	1·5	?	?	63	·504	0·4	0	?	?	0	0·82	− 0·82	0	0·82	− 0·82	0	Mainpuri.		

‡ Mean of 3 days.

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas.		...	...	—·008	...	...	...	...	...	...	...	91·8	+1·4	61·8	−0·2	76·8	+0·6	30·0	...	...	...	...	45·7
24	N.-W. Provinces, West (Sub-montane).	Bareilly	568	29·333	+·010	29·879	29·422	28th	29·198	17th	·224	72·5	90·0	+0·8	64·2	−1·0	77·1	−0·1	25·8	92·9	6th	51·2	29th	41·7
		Dehra Dun	2,233	27·672	−·014	29·892	27·762	10th	27·543	17th	·219	68·0	83·5	+1·9	60·3	−0·4	71·9	+0·8	23·2	86·5	6th	52·5	30th & 31st.	34·0
		Roorkee	887	29·000	−·009	29·883	29·088	10th	28·861	17th	·227	68·2	89·5	+0·4	59·9	−1·6	74·7	−0·6	29·6	91·7	3 days	48·2	31st	43·5
22	N.-W. P., West.	Meerut	738	29·149	−·005	29·875	29·225	10th	29·011	17th	·214	69·7	91·4	+1·3	61·5	−1·1	76·5	+0·1	29·9	94·7	5th	50·1	29th	44·6
26	South-East Punjab.	Delhi	718	29·165	−·010	29·864	29·260	27th	29·033	17th	·227	73·3	93·6	+1·7	67·7	−0·3	80·7	+0·7	25·9	97·7	7th	54·4	31st	43·3
28	Central Punjab.	Lahore	702	29·171	−·012	29·864	29·267	29th	29·026	17th	·241	70·4	94·1	+0·9	62·0	+2·0	78·1	+1·5	32·1	99·6	7th	50·2	30th & 31st	49·4
27	South Punjab	Sirsa	662	29·231?	?	29·874?	29·337	27th	29·088	17th	·249	72·9	97·7	+1·8	62·3	−0·2	80·0	+0·8	35·4	102·8	3 days	47·2	31st	55·6
		Patiala	818	29·067	?	29·871	29·146	27th	28·917	17th	·229	72·3	92·3	?	61·9	?	77·1	?	30·4	97·0	6th	51·0	29th	46·0
29	Punjab (Sub-montane).	Ludhiana	812	29·069	−·011	29·873	29·152	27th	28·929	17th	·223	69·8	91·8	?	63·1	−0·3	77·5	?	28·7	96·6	24th	52·7	28th & 30th.	43·9
		Sialkot	830	29·054	+·004	29·880	29·136	27th	28·901	17th	·235	70·3	93·2	+1·2	62·4	+0·6	77·9	+0·9	30·8	97·6	7th & 27th	51·7	27th	45·9
		Umballa	892	28·999	?	29·880	29·087	29th	28·854	17th	·233	69·2	93·7	?	59·6	?	76·7	?	34·1	97·5	15th 5th	47·0	30th	50·5
31	North Punjab	Rawalpindi	1,643	28·210	−·024	29·875	28·302	24th	28·069	17th	·233	66·2	90·6	+2·6	56·4	+0·5	73·5	+1·6	34·2	96·1	7th	46·5	30th & 31st.	49·6
	VII.—Indus Valley and North-West Rajputana.		...	...	—·015	...	...	...	...	...	...	...	97·3	+2·4	64·2	−0·6	80·8	+0·9	33·1	...	...	...	...	49·6
31	North Punjab	Peshawar	1,110	28·798	−·023	29·876	28·905	22rd	28·657	17th	·248	67·0	89·2	+0·8	57·0	−0·4	73·1	+0·2	32·2	95·0	5th & 6th.	47·0	28th	48·0
32	West Punjab	Khushab	612	29·275	?	29·874	29·370	29th	29·138	17th	·232	71·3	95·1	?	60·6	?	77·9	?	34·5	102·3	5th	47·8	30th	54·5
		Montgomery	558	29·314	−·013	29·851	29·420	27th	29·152	17th	·268	75·4	97·7	+1·2	62·3	+0·1	80·1	+0·7	35·4	104·0	7th	51·0	30th & 31st	53·0
		D. I. Khan	594	29·317	−·010	29·875	29·430	24th	29·165	17th	·265	70·1	94·0	?+0·8	59·9	?−1·6	77·0	?−0·4	34·1	100·2	5th	48·5	28th & 30th.	51·7
		Mooltan	420	29·451	?	29·851	29·576	25th	29·299	17th	·277	73·0	98·3	+3·4	64·5	−0·1	81·4	+1·7	33·8	102·9	9th	53·9	30th	49·0
47	Sind	Jacobabad	186	29·684	−·020	29·836	29·813	24th	29·519	17th	·294	73·1	101·9	+3·9	61·8	−1·3	81·9	+1·3	40·1	107·4	6th & 8th.	50·0	30th	57·4
		Hyderabad	96	29·798	?	29·848	29·892	25th	29·672	17th	·220	79·0	100·5	+3·1	69·7	−0·9	85·2	+1·1	30·8	107·2	6th	61·0	28th	46·2
		Kurrachee	30	29·892	−·010	29·874	29·998	19th	29·787	13th	·211	78·4	93·8	+0·8	71·1	−0·4	82·5	+0·2	22·7	105·4	13th	63·5	29th	41·9
51	West Rajputana	Bickaneer	771	29·118	?	29·867	29·236	27th	29·028	17th	·208	78·5	99·0	+3·4	69·0	−1·1	84·0	+1·2	30·0	103·1	5 days	56·1	27th	47·0
		Pachpadra	380	29·521	?	29·868	29·603	27th	29·411	17th	·192	73·0	101·3	?	64·1	?	82·7	?	37·2	105·3	7th & 9th	54·8	27th	50·5
		Jodhpore	782	29·117	?	29·872	29·208	27th	29·023	17th	·185	77·2	99·4	?	65·8	?	82·6	?	33·6	104·2	8th	57·7	27th	46·5
	VIII.—East Rajputana, Central India and Gujarat.		...	...	—·008	...	...	...	...	...	...	...	95·8	+3·9	67·1	−0·4	81·5	+1·8	28·8	...	...	...	...	39·6
50	East Rajputana	Jeypore	1,431	28·494	−·008	29·904	28·578	27th	28·407	17th	·171	75·6	96·0	+2·8	64·5	0	80·3	+1·4	31·5	100·5	7th & 8th.	53·1	31st	47·4
		Kotah	?	29·075	?	?	29·172	27th	28·988	13th	·184	78·7	97·0	?	69·7	?	83·3	?	27·3	100·0	5 days	60·0	28th & 29th.	40·0
		Sambhar	1,254	28·653	−·010	29·891	28·740	27th	28·568	17th	·172	74·2	96·6	+5·0	64·4	−0·3	80·5	+2·4	32·2	101·5	7th	52·9	29th	48·6
		Ajmere	1,611	28·310	−·016	29·917	28·396	27th	28·226	13th	·170	71·8	95·0	+3·6	63·1	+0·1	79·1	+1·9	31·9	98·9	3 days	50·8	28th	48·1
		Oodeypore	1,925	28·012	?	29·911	28·083	27th	27·837	13th	·146	75·5	93·3	?	62·1	?	77·7	?	31·2	96·5	7th & 9th.	54·9	28th	41·6
		Deesa	466	29·453	−·010	29·879	29·554	19th	29·367	13th	·187	80·2	101·9	+5·9	66·1	−0·8	84·0	+2·6	35·8	105·4		60·1	28th	45·2
46	Kathiawar and Cutch.	Bhuj	395	29·531	0	29·880	29·633	19th	29·442	13th	·191	83·1	99·3	+3·6	71·6	+0·4	85·5	+2·0	27·7	103·3	6th	67·4	23rd & 28th.	35·9
		Rajkot	429	29·487	−·019	29·871	29·592	19th	29·398	13th	·194	79·5	98·6	+3·4	67·6	−0·8	83·1	+1·3	31·0	101·4	6th	63·9	10th & 19th	37·5
		Veraval	?	29·887	?	29·847	30·011	19th	29·803	13th	·208	81·0	93·8	?	72·2	?	83·0		21·6	99·1	4 days	66·8	22nd	32·3
		Bhavnagar Para	35	29·880	?	29·860	29·990	19th	29·791	13th	·199	80·5	98·0	?	69·5	?	83·8	?	28·5	100·6	9th	65·8	3 days	34·8
45	Central India	Nowgong	757	29·165	+·004	29·899	29·257	28th	29·078	17th	·179	71·5	89·7	?	63·5	−1·6	76·7	?	26·2	93·0	5 days	53·0	27th	40·0
		Indore	1,823	28·112	+·003	29·900	28·183	19th	28·021	13th	·162	75·7	90·6	+3·5	62·7	−1·0	76·7	+1·3	27·9	94·2	16th	56·1	29th & 30th.	38·1
		Neemuch	1,630	28·315	−·009	29·913	28·390	19th	28·231	13th	·159	78·0	94·2	+4·3	63·7	−0·9	78·9	+1·7	30·5	97·3	8th & 20th.	55·3	27th	42·0
45	Gujarat	Surat	39	29·875	−·024	29·857	29·983	19th	29·779	13th	·204	80·3	97·7	?	71·4	?	84·6	?	26·3	99·7	4 days	67·5	23rd	32·2
		Ahmedabad	164	29·746?	?	29·858?	29·845	19th	29·669	12th	·176	80·4	97·9	?	71·8	?	84·9	?	26·1	99·7	4 days	68·6	28th	31·1
22	N.-W. P., West	Agra	555	29·340	−·016	29·867	29·434	28th	29·223	17th	·211	75·2	96·0	+3·1	67·6	−0·2	81·8	+1·5	28·4	100·0	8th	58·4	28th	41·6
21	N.-W.P., Central	Jhansi	858	29·062	+·008	29·889	29·146	28th	28·984	16th	·162	76·9	93·9	?	69·0	+0·4?	81·5	?	24·9	98·1	20th	61·4	27th &	36·7

I—continued.

in India, Burma, etc., in October 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st October 1898.	Normal rainfall for period 1st to 31st October.	Variation from normal of period, 1st to 31st October.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0·46	−0·46	...	...	...	...	VI.—Upper Sub-Himalayas.		
24	...	...	...	3	...	3	...	1	0·2	1·9	−89	77	·621	0·2	0	0·91	−0·91	0	1·15	−1·15	0	1·15	−1·15	0	Bareilly	N.-W. Provinces, West (Sub-montane).	26
28	...	...	...	2	...	...	1	...	1·1	1·7	−35	65	·458	0·4	0	1·20	−1·20	0	0·99	−0·99	0	0·99	−0·99	0	Dehra Dun		
31	...	...	...	...	...	...	...	...	0·9	1·4	−36	74	·519	0	0	0·55	−0·55	0	0·43	−0·43	0	0·43	−0·43	0	Roorkee.		
27	...	1	...	...	...	...	3	...	1·3	1·4	−8	61	·455	0	0	0·45	−0·45	0	0·42	−0·42	0	0·42	−0·42	0	Meerut	N.-W. Provinces, West.	22
6	...	...	3	3	...	...	9	10	2·7	2·4	+13	43	·364	0·4	0	0·18	−0·18	0	0·08	−0·08	0	0·08	−0·08	0	Delhi	South-East Punjab.	26
23	...	1	...	5	1	...	1	...	1·3	1·6	−19	57	·427	0·1	0	0·45	−0·45	0	0·26	−0·26	0	0·26	−0·26	0	Lahore	Central Punjab	28
...	...	2	...	13	1	9	2	4	?	2·5	?	40	·334	0	0	0·64	−0·64	0	0·14	−0·14	0	0·14	−0·14	0	Sirsa	South Punjab.	27
17	...	6	...	...	...	8	...	...	1·7	?	?	70	·562	0	0	?	?	0	?	?	0	?	?	0	Patiala.		
28	...	...	...	1	2	...	...	...	0·8	0·9	−11	62	·464	0·2	0	0·55	−0·55	0	0·40	−0·40	0	0·40	−0·40	0	Ludhiana	Punjab (Sub-montane).	29
12	...	8	9	1	...	...	...	1	1·4	1·4	0	62	·493	0·2	0	0·82	−0·82	0	0·31	−0·31	0	0·31	−0·31	0	Sialkot.		
23	...	1	2	1	...	...	2	2	1·1	?	?	69	·502	0	0	?	?	0	0·31	−0·31	0	0·31	−0·31	0	Umballa.		
31	...	...	...	...	...	...	...	...	1·5	1·2	+25	57	·377	0·4	0	1·45	−1·45	0	0·55	−0·55	0	0·55	−0·55	0	Rawalpindi	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0·06	−0·06	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
25	...	1	...	...	3	...	1	1	1·6	2·5	−36	60	·409	0	0	0·27	−0·27	0	0·11	−0·11	0	0·11	−0·11	0	Peshawar	North Punjab.	31
10	1	11	7	...	...	1	...	1	3·5	?	?	44	·343	0·1	0	0·20	−0·20	0	0·07	−0·07	0	0·07	−0·07	0	Khushab	West Punjab.	32
7	1	1	5	9	7	...	...	1	4·4	?	?	38	·343	0	0	0·10	−0·10	0	0·15	−0·15	0	0·06	−0·06	0	Montgomery		
12	3	15	...	...	...	...	...	1	1·5	1·2	+25	57	·431	0·2	0	0·09	−0·09	0	0·05	−0·05	0	0·05	−0·05	0	D. I. Khan		
14	1	4	1	7	3	...	...	1	1·1	2·0	−45	51	·420	0·3	0	0	0	0	0	0	0	0	0	0	Mooltan.		
27	1	1	...	...	...	...	1	1	1·5	2·2	−32	?	?	0·1	0	0	0	0	0	0	0	0	0	0	Jacobabad	Sind.	47
9	4	1	1	2		8	1	3	?	7·8	?	46	·438	0·2	0	0	0	0	0	0	0	0	0	0	Hyderabad.		
5	1	3	2	1	...	2	13	4	7·0	9·7	−28	64	·625	0·6	0	0	0	0	0	0	0	0	0	0	Kurrachee.		
1	1	...	...	4	6	11	4	4	5·2	4·0	+30	66	·653	0·1	0	0	0	0	0·10	−0·10	0	0·10	−0·10	0	Bickaneer	West Rajputana	51
4	2	1	2	2	3	4	2	4	4·4	3·7	+19	40	·336	0·1	0	?	?	0	0·05	−0·05	0	0·05	−0·05	0	Pachpadra.		
13	1	4	1	...	2	6	1	3	1·7	?	?	34	·327	0·1	0	?	?	0	0·13	−0·13	0	0·13	−0·13	0	Jodhpore		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·04	0·66	−0·61	...	...	...	...	VIII.—East Rajputana, Central India and Gujarat		
11	5	1	...	...	...	1	2	11	2·4	3·7	−35	43	·390	0·1	0	0·90	−0·90	0	0·30	−0·30	0	0·30	−0·30	0	Jeypore	East Rajputana	50
13	3	1	3	3	...	3	2	3	3·0	?	?	44	·434	0	0	?	?	0	0·50	−0·50	0	0·50	−0·50	0	Kotah.		
26	1	1	...	...	...	...	2	1	3·3	4·7	−30	39	·345	0·1	0	0·50	−0·50	0	0·17	−0·17	0	0·17	−0·17	0	Sambhar.		
25	...	...	1	...	...	2	2	1	2·8	2·6	+8	54	·423	0·1	0	0·64	−0·64	0·05	0·31	−0·26	0·05	0·31	−0·26	0·05	Ajmere.		
16	5	1	...	...	...	1	5	3	3·0	?	?	47	·418	0	0	?	?	0	?	?	0	?	?	0	Oodeypore.		
...	2	4	10	10	3	1	...	1	5·7	6·7	−15	42	·438	0·1	0	0·45	−0·45	0	0·35	−0·35	0	0·35	−0·35	0	Deesa.		
16	2	1	...	...	...	1	5	6	4·4	6·0	−27	41	·456	0·4	0	?	?	0	0·35	−0·35	0	0·35	−0·35	0	Bhuj	Kathiawar and Cutch.	46
3	7	2	8	1	1	...	6	3	15·5?	5·6	+177?	57	·571	0·2	0	1·27	−1·27	0	0·45	−0·45	0	0·45	−0·45	0	Rajkot		
...	14	12	...	1	...	...	2	2	4·9	?	?	54	·566	1·1	0	?	?	0	1·08	−1·08	0	1·08	−1·08	0	Veraval.		
...	4	1	...	...	...	5	7	14	5·0	?	?	48	·499	0·2	0	?	?	0	?	?	0	?	?	0	Bhavnagar Para.		
8	2	4	1	1	2	7	4	2	1·3	1·5	−13	71	·555	0·2	1	1·82	−0·82	0·45	1·17	−0·72	0·45	1·17	−0·72	0·45	Nowgong	Central India.	49
9	7	12	...	...	...	1	2	...	1·6	2·3	−30	59	·536	0·1	1	3·09	−2·09	0·18	1·45	−1·27	0·18	1·45	−1·27	0·18	Indore.		
7	...	7	4	2	...	1	6	4	4·0	7·9	−49	46	·456	0·1	0	1·09	−1·09	0·08	0·49	−0·41	0·08	0·49	−0·41	0·08	Neemuch.		
15	...	4	7	3	2	...	...	...	1·2	5·1	−76	62	·641	0	0	3·00	−3·00	0	1·53	−1·53	0	1·53	−1·53	0	Surat	Gujarat.	45
8	3	10	3	1	2	1	1	2	2·8	?	?	51	·529	0·2	0	?	?	0	0·62	−0·62	0	0·62	−0·62	0	Ahmedabad		
8	...	2	...	3	7	...	...	11	3·5	3·0	+17	53	·472	0	0	0·45	−0·45	0	0·47	−0·47	0	0·47	−0·47	0	Agra	N.-W. P., West	22
10	...	1	1	...	...	15	3	1	2·2	2·6	−15	54	·499	0·2	0	1·27	−1·27	0	0·70	−0·70	0	0·70	−0·70		Jhansi	N.-W. P. Central.	21

Table

Abstract of Observations taken at 8 A.M. at 214 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan		...	...	+·001	...	...	...	...	...	...	...	90·0	+2·5	66·7	−1·1	78·4	+0·7	23·3	...	...	...	...	35·2
39	Bombay, Deccan	Belgaum	2,539	27·394	−·005	29·850	27·473	18th & 19th.	27·314	12th	·159	73·3	84·7	+2·3	66·1	+1·1	75·4	+1·7	18·6	88·2	23rd	60·9	21st	27·3
		Sholapur	1,590	28·334	0	29·879	28·409	19th	28·226	11th	·183	77·7	91·7	+2·6	68·9	+1·0	80·3	+1·8	22·8	94·7	23rd	62·6	21st	32·1
		Poona	1,840	28·091	−·009	29·886	28·174	19th	28·004	11th	·170	75·8	91·2	+3·7	66·6	+0·2	78·9	+2·0	24·6	93·5	23rd	58·4	31st	35·1
		Bijapur	1,946	27·975	?	29·867	28·036	19th	27·867	11th	·169	76·6	88·3	?	67·9	?	78·1	?	20·4	92·7	19th	60·6	21st	32·1
40	Khandesh	Malegaon	1,430	28·490	−·015	29·883	28·569	19th	28·394	12th	·175	77·4	93·7	+4·1	64·4	−0·9	79·1	+1·6	29·3	97·4	17th	57·9	31st	39·5
		Ahmednagar	2,152	27·791	?	29·890	27·868	19th	27·694	11th	·174	76·1	89·2	?	62·9	?	76·1	?	26·3	92·8	18th	53·0	31st	39·8
41	Berar	Akola	930	28·991	−·002	29·885	29·080	28th	28·866	12th	·214	75·8	94·6	+4·5	64·5	−1·5	79·5	+1·5	30·1	97·4	21st	56·0	30th	41·4
		Amraoti	1,215	28·708	+·006	29·890	28·791	28th	28·576	12th	·215	77·1?	92·9	+3·5	68·2?	?	80·6?	?	24·7	96·2	17th,	60·8	29th	35·4
42	Central Provinces, West.	Khandwa	1,044	28·889	+·011	29·906	28·967	19th	28·782	13th	·185	75·6	94·1	+4·2	63·7	−2·4	78·9	+0·9	30·4	96·7	7th & 22nd	55·6	29th	41·1
		Hoshangabad	1,006	28·927	+·014	29·917	29·011	28th	28·803	13th	·208	71·7	91·0	+2·9	65·2	−1·8	78·1	+0·6	25·8	95·8	7th	57·2	30th	38·6
		Nagpur	1,025	28·896	+·011	29·892	28·992	28th	28·750	13th	·242	75·4	92·2	?	66·8	?	79·5	?	25·4	96·6	17th	58·7	31st	37·9
43	Central Provinces, Central.	Chanda	634	29·303	−·002	29·892	29·400	28th	29·130	12th	·270	76·3	91·4	+2·0	65·6	−2·9	78·5	−0·5	25·8	95·7	17th	54·7	30th	41·0
		Seoni	2,033	27·902	+·013	29·900	27·986	28th	27·766	13th	·220	73·0	87·6	+1·6	61·8	−2·5	74·7	−0·5	25·8	92·0	17th & 18th.	52·8	30th	39·2
		Jubbulpore	1,327	28·589	−·001	29·902	28·677	27th	28·461	13th	·216	70·4	88·0	+1·2	61·7	−2·5	74·9	−0·7	26·3	91·4	4 days	50·9	29th & 31st	40·5
		Saugor	1,807	28·129	+·002	29·899?	28·211	28th	28·026	13th	·185	76·9?	89·2	+2·4	67·2?	+2·0?	78·2?	+2·2?	22·0	92·3	21st & 22nd.	59·1	28th	33·2
49	Central India	Sutna	1,040	28·868	0	29·899	28·954	27th & 28th	28·766	13th	·188	73·8	89·0	+1·6	64·9	−0·7	77·0	+0·5	24·1	92·9	20th	53·8	27th	39·1
44	Central Provinces, East.	Raipur	970	28·946	+·006	29·883	29·054	28th	28·767	13th	·287	75·0	88·7	+0·9	68·6	−1·2	78·7	−0·2	20·1	93·4	18th	60·2	30th	33·2
		Sambalpur†	486	29·451	+·016	29·894	29·552	28th	29·355	1st	·197	76·3	88·7	0	69·7	−2·3	79·2	−1·2	19·0	93·1	2nd	57·7	29th	35·4
39	Hyderabad (North).	Aurangabad	1,865	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Indur	?			Not	recorded					78·3	88·9	?	67·3	?	78·1	?	21·6	93·4	18th	56·8	31st	36·6
		Bidar	2,165?	27·748	?	29·854	27·827	28th	27·622	11th & 12th	·205	76·1	87·8	?	64·9	?	76·4	?	22·9	92·7	18th	59·2	25th	33·5
53	Hyderabad (South).	Gulbarga	1,502	28·440	?	29·902	28·531	28th	28·298	11th	·233	76·8	90·1	?	69·0	?	79·6	?	21·1	95·6	18th	61·5	16th	34·1
		Raichur	1,309	28·595	?	29·856	28·666	19th	28·451	11th	·215	78·4	90·2	?	73·5	?	81·9	?	16·7	93·1	4 days	69·6	20th & 25th	23·5
		Hyderabad (Deccan).	1,690	28·227	−·015	29·869	28·319	28th	28·061	11th	·258	77·6	90·8	+4·0	70·1	?	80·5	?	20·7	94·9	17th	63·7	17th	31·2
		Secunderabad.	1,787	28·131	−·012	29·873	28·211	28th	27·968	11th	·243	75·9	90·2	+3·4	69·6	+1·8	80·0	+2·6	20·6	95·7	18th	64·1	16th	31·6
		Hanamconda	?	29·034	?	?	29·129	28th	28·853	12th	·276	78·8	88·3	?	71·4	?	79·9	?	16·9	91·5	3rd	65·2	3 days	26·3
	X.—West Coast		...	...	−·024	...	...	...	...	...	...	...	87·1	+1·9	75·8	+1·5	81·5	+1·7	11·2	...	...	...	...	17·4
37	Konkan	Bombay	37	29·877	−·018	29·854	29·982	19th	29·783	11th	·199	81·4	90·0	+2·7	78·2	+2·0	84·1	+2·4	11·8	94·0	24th	76·0	2nd	18·0
		Ratnagiri	110	29·785	−·009	29·833	29·877	19th	29·674	11th	·203	82·0	90·8	+2·6	76·6	+3·1	83·7	+2·9	14·2	97·9	24th	73·9	23rd	24·0
		Mormugao	60	29·852	?	29·847	29·936	18th & 19th	29·750	11th	·186	79·3	86·6	?	76·3	?	81·5	?	10·3	89·5	24th	74·4	4 days	15·1
		Goa	199	29·701	−·013	29·837	29·777	18th & 19th	29·596	11th	·181	80·2	86·0	?	76·3	?	81·2	?	9·7	89·0	4 days	72·0	26th	17·0
		Karwar	44	29·852	−·028	29·828	29·947	19th	29·739	11th	·208	77·3	86·9	+1·9	74·8	+1·7	80·9	+1·8	12·1	90·8	28th	72·5	25th	18·3
33	Malabar	Cochin	10	29·901	−·033	29·839	29·994	16th	29·819	11th	·175	79·2	87·0	+1·3	75·0	+0·6	81·0	+1·0	12·0	89·5	4 days	72·7	8th	16·8
		Calicut	27	29·882	−·034	29·839	29·970	19th	29·791	11th	·178	78·9	86·8	+1·0	74·8	+0·7	80·8	+0·9	12·0	89·3	16th & 19th.	72·0	6th	17·3
		Mangalore	65	29·848	−·030	29·845	29·937	19th	29·758	11th	·179	79·6	86·8	+1·7	75·0	+0·9	80·9	+1·3	11·8	89·8	28th	72·4	17th	17·4
		Trivandrum	198	29·716	?	29·846	29·793	19th	29·629	11th	·164	77·8	82·6	?	75·5	?	79·1	?	7·1	84·5	6 days	72·0	10th	12·5
	XI.—South India		...	...	−·012	...	...	...	...	...	...	...	88·2	+0·6	73·3	+0·9	80·7	+0·8	14·9	...	...	...	...	24·9
57	Madras (South).	Pamban	37	29·862	?	29·826	29·942	19th	29·777	11th	·165	82·0	87·7	?	76·3	?	82·0	?	11·4	91·3	19th & 22nd	73·2	2nd & 24th	18·1
		Tinnevelly	168	29·736	?	29·834	29·802	19th	29·631	11th	·171	80·6	92·4	?	76·2	?	84·3	?	16·2	100·8	14th	72·9	18th & 25th.	27·9
		Madura	447	29·448	−·016	29·834	29·524	19th	29·351	11th	·173	79·2	89·3	−2·4	74·3	+0·5	81·8	−1·0	15·0	93·9	21st	72·0	16th	21·9

I—*continued.*

in India, Burma, etc., in October 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st October 1898.	Normal rainfall for period 1st to 31st October.	Variation from normal of period, 1st to 31st October.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·	3·08	−2·92	...	...	...	...	IX.—Deccan.		
7	5	7	6	3	...	...	...	3	?	10·5	?	80	·659	2·3	8	8·09	−0·09	4·47	6·39	− 1·92	4·47	6·39	−1·92	1·50	Belgaum .	Bombay Deccan.	39
...	1	11	4	7	...	2	2	4	10·2	7·4	+38	56	·530	3·2	3	5·91	−2·91	2·82	5·10	− 2·28	2·82	5·10	− 2·28	1·47	Sholapur.		
2	1	2	12	5	1	5	...	8	6·9	5·8	+19	66	·592	2·5	4	6·18	−2·18	0·93	4·80	− 3·87	0·93	4·80	− 3·87	0·37	Poona.		
9	...	1	2	1	...	3	9	6	3·0	?	?	81	·745	2·5	7	7·70	−0·70	7·28	3·52	+ 3·76	7·28	3·52	+ 3·76	1·85	Bijapur.		
7	3	2	...	...	1	6	8	4	8·7	4·5	+93	60	·567	1·2	0	4·18	−4·18	0	2·84	− 2·84	0	2·84	− 2·84	0	Malegaon .	Khandesh.	40
10	7	3	2	2	2	...	...	5	7·1	?	?	63	·571	2·3	2	?	?	0·46	3·34	− 2·88	0·46	3·34	− 2·88	0·26	Ahmednagar.		
13	1	5	5	3	1	1	...	2	4·0	3·3	+21	58	·521	1·2	1	4·09	−3·09	0·25	3·50	− 3·25	0·25	3·50	− 3·25	0·25	Akola .	Berar.	41
...	3	9	10	1	...	3	3	2	5·2	2·9	+79	54	·510	1·5	0	4·09	−4·09	0	2·88	− 2·88	0	2·88	− 2·88	0	Amraoti.		
17	...	3	4	4	3	...	...	...	3·1	2·9	+ 7	59	·526	0·1	0	3·27	−3·27	0	1·73	− 1·73	0	1·73	− 1·73	0	Khandwa .	Central Provinces, West.	42
14	...	12	2	...	1	1	1	...	1·5	1·5	0	69	·545	0·5	0	3·18	−3·18	0	1·82	− 1·82	0	1·82	− 1·82	0	Hoshangabad.		
27	...	3	1	...	...	...	...	...	4·1	4·3	− 5	59	·530	1·6	1	3·55	−2·55	0·15	2·95	− 2·80	0·15	2·95	− 2·80	0·15	Nagpur.		
16	7	4	1	...	...	1	...	2	2·1	2·3	− 9	73	·677	1·5	1	?	?	0·17	2·24	− 2·07	0·17	2·24	− 2·07	0·10	Chanda .	Central Provinces, Central.	43
...	4	12	1	...	...	4	4	6	1·9	3·1	−39	60	·492	0·7	4	3·55	+0·45	0·97	2·36	− 1·39	0·97	2·36	− 1·39	0·54	Seoni.		
3	2	4	2	10	6	3	1	...	1·3	2·1	−38	75	·573	0·7	1	2·45	−1·45	0·16	2·07	− 1·91	0·16	2·07	− 1·91	0·14	Jubbulpore.		
...	1	5	2	6	7	5	5	...	4·7	2·7	+74	48	·440	0·4	0	2·91	−2·91	0	1·45	− 1·45	0	1·45	− 1·45	0	Saugor.		
8	7	2	1	...	...	...	3	10	3·5	4·3	−19	64	·543	0·4	0	2·09	−2·09	0·05	2·37	− 2·32	0·05	2·37	− 2·32	0·05	Sutna	Central India.	49
19	...	5	4	1	...	1	1	...	5·2	3·8	+37	72	·626	1·8	2	3·82	−1·82	1·19	2·29	− 1·10	1·19	2·29	− 1·10	1·07	Raipur .	Central Provinces, East.	44
...	6	17	3	...	...	1	...	...	2·9*	2·0	+45	79*	·726*	0·9	3	?	?	0·88	2·04	− 1·16	0·88	2·04	− 1·16	0·48	Sambalpur.†		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	?	?	...	...	...	...	...	...	...	Aurangabad.	Hyderabad (North).	39
23	3	1	2	...	1	...	...	1	1·3	?	?	73	·715	2·3	1	?	?	0·32	2·63	− 2·31	0·32	2·63	− 2·31	0·32	Indur.		
...	4	11	7	4	1	1	2	1	5·3	?	?	77	·692	1·8	2	?	?	1·37	3·65	− 2·28	1·37	3·65	− 2·28	1·01	Bidar.		
12	2	10	6	1	...	...	...	...	11·3	?	?	69	·634	2·3	7	?	?	2·42	3·06	− 0·64	2·42	3·06	− 0·64	0·70	Gulbarga .	Hyderabad (South).	51
...	5	3	7	6	1	3	2	4	7·6	?	?	77	·751	2·5	2	?	?	0·42	4·78	− 4·36	0·42	4·78	− 4·36	0·19	Raichur.		
19	...	2	2	6	...	...	1	1	3·8	?	?	72	·684	3·1	2	?	?	0·56	3·08	− 2·52	0·56	3·08	− 2·52	0·27	Hyderabad (Deccan).		
4	2	3	9	3	...	...	...	5	4·6	3·8	+21	63	·624	2·7	2	?	?	0·53	3·08	− 2·55	0·53	3·08	− 2·55	0·24	Secunderabad.		
15	8	...	...	3	2	...	1	2	5·2	?	?	77	·768	3·1	6	?	?	4·46	?	?	4·46	?	?	2·52	Hanamconda.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7·89	7·80	+0·09	...	...	...	...	X.—West Coast.		
...	...	8	13	8	1	...	1	...	7·6	9·8	−22	81	·876	1·9	1	3·45	−2·45	0·48	2·47	− 1·99	0·48	2·47	− 1·99	0·41	Bombay.	Konkan.	37
9	2	3	6	9	1	1	...	...	4·3	7·7	−44	75	·811	3·3	6	5·91	+0·09	1·98	4·28	− 2·30	1·98	4·28	− 2·30	0·73	Ratnagiri.		
...	2	1	4	16	2	4	1	1	5·3	?	?	91	·910	3·2	13	?	?	4·33	7·01	− 2·68	4·33	7·01	− 2·68	0·89	Mormugao.		
4	2	5	9	4	3	2	1	1	?	?	?	83	·861	4·3	11	?	?	6·20	5·97	+ 0·23	6·20	5·97	+ 0·23	2·09	Goa.		
4	4	12	8	3	...	...	...	...	2·8	?	?	89	·828	3·7	10	9·09	+0·91	8·18	7·68	+ 0·50	8·18	7·68	+ 0·50	2·23	Karwar.		
...	13	12	1	2	...	1	1	1	4·0	?	?	85	·859	6·5	13	15·09	−2·09	20·61	14·01	+ 6·60	20·61	14·01	+ 6·60	6·40	Cochin .	Malabar.	33
2	...	8	13	7	...	...	1	...	9·3	?	?	87	·853	6·7	16	10·44	+5·56	12·24	10·17	+ 2·07	12·24	10·17	+ 2·07	5·05	Calicut.		
14	3	5	2	3	3	1	...	...	1·7	2·7	−37	83	·841	6·5	15	9·90	+5·10	7·75	7·82	− 0·07	7·75	7·82	− 0·07	1·45	Mangalore.		
11	8	1	...	...	...	1	4	6	3·9	?	?	85	·811	8·1	10	?	?	9·22	10·76	− 1·54	9·22	10·76	− 1·54	1·93	Trivandrum.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7·94	7·35	+0·59	...	...	...	...	XI.—South India.		
2	3	2	...	...	2	12	1	9	9·8	?	?	80	·878	3·6	13	7·50	+5·50	20·14	6·86	+13·28	20·14	6·86	+13·28	4·75	Pamban .	Madras (South).	57
...	7	2	...	1	...	5	6	10	4·0	?	?	79	·826	5·7	13	7·30	+5·70	9·57	6·01	+ 3·56	9·57	6·01	+ 3·56	2·17	Tinnevelly.		
4	4	3	1	...	...	...	...	19	3·0	2·9	+ 3	78	·787	6·2	14	9·73	+4·27	12·28	8·21	+ 4·07	12·28	8·21	+ 4·07	3·58	Madura.		

* Mean of 26 days.
† " " 27 "

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras, South Central.	Salem	940	28·986	−·017	29·872	29·062	19th	28·882	11th	·180	78·2	89·2	−0·1	72·0	+1·5	80·6	+0·7	17·2	92·9	19th	66·4	20th	26·5
		Coimbatore	1,348	28·559	−·018	29·857	28·642	19th	28·434	11th	·208	76·6	87·9	−0·1	71·5	+0·9	79·7	+0·4	16·4	92·4	2nd & 21st.	68·8	18th	23·6
35	Coorg	Mercara	3,781	26·213	−·019	?	26·301	19th	26·139	10th	·162	66·8	76·4	+1·0	63·6	+1·5	70·0	+1·3	12·8	80·0	3rd	60·7	3 days	19·3
36	Mysore	Chitaldroog	2,405	27·518	?	29·847	27·598	19th	27·415	11th	·183	74·8	84·7	?	68·4	?	76·6	?	16·3	87·6	6th	63·4	1st & 20th.	24·2
		Bangalore	3,021	26·936	−·020	29·858	27·009	19th	26·833	11th	·176	71·9	82·3	+1·3	66·6	+1·7	74·5	+1·5	15·7	86·3	13th	63·8	21st	22·5
		Hassan	3,091	26·868	?	29·867	26·947	19th	26·782	11th	·165	72·1	80·8	?	65·3	?	73·0	?	15·5	83·9	2nd	59·0	21st	24·9
		Mysore	2,518	27·426	?	29·868	27·502	19th	27·323	11th	·179	73·3	83·6	?	67·8	?	75·7	?	15·8	86·9	16th	64·0	21st	22·9
66	Madras, East Coast, South.	Negapatam	31	29·864	−·018	29·824	29·933	19th	29·747	11th	·186	80·6	89·2	+1·3?	76·4	+0·8	82·8	+1·1?	12·8	95·5	4 days.	72·4	31st	23·1
		Cuddalore	12	29·881	?	29·822	29·963	28th	29·765	11th	·198	79·6	87·5	?	73·0	?	80·3	?	14·5	93·8	20th	68·2	20th	25·6
		Trichinopoly	255	29·643	−·020	29·832	29·717	19th	29·538	11th	·179	79·6	90·7	−0·1	74·9	+0·9	82·8	+0·4	15·8	97·1	19th	71·9	15th	25·2
		Madras	22	29·880	−·012	29·833	29·956	28th	29·748	11th	·208	80·2	88·2	−0·8	74·7	−0·5	81·5	−0·7	13·5	95·5	18th	70·5	18th & 19th.	25·0
85	Madras, East Coast, Central.	Nellore	71	29·823	?	29·828	29·909	28th	29·641	11th	·268	81·8	86·5	?	75·5	?	81·0	?	11·0	98·2	5th	71·1	19th	25·1
		Masulipatam	15	29·879	−·005	29·829	29·985	28th	29·410	11th	·575	82·0	89·6	+0·6	76·4	+0·7	83·0	+0·7	13·2	94·1	18th & 19th.	72·6	18th	21·5
64	Madras, Central	Cuddapah	433	29·465	−·022	29·839	29·544	28t	29·313	11th	·231	81·5	93·1	+3·2	74·8	+0·7	83·9	+2·0	18·3	99·2	19th	67·5	20th	31·7
		Kurnool	923	28·973	−·014	29·844	29·056	28th	28·813	11th	·243	79·3	93·1	+3·8	72·3	+1·0	82·7	+2·4	20·8	101·2	18th	64·8	20th	36·4
		Bellary	1,475	28·431	−·012	29·856	28·503	28th	28·301	11th	·202	78·5	89·8	+0·4	71·9	+1·1	80·9	+0·8	17·9	94·2	20th	66·2	27th	28·0
62	Madras, East Coast, North.	Cocanada	26	29·874	+·011	29·835	29·976	28th	29·695	11th	·281	81·4	88·9	+1·5	76·8	+1·1	82·9	+1·3	12·1	95·1	1st	72·5	18th	22·6
		Vizagapatam	31	29·870	+·005	29·839	29·970	27th	29·702	13th	·267	82·1	88·9	−0·7	75·8	+1·8	82·4	+0·6	13·1	93·2	8th	70·9	31st	22·3
		Waltair	?			Not r	ecorded.					82·5	88·2	?	76·9	?	82·5	?	11·3	92·4	8th	73·4	31st	19·0
		Gopalpur	21	29·885	?	29·846	29·997	28th	29·709	13th	·288	80·1	88·2	?	74·8	?	81·4	?	13·6	93·3	1st & 3rd.	64·1	31st	29·2
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·863	?	?	25·950	24th & 25th.	25·750	17th	·200	72·1	88·1	?	50·2	?	69·2	?	37·9	96·0	15th	39·0	31st	57·0
		Pishin	?			Not r	ecorded.					?	76·8	?	30·0	?	53·5	?	46·8	84·0	18th	17·9	31st	66·1
		Quetta	5,502	24·737	+·014	?	24·817	24th	24·630	17th	·187	52·5	77·3	+2·7	36·1	−3·0	56·7	−0·2	41·2	83·2	16th & 17th.	27·3	27th	55·9
		Kalat	?			Not r	ecorded.					60·9	77·0	?	31·7	?	54·4	?	45·3	85·9	8th	22·0	24th & 30th.	63·9
		Chaman	4,311	25·778	?	?	25·903	24th	24·653	17th	·250	63·9	81·4	?	51·6	?	66·5	?	29·8	90·2	16th	39·1	25th	5·1
80	Punjab	Leh	11,503	19·838	+·063	?	19·898	5th	19·761	13th	·137	39·5	60·4	+1·6	29·9	−0·1	45·2	+0·8	30·5	68·1	3rd & 4th.	23·0	26th & 31st.	45·1
		Srinagar	5,204	24·982	?	?	25·113	25th	24·870	17th	·243	47·6	72·6	?	40·4	?	56·5	?	32·2	78·3	3 days.	30·3	26th	48·0
		Skardu	?			Not r	ecorded.					46·4	66·3	?	40·7†	?	52·3†	?	25·6	77·4	7th	30·7	26th	46·7
		Dras	?	20·880	?	?	20·955	27th	20·789	13th	·166	37·5	52·8	?	23·7	?	38·3	?	29·1	63·3	12th & 16th.	5·6	24th	57·7
		Gilgit	?	25·592	?	?	25·459	24th	25·116	17th	·343	58·2	72·0	?	52·1	?	62·0	?	19·9	79·7	10th	41·3	24th	38·4
		Chitral	?	24·735	?	?	24·900	24th	24·600	13th & 17th	·300	47·2	80·4	?	45·1	?	62·8	?	35·3	89·2	3 days	36·0	26th	53·2
		Killa Drosh	?			Not r	ecorded.					57·1	80·4	?	55·2	?	67·9	?	25·2	90·0	9th	48·1	31st	41·9
		Para Chinar	6,000	24·528	?	?	24·597	19th	24·416	17th	·181	62·8	75·9	?	48·8	?	62·4	?	27·1	82·0	5th	40·7	23rd	41·3
		Cherat	?	25·749	?	?	25·826	19th	25·640	17th	·186	66·0	80·1	?	57·0	?	68·6	?	23·1	86·4	6th & 7th.	45·6	31st	40·8
		Murree	6,333	23·888	−·021	?	23·957	10th	23·789	17th	·168	59·5	69·2	−0·1	55·7	+2·5	62·5	+1·2	13·5	75·2	6th & 9th.	48·9	4 days	26·3
		Poo	?			Not r	ecorded.					?	69·7	?	42·8	?	56·3	?	26·9	78·6	5th	36·5	25th & 30th.	42·1
		Simla	7,224	23·179	−·001	?	23·257	10th	23·084	17th	·173	54·3	63·1	+0·5	51·4	+0·4	57·3	+0·5	11·7	68·3	5th	44·7	30th	23·6
25	N.-W. Provinces	Chakrata	7,022	23·349	+·022	?	23·423	9th	23·245	17th	·178	57·8	67·6	+1·6	50·9	+0·2	59·3	+0·9	16·7	72·2	5th	45·2	30th	27·0
		Mussooree	6,705	23·604	?	?	23·688	10th	23·500	17th	·188	58·1	64·9	+0·7	52·3	+0·7	58·6	+0·7	12·6	71·3	6th	46·0	31st	25·3
		Ranikhet	6,068	24·169	+·020	?	24·246	10th	24·065	17th	·181	59·3	69·6	+0·4	54·8	+0·7	62·2	+0·6	14·8	76·0	4th	50·0	3 days	26·0
		Muktesar	?	22·823	?	?	23·029	7th	22·825	17th	·204	55·7	66·1	?	49·6	?	57·9	?	16·5	71·7	4th	45·1	24th	26·6

† Mean of 20 days.

I—*continued.*

in India, Burma, etc., in October 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 31st October 1898.	Normal rainfall for period, 1st to 31st October.	Variation from normal of period, 1st to 31st October.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
20	1	2	1	...	...	4	2	1	3·3	2·8	+18	83	·804	6·3	8	11·36	−3·36	3·98	6·89	− 2·91	3·98	6·89	− 2·91	1·47	Salem	Madras, South Central.	34
...	...	2	9	3	1	7	9	...	0·5	3·5	−86	84	·783	6·8	14	8·91	+5·09	9·24	5·94	+ 3·30	9·24	5·94	+ 3·30	2·10	Coimbatore.		
10	2	2	9	2	...	...	3	3	6·2	3·6	+72	93	·611	4·2	14	13·50	+0·50	8·23	9·60	− 1·37	8·23	9·60	− 1·37	1·32	Mercara	Coorg.	35
2	1	1	9	6	1	2	5	4	6·1	?	?	79	·680	6·3	7	?	?	3·52	4·99	− 1·47	3·52	4·99	− 1·47	0·91	Chitaldroog.	Mysore.	36
...	...	7	3	3	...	6	7	...	6·2	4·0	+55	82	·650	6·6	7	10·00	−3·00	3·65	7·15	− 3·50	3·65	7·15	− 3·50	2·59	Bangalore.		
...	2	6	10	7	...	1	2	3	2·7	?	?	82	·642	7·3	11	?	?	11·44	5·68	+ 5·76	11·44	5·68	+ 5·76	3·12	Hassan.		
1	1	4	6	3	1	7	7	1	7·3	?	?	83	·674	8·1	7	?	?	2·52	6·61	− 4·09	2·52	6·61	− 4·09	1·15	Mysore.		
1	4	2	1	...	...	16	2	5	7·0	3·7	+89	85	·887	6·9	14	10·82	+3·18	12·19	10·59	+ 1·60	12·19	10·59	+ 1·60	2·32	Negapatam	Madras, East Coast, South.	53
...	7	2	...	...	3	3	9	7	0·4	?	?	91	·921	4·7	13	9·40	+3·60	11·24	8·67	+ 2·57	11·24	8·67	+ 2·57	3·72	Cuddalore.		
17	...	1	...	...	...	2	9	2	4·2	3·8	+11	81	·819	6·5	11	10·00	+1·00	5·05	7·49	− 2·44	5·05	7·49	− 2·44	1·03	Trichinopoly.		
2	6	4	...	1	7	3	4	4	4·0	5·0	−20	85	·886	5·8	17	12·09	+4·91	16·31	11·00	+ 5·31	16·31	11·00	+ 5·31	4·05	Madras.		
24	...	...	1	...	1	...	2	3	3·7	?	?	83	·902	6·1	10	8·90	+1·10	10·41	9·04	+ 1·37	10·41	9·04	+ 1·37	3·50	Nellore	Madras, East Coast, Central.	55
4	13	6	1	1	...	2	1	3	6·4	4·4	+45	85	·929	3·7	5	9·91	−4·91	4·10	9·34	− 5·24	4·10	9·34	− 5·24	2·80	Masulipatam.		
...	2	13	10	5	...	...	...	1	?	?	?	72	·771	3·9	8	6·80	+1·20	2·78	5·33	− 3·55	2·78	6·33	− 3·55	0·67	Cuddapah.	Madras, Central.	54
28	1	...	...	...	...	...	2	...	?	?	?	71	·710	3·4	1	7·00	−6·00	0·59	5·03	− 4·44	0·59	5·03	− 4·44	0·42	Kurnool.		
10	1	1	8	1	...	...	4	6	4·4	4·3	+2	61	·592	5·5	9	6·73	+2·27	3·70	4·29	− 0·59	3·70	4·29	− 0·59	1·11	Bellary.		
...	13	6	...	1	...	2	3	6	3·6	?	?	74	·796	3·0	9	10·00	−1·00	7·34	10·26	− 3·02	7·34	10·26	− 3·02	2·64	Cocanada.	Madras, East Coast, North.	52
17	2	8	...	...	...	1	1	2	?	2·0	?	77	·853	3·9	7	10·36	−3·36	9·68	10·54	− 0·86	9·68	10·54	− 0·86	4·92	Vizagapatam.		
...	12	3	...	...	3	7	4	2	10·2	?	?	75	·827	3·9				No	rain g	auge					Waltair.		
...	14	1	...	...	1	1	...	14	9·2	6·3	+46	81	·823	1·4	8	9·44	−1·44	13·47	9·35	+ 4·12	13·47	9·35	+ 4·12	4·15	Gopalpur.		
																									XII.—Hill Stations.		
2	26	...	...	1	...	...	...	2	5·3	?	?	14	·113	0·1	0	?	?	0	0·17	− 0·17	0	0·17	− 0·17	0	Sharigh.	Baluchistan	49
					Not	recorde	d.		?	?	?	?	?	?	...	...	...	...	0·06	...	...	...	...	...	Pishin.		
31	...	...	...	...	...	...	...	...	0·6	3·0	−80	52	·211	0·3	0	0·18	−0·18	0	0·07	− 0·07	0	0·07	− 0·07	0	Quetta.		
...	1	...	21	3	6	...	...	...	?	?	?	29*	·147*	0·1	0	?	?	0	0·07	− 0·07	0	0·07	− 0·07	0	Kalat.		
...	...	2	15	11	1	...	2	...	8·2	?	?	32	·199	0·3	0	?	?	0	0·09	− 0·09	0	0·09	− 0·09	0	Chaman.		
...	...	...	...	...	...	2	26	3	2·9	2·0	+45	46	·107	1·7	0	?	?	0·03	0·23	− 0·20	0·03	0·23	−0·20	0·03	Leh	Punjab.	38
14	1	1	1	7	6	...	...	1	3·9	?	?	88	·297	1·4	3	?	?	0·38	0·63	− 0·25	0·38	0·63	−0·25	0·12	Srinagar.		
24	1	3	...	...	...	...	2	1	6·7	?	?	84	·264	1·2	0	?	?	0·08	0·02	+ 0·06	0·08	0·02	+0·06	0·08	Skardu.		
28	1	1	1	...	...	...	...	...	1·8	?	?	76	·168	1·4	2	?	?	0·76	1·64	− 0·88	0·76	1·64	−0·88	0·46	Dras.		
30	...	...	...	...	...	...	1	...	0·5	?	?	42	·209	1·2	1	?	?	0·15	0·16	− 0·01	0·15	0·16	− 0·01	0·15	Gilgit.		
30	...	1	...	...	...	...	...	...	2·3	?	?	73	·238	0	0	?	?	0·04	?	?	0·04	?	?	0·04	Chitral.		
18	3	...	2	...	3	...	5	...	?	?	?	34	·152	0·6		?	?	0·08	?	?	0·08	?	?	0·04	Killa Drosh.		
...	7	7	3	...	...	3	6	5	5·3	?	?	27	·158	0	0	?	?	0·03	?	?	0·03	?	?	0·03	Para Chinar.		
1	12	5	...	1	5	3	...	4	9·5	?	?	34	·220	0·1	0	?	?	0·02	0·10	− 0·08	0·02	0·10	− 0·08	0·02	Cherat.		
15	6	...	...	3	2	...	...	5	5·3	5·7	− 7	40	·217	0·2	0	2·45	−2·45	0·03	1·65	− 1·62	0·03	1·65	− 1·62	0·03	Murree.		
...	...	...	14	4	...	2	9	2	?	?	?	?	?	0·8	0	?	?	0	0·75	− 0·75	0	0·75	− 0·75	0	Poo.		
6	13	7	1	1	3	...	...	...	3·6	2·5	+44	51	·217	0·1	0	1·27	−1·27	0	1·22	− 1·22	0	1·22	− 1·22	0	Simla.		
20	7	...	...	...	4	...	...	...	10·0	5·1	+96	57	·273	0·4	0	?	?	0·09	0·84	− 0·75	0·09	0·84	− 0·75	0·09	Chakrata	N.-W. Provinces.	25
...	2	2	7	2	...	...	2	15	?	8·5	?	60	·297	1·2	0	1·40	−1·40	0	1·04	− 1·04	0	1·04	− 1·04	0	Mussoorec.		
23	...	1	...	...	...	4	...	3	2·1	1·7	+24	55	·332	0·4	0	1·09	−1·09	0	1·48	− 1·48	0	1·48	− 1·48	0	Ranikhet.		
...	...	...	1	11	2	1	...	16	0·6	?	?	55	·248	0·5	0	0	0	0	0	0	0	0	0	0	Muktesar		

* Mean of 30 days.

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Bengal	Yatung	10,480?			Not recorded.						?	54·7	?	37·8	?	46·3	?	16·9	63·1	3rd	29·9	26th & 27th	33·2
		Darjeeling	7,409	23·036	−·018	?	23·137	23rd	22·939	16th	·198	54·4	60·4	−0·4	(a) 34·0	+5·0	(a) 57·5	+2·3	6·4	64·2	2 days	51·7	17th	12·5
		Gantok	5,660	24·477	?	?	24·614	23rd.	24·361	4th	·253	59·4	69·0	?	43·3	?	56·2	?	25·7	73·6	4th	38·8	31st	34·3
	Central India	Mount Abu	3,945	26·106	−·010	?	26·174	19th	26·028	17th	·146	73·9	81·1	+2·2	66·9	+2·7	74·0	+2·5	14·2	84·2	7th & 11th.	62·4	27th & 28th	21·8
		Pachmarhi	3,528	26·495	+ ·002	?	26·561	19th	26·376	13th	·185	71·3	79·8	+2·5	57·3	−2·6	68·6	−0·1	22·5	82·7	21st & 22nd.	48·7	30th	34·0
	South India	Wellington	6,200	24·227	−·025	?	24·318	19th	24·158	11th	·160	62·1	69·5	+1·0	55·1	+0·1	62·3	+0·6	14·4	73·2	14th	48·5	21st	24·7
	XIII.—Extra India.																							
	Ceylon	Trincomalee	12	29·870	?	29·808	29·944	19th	29·792	10th	·152	79·8	88·4	?	76·1	?	82·2	?	12·3	93·0	15th	74·0	27th	19·0
		Colombo	40	29·881	−·024	29·847	29·958	19th	29·806	2nd	·152	79·8	86·1	?	75·0	?	80·6	?	11·1	90·0	22nd	72·0	5th & 31st	18·0
	Persia	Meshed	3,104			Not recorded.						53·1	?	?	46·3	?	?	?	?	?	...	32·2	23rd	?
		Resht	?	...	...	...	...	...	—	...	...	...	...	...	—	...	...	...	...	...	...	...	...	...
		Teheran*	? b	26·101 25·440	? ?	? ?	26·445 25·740	22nd & 23rd. 22nd & 23rd	25·900 25·280	14th & 15th, 14th & 15th	·545 ·460	65·2	80·5	?	54·8	?	67·7	?	25·7	88·5	9th & 14th	44·4	31st	44·1
		Isphahan	? (b)	24·524	?	?	24·740	22nd	24·350	17th	·390	58·6	79·8	?	43·2	?	61·5	?	36·6	86·8	9th	33·2	25th	53·6
		Bushire	14	29·937	−·004	29·910	30·033	28th	29·846	1st	·187	77·9	87·8	−0·1	71·8	+1·1	79·8	+0·5	16·0	96·5	24th	61·2	28th	35·3
		Jask	?	29·959	?	?	30·088	24th	29·810	17th	·278	81·4	89·4	?	73·8	?	81·7	?	15·6	100·8	5th	66·2	30th	34·6
	Arabia	Muscat	20	29·937	?	29·905	30·052	24th	29·814	17th	·238	82·7	85·6	?	79·7	?	82·7	?	5·9	91·3	15th	75·1	31st	16·2
		Baghdad	220	29·857	+·033	30·057	29·982	23rd	29·665	12th	·317	67·6	94·5	+0·8	62·5	+0·4	78·5	+0·6	32·0	103·3	7th	56·2	27th	47·1
		Aden	94	29·863	−·010	29·889	29·927	19th	29·799	1st	·128	82·3	88·9	−2·3	78·1	+1·0	83·5	−0·7	10·8	91·3	4 days	74·4	18th	16·9
		Perim*	?	29·691	?	?	29·765	24th	29·553	1st	·212	85·0	91·0	?	81·3	?	86·2	?	9·7	93·9	1st	78·8	19th	15·1
	Afghanistan	Kabul	?			Not recorded.						46·9	85·3	?	40·2	?	62·8	?	45·1	97·1	22nd	29·4	23rd	67·7
	Central Asia	Kashgar	?(c)	25·766	?	?	26·041	30th	25·531	22nd	·510	50·6	68·8	?	44·5	?	56·6	?	24·3	81·0	14th	33·3	27th	47·7
	Arabian Sea Islands.	Amini Devi	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Minicoy	10	29·863	?	29·798	29·949	16th	29·784	11th	1·65	81·0	85·3	?	?	?	?	?	?	87·7	21st	?	...	?
	Africa	Zanzibar	73	30·010	−·001	30·010	30·072	8th	29·920	31st	·152	78·1	83·2	?	75·1	?	79·2	?	8·1	86·8	18th	73·0	7th & 8th	13·8
		Dunga (Zanzibar).	?			Not recorded.						78·3	89·2	?	68·0	?	78·6	?	21·2	3·5	23rd	64·8	3rd	28·7

* Observations of 20 days.
(a) Mean of 24 days.

NOTE.—When a query is inserted against any reading or in the variation returns for any station the
(b) Aneroid uncorrected.
(c) " corrected.

I—*concluded.*

in India, Burma, etc., in October 1898—concluded.

Wind direction. Number of winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st to 31st October 1898.	Normal rainfall for period, 1st to 31st October.	Variation from normal of period, 1st to 31st October.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
Not recorded.									P	P	?	P	P	P	4	P	P	1·32	2·49	− 1·17	1·32	2·49	−1·17	0·77	Yatung	Bengal.	13
6	3	5	8	8	1	...	...	...	2·5	2·6	−4	91	·389	5·9	3	4·92	−1·92	1·78	5·83	− 4·05	1·78	5·83	−4·05	0·98	Darjeeling.		
20	...	1	1	1	1	5	...	2	1·9	P	P	86	·438	3·4	7	P	P	3·84	6·89	− 3·05	3·84	6·89	−3·05	1·35	Gantok		
12	3	4	...	...	...	2	5	5	5·4	4·0	+35	33	·275	0·3	0	0·60	−0·60	0	0·71	−0·71	0	0·71	−0·71	0	Mount Abu	Central India.	
23	1	4	2	...	...	1	...	...	4·9	2·9	+69	53	·408	0·9	1	4·27	−3·27	0·18	2·63	−2·45	0·18	2·63	−2·45	0·12	Pachmarhi.		
20	...	2	3	5	1	...	...	...	1·7	2·6	−35	82	·459	6·8	20	15·89	+4·11	12·79	12·10	+0·69	12·79	12·10	+0·69	2·17	Wellington.	South India.	
																									XIII.—Extra India.		
4	...	...	...	...	...	27	...	...	6·8	P	P	86	·875	2·1	11	P	P	4·31	9·96	−5·65	4·31	9·96	−5·65	1·25	Trincomalee	Ceylon.	
...	1	1	4	7	4	7	6	1	7·6	7·3	+4	87	·895	6·5	21	P	P	20·06	13·51	+6·55	20·06	13·51	+6·55	3·71	Colombo		
Not recorded.									P	P	P	57	·240	0·6	0	P	P	0·05	0·79	−0·74	0·05	0·79	−0·74	0·05	Meshed	Persia.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	—	...	...	...	...	...	...	...	...	...	...	Resht		
19	6	4	...	...	...	...	...	1	3·8	P	P	35	·223	0·3	0	?	P	0	0·17	−0·17	0	0·17	−0·17	0	Teheran*		
13	1	1	...	1	...	2	11	2	1·9	P	P	54	·273	0·3	0	?	?	0	0·30	−0·30	0	0·30	−0·30	0	Isphahan		
4	10	7	10	...	...	...	...	...	5·6	6·5	−14	62	·594	0	0	P	P	0	0·10	−0·10	0	0·10	−0·10	0	Bushire		
...	5	5	12	4	...	...	1	4	8·8	P	?	63	·685	0·5	0	P	P	0	0·07	−0·07	0	0·07	−0·07	0	Jask		
4	...	2	2	3	4	2	8	6	4·0	P	P	59	·665	0·4	0	P	P	0	0·04	−0·04	0	0·04	−0·04	0	Muscat	Arabia.	
16	2	...	...	3	...	1	3	6	2·5	P	P	45	·306	0·6	0	P	P	0	0·04	−0·04	0	0·04	−0·04	0	Baghdad		
3	2	5	18	2	1	...	...	...	12·0†	12·2	−2	72	·806	3·3	0	P	P	0	0·02	−0.02	0	0·02	−0·02	0	Aden		
...	...	...	14	14	1	1	...	...	17·5	?	P	71	·850	4·4	0	P	P	0	0·09	−0·09	0	0·09	−0·09	0	Perim		
1	...	5	7	3	2	4	8	1	P	P	P	40	·134	0	0	?	?	0	0·03	−0·03	0	0·03	−0·03	0	Kabul	Afghanistan.	
24	2	...	1	...	2	...	2	...	P	P	P	56	·214	4·2	0	P	P	0	0·07	−0·07	0	0·07	−0·07	0	Kashgar	Central Asia.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Amini Devi.	Arabian Sea Islands.	
5	2	...	...	...	...	3	11	10	8·3	P	P	82	·872	5·2	15	P	P	10·83	P	P	10·83	P	P	2·37	Minicoy		
1	...	...	2	11	13	3	1	...	4·3	P	P	80	·765	7·2	3	P	?	1·31	3·72	−2·41	1·31	3·72	−2·41	0·65	Zanzibar	Africa.	
3	1	4	8	6	1	5	3	...	5·9	P	P	80	·775	6·0	7	P	P	2·32	P	P	2·32	P	P	0·76	Dunga (Zanzibar.)		

data for that station are not utilized in calculating the provincial variations. † Mean of 30 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·855	29·751	·104	29·801	−·008	29·792	87·9	77·9†	10·0	90·7	76·2	14·5	85·2	84·6	81·7†	+1·5	75·7	80·5	79·3	78·5
	Rangoon	...	·885	·764	·121	·830	−·017	·807	89·8	75·4	14·4	92·4	72·9	19·5	85·0	86·4	80·9	+1·1	74·1	79·5	78·5	77·4
	Diamond Island	...	·886	·778	·108	·830	−·014	·806	87·8	79·3	8·5	91·3	76·4	14·9	85·9	85·3	82·5	+2·5	75·8	80·0	78·1	78·0
	Cocos Island‡	111	·793	·694	·099	·742	−·016	·784	86·8	78·5	8·3	89·2	76·1	13·1	84·7	83·6	81·4	+1·6	75·1	79·7	78·6	77·8
	Akyab	...	·906	·796	·110	·852	−·002	·815	88·3	77·5	10·8	90·3	75·3	15·0	83·3	85·4	82·2	+0·9	75·5	79·8	81·2	78·8
Assam.	Silchar	...	·833	·706	·127	·774	−·001	·828	83·3	72·1	17·2	94·0	63·4	30·6	83·1	87·6	79·8	+0·8	70·6	77·7	77·5	75·3
	Sibsagar	...	·627	·493	·134	·559	−·003	·850	84·0	70·1	13·9	92·3	64·3	28·0	77·6	82·9	76·0	−0·1	70·0	74·6	76·4	73·7
	Dhubri	...	·819	·688	·131	·750	−·014	·820	84·7	72·9	11·8	89·3	67·7	21·6	79·3	83·3	77·9	+0·2	71·8‡	74·9	75·4	74·0
Bengal and Orissa.	Chittagong	...	·830‡	·721‡	·109	·77[illegible]	−·011	·811‡	85·7	72·7	13·0	90·6	65·1	25·5	82·5‡	83·5‡	78·6‡	−0·4	72·0	78·3‡	78·5‡	76·3
	Narayanganj	...	·894	·781	·113	·836	−·001	·810	86·6	75·7	10·9	91·1	69·2	21·9	83·0	84·7	81·0	+0·6	73·7	77·1	76·5	75·8
	Calcutta (Alipore)	...	·901	·792	·109	·842	+·006	·809	85·6	72·7	12·9	91·2	63·1	28·1	81·9	84·0	79·0	−1·0	71·7	74·9	75·0	73·9
	Saugor Island	...	·887	·782	·105	·830	0	·799	86·4	74·3	12·1	91·9	62·9	29·0	83·2	83·6	79·2	−1·0	72·3	77·1	75·9	75·1
	Burdwan	...	·828	·716	·112	·767	0	·813	88·1	73·2	14·9	93·9	62·9	31·0	84·0	85·7	79·9	−1·3	71·5	76·1	75·4	74·3
	Berhampore	...	·848	·746	·102	·792	−·002	·807	86·4	74·0	12·4	91·5	64·8	26·7	83·1	85·7	79·9	−0·7	71·3	75·8	75·0	74·0
	False Point	...	·899	·793	·106	·844	−·003	·806	87·0	73·8	13·2	92·5	62·2	30·3	84·1	84·8	79·3	−0·5	73·3	78·1	77·8	76·4
	Cuttack	...	·841	·729	·112	·783	0	·805	89·5	74·6	14·9	95·2	63·8	31·4	84·0	86·6	81·0	+0·2	73·2	75·6	75·0	74·6
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·907	27·811	·096	27·861	−·007	·812	82·8	65·7	17·1	87·9	57·8	30·1	78·1	80·7	73·4	−0·1	61·5	66·6	66·6	64·9
	Patna	...	29·741	29·631	·110	29·682	0	·818	86·9	71·5	15·4	90·0	60·8	29·2	82·7	85·5	78·5	−0·7	68·8	73·5	73·6	72·0
	Darbhanga	...	·750	·644	·106	·693	−·012	·813	86·5	73·0	13·5	91·1	63·4	27·7	82·7	85·6	79·2	−0·1	71·1	74·8	74·6	73·5
	Allahabad	...	·814	·501	·113	·552	−·003	·813	91·7	65·7	26·0	95·0	52·8	42·2	84·1	90·8	77·9	−0·7	63·0	70·4	70·1	67·9
	Lucknow	...	·550	·442	·108	·490	−·006	·815	91·4	65·4	26·0	94·1	54·2	39·9	83·2	87·6	77·4	−0·3	63·0	71·2	71·8	68·7
Upper Sub-Himalayas.	Dehra Dun	...	27·692	27·601	·091	27·635	−·017	·824	83·4	60·3	23·1	86·5	52·7	33·8	76·0	78·7	70·3	−0·3	56·3	64·0	65·5	61·9
	Roorkee	...	29·018	28·907	·111	28·952	−·012	·804	89·3	59·9	29·4	91·7	48·2	43·5	80·3	86·6	73·5	−0·6	57·6	67·9	68·3	64·6
	Meerut	...	·166	29·064	·102	29·108	−·009	·810	91·1	61·6	29·5	94·6	50·1	44·5	81·5	89·1	75·4	−0·2	58·9	65·9	67·1	64·0
	Lahore	...	·185	·092	·093	·131	−·019	·797	93·9	61·9	32·0	99·4	50·2	49·2	82·4	93·3	77·1	+2·6	55·9	65·5	68·5	63·3
	Ludhiana	...	·088	28·989	·099	·031	−·011	·810	91·7	63·2	28·5	96·6	52·8	43·8	80·5	88·7	76·1	+0·9	58·4	65·6	65·8‡	63·3
Indus Valley and N.-W. Rajputana.	Peshawar	...	28·807	·699	·108	28·746	−·033	·839	88·9	57·1	31·8	95·0	47·0	48·0	79·0	86·1	71·6	+0·7	50·5	63·6	66·7	60·3
	Mooltan	...	29·470	29·369	·101	29·413	−·019	·798	98·0	64·8	33·2	102·9	54·1	48·8	84·2	94·8	79·9	+2·3	56·3	66·1	70·3	64·2
	Jacobabad	...	·702	·593	·109	·640	−·026	·782	101·8	62·1	39·7	107·4	50·3	57·1	89·7	98·9	80·5	+2·0	?	?	?	?
	Kurrachee	...	·902	·805	·097	·854	−·018	·835	93·9	71·1	22·8	105·3	63·4	41·9	87·9	88·7	81·2	+1·5	66·1	72·0	74·1	70·8
E. Rajputana, C. India and Gujarat.	Jeypore	...	28·507	28·407	·100	28·451	−·007	·818	95·8	64·4	31·4	100·5	52·1	47·4	88·5	94·3	78·7	+2·5	54·1	64·6	65·0	61·2
	Ajmere	...	·319	·226	·093	·269	−·022	·818	95·0	63·1	31·9	99·2	50·8	48·4	85·6	93·6	78·1	+2·8	55·2	66·3	69·6	63·7
	Oodeypore	...	·020	27·918	·102	27·969	?	·812	93·4	62·1‡	31·3	96·4	54·7	41·7	87·4	91·9	77·4‡	?	56·0	65·0	65·6	62·2
	Deesa	...	29·459	29·346	·113	29·396	−·019	·805	101·9	66·0	35·9	105·3	60·2	45·1	92·5	100·0	83·7	+3·0	57·7	68·5	69·5	65·2
	Nowgong	...	(a) ·140	(a) ·040	·100	(a) ·085	−·025	(a) ·794	89·8‡	63·5	26·3	93·0	53·0	40·0	(a) 83·6	(a) 88·6	(a) 78·0	+1·3	(a) 63·6	(a) 72·0	(a) 71·4	69·0
	Agra	...	·352	·246	·106	·288	−·025	·798	96·0	67·6	28·4	100·2	58·4	41·8	86·8	91·5	80·4	+2·4	59·6	69·4	70·8	66·6
Deccan.	Belgaum	...	27·380‡	27·270‡	·110	27·324	−·016	·791§	84·8	66·0	18·8	88·3	60·8	27·5	79·1‡	80·2‡	73·8‡	+1·5	65·3	69·5‡	69·7‡	68·1
	Sholapur	...	28·335	28·197	·138	28·269	−·010	·783	91·7	68·9	22·8	94·8	62·6	32·2	84·0	89·3	79·1	+1·9	64·0	68·9	69·0	67·3
	Poona	...	·089	27·966	·123	·031	−·013	·787	91·3	66·6	24·7	93·5	58·3	35·2	83·4	89·0	78·3	+2·2	63·5	69·3	68·8	67·2
	Akola	...	·994	28·863	·131	·924	−·012	·796	94·7	64·5	30·2	97·6	56·0	41·6	86·6	93·2	80·0	+1·6	60·7	70·1	69·3	66·7
	Buldana	2,132	27·812	27·702	·110	27·753	−·002	·796	88·3	67·4	20·9	91·4	60·9	30·5	84·1	86·5	78·2	+1·6	58·9	66·6	65·5	63·7

† Mean of 28 days. ‡ Mean of 30 days. § Mean of 29 days. ‖ Mean of 25 days.

II.

at 86 Stations in India, Burma, etc., in October 1898.

Vapour Tension. From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Humidity. From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Cloud. Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Wind Steadiness. Average percentage.	Normal percentage.	Wind Velocity. Mean velocity in miles per diem.	Normal.	Rainfall. Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·884†	·978	·933	·925	+·014	90†	81	79	83	−3	7·0	7·9	7·5	+1·5	3	2	3	6	18	9	6	9	6	S 11° E	S 1° W	29	25	145	150	...	...	Port Blair	Burma Coast and Bay Islands.
·827	·936	·869	·877	−·011	94	78	69	80	−4	5·4	3·8	4·6	−1·3	...	2	9	14	12	12	10	1	1	S 46° E	S 36° E	45	28	44	74	...	...	Rangoon	
·847	·946	·868	·887	+·020	84	76	71	77	−6	5·2	7·0	6·1	+0·4	2	3	11	14	12	1	6	5	8	N 80° E	S 56° E	26	17	193*	173	...	...	Diamond Island	
·825	·948	·913	·895	+·015	85	79	79	81	−2	3·7	5·1	4·4	−0·8	...	3	13	7	9	7	4	5	11	N 62° E	S 67° E	13	13	?	?	3·13	1·15	Cocos Island.	
·859	·971	1·012	·947	+·064	91	85	83	86	+3	5·0	4·1	4·6	−0·2	...	3	7	15	6	4	7	15	5	S 19° E	S 64° E	3	8	44	59	...	...	Akyab	
·735	·883	·812	·810	+·006	93	78	63	78	−2	4·9	4·2	4·6	−0·2	41	2	1	3	1	3	1	5	5	N 70° W	S 60° E	8	7	41*	41	...	...	Silchar	Assam.
·737	·826	·767	·777	−·014	100	87	74	87	+2	6·1	3·5	4·8	−1·4	24	18	7	...	1	1	11	...	...	N 9° W	N 69° E	23	47	39*	48	...	...	Sibsagar	
·770‡	·810	·779	·786	+·014	94‡	80	69	81	+1	2·7	2·5	2·6	−0·2	7	1	14	31	1	2	6	...	...	N 84° E	N 59° E	61	20	122*	89	...	...	Dhubri	
·783	·917‡	·915‡	·872	+·024	97	82‡	79‡	86	+3	4·7‡	3·8‡	4·3	−0·1	16	6	8	2	6	2	4	1	15	N 11° W	N 11° W	22	13	69*	66	...	...	Chittagong	
·810	·857	·810	·826	−·008	91	76	68	78	−1	5·5	4·5	5·0	+0·8	...	9	7	10	3	3	5	7	18	N 19° W	S 9° E	31	3	78	63	...	...	Narayanganj	Bengal and Orissa.
·773	·780	·756	·770	−·049	95	71	65	77	−4	4·7	3·9	4·3	+0·2	10	13	6	4	5	2	7	7	8	N 25° W	N 44° W	22	11	43	67	...	...	Calcutta (Alipore).	
·776	·855	·802	·811	−·046	90	75	70	78	−3	5·3	4·2	4·8	+0·1	...	12	4	3	5	4	6	7	21	N 43° W	N 8° W	39	13	183	174	...	...	Saugor Island.	
·758	·804	·748	·770	−·011	91	69	61	74	0	3·0	2·9	3·0	−1·1	24	11	7	4	...	2	2	5	7	N 8° W	N 10° E	29	26	11*	47	...	...	Burdwan	
·739	·801	·732	·757	−·028	88	71	60	73	−5	2·6	3·0	2·8	−1·6	34	2	1	5	1	2	5	4	8	N °72 W	N 35° W	11	17	39*	52	...	...	Berhampore	
·820	·888	·866	·858	+·033	97	76	72	82	+3	5·0	4·5	4·8	0	3	17	8	12	6	2	3	5	6	N 30° E	N 50° E	34	22	104*	145	...	...	False Point	
·808	·777	·717	·767	−·009	93	67	58	73	−1	2·9	3·4	3·2	−1·2	10	10	23	8	...	...	2	6	3	N29 °E	N 34° E	50	21	49	43	...	...	Cuttack	
·503	·517	·487	·502	−·037	76	54	47	59	−5	2·7	3·3	3·0	−1·4	4	10	4	9	4	4	4	12	11	N 35° W	N 35° W	21	24	117*	124	...	...	Hazaribagh	
·679	·708	·678	·688	−·006	86	63	56	68	−1	1·7	1·7	1·7	−1·6	10	1	5	16	2	5	8	12	3	S 12° E	N 45° W	10	5	72*	49	...	...	Patna	Gangetic Plain and Chota Nagpur.
·746	·762	·717	·742	−·015	91	68	58	72	−3	1·7	1·6	1·7	−0·9	3	1	1	11	11	7	9	14	5	S 15° W	S 4° W	26	1	54	52	...	...	Darbhanga	
·553	·571	·471	·532	−·088	85	48	32	55	−11	1·0	1·0	1·0	−0·8	1	6	8	7	3	1	4	13	19	N 37° W	N 49° W	39	18	103*	66	...	...	Allahabad	
·555	·613	·575	·581	0	87	54	43	61	−1	0·3	0	0·2	−1·6	54	3	1	1	...	...	1	1	1	N 10° W	N 30° W	6	40	12*	47	...	...	Lucknow	
·411	·453	·472	·444	−·006	78	50	47	58	−4	0·2	1·7	1·0	−0·2	25	...	...	3	15	7	3	7	...	S 13° E	N 39° W	33	21	23	33	...	...	Dehra Dun	
·456	·525	·454	·478	−·016	86	50	36	57	−1	0	0·6	0·3	−0·6	47	...	...	...	11	1	...	...	3	S 40° E	S 6° E	14	6	?	31	...	...	Roorkee	Upper Sub-Himalayas.
·474	·438	·376	·429	−·064	84	40	27	50	−7	0	0	0	−0·7	33	...	...	...	1	...	2	22	4	N 88° W	N 55° W	40	35	34*	31	...	...	Meerut	
·377	·409	·368	·384	−·058	66	36	23	42	−5	0·1	0·1	0·1	−0·6	27	4	2	7	1	6	...	7	8	N 39° W	N 7° W	10	11	28	39	...	...	Lahore	
·431	·442	·337‡	·403	−·061	74	42	25‡	47	−6	0·1	0	0·1	−0·9	46	1	...	...	1	4	...	...	10	N 63° W	N 39° W	11	22	20	26	...	...	Ludhiana	
·294	·404	·420	·373	+·010	62	41	33	45	−2	0	0·9	0·5	−1·0	40	9	2	2	1	1	...	...	7	N 4° W	N 52° E	23	33	39*	60	...	...	Peshawar	
·349	·407	·417	·391	−·127	55	34	25	38	−15	0·2	0·1	0·2	−0·2	30	1	11	...	14	1	3	...	2	S 79° E	S 46° W	23	17	36*	39	...	...	Mooltan	Indus Valley N.-W. Rajputana.
?	?	?	?	?	?	?	?	?	?	0	0·1	0·1	−0·3	41	...	2	2	2	4	5	4	2	S 33° W	S 27° E	12	9	33*	54	...	...	Jacobabad	
·589	·585	·654	·609	−·037	76	46	49	57	−6	0·1	0·1	0·1	−0·8	4	...	2	2	...	3	17	29	5	S 76° W	S 72° W	68	61	205*	235	...	...	Kurrachee	
·299	·315	·256	·290	−·118	49	23	15	29	−14	0·2	0·4	0·3	−1·4	1	7	2	2	2	2	8	16	22	N 65° W	N 22° W	58	37	59	77	...	...	Jeypore	
·348	·410	·427	·395	−·066	58	33	27	39	−10	0·1	0·6	0·4	−0·7	5	4	5	1	2	7	7	18	13	N 82° W	N 73° W	43	28	68	66	...	...	Ajmere	E. Rajputana, C. India and Gujrat.
·380‡	·342	·305	·342	?	67‡	27	20	38	?	0	0·4	0·2	?	13	6	7	6	7	4	5	9	5	N 5° W	?	3	?	69	?	...	...	Oodeypore	
·374 (a)	·377 (a)	·314 (a)	·355	−·085	57 (a)	25 (a)	16 (a)	33	−9	0·1 (a)	0·1 (a)	0·1	−1·7	...	10	14	9	7	3	4	6	5	N 42° E	N 82° E	29	12	137‖	161	...	...	Deesa	
·554	·634	·540	·576	+·039	84	55	41	60	+2	0·5	1·1	0·8	−1·8	...	5	4	6	...	...	5	12	6	N 52° W	N 55° W	37	39	21a	35	...	...	Nowgong¶	
·412	·491	·477	·460	−·027	60	38	32	43	−6	0	0·1	0·1	−0·8	...	...	6	...	6	...	20	...	30	N 74° W	N 66° W	45	45	78*	74	...	...	Agra	
·619	·604‡	·598‡	·605	+·016	97	60‡	60‡	72	0	3·5‡	6·3‡	4·9	−0·7				Not	reco	rded				?	N 54° E	?	13	?	241	...	...	Belgaum	Deccan.
·551	·522	·459	·511	−·068	76	45	34	52	−10	3·7	5·5	4·6	−1·3	1	9	26	4	14	...	2	1	5	N 53° E	N 55° E	53	22	188*	193	...	...	Sholapur	
·552	·546	·456	·518	−·031	83	48	34	55	−5	3·1	4·7	3·9	−1·0	1	2	8	22	12	...	5	4	8	N 86° E	N 37° E	37	19	190*	139	...	...	Poona	
·494	·520	·401	·472	−·099	79	41	26	49	−11	1·3	2·2	1·8	−1·4	1	1	24	10	5	...	3	1	17	N 35° E	N 16° E	39	32	†94*	83	...	...	Akola	
·400	·442	·372	·405	−·118	59	38	30	62	+3	0·8	1·3	1·1	−2·6	3	15	13	12	7	2	...	2	8	N 39° E	N 24° E	47	49	120*	125	0·11	0·09	Buldana	

* Corrected. (a) Mean of 19 days. ¶ Wind observation 38.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—*concluded.*	Khandwa	...	28·890	28·772	·118	28·827	+·001	29·815	94·3	63·9	30·4	96·7	55·8	40·9	85·9	92·7	78·1	+1·2	60·0	69·6	69·6	66·4
	Hoshangabad	...	·936	·815	·121	·872	+·012	·831	90·9	65·2	25·7	95·6	57·3	38·3	82·0	89·4	77·1	+0·2	60·8	69·6	70·0	66·8
	Nagpur	...	·902	·775	·127	·835	−·025	·806	92·2	66·8	25·4	96·7	58·9	37·8	83·6	90·1	79·8	+1·0	61·7	69·7	69·2	66·9
	Do. (Sanitary Commr.'s Office)	...	·922	·797	·125	·856	P	·817	93·6	66·2	27·4	98·0	56·6	41·4	85·3	91·3	79·3	P	61·7	70·8	70·3	67·6
	Jubbulpore	...	596	·488	·108	·538	0	·815	88·1	61·7	26·4	91·7	50·7	41·0	8·00	87·1	74·0	0	60·4	68·8	68·3	65·8
	Saugor	...	·143	·043‡	·100	·089	−·004	·826‡	89·3	67·1	22·2	92·3	59·1	33·2	84·8	86·9‡	76·9‡	+1·6	P	65·8	64·3‡	P
	Sutna	...	·872	·771	·101	·817	−·004	·813	88·9	64·9	24·0	92·9	52·8	39·1	83·3	87·6	75·9	+0·4	61·5	67·9	67·1	65·5
	Raipur	...	·951	·837	·114	·890	0	·796	88·5	68·5	20·0	93·4	60·0	33·4	81·9	86·2	78·7	−0·1	64·6	71·0	69·7	68·4
	Hyderabad (Deccan).	...	·230	·116	·114	·171	−·002	·786	90·7	70·1	20·6	95·0	63·7	31·3	84·3	86·3	79·3	+2·4	67·2	72·7	71·5	70·5
West Coast.	Bombay	...	29·881	29·767	·114	29·820	−·022	·796	90·1	78·2	11·9	94·2	76·0	18·2	84·8	87·5	83·4	+2·3	73·0	77·8	79·2	76·7
	Ratnagiri	...	·788	·680	·109	·730	−·026	·777	91·0	76·4	14·6	97·8	73·8	24·0	87·7	85·8	82·3	+2·4	73·2	77·2	78·1	76·2
	Karwar	...	·863	·746	·117	·800	−·032	·776	87·1	74·8	12·3	90·8	72·5	18·3	83·0	85·0	80·3	+1·9	73·5	76·8	77·6	76·0
	Cochin	...	·908	·818	·090	·859	−·028	·796	86·9	75·0	11·9	89·6	72·7	16·9	82·0	82·8	79·9	+0·3	73·8	77·2	77·3	76·1
South India.	Salem	...	28·986	28·857	·129	28·928	−·016	·802	89·2	72·0	17·2	92·7	66·2	26·5	82·7	83·5	78·1	+0·1	70·5	75·6	75·8	74·0
	Mercara	...	26·224	26·124	·100	26·180	−·022	P	76·4	63·7	12·7	79·8	60·7	19·1	69·2	71·4	68·8	+1·1	62·6	66·6	67·0	65·4
	Chitaldroog	...	27·520	27·462	·118	27·463	−·012	·772	84·8	68·4	16·4	87·5	63·3	24·2	79·3	81·4	75·7	+0·6	65·7	71·2	70·3	69·1
	Bangalore	...	26·944	26·826	·118	26·889	−·017	·786	82·2	66·6	15·6	86·4	64·0	22·4	76·8	78·1	73·4	+1·4	65·0	69·5	68·9	67·8
	Hassan	...	·875	·769	·106	·826	−·021	·789	80·8	65·3	15·5	83·9	59·0	24·9	76·8	77·4	72·2	+0·8	64·5	69·1	69·1	67·6
	Mysore	...	27·428	27·308	·120	27·368	−·018	·787	83·7	67·7	16·0	86·8	63·8	23·0	78·2	80·4	74·9	+0·2	66·2	70·5	70·4	69·1
	Trichinopoly	...	29·651	29·520	·131	29·592	−·010	·777	90·6	75·0	15·6	97·2	71·9	25·3	84·2	86·7	80·7	+0·3	73·2	75·7	76·4	75·1
	Madras	...	·891	·780	·111	·838	−·003	·790	88·0	74·5	13·5	95·2	70·4	24·8	83·9	83·7	80·4	−0·7	P	77·9	78·3	77·3
	Bellary	...	28·440	28·304	·136	28·374	−·022	·781	89·8	71·8	18·0	94·2	66·0	28·2	83·5	84·9	79·0	+0·2	67·2	69·8	70·6	69·2
	Cocanada	...	29·883	29·770	·113	29·822	−·016	·784	88·6	76·8	11·8	93·1	72·7	20·4	85·3	86·3	82·1	+1·1	74·1	76·5	76·4	75·7
	Vizagapatam	...	·878	·769	·109	·819	−·002	·787	88·7	75·8	12·9	93·1	70·8	22·3	86·2	86·1	82·6	+0·3	74·2	77·5	77·7	76·5
Hill Stations, Baluchistan.	Quetta	...	24·742	24·662	·080	24·698	+·010	P	76·9	36·1	40·8	83·2	27·3	55·9	66·9	74·1	55·8	+0·2	31·1	50·1	53·3	44·3
Hill Stations, Punjab.	Leh	...	19·882	19·771	·111	19·786	+·054	P	60·2	29·9	30·3	68·1	23·0	45·1	47·4	56·7	45·2	+2·6	26·5	35·9	39·5	34·0
	Srinagar	...	24·995	24·887	·108	24·932	−·006	P	72·5	40·4	32·1	78·2	30·3	47·9	58·3	69·9	55·8	+2·4	40·1	53·8	64·1	52·7
	Murree	...	23·903	23·874	·029	23·880	−·022	P	69·0	55·7	13·3	75·2	48·9	26·3	63·2	66·2	61·5	+2·3	43·3	50·5	52·8	48·9
	Kaliang	10,087	21·661	20·909	·122	20·978	+·169	?	65·6	32·2	33·4	72·6	24·0	48·6	53·3	58·7	45·8	+3·4	28·1†	38·9†	40·2‡	35·8
	Simla (Ridge)	...	23·198	23·148	·050	23·164	+·004	P	62·8	51·4	11·4	68·8	44·7	23·6	57·9	60·1	56·2	0	43·8	49·1	50·0	47·3
Hill Stations, N.-W.P.	Chakrata	...	·367	·308	·059	·329	+·002	P	67·8	51·1	16·2	72·1	45·2	26·9	63·5	59·8	57·1	+0·3	45·0	53·0	51·7	49·3
	Ranikhet	...	24·185	24·109	·076	24·132	+·013	P	69·3	54·8	14·5	76·0	49·9	26·1	65·0	66·9	61·0	+0·3	49·9	54·2	55·4	52·8
	Muktesar	...	22·942	22·875	·067	22·908	?	?	65·8	49·6	16·2	71·7	45·1	26·6	60·5	60·7	56·5	P	42·7	50·5	51·5	48·2
Hill Station, Nepal.	Katmandu	4,388	25·614	25·546	·068	25·579	−·058	P	79·4	57·4	22·0	86·0	48·5	37·5	70·4	74·2	67·1	+0·2	56·2	63·7	65·7	61·9
Hill Station, Bengal.	Darjeeling	...	23·051	9725	·079	23·0085	−·020	P	60·4‡	(P) 54·0	6·4	64·2	51·5	12·7	56·8	58·9§	(c) 56·7	+2·2	48·2	54·8	55·2§	52·8
Hill Stations, Central India.	Mount Abu	...	26·119	26·045	·074	26·076	−·018	P	81·1	66·9	14·2	84·2	62·2	22·0	77·7	79·3	73·5	+2·9	53·1	58·1	58·8	56·7
	Pachmarhi	...	·514	·429	·085	·467	+·004	P	79·9	57·3	22·6	82·9	48·7	34·2	76·0	78·1	68·2	+0·5	53·4	60·9	62·1	58·8
	Chikalda	3,642	·383	·286	·097	·330	−·011	P	80·1	64·2	15·9	82·2	59·6	22·6	76·5	78·1	71·6	+1·5	56·7	63·9	65·2	62·0

† Mean of 29 days. ‡ Mean of 30 days. § Mean of 28 days.

II—*continued.*

in India, Burma, etc., in October 1898—continued.

Vapour Tension. From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Humidity. From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Cloud. Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Wind Steadiness. Average percentage.	Normal percentage.	Wind Velocity. Mean velocity in miles per diem.	Normal.	Rainfall. Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·479	·524	·442	·482	−·058	78	42	29	50	− 7	0·2	0·7	0·5	−1·9	3	3	27	8	7	3	1	5	5	N 53° E	N 22° E	47	35	74	71	...	...	Khandwa	Deccan—*concluded.*
·486	·576	·493	·518	−·070	77	52	35	55	− 7	0·4	0·8	0·6	−1·9	27	3	23	3	...	1	1	4	...	N 40° E	N 18° E	37	20	34‡	42	...	...	Hoshangabad	
·496	·553	·458	·502	−·079	74	48	33	52	− 8	1·6	2·4	2·0	−1·8	16	9	23	9	1	...	...	1	3	N 41° E	N 37° E	56	49	99	102	...	...	Nagpur	
·506	·577	·481	·521	P	77	47	33	52	P	1·5	1·9	1·7	P	3	41	8	...	...	2	2	1	5	N 1° W	P	75	P	26*	P	...	...	Do. (Sanitary Commr.'s Office)	
·521	·572	·464	·519	−·047	92	55	36	61	− 4	1·0	1·6	1·3	−1·4	4	11	13	5	6	6	6	5	6	N 27° E	N 9° E	18	16	35	47	...	...	Jubbulpore	
?	·406	·328‡	P	?	?	34	26‡	P	P	0·5	1·0	0·8	−1·1	2	13	9	5	7	3	2	13	7	N 12° W	N 31° W	25	33	127*	63	...	...	Saugor	
·518	·499	·413	·477	−·049	82	43	32	52	− 5	0·3	0·7	0·5	−1·7	2	16	5	5	...	...	1	8	25	N 26° W	N 29° W	66	47	71*	100	...	...	Sutna	
·565	·616	·511	·564	−·070	80	57	42	60	− 6	1·8	3·1	2·5	−1·1	19	8	15	9	...	1	3	1	6	N 32° E	N 31° E	37	35	95*	96	...	...	Raipur	
·637	·661	·592	·630	−·019	85	57	49	64	− 6	4·5	4·8	4·7	+0·4	26	1	5	15	12	...	...	1	2	S 84° E	S 80° E	40	33	90*	96	...	...	Hyderabad (Deccan)	
·751	·862	·889	·834	−·006	78	72	68	73	− 7	1·5	1·7	1·6	−2·5	...	1	6	15	8	1	...	11	20	N 1° W	N 14° E	21	33	183	226	...	...	Bombay	West Coast.
·779	·796	·861	·812	+·016	86	61	70	72	− 4	2·6	4·4	3·5	+0·2	2	5	1	6	7	...	12	15	14	N 84° W	N 74° W	35	22	168*	162	...	...	Ratnagiri	
·813	·838	·854	·835	+·020	94	74	72	80	− 3	3·7	5·5	4·6	+0·1	3	5	2	...	...	...	...	26	26	N 63° W	N 76° W	78	63	69	54	...	...	Karwar	
·818	·871	·866	·852	+·018	94	80	78	84	+ 1	6·5	8·3	7·4	+1·5	1	7	3	...	1	1	6	25	18	N 68° W	S 87° W	68	44	96	103	...	...	Cochin	
·729	·793	·790	·771	+·020	93	71	70	78	+ 2	6·8	8·5	7·7	+1·9	28	...	9	8	4	1	5	6	1	S 87° E	S 50° W	11	29	79	60	...	...	Salem	South India.
·557	·623	·610	·597	+·021	94	87	80	87	+ 2	6·1	8·0	7·1	−0·5	28	2	7	9	...	1	1	11	3	N 1° E	N 26° W	11	25	139*	93	...	...	Mercara	
·601	·664	·606	·624	+·058	86	67	58	70	+ 5	6·4	7·4	6·9	+0·9	2	1	9	26	8	2	4	5	5	N 89° E	N 28° E	43	15	130*	143	...	...	Chitaldroog	
·604	·636	·599	·613	+·021	92	69	63	75	0	6·0	7·1	6·6	+0·8	2	3	14	21	2	3	4	8	3	N 68° E	N 8° W	34	8	149*	105	...	...	Bangalore	
·598	·624	·616	·613	+·034	96	68	67	77	+ 2	7·0	8·3	7·7	+0·6	2	1	22	26	4	...	...	4	3	N 68° E	N 42° E	66	24	65*	63	...	...	Hassan	
·631	·652	·621	·635	+·033	93	68	60	74	+ 3	7·6	7·8	7·7	+1·1	3	3	10	18	13	1	4	7	2	S 86° E	N 42° E	37	13	178*	185	...	...	Mysore	
·800	·775	·772	·782	+·017	92	66	63	74	+ 2	5·8	7·3	6·6	−0·6	34	1	10	1	1	...	1	11	3	N 30° W	N 44° W	16	28	103	87	...	...	Trichinopoly	
P	·883	·898	·898	+·065	P	78	78	87	+ 7	6·4	5·7	6·1	+0·1	...	4	26	27	5	...	...	...	...	N 46° E	N 55° E	53	17	99	118	...	...	Madras	
·610	·560	·571	·580	−·041	78	49	49	59	− 4	7·4	9·0	8·2	+1·7	5	1	8	25	5	2	2	4	10	N 73° E	N 42° E	37	14	111*	104	...	...	Bellary	
·813	·795	·783	·797	+·006	88	66	63	72	− 2	2·9	2·7	2·8	−1·0	...	2	17	20	12	1	5	3	2	N 86° E	N 83° E	53	32	196*	178	...	...	Cocanada	
·826	·829	·839	·831	+·051	93	66	68	76	+ 4	4·3	3·8	4·1	−0·6	16	6	26	...	1	7	3	3	...	N 44° E	S 73° E	33	10	P	43	...	...	Vizagapatam	
·127	·191	·195	·171	−·015	59	28	23	37	− 4	0·2	0·4	0·3	−0·3	55	1	...	...	...	...	...	3	3	N 59° W	N 59° W	10	44	13*	54	...	...	Quetta	Hill Station, Baluchistan.
·117	·113	·095	·108	+·008	71	37	24	44	+ 4	1·8	3·3	2·6	−1·2	...	...	...	1	...	...	7	51	3	S 87° W	S 55° W	92	42	68	44	...	...	Leh	Hill Stations, Punjab.
·247	·370	·543	·387	+·072	97	74	73	81	+ 3	1·0	2·1	1·6	−1·2	15	10	4	2	3	2	1	8	17	N 55° W	N 18° W	39	12	70*	75	...	...	Srinagar	
·155	·237	·264	·219	−·014	35	41	40	39	− 6	0·2	0·3	0·3	−1·8	45	2	...	...	2	10	1	1	1	S 6° W	S 22° E	16	16	128*	158	...	...	Murree	
·121†	·118†	·094‡	·111	−·023	67†	29†	21‡	39	−11	1·6	3·1	2·4	−1·0	...	...	...	...	3	20	17	16	6	S 45° W	S 37° W	68	64	54	37	0·01	0·01	Kailang	
·211	·239	·260	·237	−·009	55	49	50	51	− 1	0·2	0·7	0·5	−1·0	12	26	11	...	...	6	4	1	2	N 5° E	N 32° W	43	40	85	108	...	...	Simla (Ridge)	
·240	·297	·305	·281	−·003	63	50	58	57	− 3	0·6	1·7	1·2	−0·5	3	...	...	...	1	58	...	...	...	S 1° E	S 64° W	95	32	238	129	...	...	Chakrata	Hill Stations, N.-W. P.
·292	·313	·334	·313	−·015	67	51	52	57	− 4	1·2	1·4	1·3	−0·4	21	1	1	...	...	2	16	16	5	S 75° W	S 55° W	50	51	57*	49	...	...	Ranikhet	
·206	·269	·293	·256	P	58	51	55	55	P	1·7	2·9	2·3	P	...	...	2	1	19	1	6	...	33	N 62° W	P	21*	P	14*	P	...	...	Muktesar	
·446	·521	·538	·502	+·028	93	69	63	75	+ 2	4·1	4·9	4·5	+0·6	2	...	1	17	10	1	2	21	8	S 45° W	W	8	38	13	16	1·04	0·35	Katmandu	Hill Station, Nepal.
·293b	·411	·421§	·375	+·005	69b	88	90§	82	− 1	7·6	7·9§	7·8	+2·0	5	4	17	17	4	...	1	4	7	N 52° E	S 78° W	47	21	59a	85	...	...	Darjeeling	Hill Station, Bengal.
·251	·262	·261	·258	−·081	38	27	26	30	−15	0·2	0·5	0·4	−1·5	...	11	7	2	4	3	12	11	12	N 61° W	N 40° W	34	9	131*	109	...	...	Mount Abu	Hill Stations, Central India.
·275	·367	·382	·375	−·064	77	41	39	52	− 9	1·2	1·8	1·5	−1·7	31	2	11	8	4	...	1	3	2	N 60° E	N 25° E	24	32	89*	75	...	...	Pachmarhi	
·377	·454	·482	·428	−·028	62	50	50	54	− 8	1·2	1·7	1·5	−2·2	26	18	8	...	3	1	2	1	3	N 9° E	N 2° E	35	40	161*	139	1·70	0·95	Chikalda	

* Corrected.

(a) Mean of 18 days. (b) Mean of 20 days. (c) Mean of 19 days. (P) Mean of 21 days.

Tabl

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 86 Station

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, South India.	Wellington	...	24·241	24·164	·077	24·203	−·016	?	69·4	55·1	14·3	73·2	48·5	24·7	65·7	63·8	60·9	+0·1	54·7	60·9	60·5	58·7
Extra India.	Aden	...	29·872	29·762	·110	29·817	−·009	29·842‡	88·9	78·0	10·9	91·5	74·3	17·2	84·9‡	86·3‡	83·0‡	+0·1	73·8	76·1	75·5	75·1
	Perim	...	·703‡	·596‡	·107	·650	−·024	?	90·7‡	81·3‡	9·4	92·3	78·8	13·5	88·2‡	87·9‡	85·3‡	+0·4	75·0‡	78·1‡	79·1‡	77·4
	Minicoy	...	·871	·774	·097	·821	?	·755	85·1	?	?	87·7	?	?	82·9	82·4	?	?	?	77·9	77·4	?
	Zanzibar	...	30·010	·887	·123	·949	−·005	·948	83·4	75·1	8·3	86·8	73·0	13·8	79·5	83·2	79·2	+0·1	71·5	74·3	74·3	73·4
	Port Victoria (Seychelles)	15	·001	·910	·091	·956	+·001	·895	82·1	74·4	7·7	84·5	72·2	12·3	80·8	81·2	78·0	−1·	71·2	74·8	74·8	73·6
	Mauritius	181	?	?	?	·927	−·026	?	?	?	?	87·7	55·9	31·8	?	?	72·3	−0·4	?	?	?	?

‡ Mean of 30 days.

II—*concluded.*

in India, Burma, etc., in October 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·427	·488	·496	·470	+·026	97	77	83	86	+3	8·0	9·1	8·6	+1·2	8	7	9	10	25	3	...	...	...	S 78° E	S 36° E	56	34	42	54	—	...	Wellington .	Hill Station, South India.
·782	·778‡	·736‡	·765	+·045	81	65‡	59‡	68	+4	2·8	2·1	2·5	+0·8	...	1	7	26	12	12	3	1	...	S 65° E	S 80° E	64	56	325‡	316	...	...	Aden . .	Extra India
·784‡	·825‡	·879‡	·829	+·080	73‡	62‡	66‡	67	+6	3·2	3·7	3·5	+2·3	...	.8	...	29	27	4	...	...	...	S 64° E	S 62° E	89	84	414‡	444	...	...	Perim .	
?	·887	·874	?	?	?	79	79	?	?	4·7	5·3	5·0	?	4	6	2	...	...	...	7	29	14	N 74° W	?	71	?	198*	?	...	...	Minicoy. .	
·723	·778	·729	·743	−·028	83	77	64	75	−3	6·5	4·0	5·3	+0·7	1	6	4	6	8	16	11	7	3	S 7° W	S 3° E	31	53	103*	120	...	...	Zanzibar .	
·722	·786	·777	·762	−·018	85	75	73	78	0	5·2	5·1	5·2	−1·0	7	...	3	4	27	14	3	3	1	S 31° E	S 44° E	61	59	163	183	4·67	1·30	Port Victoria (Seychelles).	
?	?	?	·552	?	?	?	?	73	+1	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	247	266	0·53	0·17	Mauritius .	

G. I. C. P. O.—No.—70 Meteo.—8-2-99.—385.

* Corrected.

† Mean of 30 days.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2 miles per hour	...	one feather added to the wind arrow
,, ,,	2 to 5 ,, ,, ,,	...	two feathers ,, ,, ,, ,,
,, ,,	5 to 10 ,, ,, ,,	...	three ,, ,, ,, ,, ,,
,, ,,	10 to 20 ,, ,, ,,	...	four ,, ,, ,, ,, ,,
	over 20 ,, ,, ,,	...	five ,, ,, ,, ,, ,,

LITHO. BY J. N. MUNDLE.

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

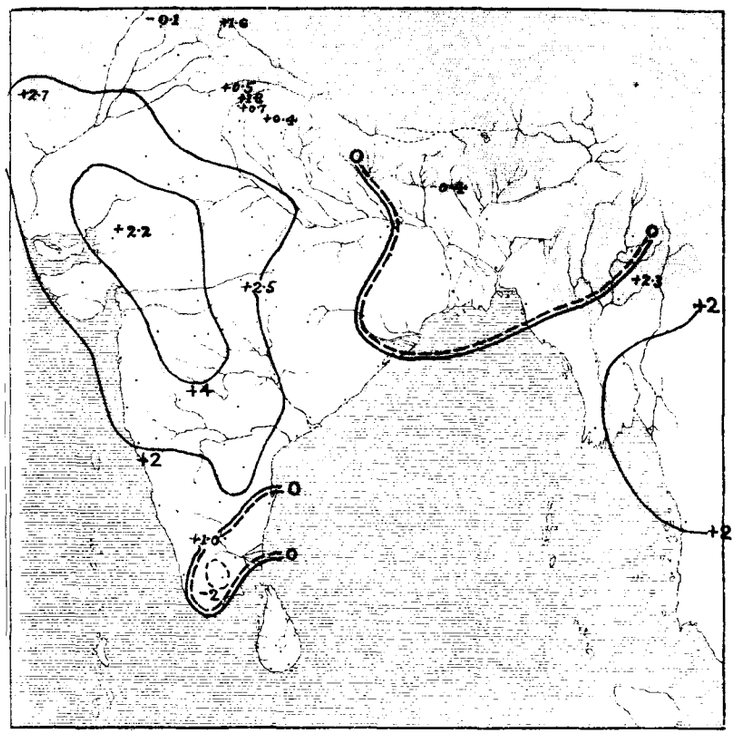
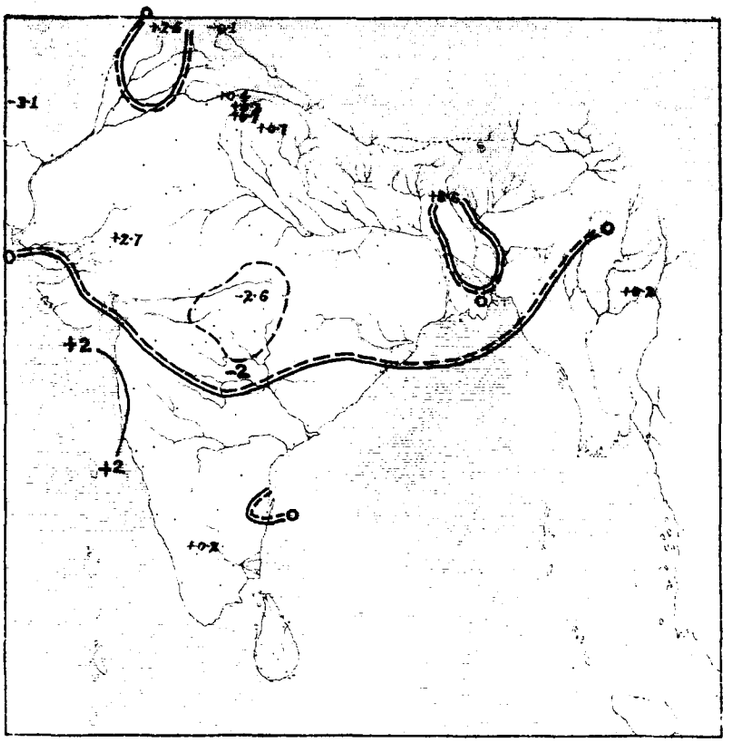


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

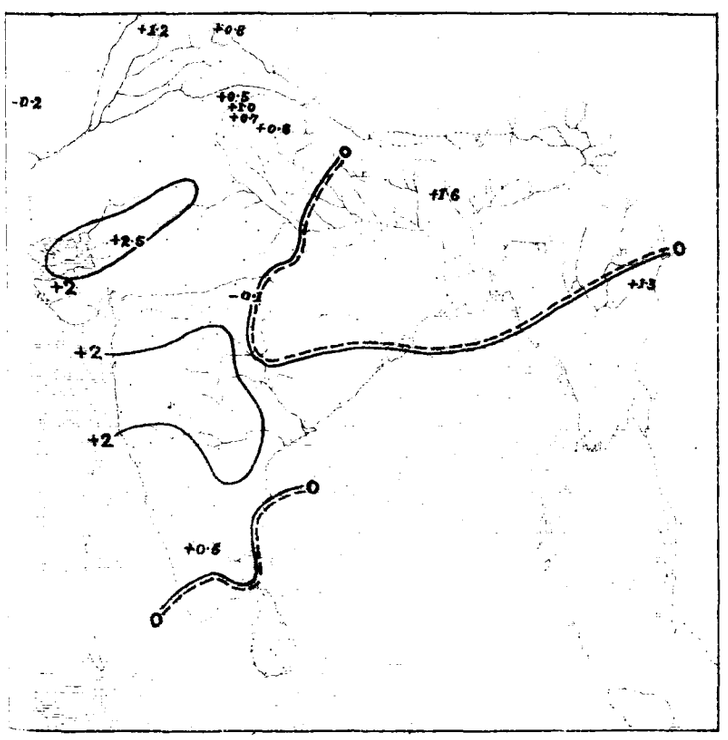
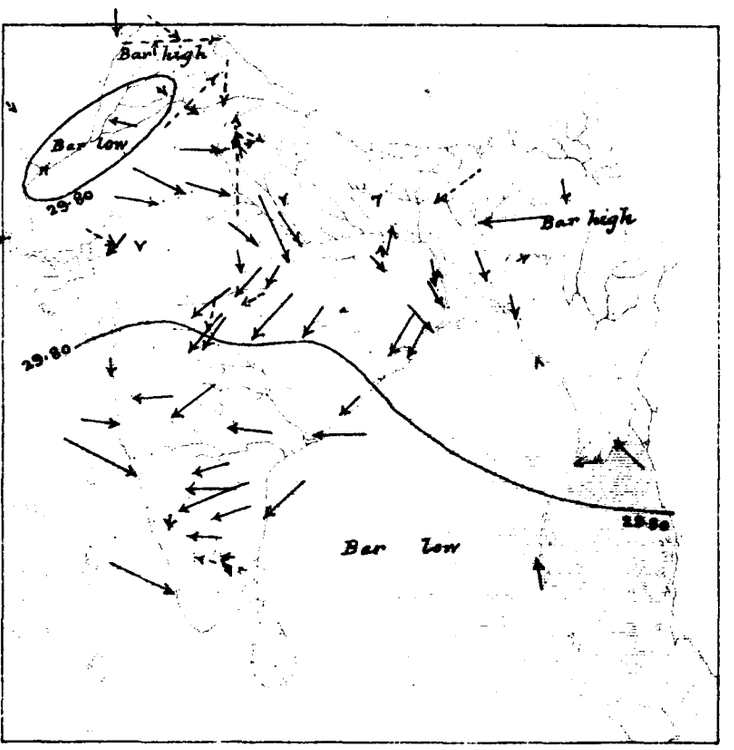


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF OCTOBER 1898.



LITHO. BY J. N. MUNDLE.

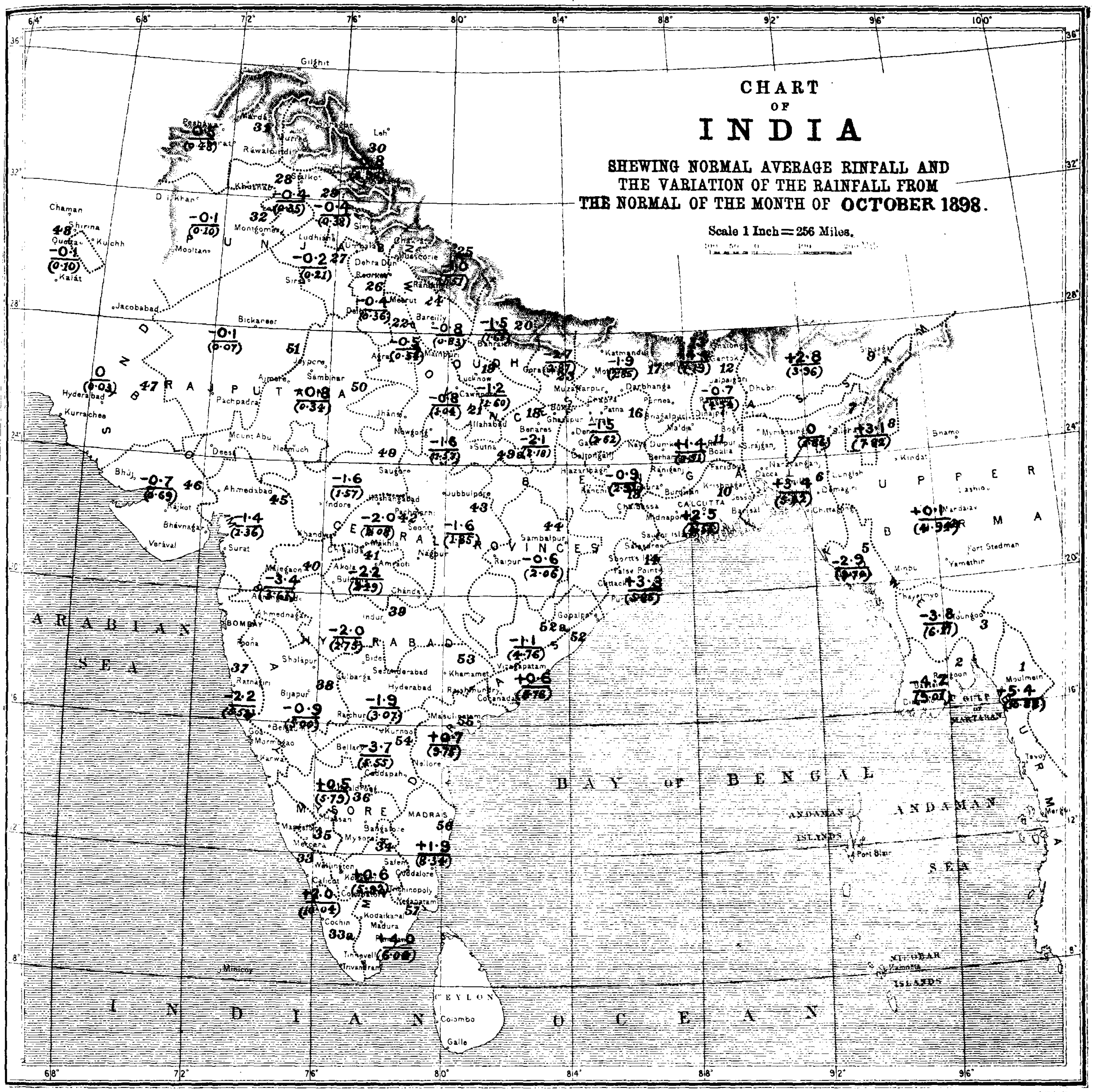
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of $\frac{1}{8}$th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this Chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in Elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Reg. No. 243, Wr., I.—June 98.—52,50.

Litho. S. I. O., Calcutta.

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or – sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim
2. Lower Burma, Deltaic
3. Central do.
4. Upper do.
5. Arakan
6. East Bengal
7. Assam, Surma
8. Do., Hills
9. Do., Brahmaputra
10. Deltaic Bengal
11. Central do.
12. North do.
13. Bengal Hills
14. Orissa
15. Chota Nagpur
16. South Bihar
17. North Bihar
18. North Western Provinces, East
19. South Oudh
20. North do.
21. North Western Provinces, Central
22. Do. do., West
23. Do. do., East Submontane
24. Do. do., West do.
25. Do. do., Hills
26. South East Punjab
27. South do.
28. Central do.
29. Punjab, Submontane
30. Do., Hills
31. North Punjab
32. West do.
33. Malabar
33a Travancore
34. Madras, South Central
35. Coorg
36. Mysore
37. Konkan
38. Bombay Deccan
39. Hyderabad, North
40. Khandesh
41. Berar
42. Central Provinces, West
43. Do., Central
44. Do., East
45. Gujarat
46. Kathiawar
47. Sind
48. Baluchistan Hills
49. Central India, East
49a Do. do.
50. Rajputana East, Central India West
51. West Rajputana
52. East Coast, North
52(a). Do. do. (a)
53. Hyderabad, South
54. Madras, Central
55. East Coast, Central
56. East Coast, South
57. Madras, South

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GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

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CALCUTTA, NOVEMBER, 1898.

INTRODUCTION.

THIS review of the weather in India during the month of November 1898 is based on observations taken daily at 8 A.M. at 214 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 85 stations. In the rainfall summary the rainfall data of the meteorological observatories and the weekly rainfall telegrams received during the month from district officers throughout India, and the rainfall statements of the month published by the Provincial Governments that had been received up to the date of the publication of the Review, are utilized. A summary of the weather in the Bay of Bengal and the Arabian Sea, derived from information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of November, 1898.

The normal meteorological conditions of the month of November are in many respects similar to those of October, as the month forms a part of the transition period during which the south-west monsoon current is retreating from the Indian land and sea areas.

Pressure usually increases in Northern India, and hence the gradients favouring the extension and increasing intensity of the north-east winds in the Bay and Arabian Sea become steeper during the month. Pressure (8 A.M.) at the commencement of the month ranges normally between 29·96″ in the Punjab and 29·86″ in the centre and south of the Bay, and at the end of the month between 30·10″ in the Punjab and Central Rajputana and 29·90″ in the south of the Bay. The total range of pressure hence usually increases from an average of one-tenth to an average of two-tenths of an inch during the month.

The most important feature in the mean distribution of pressure is the existence of a very shallow belt or trough of low pressure which stretches across the centre of the Bay from the Coromandel coast to the Andamans, and which defines the area over which the humid south-west winds across the entrance and south of the Bay recurve through south, south-east and east, and finally blow as north-east winds on the Coromandel coast, and usually give moderate to heavy rain in Central and South Madras and Mysore during the month.

Over the whole of Northern and Central India the weather is almost invariably fine with clear skies and light winds.

North-westerly to westerly winds prevail in the Gangetic Plain, and northerly winds in Bengal. In Rajputana and Central India windsrange between north and north-east and are light and somewhat unsteady. Easterly winds obtain in the Peninsula, the air movement in that area forming part of the general drift from north-east to south-west across the north of the Bay and the north and centre of the Arabian Sea.

Temperature falls rapidly in North-Western India during the month, and the mean temperature of the month ranges from 62° in the North Punjab to 80° in the Andamans, the south of the Bay and West Ceylon. The daily range of temperature is always large in Northern India in November, in consequence of the clearness and dryness of the atmosphere, and exceeds 30° over the greater part of the Punjab, Sind, Rajputana, Central India, Berar, the Central Provinces and the North-Western Provinces.

The month is almost invariably rainless over the whole of India to the north of Lat. 21°N., except in Assam and Bengal which occasionally receive rain during the existence of the cyclonic storms of the month. These storms usually originate in the centre of the Bay and travel westwards to the Coromandel or North Madras coast. The Peninsula to the south of Lat. 15°N. receives moderate to heavy rain, due to the retreating south-west monsoon current in the Bay. The rainfall is usually heaviest in the South Coromandel coast districts, South Madras and West Mysore and on the Nilgiris, Palnis and other hills of Southern India.

The following gives a summary of the more important changes of meteorological conditions and the chief features of the weather in India during November 1898 :—

Fine dry weather with clear skies obtained at the commencement of the month over the whole of India, except the Peninsula south of Lat. 13°N. where weather was showery. Gradients were steeper than usual due to a moderate excess of pressure in the north and a slight deficiency in the south. Temperature differed little from the normal except in Gujarat, Rajputana and Central India where it was considerably above the normal. The following gives variations for these areas from the 1st to the 4th :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of			
	1st November.	2nd November.	3rd November.	4th November.
	°	°	°	°
Gujarat	+8·5	+7·4	+0·2	+0·1
Rajputana	+4·3	+6·5	+1·1	+1·7
Central India	+2·0	+3·9	+6·4	+5·5
Berar	+0·4	+1·1	+3·0	+2·8
Central Provinces	−1·3	+1·4	+2·0	+2·2

Temperature was during this period in slight to moderate defect in the Punjab and North-Eastern and Southern India.

A shallow cold weather depression formed in Rajputana on the 1st and intensified slightly on the 2nd and extended eastwards into the western districts of the North-Western Provinces on the 3rd and filled up during the next 24 hours. The disturbance gave light showers in Oudh and the central, submontane and hill districts of the North-Western Provinces between the 3rd and 6th. Dehra Dun, Naini Tal and Almora received moderate falls.

Pressure increased rapidly in Northern India on the 4th and 5th and winds strengthened in the Bay. Westerly winds prevailed over the entrance to the Bay and easterly to north-easterly winds over the Bay itself. A depression formed on the 4th in the narrow belt of variable winds between the two systems of easterly and westerly winds. It intensified on the 5th and began to march west-north-westwards to the Coromandel coast. The centre crossed the coast between 3 A.M. and 4 A.M. of the 6th 20 or 30 miles to the south of Madras. The storm was of moderate intensity at that hour.

It advanced into Mysore on the morning of the 7th and thence passed across the West Ghats into the Arabian Sea between Karwar and Mangalore. The storm gave a heavy downpour on the 6th and 7th over the greater part of Southern India, more especially in the Coromandel coast districts. The following gives data of the heaviest district rainfalls for these dates and also for the 8th :—

District.	Date.	Average rainfall of 24 hours preceding 8 A.M. of date.	Heaviest rainfall in district.
		Inches.	Inches.
Godavari	8th November.	2·84	10·13
Kistna	8th "	1·51	4·55
Nellore	7th "	2·13	10·36
Madras	6th "	3·14	3·14
Chingleput	6th "	3·93	6·35
North Arcot	6th "	3·14	5·23
South Arcot	6th "	6·50	8·94
Tanjore	4th "	3·33	8·76
Trichinopoly	6th "	1·72	5·17
Salem	6th "	2·86	4·85

The rainfall reduced temperature below the normal over Madras, Mysore and Malabar for some days, as is shown by the following data :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of			
	5th November.	6th November.	7th November.	8th November.
	°	°	°	°
South India	−4·7	−5·0	−1·9	+1·6
Mysore	−1·9	−5·0	−5·1	−1·0
Madras Coast	−1·1	−2·1	−3·0	−2·0
Madras Deccan	+0·8	+2·7	−2·2	−1·8

The storm passed out into the Arabian Sea as a feeble residual depression. It continued to advance in the same direction as hitherto and the centre was in Lat. 14° N. Long. 74½°E. at 8 A.M. of the 8th and in Lat. 14½° N. and Long. 70½° E. at 8 A.M. of the 9th. It intensified rapidly during the next 36 hours and gave very stormy weather with violent to hurricane squalls in the centre of the Arabian Sea on the 10th and 11th. The centre was in Lat. 16°N. and Long. 67½°E. at 8 A.M. of the 10th and in Lat. 18°N. and Long. 65½°E. at the same hour of the 11th. The storm began to fill up on the morning of the 11th, but continued to give showery squally weather in the centre and west of the Arabian Sea until the 14th and 15th. During the whole of this period from the 8th to the 15th weather was showery in the Peninsula to the south of Lat. 20°N. The rainfall was moderate in amount in South Madras, Mysore and the South Deccan, and light in the North Deccan.

Temperature was in considerable to large defect in Baluchistan, the Punjab, Sind and Rajputana from the 6th to the 10th, as is shown by the following data :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	6th November.	7th November.	8th November.	9th November.	10th November.	11th November.
	°	°	°	°	°	°
Baluchistan (Quetta) .	—5·0	—4·8	—0·4	+2·9	+2·4	+1·4
Sind	—5·9	—4·9	—5·0	—2·9	—1·2	+0·5
Punjab . . .	—5·2	—4·4	—4·0	—3·9	—3·1	—2·2
Rajputana . . .	—2·2	—3·0	—4·1	—2·7	+0·7	+2·9

Temperature was in slight to moderate excess in Central India and the northern provinces of the Peninsula from the 5th to the 9th. It increased rather rapidly in that area on the 10th and was in large excess from the 10th to the 16th. The following gives data :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF—						
	10th November.	11th November.	12th November.	13th November.	14th November.	15th November.	16th November.
	°	°	°	°	°	°	°
Bombay Deccan .	+3·0	+2·6	+4·8	+2·6	+3·1	+1·8	+0·7
Central Provinces .	+3·6	+4·8	+4·9	+2·5	+2·1	+2·5	+3·8
Berar . . .	+6·2	+6·9	+6·7	+4·4	+2·6	+4·0	+3·4
Gujarat . . .	+4·4	+8·1	+6·4	+7·0	+7·2	+5·9	+7·6
Central India . .	+2·4	+3·6	+2·9	+2·8	+2·5	+4·3	+6·7
Rajputana . .	+0·7	+2·9	+4·0	+2·3	+4·0	+7·9	+5·6

The area of greatest excess of temperature was hence transferred northwards from Berar and the western districts of the Central Provinces into Gujarat and Rajputana during this period.

Dry weather set in over Southern India on the 16th and continued until the 25th. During this period weather was fine with clear or lightly clouded skies over nearly the whole of India. A shallow depression appeared in Sind on the 22nd. It advanced into East Rajputana on the 24th and filled up during the next 48 hours. Fine clear weather continued throughout in the area of depression. The temperature variations were the only important feature of the weather during this period. Temperature was in considerable to large excess in the large central area including the West Deccan, Central Provinces, Berar, Central India, Gujarat and Rajputana and also in the Punjab and Sind. The following variation data illustrate the conditions in that large area for every alternate day from the 15th to the 25th :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF—					
	15th November.	17th November.	19th November.	21st November.	23rd November.	25th November.
	°	°	°	°	°	°
Madras Deccan . .	+2·5	0	—0·6	—0·2	—1·4	—0·2
Bombay Deccan . .	+1·8	+0·9	+0·7	+0·1	+0·4	+1·5
Central Provinces .	+2·5	+3·9	+1·8	+0·5	+0·9	+4·3
Berar	+4·0	+5·4	+4·6	+3·2	+2·9	+4·5
Central India . .	+4·3	+3·0	+4·7	—0·2	+2·2	+5·4
Gujarat . . .	+5·9	+8·0	+5·2	+4·6	+6·6	+7·1
Rajputana . . .	+7·9	+4·9	+5·9	+3·5	+7·8	+7·7
Punjab . . .	+6·9	+2·1	+2·4	+1·4	+4·9	+4·3
Sind	+2·1	+3·5	+2·9	+3·3	+9·0	+6·0

The position of the area of greatest excess of temperature varied very slightly during this period and was throughout in Gujarat and Rajputana. The prevalence of dry land winds gave lower night temperatures than usual at this time in Lower Burma and Southern India. The variations were, however, not large in these two areas.

This period was also characterised by great dryness of the air over the whole of the interior. Very low humidities were recorded, more especially during the period from the 18th to the 22nd. The following gives the most noteworthy :—

STATION.	Date.	Hour.	Lowest humidity during month.
			%
Peshawar . . .	18th November.	4 P.M.	5
Meerut . . .	19th ,,	,,	11
Saugor	20th ,,	,,	13
Saugor	21st ,,	10 A.M.	13

STATION.	Date.	Hour.	Lowest humidity during month.
			%
Saugor	21st November.	4 P.M.	13
Sutua	20th ,,	,,	14
Buldana	18th ,,	,,	14
Buldana	22nd ,,	,,	14
Akola	,, ,,	,,	14
Poona	,, ,,	,,	15
Mount Abu	21st ,,	10 A.M.	15
Allahabad	20th ,,	4 P.M.	16
Sholapur	1st 2nd, 4th and 19th Nov.	,,	17
Lahore	19th ,,	,,	18
Hoshangabad	21st ,,	,,	20

Pressure increased in Northern India relatively to Southern India and the south of the Bay on the 25th and 26th. Winds strengthened *pari passu* in the Bay. These conditions continued until the end of the month. The intensified north-east winds gave light to moderate showers in the Peninsula south of Lat. 16°N. from the 26th to the 30th. A shallow low pressure wave and disturbance formed in the extreme south-west of the Bay on the 28th and passed across Ceylon on the 29th. Heavy rain fell in the South Coromandel coast districts on the 29th and 30th, due to this disturbance. The following gives data of the heaviest district rainfalls :—

DISTRICT.	Average rainfall of 24 hours preceding 8 A.M. of 30th November.	Heaviest rainfall in district on 30th November.
	Inches.	Inches.
Madras	2·22	2·22
Chingleput	2·96	5·03
North Arcot	2·49	5·45
South Arcot	3·12	5·59
Tanjore	2·58	4·45
Trichinopoly	2·11	3·35

Temperature varied to no important extent from the normal in the centre and south of the Peninsula and North-Eastern India during this period from the 26th to the 30th. It continued throughout in large excess in the large central area lying between the head of the Peninsula and the north-west frontier. The following gives data for this area :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	26th November.	27th November.	28th November.	29th November.	30th November.
	°	°	°	°	°
Berar	+4·0	+5·0	+4·9	+4·3	+3·5
Central Provinces	+3·7	+4·5	+5·2	+4·0	+3·9
Central India	+5·9	+5·6	+5·9	+5·2	+2·8
Chota Nagpur	+3·0	+4·0	+3·1	+3·7	+4·8
North-Western Provinces and Oudh.	+4·7	+5·7	+5·8	+4·3	+1·4
Rajputana	+8·0	+8·1	+7·2	+3·0	+4·0
Gujarat	+5·6	+6·8	+6·3	+4·5	+4·7
Sind	+5·8	+4·5	+6·0	+4·3	+4·6
Punjab	+3·9	+4·6	+4·2	+2·4	+3·7

Pressure was in considerable defect in the Indian area by amounts averaging ·026″. Pressure was, relatively to the general condition, in very slight defect in Southern and North-Western India and the southern half of the Bay and in very slight excess in the remainder of India. The local anomalies were hence unusually small in amount, but were the continuation of features initiated in September and continued through October into November. The vertical pressure anomalies were positive and moderate in amount in Upper India and were slightly larger than in the preceding month.

The following table gives the mean pressure variations and anomalies of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of November 1898.	Pressure anomaly, November 1898.
	″	″
Burma Coast and Bay Islands	—·022	+·004
Burma Inland	—·024	+·002
Assam	—·024	+·002
Bengal and Orissa	—·015	+·011
Gangetic Plain and Chota Nagpur	—·032	—·006
Upper Sub-Himalayas	—·030	—·004
Indus Valley and North-West Rajputana	—·032	—·006
East Rajputana, Central India and Gujarat	—·039	—·013
Deccan	—·021	+·005
West Coast	—·030	—·004
South India	—·025	—·001

Temperature.—The mean maximum temperature was slightly below the normal in Southern India, the only area which received heavier rainfall than usual. It was more

or less above the average over the remainder of the country. The excess was moderate to considerable in amount in Central Burma and in the large area including Sind, Rajputana, North Bombay, Central India, Berar, the Central Provinces and Chota Nagpur. It ranged between 4° and 6° in Cutch, Gujarat, Central India, South and Central Rajputana, Berar and the western districts of the Central Provinces.

The mean minimum temperature was also in moderate to considerable excess over the greater part of the area of increased day temperature, including North Bombay, South and Central Rajputana, Central India, Berar and the western districts of the Central Provinces. The excess was largest in a narrow belt including Rajkot (+6°·2), Deesa (+5°·5), Ajmere (+4°·9), Surat (+4°·8) and Jeypore (+4°·5). The mean minimum temperature was generally in slight excess in Southern India and was in slight to moderate defect in Assam, Burma, South Bengal, Orissa and the West Punjab.

The variations of the day and night temperatures were opposite in character and slight to moderate in amount in Burma, Assam, South Bengal and a part of Southern India. The mean temperature of the month hence differed little from the normal in these areas. It was in considerable to large excess in the large central area including Gujarat, Kathiawar, South and Central Rajputana, Central India, Berar and the western districts of the Central Provinces. The excess was 5° or more at Deesa (+5°·3), Rajkot (+5°·1) and Khandwa (+5°·0).

The following table gives temperature variation data of the month for the eleven meteorological provinces of India :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, November 1898.	Mean minimum temperature, November 1898.	Mean daily temperature, November 1898.
	°	°	°
Burma Coast and Bay Islands	+1·6	—1·1	+0·2
Burma Inland	+2·5	—1·6	+0·5
Assam	+0·4	—1·0	—0·3
Bengal and Orissa	+0·7	—0·1	+0·3
Gangetic Plain and Chota Nagpur	+1·9	+0·2	+1·1
Upper Sub-Himalayas	+0·7	+0·1	+0·4
Indus Valley and North-West Rajputana.	+1·8	+0·5	+1·2
East Rajputana, Central India and Gujarat.	+4·0	+4·2	+4·2
Deccan	+3·2	+1·3	+2·3
West Coast	+0·4	+0·8	+0·6
South India	—0·7	+0·4	—0·2

Winds.—The mean air movement over the whole of Northern and Central India was, as is usual in November, very feeble. In the absence of any marked abnormal features of pressure it varied somewhat irregularly from the normal. Winds were slightly more easterly than usual in East Bengal and somewhat more westerly than usual in South-West and West Bengal. Winds were unusually feeble in Bihar and were, on the whole, slightly stronger than usual in the North-Western Provinces. They were steadier and more westerly than usual in Rajputana and Central India. In the Madras coast districts and Mysore winds were, on the other hand, generally more easterly than usual, as was also the case in Malabar. They were in the Konkan, as in Rajputana and Central India, more northerly and less easterly than usual. Winds were normal in strength and direction at Zanzibar and were more southerly than usual at the Seychelles.

Humidity.—The air was slightly damper in Southern India and North Madras. It was drier than usual over the remainder of India. The mean humidity was 5 or upwards below the normal in five meteorological provinces. The deficiency was greatest in the Indus Valley and North-West Rajputana where it averaged 8. The mean humidity of the month was upwards of 10 below the normal at Buldana (—13), Jeypore and Kurrachee (each —12) and Murree (—11). The deficiency was as pronounced at the hill stations in Upper India as in the adjacent plains.

The following table gives variation data of the mean aqueous vapour pressure and mean humidity of ten meteorological provinces for the month of November 1898 :—

METEOROLOGICAL PROVINCE.	MEAN ABSOLUTE HUMIDITY.		MEAN RELATIVE HUMIDITY.	
	Average actual, November 1898.	Variation of actual from normal, November 1898.	Average actual, November 1898.	Variation of actual from normal, November 1898.
	"	"	%	
Burma Coast and Bay Islands	·771	—·043	75	—5
Assam	·575	—·028	77	—2
Bengal and Orissa	·590	—·015	70	—2
Gangetic Plain and Chota Nagpur	·425	—·002	59	—2
Upper Sub-Himalayas	·287	—·043	51	—5
Indus Valley and North-West Rajputana.	·291	—·052	43	—8
East Rajputana, Central India and Gujarat.	·297	—·007	37	—6
Deccan	·394	—·027	49	—5
West Coast	·709	—·006	70	—2
South India	·612	—·004	68	+2

Cloud.—There was less cloud than usual in Baluchistan, Upper India, Bihar, Chota Nagpur, the eastern districts of

the Central Provinces, the West Deccan, Orissa, Bengal, Assam and Burma. The deficiency was considerable in Burma, South and Central Bengal, Arakan, Upper Assam and the hill districts of Upper India and exceeded 1·0 at Murree, Srinagar, Simla, Sibsagar, Chittagong, Akyab and Rangoon and was absolutely greatest at the last station (—2·0). Cloud was in excess over the remainder of India. The excess was more than 1·0 in the South Deccan and Mysore and at Salem (+2·0) and Cochin (+1·3), stations representative probably of the whole of Malabar and South-Central Madras.

The following table gives variation data of the mean cloud amount of ten meteorological provinces for the month of November 1898 :—

Meteorological Province.	Mean cloud amount.	
	Average actual, November 1898.	Variation of actual from normal, November 1898.
Burma Coast and Bay Islands	4·0	—0·7
Assam	3·6	—0·5
Bengal and Orissa	2·1	—0·7
Gangetic Plain and Chota Nagpur	1·3	—0·2
Upper Sub-Himalayas	0·6	—0·7
Indus Valley and North-West Rajputana	1·0	—0·5
East Rajputana, Central India and Gujarat	1·1	—0·1
Deccan	2·2	0
West Coast	3·2	+0·6
South India	6·1	+0·8

Rainfall.—The month was drier than usual over nearly the whole of India. The rainfall is usually very small in amount in North-Western and Central India and the North-Deccan and slight to moderate in North-Eastern India and Burma. Practically no rain fell over nearly the whole of that area. Tenasserim received showers on the 9th and 10th and the submontane, central and hill districts of the North-Western Provinces from the 3rd to the 6th. Assam obtained some light showers, chiefly on the 19th and 20th. The rainfall was actually or practically *nil* in five meteorological provinces, *viz* :—Burma Inland, Bengal and Orissa, Gangetic Plain and Chota Nagpur, Indus Valley and North-West Rajputana and East Rajputana, Central India and Gujarat. It was also *nil* in the Central Provinces. The normal rainfall is small in amount in all these provinces, except the first two, *viz.* :—Burma Inland and Bengal and Orissa. The rainfall of the month was in large actual defect in Burma Coast (2·77 inches or 78 per cent.) and in considerable actual defect in Burma Inland (1·39 inches or 100 per cent.), Bengal and Orissa (0·98 inch or 97 per cent.) and Assam (0·67 inch or 79 per cent).

The Peninsula south of Lat. 12°N. received frequent rain during the month. There were two periods of rainfall, *viz.* :—the 1st to the 15th and the 26th to the 30th. During the first period, a cyclonic storm advanced from the south-west of the Bay across Southern India. It gave very heavy rain in the Madras coast districts from the 5th to the 9th and the indraught to the storm was followed by a short extension of rainfall to the West and South Deccan and the west coast lasting from the 8th to the 12th.

The rainfall of the month was in large excess in South India (*viz.*, 3·84 inches or 60 per cent.) and in moderate excess in the West Coast division (*viz.*, 0·97 inch or 32 per cent). The excess was abnormally large in the following districts of Madras :—

District.	Number of rainy days.		Rainfall.			
	Actual, November 1898.	Normal, November.	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Percentage variation from normal.
			Inches.	Inches.	Inches.	
Godavari	4·2	3·1	8·13	3·22	+4·91	+152
Chingleput	13·8	9·9	19·57	11·46	+8·11	+ 71
North Arcot	13·1	7·3	14·79	7·64	+7·15	+ 94
South Arcot	14·9	9·2	24·21	8·72	+15·49	+178
Tanjore	14·7	10·2	18·92	10·42	+8·50	+ 82
Trichinopoly	13·6	7·1	12·55	4·53	+8·02	+177
Salem	11·8	5·9	12·01	3·80	+8·21	+216
Coimbatore	9·4	5·9	6·54	3·64	+2·90	+ 80

The following gives comparative rainfall data of the month for the eleven meteorological provinces of the Empire :—

Meteorological Province.	Rainfall.			
	Mean actual for November 1898.	Mean normal, for November.	Variation from normal, November 1898.	Percentage variation from normal.
	Inches.	Inches.	Inches.	
Burma Coast and Bay Islands	1·60	3·57	—3·22*	— 90
Burma Inland	0	1·39	—1·39	—100
Assam	0·18	0·85	—0·67	— 79
Bengal and Orissa	0·03	1·01	—0·98	— 97
Gangetic Plain and Chota Nagpur	0·03	0·23	—0·20	— 87
Upper Sub-Himalayas	0·17	0·15	+0·04*	+ 27
Indus Valley and North-West Rajputana.	0	0·16	—0·16	—100
East Rajputana, Central India and Gujarat.	0·05	0·23	—0·18	— 78
Deccan	0·63	0·91	—0·41*	— 45
West Coast	4·04	3·07	+0·97	+ 32
South India	10·23	6·40	+3·84	+ 60

*A reference to table I will show that the means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with figures in column 1.

Atmospheric Pressure.

The mean 8 A.M. pressure of the Indian land area during the month averaged ·026 inch below the normal. The local variations were unusually small. Relatively to the general condition, pressure was in very slight defect in North-Western India and in South Madras, Ceylon and the southern half of the Bay, and in slight excess over the remainder of the country. The local variations or anomalies were less than ·02 inch, except in the case of the following stations :—

AREA.	STATION.	Variation from normal of mean 8 A.M. pressure of November 1898.	Pressure anomaly, November 1898.
		"	"
CIRCARS COAST	Vizagapatam	—·001	+·025
	Cocanada	+·003	+·029
	Masulipatam	—·003	+·023
CEYLON	Colombo	—·046	—·020

The variations of pressure at the hill stations were somewhat large. Pressure was relatively in slight to moderate excess or the vertical anomalies were positive except in the cases of Murree and Darjeeling, as is shown by the following data for seven pairs of stations :—

HILL STATION.	Variation of actual from normal pressure, November 1898.	PLAIN STATION.	Variation of actual from normal pressure, November 1898.	Vertical pressure anomaly (Hill—Plain).
	"		"	"
Leh	+·022	Lahore	—·026	+·0
Quetta	—·002	Jacobabad	—·035	+·033
Murree	—·029	Peshawar	—·027	—·002
Simla	—·013	Ludhiana	—·028	+·01
Chakrata	+·006	Roorkee	—·030	+·03
Ranikhet	+·007	Bareilly	—·013?	+·020?
Darjeeling	—·049	Dhubri	—·028	—·021

The chief features of the pressure distribution of the month were—

(1) General deficiency.

(2) Local defect in North-Western India, and in South Madras, Ceylon and the south of the Bay. The deficiency was everywhere small in amount.

(3) Local excess in the remainder of India, slightly exceeding ·02 inch in the Circars.

(4) Slight to moderate excess of pressure at the hill stations in North-Western India, as compared with the pressure at the neighbouring plains stations.

Barometric depressions and cyclonic storms of the month.

At the commencement of the month the pressure conditions differed little from the normal. The only important features were a slight to moderate excess of pressure in North-Eastern India, the Central Provinces, Berar, Madras and the Deccan and a moderate deficiency in Sind, Rajputana and Gujarat. Weather was showery in the Peninsula to the south of Lat. 13° N. and was fine and dry over the remainder of India. Pressure gave way over the whole Indian area during the next 24 hours. The changes were very irregular in North-Western and Central India. The chief result of the changes was the formation of a shallow depression in Rajputana on the 2nd. It was stationary on the 3rd, increasing slightly in intensity, and filled up on the 4th and 5th. It was associated with very feebly disturbed weather in North-Western India. Dust-storms occurred at several stations and light to moderate snow fell on the interior ranges of the Simla hill districts.

Pressure increase rapidly on the 4th and 5th in North-Western India and was unchanged or fell briskly in the south of the Bay and Southern India. These changes tended to give steep gradients, more especially in the Peninsula and the northern half of the Bay. A shallow depression began to form on the 4th in the area of lowest pressure in the south of the Bay. This developed into a storm of considerable intensity of which the following gives the history.

Cyclonic storm of the 4th to the 8th November 1898.—Gradients were feeble in the north of the Bay on the 1st and 2nd, and pressure was uniform over the southern half of the Bay and slightly lower than at the entrance to the Bay. Pressure increased slightly in Northern India relatively to Southern Indian on the 3rd. North-easterly winds prevailed over the north and centre of the Bay and easterly winds in the south. Weather was fine in the north of the Bay and squally and showery in the

centre and south. The following gives 8 A.M. data of the 3rd for this area :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Ballaarat* .	5 20	98 07	29·785	ENE	3	Frequent rain.
S.S. *Moshtari* .	6 13	81 42	·770	NE	2	Noon, continuous rain.
S.S. *Ula* . .	6 26	81 09	·776	SW	4	4 A.M. rain squalls.
S.S. *Chelydra* .	7 05	98 43	·853	W	3	Overcast.
S.S. *Pundua* .	7 22	98 36	·852	W	4	Midnight, heavy rain.
S.S. *India* .	7 35	82 35	·763	Var.	2	Squally with rain.
S.S. *Sirsa* .	11 17	88 43	·779	E	4	Midnight, passing rain squalls.
S.S. *Shahjehan*.	11 54	89 58	·781	ESE	6	Heavy head sea and squally, 4 P.M. heavy rain squalls.

The data indicate that westerly winds, force 3 to 4, prevailed at the entrance to the Bay, and that further north winds were from south-east to east. There was no indication of the existence of a depression or cyclonic circulation in the south of the Bay. The chief factor which probably contributed to the formation of the storm was the presence of a shallow low pressure area determining or determined by the action of a current recurving from west to east in the eastern half of the Bay and by the occurrence of increasing rainfall.

4th November.—Pressure had increased slightly in Bengal and rapidly in Upper India and was unchanged in the Peninsula. Gradients hence continued to increase in India and the Bay. Rain continued to fall in Southern India and large amounts were recorded at some of the South Coromandel coast stations. The depression in the south of the Bay occupied nearly the same position as on the previous day. The north-east winds had increased considerably in the south-west of the Bay due to the increasing gradients. The marine data show that a cyclonic circulation had formed in the extreme south-west of the Bay during the previous 24 hours. The following data show its position and character at 8 A. M. :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Peshawur* .	2 44	101 10*	29·843	W	2	4 A.M. thick with rain.
S.S. *Camorta* .	6 11	80 47	·781	W by N	4	Frequent showers of rain.
S.S. *Valetta* .	7 28	82 14	·759	WNW	3	8 P.M. passing squalls and heavy rain.

* Noon position.

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S.S. *Moshtari* .	8 26	82 49	29·748	NW	2	Cloudy.
S.S. *Sirsa* .	9 09	85 18	·719	Var.	4	Moderate sea and rainy.
S.S. *India* .	10 33	83 49	·744	ENE	6	4 P.M. heavy squalls.
S.S. *Mascotte* .	11 30	83 19	·785	ENE	6	Moderate sea.

The data indicate that a cyclonic circulation was forming about a centre near the 8 A.M. position of the S.S. *Sirsa*. Weather was rainy and squally over the whole of the south-west of the Bay. The strongest winds were experienced to the north of the centre where north-east winds of force 4 to 6 were reported by several vessels. The *Sirsa* was advancing southwards on her voyage from Rangoon to Bombay. The following gives extracts from her log :—

Hour.	NAME OF VESSEL.	POSITION.		Barometer corrected.	WIND		WEATHER.
		Lat. N.	Long. E.		Direction.	Force.	
		° ′	° ′	″			
4 A.M.	S.S. *Sirsa* .	...	...	...	NE	4	Following sea and rain squalls.
8 A.M.	" .	9·09	85·18	29·719	Var.	4	Rainy and moderate sea.
Noon	" .	8·47	85·19	...	W	4	Rainy and moderate sea.
2 P.M.	" .	...	...	...	SW	...	...
4 P.M.	" .	...	...	...	WSW	6	Continuous rain and increasing sea.
8 P.M.	" .	...	...	...	W	6	Rainy and moderate sea.
Midnight.	"	...	...	...	W	5 to 6	Heavy rain squalls.

Her log is very interesting as showing the transition from north-east to south-west winds through an area of variable winds. It indicates also that continuous heavy rain fell in and near the central area of variable winds throughout the day.

5th November.—Pressure had increased slightly to briskly in Upper India. It had fallen briskly to rapidly in the south-west of the Bay and the Coromandel coast districts. Moderate gradients for north-east winds now obtained in the north and centre of the Bay. The depression in the south of the Bay had developed into a closed

low pressure area of moderate depth and intensity. The following gives data of the storm area at 8 A.M. :—

NAME OF VESSEL.	8 A.M. POSITION.		Barometer corrected.	WIND		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	″			
S. S. *Sirsa* .	7 6	83 7	29·759	WSW	6	Moderate sea, 2 A.M. heavy rain.
S. S. *Kirkhill* .	8 12	83 14	·737	SW	4	4 A.M. showery.
S. S. *Mascotte* .	8 17	82 25	·715	WNW	4	.....
S.S. *Moshtari* .	9 53	84 19	·680	NW	2	Rainy.
S. S. *Steinberger*	10 21	81 26	·710	N	4 to 6	.....
S. S. *Valetta* .	11 11	84 23	·645	NE	3	4 A.M. passing showers.
S. S. *India* .	13 8	84 31	·701	E	...	Frequent squalls.
S. S. *Oolobaria* .	14 5	84 21	·728	NE by E	7	4 A.M. heavy rain squalls.

The depression was unchanged in position, but was considerably deeper than on the 4th. The centre was in about Lat. 10½° N. and Long. 85° E., the S. S. *Moshtari* being about 60 miles to the south-west and the *Valetta* about the same distance to the north-west. Moderate to strong south-west and west winds prevailed off the South and South-East Ceylon coasts and strong north-east winds at a considerable distance to the north of the centre.

The vessels nearest the centre had light winds, cyclonic in direction, in the same area in which the S.S. *Sirsa* on the previous day had variable winds. The following gives extracts from the logs of these two vessels :—

Hour.	NAME OF VESSEL.	POSITION.		Barometer corrected.	WIND.		WEATHER.
		Lat. N.	Long. E.		Direction.	Force.	
		° ′	° ′	″			
4 A.M.	S.S. *Moshtari*	...	...	...	NW	2	Cloudy.
8 A.M.	,, .	9 53	84 19	29·680	NW	2	Rainy.
Noon	,, .	10 6	84 8	...	NW	2	Cloudy.
4 P.M.	,, .	...	...	...	S	2	Squally.
8 P.M.	,, .	...	...	...	SE	2	Rainy.
Mid-night.	,, .	...	...	...	SE	2	Fine.
4 A.M	S.S. *Valetta* .	...	...	...	W	2	Overcast and passing showers.
8 A.M.	,, .	11 11	84 23	·645	NE	3	Fine and cloudy.
Noon	,, .	11 48	84 43	...	SSE	4	Fine and cloudy.
4 P.M.	,, .	...	...	...	SSE	4	Overcast and passing showers.
8 P.M.	,, .	...	...	...	SSE	4	Cloudy and passing squalls.
Mid-night.	,, .	...	...	...	SSE	5	Cloudy and passing squalls of wind and rain.

The *Moshtari* was proceeding slowly in a north-westerly direction at the rate of 4 miles and the *Valetta* on a N. 29° E. course at the rate of 11 miles per hour. The data of both vessels show that the central area was one of very light winds, and that strong winds in the initial stages of this storm were experienced only at very considerable distances from the centre.

The storm apparently began to move west-north-westwards on the morning of the 5th and advanced with increasing speed during the evening and night of this day. Weather was showery during the day in the Coromandel coast districts and a strong swell set in at the coast stations during the morning and increased throughout the day. The following gives the heaviest rainfalls registered in the Madras coast districts on the morning of the 5th :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 5th November 1898.
		Inches.
South Arcot	Merkanam . . .	5·50
,, ...	Kamblimedu . .	4·40
,, ...	Cuddalore . . .	4·09
North Arcot	Kalahasti . . .	4·85
,, ...	Arkonam . . .	4·10
Chingleput	Tiruvallur . . .	4·20

The Captain of the S. S. *India* forwarded the following observations of the weather he experienced during the day in the storm area :—

Date and hour.	WIND		Barometer corrected.	POSITION.		REMARKS.
	Direction.	Force.		Lat. N.	Long. E.	
				° ′	° ′	
4th Nov. Noon	...	...	...	...	...	Sky dull and overcast, squally looking, dull rainy weather, sea slightly higher.
0-30 P.M.	NE & N	5	...	...	...	Sky dull and overcast, rain ceased, sky clearing a little to windward, sea slightly higher.
1-0 ,,	NE ½ N	5	...	...	...	Clouds banking up again to NE., wind decreasing, sea as at 0-30 P.M.
1-30 ,,	NE	5	...	...	...	Sky threatening and squally looking to N. and E., rain falling. Wind and sea increasing.
2-0 ,,	NE	...	29·740	...	...	Squally and rainy weather, wind veering slightly to eastwards, considerable N.E. sea running.

Date and hour.	Wind		Barometer (corrected.)	Position.		Remarks.
	Direction.	Force.		Lat. N.	Long. E.	
4th Nov.—*contd.*				° ′	° ′	
3-0 P.M.	NNE	...	...	...	...	3-5 P.M. heavy squall struck ship, wind variable between NNE. and NE. and N. Sea still rising. Sky dull and gloomy.
3-30 ,,	NE	6	...	...	...	Continuous heavy rain, wind puffy, weather clearing slightly again, rain ceased.
4-0 ,,	NE to N	5	29·748	...	...	Dull rainy weather with squalls working up from ENE. Fresh breeze and rising sea.
4-30 ,,	NE	5	...	...	...	Frequent squalls from NNE. to NE. and E., incessant rain. Between squalls sky to ENE. had a nasty greenish grey tint.
5-0 ,,	,,	6	29·750	...	...	No break since 4-30 P.M., sea regular, wind steady, squalls harder.
6-0 ,,	,,	4	29·747	11 45	84 10	Lightning to NE. Heavy bank to eastward, wind gentle breeze, squalls less frequent. During the last hour there were frequent lulls.
7-0 ,,	NE & N	4	29·730	...	...	Squally and rainy.
7-30 ,,	ENE	7	...	...	...	Heavy squalls, wind fairly steady.
8-0 ,,	,,	...	29·735	...	...	Moderate gale, squally, finer looking to eastward, Sea moderate.
9-0 ,,	N E & E	6	29·723	...	...	Wind steady but during squalls more easterly.
9-30 ,,	ENE	...	...	...	...	Wind becoming more easterly. Sea increasing.
10-0 ,,	,,	...	29·720	...	...	Wind puffy, sea high and cross, sky clear here and there in small patches, squally and rainy, slight improvement generally.
10-30 ,,	ENE	6 to 8	...	...	...	Wind increasing steadily, no squalls since 10 P.M. Sky slightly clearer.
11-0 ,,	ENE	7	29·703	...	...	Wind and weather as before.
11-30 ,,	NE & E	6 to 8	29·694	...	...	Heavy squall struck ship from NE., wind less steady, sea increasing, incessant rain.
Midnight	ENE	9	29·695	12 25	84 20	Dull gloomy looking sky with less frequent squalls, wind generally stronger and steadier.
5th Nov.						
1-0 A.M.	ENE	7	29·690	...	...	Heavy squalls of wind and rain from ENE. Passing light driving rain at intervals.
1-30 ,,	,,	...	...	...	..	Heavy squall passed over from ENE, wind puffy, sea high, dull and gloomy looking windward, heavy rain at times.

Date and hour.	Wind		Barometer (corrected.)	Position.		Remarks.
	Direction.	Force.		Lat. N.	Long. E.	
5th Nov.—*concld.*				° ′	° ′	
2-0 A.M.	ENE	7 to 6	29·690	...	...	Sky clearing considerably to windward, wind decreasing slightly and ship making better weather of it.
3-0 ,,	ENE to E & N	7	29·680	...	...	Large masses of detached cloud passng over from eastward, slight rain, wind veering to eastward in squalls, dull muddy looking sky to wind-ward.
4-0 ,,	ENE	7	29·675	...	...	Dull gloomy overcast sky, wind and sea higher.
5-0 ,,	,,	7	29·660	...	...	Weather improving, squalls less frequent and heavy bank breaking up, no rain, moon out. Lulling a little between squalls, sky clear over head, sea as before.
6-0 ,,	...	...	29·655	13 0	84 30	Moderate gale, high sea and occasional squalls.
7-0 ,,	E	...	29·675	...	...	Moderate gale, high sea and much finer looking.
8-0 ,,	E	7	29·665	...	...	Weather much finer, wind and sea as at 7 A.M. Heavy bank to NW.
9-0 ,,	E	8	29·690	...	..	No squalls since 8 A.M.
10-0 ,,	ESE to E	...	29·700	...	...	Sharp squall passed, wind still hauling, sea high and cross.
11-0 ,,	N to E	7 to 8	29·705	...	...	Heavy squall passed over, weather generally looking more threatening and squally.
Noon,	E	6	29·700	13 30	84 40	Sea very high cross, weather gloomy, but clearing to eastward.
1-0 P.M.	ESE	6	29·685	...	...	Heavy clouds working up to windward.
2-0 ,,	SE to E	...	29·705	...	...	Overcast with light rain, fresh breeze and high confused sea.
3-0 ,,	...	...	29·710	...	...	Weather clearing and wind decreasing.
4-0 ,,	E to S	5	29·700	...	...	Dull cloudy weather, wind hauling eastward.
5-0 ,,	SE	5	...	...	...	Squally and overcast, sea decreasing.
6-0 ,,	...	...	29·705	14 10	84 45	Squally with rain.
8-0 ,,	SE	...	29·730	...	...	Fresh to moderate wind hauling to ESE in squalls with rain, sea moderating.
9-0 ,,	SE to E	7	29·715	...	...	Squalls less heavy and less frequent, wind increasing.
10-0 ,,	SE to E	7	29·710	...	...	Sky clearing gradually all round, wind steady, no squall since 9 P.M.
11-0 ,,	ESE	4	...	...	...	Continuous heavy rain.
Midnight.	...	4	29·725	14 45	84 55	Moderate breeze with occasional heavy squalls of wind and rain. Sea increasing, sky dull overcast, but clearing steadily to SW, constant heavy rain since 11 P.M.

6th November.—Pressure was unchanged in Northern and Central India. It had fallen very rapidly in the Central Coromandel coast districts to which the storm centre had advanced during the previous 24 hours. The following gives data of the land stations within the storm area at 8 A.M. :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Pamban .	29·696	—·067	...	SE	10	3	0·86	
Negapatam .	·653	—·090	—·203	SW	12	7	2·10	
Cuddalore .	·622	—·135	...	SSW	5	10	8·94	Continuous rain.
Madras .	·553	—·191	—·314	SSE	15	10	3·14	Gale; sea very rough.
Nellore .	·601	—·169	...	E	13	10	4·23	Continuous rain.
Cuddapah .	·659	—·149	...	NNE	10	...	0·46	Showery.
Bangalore .	·696	—·112	—·204	NW	10	10	0·66	Drizzling.
Trichinopoly	·676	—·097	—·190	W	4	10	0·39	Continuous rain.

The centre at 8 A.M. was a short distance to the west of Madras.

Hourly observations recorded at the Madras observatory indicate that the centre crossed the coast a little to the south of Madras between 3 and 4 A.M. The following gives a summary of the hourly observations recorded at the Madras observatory during the storm :—

Date and hour.	BAROMETER.		Dry bulb thermometer.	Humidity.	WIND PRECEDING HOUR.		Rainfall preceding hour.	Wind velocity at harbour.	WEATHER.
	Reduced to 32°.	Reduced to sea-level and corrected for daily tide.			Direction.	Velocity.			
	"	"	°				Inch		
5th 0 hour.	29·802	29·812	74·5	99	...	...	...	...	
1 " .	·775	·803	75·2	98	NNE	4	0·02	...	
2 " .	·758	·801	75·6	98	NNE	5	0·02	...	
3 " .	·737	·790	75·9	96	NNE	4	...	...	
4 " .	·732	·784	75·9	96	NNE	4	...	...	
5 " .	·732	·772	76·3	94	NNE	5	...	...	
6 " .	·761	·781	76·7	92	NNE	12	0·02	...	
7 " .	·778	·774	76·5	93	NNE	12	0·05	...	
8 " .	·792	·768	75·2	96	E	7	0·06	...	Sea rough.
9 " .	·795	·761	75·4	96	NNE	11	...	...	
5th Nov.	"	"	°				Inch		
10 hours.	29·767	29·737	79·0	91	NNE	10	...	...	
11 " .	·739	·725	78·2	88	NNE	15	...	...	
12 " .	·707	·718	78·3	89	NNE	15	0·01	...	
13 " .	·676	·716	76·0	96	N	13	0·55	...	
14 " .	·640	·701	75·3	99	NNE	13	0·85	...	Sea very rough.
15 " .	·595	·669	76·7	93	N	17	0·32	...	
16 " .	·603	·676	76·9	93	NNE	20	0·04	18	
17 " .	·604	·664	76·8	93	NNE	17	0·26	21	Gusts on Dines's anemometer 29 miles per hour.
18 " .	·611	·651	77·0	93	NNE	21	0·11	30	
19 " .	·623	·644	76·7	93	NE	20	0·15	40	Gusts on Dines's anemometer 32 miles per hour.
20 " .	·631	·630	76·5	95	NE	20	0·02	37	Squally.
21 " .	·637	·624	76·6	94	NE	15	0·33	30	Gusts on Dines's anemometer 32 miles per hour.
22 " .	·615	·601	77·3	91	NE	16	0·16	36	
23 " .	·599	·592	75·0	98	E	13	0·11	22	
6th 0 hour.	·569	·577	76·8	93	ENE	12	0·17	23	Gusts on Dines's anemometer 22 miles per hour.
1 " .	·539	·565	78·0	90	E	16	0·03	24	
2 " .	·517	·557	78·1	93	SE	13	...	36	
3 " .	·503	·553	78·9	87	SSW	12	...	32	
4 " .	·490	·539	78·1	90	SSW	17	0·03	37	
5 " .	·507	·544	77·1	93	SW	10	...	21	
6 " .	·529	·546	77·0	92	WSW	12	...	24	
7 " .	·556	·549	75·9	96	W	16	...	29	
8 " .	·600	·576	75·2	92	NW	17	...	36	Sea very rough.
9 " .	·633	·599	75·9	93	NNW	17	...	33	Gusts on Dines's anemometer 24 miles per hour.
10 " .	·648	·616	77·1	86	NNW	19	...	28	
11 " .	·643	·628	79·0	84	N	16	...	24	
12 " .	·613	·623	79·8	78	N	11	...	23	
13 " .	·599	·638	79·7	79	N	10	...	20	
14 " .	·590	·651	79·8	78	N	12	...	19	
15 " .	·595	·669	77·9	85	NNW	10	...	20	
16 " .	·615	·688	78·1	89	NNW	7	0·01	...	

The observations are interesting as they show that the rainfall at Madras occurred when that station was in the

advancing quadrant and that the winds were very much stronger at the Port office on the sea shore than at the observatory, about 2 miles in a direct line from the shore.

Weather was squally and showery over the greater part of the centre and south of the Bay during the morning, but improved rapidly during the afternoon and evening. The following extracts from the log of the S.S. *India* giving the weather experienced by that steamer on the 6th illustrate these features :—

Date and hour.	Position. Lat. N.	Position. Long. E.	Wind. Direction.	Wind. Force.	Barometer, corrected.	Wind, weather and sea remarks.
6th Nov.	° ′	° ′			″	
Midnight to 2 A.M.	14 45	84 55	ESE	6	29·720	Squally with light rain, wind steady and sea confused.
2·30 „	...	...	ESE	6	...	Heavy squall passed over with dense rain lasting about half an hour.
3·30 „	...	...	ESE	5	...	Continuous rain with occasional wind squalls, wind steady and sea confused, dull and gloomy appearance of sky to windward.
4·0 „	...	...	ESE	6 to 7	29·735	Squalls increasing in frequency and violence, sky overcast and gloomy and high sea.
5·0 „	...	...	SE	5	...	.....
6·0 „	15 30	85 10	ESE	6	·735	Frequent squalls from SSE to ESE with continuous rain, sky overcast, moderately high easterly sea and dirty appearance to eastward.
7·0 „	...	..	E	7 to 8	·735	Wind shifted to east in a fierce squall with heavy rain.
8·0 „	...	...	E	9	·755	Strong gale with fierce squalls and continuous heavy rain, sea rising and dirty, gloomy appearance to windward.
8·30 „	...	...	E	9 to 10	...	Fierce squalls of blinding rain and wind during squalls, wind east.
9·0 „	...	...	E	10	·750	Sea rapidly increasing and becoming more wall-sided.
9·10 „	...	...	E	10	...	Whole gale with small blinding rain and hard squalls.
10·0 „	...	...	E	10	·775	Sea rapidly increasing and becoming more wall-sided and frequently breaking aboard forward.
10·10 „	...	...	E	9 to 10	...	Rain less and weather slightly clearer.
10·30 to 11·0 A.M.	...	...	E to S	...	·780	Constant fine, blinding rain with fierce hard squalls, wind variable from east to south, more southerly during squalls.
11·30 to noon.	15 55	85 20	E to S	9 to 8	·795	Strong to moderate gale with high short sea, sky dull and clouded, weather less threatening, squalls of less frequency and force.
6th Nov.—*concld.*	° ′	° ′			″	
1·0 P.M.	...	...	SE	7	29·800	Continuous heavy rain with frequent hard squalls, wind more southerly in squalls.
2·0 „	...	...	E to S	...	·800	Rain taking off, wind decreasing, weather clearing a little, dull watery looking and cloud rising south-eastwards.
2·30 „	...	...	E to N	5	...	Sky overcast, sea high, rain ceased and wind hauling to northward.
3·0 „	...	...	NE to E	6	·805	Weather clearing up considerably.
4·0 „	...	...	E to S	7	·805	Dull overcast sky, gloomy weather with strong wind and high sea, squally appearance to windward. Wind unsteady between E and NE
4 to 6 „	16 45	85 55	E to S	7	·805	Strong wind, rough sea and dull gloomy weather, unsettled appearance all round.
7·0 „	...	...	E	...	·820	Squally locally and lightning to eastward.
8·0 „	...	...	NE to E	6	·845	Between squalls moderate breeze, smart squalls from NE and E, sea moderate, weather cloudy and overcast.
9·0 „	...	...	E to N	5	·850	Wind variable, force moderate and sky clearing here and there.
10·0 „	...	...	N to E	6	·860	Lightning to E and SE.
11·0 „ to midnight	17 30	86 25	NE to E	5 to 6	·875	Dull rainy weather, wind steadier in force, sky dull and cloudy. Cloud bank making up to SE moderate to fresh head wind and sea, dull cloudy and rainy weather.

Heavy rain had fallen in the Madras coast districts from Vizagapatam southwards during the previous 24 hours. The following gives the most noteworthy falls :—

District.	Station.	Rainfall during 24 hours preceding 8 A.M. of 6th November 1898.
		Inches.
South Arcot	Cuddalore	8·94
„	Vanur	8·80
„	Manambadi	8·68
„	Markanam	7·75
„	Villupuram	7·28
„	Chidambaram	7·00
Nellore	Venkatagiri	7·16

7th November.—The barometric changes were small in amount except in Southern India. Pressure had fallen

slightly in Mysore, Malabar and the South Konkan, and had risen rapidly in the Central Coromandel coast districts. The depression had advanced westwards and filled up rather rapidly during the previous 24 hours. The following data show its position at 8 A.M. :—

STATION.	PRESSURE.			WIND.		Cloud.	Rainfall.	WEATHER.
	8 A.M. reduced to sea-level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"				Inches	
Mercara .	...	—·036	—·151	NW	6	10	0·32	Drizzling.
Mysore .	29·714	—·035	...	WSW	7	10	1·15	Raining.
Bangalore	·697	+·001	—·193	S	10	10	1·75	Drizzling.
Chitaldroog.	·747	+·019	...	NNE	8	10	0·73	
Salem .	·690	—·022	—·206	SW	4	8	0·19	Showery.
Cuddapah	·708	+·049	...	E	...	10	1·48	"

The centre of the residual cyclonic circulation was in Mysore in about Lat. 13°½ N. and Long. 77° E. It had hence advanced about 190 miles during the previous 24 hours.

Moderate to heavy rain had fallen in the Circars and the Peninsula to the south of Lat. 16° N. The rainfall had extended to the Malabar coast districts where winds were light and irregular. The following gives the largest falls during the previous 24 hours :—

DISTRICT.	Station.	Rainfall during 24 hours preceding 8 A.M. of 7th November 1898.
		Inches.
NELLORE	Kandukur	10·36
"	Pakala	5·13
"	Udayagiri	4·60
"	Atmakur	3·14
SALEM	Yercand	3·47
CUDDAPAH	Badvel	3·29

8th November.—Pressure had risen slightly to briskly in Southern India and had fallen in Baluchistan and the remainder of India. A shallow residual depression lay over the west coast between Karwar and Mangalore and the adjacent part of the Arabian Sea. Light to moderate rain had fallen over the south and centre of the Peninsula. The falls were heavies in the Circars districts where the following amounts were recorded :—

DISTRICT.	STATION.	Rainfall during 24 hours preceding 8 A.M. of 8th November 1898.
		Inches.
GODAVARI.	Razole	10·13
	Narsapuram. . .	8·45
	Bhimavaram . .	5·77
	Coringa . . .	4·10
KISTNA	Masulipatam . .	4·55

Moderate to strong north-east winds obtained over the north-west and centre of the Arabian Sea. Winds were light and irregular off the Konkan coast. Light to moderate westerly winds with showery weather obtained off the South Malabar and Ceylon coasts.

The residual depression affected the weather in the Arabian Sea during the next three days. The centre was so far as can be judged from the scanty information in about Lat. 14°½ N. and Long. 70°½ E. at 8 A.M. on the 9th and in Lat. 16° N. and Long 67°½ E. at 8 A.M. of the 10th. The disturbance was apparently feeble at that hour, but intensified considerably during the day. The centre was in about Lat. 18° N. and Long. 65½°E. at 8 A.M. of the 11th. The following data show the character and position of the cyclonic disturbance at 8 A.M. of the 11th :—

NAME OF VESSEL	8 A.M. POSITION.		Barometer corrected. (Bombay Office.)	WIND		WEATHER.
	Lat. N.	Long. E.		Direction.	Force.	
	° ′	° ′	"			
S. *Flor De Dio* .	14·27	69·29	...	SSW	4	Cloudy.
S.S. *Crescent* .	16·39	62·43	...	NW	5	Noon, squally and rainy.
S.S. *Anapa* .	17·53	67·32	29·795	SE by E	7	0-30 A.M. wind increasing to hurricane with terrific squalls with heavy rain and thunder and lightning.
S.S. *Clyde* .	17·53	69·18	·766	ESE	8	Cross sea from S. S.-E. to E. S.-E., 4 A.M. violent squalls.
S.S. *Haddon Hall.*	17·57	68·38	...	SE	6	Rough S.-S-E., sea.
S.S. *Carthage* .	18·20	65·51	·586	ENE	7	Squally and tempestuous.

The information shows that in the part of the Arabian Sea covered by these vessels weather was stormy with severe to terrific squalls and heavy rain and cyclonic winds of intensity 6 to 12. The S.S. *Anapa* appears to have passed near the centre during the day. The following

gives extracts from her log showing the weather she experienced during the day :—

Hour.	Name of Vessel.	Position. Lat. N.	Position. Long. E.	Barometer corrected.	Wind Direction	Wind Force.	Weather.
		° ′	° ′	″			
10th 8 A.M.	S.S. *Anapa*	17·21	66·16	29·755	NE by N	6	Heavy rain, thunder and lightning.
Noon .	,,	17·28	66·53	·680	NE	6	Heavy rain squalls and high head sea.
4 P. M. .	,,	...	...	·570	NE by N	6	Heavy rain squalls and high head sea.
8 ,, .	,,	...	...	·580	ENE	7	Heavy rain squalls with thunder and lightning, 6 to 8 P.M. wind shifting to north, barometer rising, 8 P.M. wind shifting back to E.-N.-E., barometer suddenly falling.
9 ,, .	,,	...	...	...	N	8	
10 ,, .	,,	...	...	·510	SW	...	
Midnight	,,	...	...	·300	NW	9	Terrific squalls, high sea and rain, thunder and lightning.
11th Nov.							
1 A. M. .	,,	...	...	...	WNW	10	0-30 A.M. wind increasing to hurricane and backing to S.-W., with terrific squalls, thunder and lightning and heavy rain.
2 ,, .	,,	...	...	...	W	11	1-20 A.M. barometer started to rise, continuing rapidly till 4 A.M., squalls moderating and less frequent.
3 ,, .	,,	...	..	...	SW	9	
4 ,, .	,,	...	...	·370	SSE	9	Wind S. to S.S.-E., and blowing hard.
6 A. M. .	,,	...	...	...	...	...	Strong gale and high sea.
8 A.M. .	S.S. *Anapa*	17·53	67·32	29·795	SE by E	8	Wind and sea moderating and sky clearing, barometer rising rapidly.
Noon .	,,	17·58	67·40	·850	ESE	6	Fresh gale, rough sea.
4 P. M. .	,,	...	...	·810	ESE	5	Squally, with heavy showers and moderate sea.
8 ,, .	,,	...	...	·890	ESE	5	Smooth sea.

The S. S. *Anapa* passed near to the centre at midnight when her barometer (corrected) had fallen to 29·30 inches. She had terrific squalls and hurricane winds for about an hour. The position of the centre at midnight, as obtained from the data of that vessel, was probably in about Lat. 17°½ N. and Long. 67° E.

The storm had hence increased rapidly in intensity during the previous 24 hours when it had passed fully into the open sea and was of considerable intensity during the day.

12th November.—The storm apparently filled up very rapidly during the night of the 11th and morning of the 12th.

The following gives 8 A.M. data from the logs of ships showing the weather at that hour in the centre of the Arabian Sea :—

Name of Vessel.	8 A.M. Position. Lat. N.	8 A.M. Position. Long. E.	Barometer (corrected). (Bombay Office.)	Wind Direction.	Wind Force.	Weather.
	° ′	° ′	″			
S.S. *Matiana* .	9·36	67·02	30·107	SE	2	Fine.
S.S. *Palawan* .	10·17	59·51	29·907	Calm.	0	Fine.
S. *Flor De Dio* .	15·06	71·25	...	SSE	5	
S.S. *Winnie* .	15·25	58·05	...	NNE	3	4 P.M. cloudy.
S.S. *Clan Macrae*	16·12	61·48	·724	NW	4 to 5	Confused swell and passing rain squalls.
S.S. *Crescent* .	18·11	64·19	...	E	5	4 A.M. heavy showers and lightning to E.
S.S. *Naseri* .	18·34	68·51*	·755	Var.	2	Midnight, hazy.

* Noon position.

Weather improved slowly in the Arabian Sea. Squalls and unsteady winds were experienced during the next 48 hours, more especially off the Malabar coast. It is not possible in the absence of information to trace further the residual depression, but, judging from the scanty data available, it filled up very slowly. Fine weather with normal winds was re-established over the whole sea area on the 17th and 18th.

The following gives the position of the storm centre and its rate of advance throughout its existence from the 5th to the 11th :—

DATE.	POSITION OF CENTRE AT 8 A.M.				Distance travelled during interval.	Average hourly rate of motion during interval.
	Lat. N.		Long. E.			
	°	′	°	′	Miles.	Miles.
5th November . .	10	25	85	0	...	...
6th " . .	13	0	79	45	410	17
7th " . .	13	30	77	0	190	8
8th " . .	13	50	74	30	170	7
9th " . .	14	30	70	30	270	11
10th " . .	16	0	67	30	250	10
11th	18	0	65	30	200	8

The storm formed rapidly in the south-west of the Bay on the 4th and 5th, and commenced to advance west-north-westwards on the morning of the 5th. The centre marched with increasing velocity during the night, and struck the Coromandel coast a little to the south of Madras between 3 and 4 A. M. of the 6th. It continued to march across the Peninsula at a diminished rate during the next 48 hours, and filled up slowly and passed out into the Arabian Sea as a residual depression on the morning of the 8th. It was a feeble disturbance during the next thirty-six hours in that area, but when it had advanced well into the open sea it intensified rapidly, and was a severe and vigorous storm on the 10th and 11th, when the vessels within the central area experienced cyclonic winds of force 8 to 12 and violent to terrific squalls. It marched in almost the same direction throughout from the 5th to the 12th. It filled up rapidly on the 12th, but the residual depression appears to have given showery squally weather in the centre, north and west of the Arabian Sea until the 15th or 16th.

Pressure increased considerably on the 9th, 10th and 11th in the Peninsula and fell slightly in Northern India. Gradients hence diminished rapidly during this period, and pressure on the 11th was very uniform over Northern and Central India. Showery weather continued in the Peninsula south of Lat. 17° N. during the period from the 8th to the 11th, showers being general in Mysore and Southern India. Pressure differed little from the normal over India on the 11th, but was in moderate to considerable defect in Burma.

Pressure decreased considerably to largely over the whole of India during the next 48 hours (*i.e.* on the 12th and 13th), and was in large defect in Northern India on the 13th. Fine dry weather with clear skies, however, prevailed in Northern and Central India and the north of the Peninsula. Showery weather continued in Southern India (*i.e.*, the Peninsula south of Lat. 12°) on the 12th and 13th, but the falls were light. Pressure increased over the whole of India on the 14th and 15th, more rapidly in Northern India than in the Peninsula. Pressure was normal in the Peninsula but in moderate to considerable defect in Northern India on the 15th. Fine dry weather set in on that day in Southern India and continued until the 25th,. Fine clear weather obtained during the period 16th to the 25th over nearly the whole of India. The pressure changes were of the usual fine weather oscillatory character in India during this period.

A depression formed in Persia on the 18th and 19th. It advanced eastwards through East Persia and Baluchistan on the 20th and 21st, into Sind and Rajputana on the 22nd and 23rd. It filled up during the next 48 hours in North-Western India. The disturbance gave some cloud but no rain in Baluchistan and Upper India.

On the 25th, 26th and 27th, pressure increased considerably in Northern India relatively to the Peninsula and south of the Bay. Gradients hence increased, and the north-east winds in the north and centre of the Bay hence increased steadily in force. The following data illustrate this change :—

Date.	Mean force of winds in Bay.
22nd November	2·5
23rd "	2·9
24th "	3·9
25th "	3·1
26th "	3·3
27th "	3·4
28th "	3·7
29th "	3·9

These intensified north-east winds gave light to moderate rain in Southern India from the 26th to the 30th, heaviest and most general in the South Coromandel coast districts

The following gives daily district rainfalls exceeding one inch during this period, and shows the distribution of the heaviest rain :—

DISTRICT.	Date.	Average actual rainfall during 24 hours preceding 8 A.M. of date.
		Inches.
Madras	27th Nov.	2·09
Nellore	Ditto	1·15
Madura	28th Nov.	1·10
Madras	30th ,,	2·22
Chingleput	Ditto	2·96
North Arcot	Ditto	2·49
South ,,	Ditto	3·12
Tanjore	30th Nov.	2·58
Trichinopoly	Ditto	2·11
Salem	Ditto	1·52
Nilgiris	Ditto	1·12

A feeble disturbance similar in character to that of the last week of December 1896 formed to the east of Ceylon on the 28th, between a region of easterly winds to the north and of westerly winds to the south. The marine data are not sufficient to trace fully the origin of the disturbance. It passed over Ceylon on the 29th and 30th and gave heavy rain in the South Coromandel coast districts on the 29th and 30th.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-West of India.

I.—AFGHAN MOUNTAIN DISTRICTS.

(1) *Hills bordering Dera Ismail Khan District.*—No snow fell in these hills during the month of November.

(2) *Kurram.*—Snow is reported to have fallen on the 15th down to 16000 feet, on the 16th down to 14,000 feet, and on the 25th down to 12,000 feet. The falls were in each case light and melted away rapidly during the next three or four days. The month was unusually dry in this district.

II.—KASHMIR AND PUNJAB HIMALAYAS.

(1) *Simla hill district.*—Snow fell down to about 6,500 feet on the 5th. The fall was light, averaging only two inches at Kilba, and was probably two to three feet in depth on the higher ranges.

Summary of Special Storm Reports.

The weather was more settled than is usually the case in November in the Indian area, and there were few local storms reported. Series of observations were recorded at Cocanada, Salem, Negapatam and Pamban during the stormy weather of the 3rd to the 6th. The information has been utilized in the pressure section. The following is a brief statement of the local storms reported :—

3rd.—Feeble duststorm at Delhi from north at 2 P.M. Duststorm at Kotah from north at 4 P.M.

4th.—Thunderstorm with hail at Simla from 3 P.M. to 4 P.M.

10th.—Severe thunderstorm at Salem from 11 P.M. to 0-40 A.M. of the 11th. Rainfall during the storm amounted to 3 inches.

13th.—Thunderstorm at Salem lasting from 3-45 P.M. to 4-45 P.M. Rainfall during the storm 0·81 inch.

14th.—Thunderstorm at Salem lasting from 10-10 P.M. to 11-10 P.M. Rainfall during the storm 0·26 inch.

25th.—Thunderstorm at Salem from 9-55 P.M. to midnight. Rainfall during the storm 0·81 inch.

Brief Summary of the Weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Exceedingly unsteady winds, chiefly from northerly directions, obtained over the Arabian Sea during the first four days of the month. Weather was fine in the north, centre and east, and more or less rainy and squally in the west and south-east. The mean air movement ranged between 3·2 and 3·9 as compared with 2·9, the normal for the month. Ordinary north-east winds set in over the north and centre of the Arabian Sea during the next 24 hours, and were established over the whole of the sea, except the neighbourhood of the west coast of

the Peninsula, where unsteady variable winds held steadily. No significant change took place until the 8th, on the morning of which day a feeble residual disturbance, the continuation of a cyclonic storm which passed into Southern India from the south-west of the Bay, crossed into the east of the Arabian Sea between Karwar and Mangalore. Winds hence intensified considerably and became cyclonic in direction over the east and centre. The disturbance drifted along a west-north-westerly track during the next 48 hours, developing at the same time. It was a severe disturbance on the early morning of the 11th, when the S. S. *Anapa* in the central area experienced winds of hurricane force with terrific squalls. The centre of the storm was probably in about Lat. 18°N. and Long. 65½°E. at 8 A.M. of the 11th. The future career of the storm can only be surmised, the marine information available for the part of the sea traversed by the storm being very scanty. It is, however, probable that it continued to advance in the same direction during the next 24 hours as on the previous day, and broke up as a distinct system during the 12th. Winds hence moderated rapidly over the centre and returned to their normal November directions. Their mean strength was 2·8 on the 13th and 2·6 on the 14th and 15th. Weather during this period from the 13th to the 15th was fine in the east and feebly disturbed in the centre and west. Very variable winds with occasional heavy rain obtained on these days in the south to the west of the Laccadives and Maldives. Winds strengthened considerably during the next 48 hours and averaged 3·4 on the morning of the 17th. Fine weather with ordinary north-east monsoon winds, force 2 to 6, obtained generally over the sea until the 21st, when the air movement diminished rapidly. It averaged only 2·4 at 8 A.M. of the 22nd and 2·5 on the following two days. Increasing gradients for northerly winds obtained during the remainder of the month, and hence the air movement increased steadily during this period from an average of 2·9 on the 25th to 3·8 on the 29th and 30th. Weather was fine generally during this period, except in the neighbourhood of the Malabar and Ceylon coasts, where showers were of occasional occurrence.

Bay of Bengal.—At the commencement of the month ordinary north-east winds, force 2 to 6, obtained over the north and centre of the Bay, light easterly winds in the south and south-east, and moderate to strong westerly winds at the entrance to the Bay. Between these two systems of easterly and westerly winds there was a narrow zone in which winds were very variable and light. Weather was cloudy with occasional showers and squalls in the region of easterly and westerly winds and fine over the remainder of the Bay. The mean air movement as derived from the data of 25 vessels was 3·3, or 0·1 above the normal at 8 A. M. of the 1st. No important change occurred during the next two days, except in the south, where squalls increased in frequency and the rainfall became heavier. A storm was generated over the area between the westerly and easterly winds in the south-west of the Bay on the 4th. It intensified during the next 24 hours and began to march in a west-north-west direction. The centre crossed the Coromandel coast to the south of Madras on the early morning of the 6th. The storm was of considerable intensity during the 5th, and occasioned very unsettled weather over the south-west of the Bay. The strongest winds in the storm area were experienced by the *India* and were of force 10. The average wind force as recorded on board 24 vessels was 3·8 at 8 A. M. of the 6th. The influence of the storm over the air movement in the Bay diminished rapidly during the next 48 hours. Winds hence fell off rapidly in intensity and averaged only 2·9 on the morning of the 9th. Weather, however, remained feebly disturbed with occasional showers and squalls in the south-west of the Bay. Important pressure changes occurred over the Bay and Burma during the next 24 hours, the chief effect of which was to give lower pressure in Lower Burma and the neighbouring sea area than elsewhere. North-westerly winds hence set in over the centre and east of the Bay and continued during the next seven or eight days. During the whole of this period, from the 10th to the 17th, north-easterly winds, feebler than usual, obtained over the north-west and south of the Bay and westerly winds over the entrance to the Bay. Weather was fine and clear over the whole Bay area, except in the vicinity of the Madras and Ceylon coasts where showers and squalls were of occasional occurrence. The mean air movement ranged between 2·3 and 3·1 during the period and averaged 2·6 for the whole period. The abnormal pressure conditions in Lower Burma passed away on the 18th and 19th, and winds reverted to north-easterly directions and prevailed with great steadiness over nearly the whole of the Bay during the remainder of the month. They were somewhat stronger than usual during the last seven days of the month, their average strength varying between 3·3 and 3·9. Moderate westerly winds obtained on these days at the entrance to the Bay. A feeble disturbance was formed to the east of Ceylon on the 28th. It moved eastwards across Ceylon on the 29th and probably filled up on the 30th.

From the preceding account of the weather in the Indian seas it will be seen that a noteworthy feature of the meteorology of these areas during the month was the early extension of the winter monsoon winds to the south, where in ordinary years, westerly winds obtain.

Temperature of the Air.

Weather was even less disturbed than usual in Persia, Baluchistan and North-Western India. It was also abnormally dry in Burma in which no rain fell during the month. There were two periods of rain in Southern India, where the precipitation was more abundant than usual.

The mean maximum temperature was below the normal in Southern India and the North Madras coast districts. The variations were generally small in amount, the largest being a deficiency of 2°·3 at Salem and of 1°·9 at Coimbatore. The mean maximum temperature of the month was above the normal over the remainder of India and in Burma. The excess was large in Cutch, Rajputana, Central India, Khandesh, Berar and the western districts of the Central Provinces.

Comparative data are given below for stations in that area :—

Province.	Station.	Mean maximum temperature.		
		Actual November, 1898.	Normal, November.	Variation of actual from normal November 1898.
		°	°	°
Central Provinces	Khandwa	91·7	85·3	+6·4
Ditto	Saugor	85·1	80·7	+4·4
Ditto	Pachmarhi	76·9	72·0	+4·9
Berar	Akola	91·0	85·9	+5·1
Do.	Amraoti	89·9	85·2	+4·7
Khandesh	Malegaon	90·0	85·7	+4·3
Central India	Indore	86·5	81·8	+4·7
Do.	Neemuch	88·1	83·4	+4·7
Rajputana	Deesa	95·4	90·4	+5·0
Do.	Sambhar	87·0	82·5	+4·5
Cutch	Bhuj	92·8	88·3	+4·5

The variations were small in the hill and submontane districts of Northern India and Bengal. The mean day temperature was in considerable excess in the interior of Burma, as is shown by the following data :—

Station.	Mean maximum temperature.		
	Actual, November 1898.	Normal, November.	Variation of actual from normal, November 1898.
	°	°	°
Thayetmyo	92·2	87·5	+4·7
Toungoo	91·2	87·0	+4·2
Mandalay	90·2	86·6	+3·6

High maximum temperatures were recorded in the area of greatest excess of temperature. The most noteworthy are given below with a statement of the highest day temperatures previously recorded in November :—

Area.	Station.	Highest maximum temperature recorded in November 1898.	Date on which recorded.	Highest maximum temperature recorded in November previous to 1898.	Year in which recorded.
		°		°	
Burma	Thayetmyo	95·1	4th	94·2	1881, 1888, & 1891.
	Toungoo	94·7	1st	94·5	1878
	Mandalay	96·0	4th	95·6	1896
Central Provinces.	Khandwa	94·2	3rd, 6th, 13th, 16th, and 17th.	97·7	1896
					1896
	Saugor	89·3	3rd & 5th	92·3	1896
	Pachmarhi	80·7	3rd & 5th	83·2	1896
Berar	Akola	93·9	3rd & 4th	97·5	1896
	Amraoti	92·7	4th	96·2	1896
Khandesh	Malegaon	94·4	3rd & 4th	96·4	1896
Central India.	Indore	90·2	2nd	93·2	1896
	Neemuch	93·3	20th	94·3	1895
Rajputana	Deesa	99·3	1st	102·9	1895
	Sambhar	94·5	2nd	94·5	1895
Cutch	Bhuj	99·3	1st	99·0	1895

The mean minimum night temperature of the month was less than usual in Burma, Assam, South Bengal, Orissa and the West Punjab. The deficiency was less than 2° except in a small area represented by the stations for which data are given below :—

Station.	Mean minimum temperature.		
	Actual, November 1898.	Normal, November.	Variation of actual from normal, November 1898.
	°	°	°
Thayetmyo	64·6	68·0	—3·4
Toungoo	67·4	70·3	—2·9
Rangoon	70·5	72·9	—2·4

The mean minimum night temperature was in excess over practically the remainder of India. The excess was moderate to large in amount (ranging between 2° and 6°) in Cutch, Kathiawar, Gujarat, Konkan, Khandesh, Berar, Rajputana, Central India and the western districts of the Central Provinces. It was more than 4° in a part of that area, including the stations for which comparative data are given below :—

STATION.	MEAN MINIMUM TEMPERATURE.		
	Actual, November 1898.	Normal, November.	Variation of actual from normal, November 1898.
	°	°	°
Rajkot	64·7	58·5	+6·2
Surat	67·1	62·3	+4·8
Bhuj	66·3	62·0	+4·3
Deesa	62·3	56·8	+5·5
Ajmere	54·3	49·4	+4·9
Jeypore	57·5	53·0	+4·5
Jhansi	60·7	56·7	+4·0

The area of greatest excess of night temperature hence practically coincided with the area of greatest excess of day temperature.

The lowest temperatures of the month were generally registered in Bengal and Bihar from the 15th to the 17th, in the North-Western Provinces from the 14th to the 21st, in Sind from the 3rd to the 7th, and in Central India, the Central Provinces, Berar and North Bombay from the 20th to the 22nd. They were generally recorded during the second period of the month, when fine dry weather obtained over the whole of India.

The mean temperature of the month was practically normal in Burma. The day temperature was in somewhat greater excess in that area than the night temperature was in defect. The temperature variations in Burma were conditioned by the unusual dryness of the air and the abnormal prevalence of northerly winds.

The mean day and night temperatures of the month also varied in opposite directions from the normal in Assam, South Bengal and a part of Southern India. As the day temperature was more largely in defect than the night temperature was in excess, the mean temperature of the month was below the normal to a slight extent. The mean temperature of the month was in excess over practically the remainder of India and in Baluchistan and Persia. The excess was more than 2° in amount in Cutch, Kathiawar, Gujarat, the North Konkan, Khandesh, Berar, the greater part of the Central Provinces, Central India and Rajputana, and was 4° or upwards in the areas represented by the stations for which comparative data are given below :—

PROVINCE.	STATION.	MEAN DAILY TEMPERATURE.		
		Actual, November 1898.	Normal, November.	Variation of actual from normal, November 1898.
		°	°	°
CUTCH	Bhuj	79·6	75·2	+4·4
KATHIAWAR	Rajkot	79·3	74·2	+5·1
GUJARAT	Surat	80·4	76·1	+4·3
CENTRAL INDIA	Indore	72·1	67·8	+4·3
	Neemuch	72·9	68·7	+4·2
RAJPUTANA	Deesa	78·9	73·6	+5·3
	Ajmere	70·7	66·3	+4·4
CENTRAL PROVINCES	Khandwa	75·5	70·5	+5·0
BERAR	Amraoti	76·9?	72·9	+4·0?

The mean temperature of the month differed very slightly from the normal at the hill stations in Northern India. The following gives variation data for five stations :—

STATION.	MEAN DAILY TEMPERATURE.		
	Actual, November 1898.	Normal, November.	Variation of actual from normal, November 1898.
	°	°	°
Leh	33·2	34·0	—0·8
Murree	53·9	53·0	+0·9
Simla	50·6	49·8	+0·8
Chakrata	52·3	51·4	+0·9
Ranikhet	54·4	54·7	—0·3

The following gives comparative temperature data for the 57 meteorological divisions of the Empire:—

Province.	Division.	Actual Temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of month of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	88·3	69·9	79·1	18·4	29·2	+0·5	+0·2	+0·3
	Lower Burma (Deltaic)	88·2	73·1	80·7	15·1	25·1	+2·0	−1·6	+3·6
	Central do.	91·7	66·0	78·9	25·7	36·3	+4·5	−3·2	+7·7
	Upper do.	87·7	64·0	75·9	23·7	32·0	+2·1	−1·2	+3·3
	Arakan	86·5	70·0	78·3	16·5	26·6	+1·0	−1·9	+2·9
Bengal and Assam	Eastern Bengal	83·8	63·1	73·5	20·7	30·9	+0·4	0	+0·4
	Assam (Surma)	86·6	62·6	74·6	24·0	35·1	+1·9	−1·2	+3·1
	Do. (Brahmaputra)	78·8	60·8	69·8	18·1	26·4	−0·4	−1·0	+0·6
	Deltaic Bengal	83·4	63·3	73·4	20·1	30·0	+1·2	−1·0	+2·2
	Central do.	83·1	62·2	72·7	20·9	29·7	+0·9	+0·3	+0·6
	North do.	81·6	61·3	71·4	20·3	28·2	−0·7	+1·1	−1·8
	Bengal Hills	55·4	32·4	43·9	23·0	39·2	...	...	...
	Orissa	84·8	66·8	75·8	18·0	26·2	+1·7	−0·6	+2·3
	Chota Nagpur	81·5	56·4	69·0	25·1	33·3	+2·1	0	+2·1
	South Bihar	84·1	59·1	71·6	25·0	34·0	+2·0	+0·5	+1·5
	North do.	81·9	59·7	70·9	22·3	31·5	+0·4	+0·6	−0·2
North-Western Provinces and Oudh.	North-Western Provinces (East)	84·2	54·9	69·5	29·3	40·9	+2·1	−0·1	+2·2
	Oudh (South)	84·0	53·7	68·9	30·3	42·1	+1·2	+1·8	−0·6
	Do. (North)	83·3	55·3	69·3	28·0	39·4	...	...	...
	North-Western Provinces (Central)	86·2	56·1	71·2	30·2	43·4	+3·2	+1·6	+1·6
	Do. do. (West)	84·1	53·6	68·9	30·5	41·1	+1·5	+1·4	+0·1
	Do. do. (West Submontane)	79·1	50·4	64·7	28·7	38·3	+0·6	−0·5	+1·1
	Do. do. (Hills)	59·2	44·2	51·7	15·0	32·9	−0·4	0	−0·4
Punjab	Punjab (South-East)	82·9	56·3	69·6	26·6	39·3	−0·1	+0·9	−1·0
	Do. (South)	83·6	48·7	66·2	34·9	44·1	+1·0	+0·1	+0·9
	Do. (Central)	81·6	49·3	65·5	32·3	43·4	?	?	?
	Do. (Submontane)	82·0	48·7	65·4	33·2	46·7	+0·6	+0·3	+0·3
	Do. (Hills)	59·2	35·9	47·6	23·4	37·8	−0·3	+0·9	−1·2
	Do. (North)	78·1	42·9	60·6	35·2	44·5	+1·3	−0·3	+1·6
	Do. (West)	83·4	47·9	65·7	35·5	45·1	+1·1	−0·7	+1·8
Bombay and Malabar Coast Districts (Madras).	Malabar	85·5	73·4	79·5	12·0	22·2	−0·5	−0·1	−0·4
	Madras (South Central)	84·3	68·6	76·4	15·8	27·8	−2·1	0	−2·1
	Coorg	74·0	61·1	67·6	12·9	23·8	−1·0	+0·8	−1·8
	Mysore	79·2	63·0	71·1	16·2	28·1	−0·7	+0·5	−1·2
	Konkan	88·0	72·7	80·4	15·3	24·0	+1·3	+1·7	−0·4
	Bombay Deccan	86·2	61·4	73·8	24·8	35·7	+1·9	+0·1	+1·8
	Hyderabad (North)	84·6	62·2	73·4	22·5	32·0	...	...	...
	Khandesh	88·9	58·1	73·5	30·8	46·7	+4·3	+2·6	+1·7
Central Provinces and Berar.	Berar	91·0	59·0	75·0	32·0	42·8	+5·1	+2·1	+3·0
	Central Provinces (West)	88·8	60·1	74·5	28·7	40·9	+4·6	+2·7	+1·9
	Do. (Central)	85·3	56·4	70·9	28·9	40·3	+3·8	+2·0	+1·8
	Do. (East)	85·0	60·5	72·8	24·5	33·2	+2·3	−0·8	+3·1
Bombay (North)	Gujarat	93·6	67·4	80·5	26·3	37·7	+3·8	+4·8	−1·0
	Kathiawar and Cutch	92·2	66·9	79·6	25·3	39·5	+4·2	+5·3	−1·1
	Sind	89·4	58·0	73·7	31·4	44·2	+2·1	+1·4	+0·7
	Baluchistan Hills	69·0	32·2	50·6	36·8	53·9	+2·9	−0·2	+3·1
Rajputana and Central India.	Central India (East)	85·3	56·8	71·1	28·6	41·0	+4·4	+3·5	+0·9
	Rajputana (East), Central India (West)	89·1	57·8	73·5	31·3	44·2	+4·2	+4·4	−0·2
	Do. (West)	89·6	56·8	73·2	32·7	46·3	+2·9	+0·6	+2·3
Madras	East Coast (North)	83·4	69·5	76·5	13·9	22·3	−0·8	+0·2	−1·0
	Hyderabad (South)	85·4	63·9	74·6	21·5	31·7	+1·7	+0·6	+1·1
	Madras (Central)	87·4	67·3	77·3	20·0	34·8	+0·9	+0·9	0
	East Coast (Central)	83·7	71·9	77·8	11·8	25·3	−0·6	+0·3	−0·9
	Do. (South)	83·6	72·4	78·1	11·2	20·3	−1·2	+0·5	−1·7
	Madras (South)	85·9	74·0	79·9	11·9	21·1	−1·6	−0·3	−1·3

It may be premised that the meteorology of the month may be arranged in three periods, *viz.*, from the 1st to the 15th, the 16th to the 25th and the 26th to the 30th. During the first period a cyclonic storm advanced from

the south of the Bay into Southern India. Heavy rain was received during the progress of the storm from the 4th to the 8th in the southern half of the Peninsula. Weather was showery during the remainder of the period. Fine dry weather prevailed over the whole of India during the second period. Showery weather set in again in Southern India during the third period, whilst fine dry weather continued in the remainder of India.

Temperature at the commencement of the month was in slight to moderate defect in the Punjab and North-Eastern India and in excess over the remainder of India. The chief feature was the large to very large excess in Gujarat and Rajputana. The following variation data for the 24 hours preceding 8 A.M. of the 1st illustrate the conditions prevailing :—

AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 1st November.	Mean minimum temperature, 1st November.	Mean temperature, 1st November.
	°	°	°
Burma	+1·7	—1·4	+0·2
Assam	—1·2	—4·3	—2·8
Bengal	—1·0	—2·8	—1·9
Orissa	—0·2	—6·6	—3·4
Bihar	—1·2	—3·8	—2·5
Chota Nagpur	—0·1	—6·4	—3·3
North-Western Provinces and Oudh.	+1·3	—3·3	—1·0
Punjab	—0·9	—2·3	—1·6
Sind	+1·9	—2·1	—0·1
Rajputana	+4·5	+4·0	+4·3
Gujarat	+6·0	+11·0	+8·5
Central India	+2·7	+1·2	+2·0
Central Provinces	+1·3	—3·8	—1·3
Berar	+2·8	—2·0	+0·4
West Coast	+1·5	+1·9	+1·7
Bombay Deccan	+3·0	—1·9	+0·6
Mysore	+0·9	—0·6	+0·2
Madras Coast	+0·5	+0·3	+0·4
Madras Deccan	+4·4	+0·1	+2·3
South India	—0·2	+1·4	+0·6

No large change occurred during the next four days. The following gives comparative data for the area of excessive temperature in North Western and Central India and the north of the Peninsula during this period :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	1st November.	2nd November.	3rd November.	4th November.
	°	°	°	°
Gujarat	+8·5	+7·4	+0·2	+0·1
Rajputana	+4·3	+6·5	+1·1	+1·7
Central India	+2·0	+3·9	+6·4	+5·5
Berar	+0·4	+1·1	+3·0	+2·8
Central Provinces	—1·3	+1·4	+2·0	+2·2

Data for the area of diminished temperature in North-Eastern and Southern India are given below :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	1st November.	2nd November.	3rd November.	4th November.
	°	°	°	°
Bengal	—1·9	—2·1	—1·8	—1·5
Orissa	—3·4	—4·2	—4·0	—2·5
Chota Nagpur	—3·3	—3·7	—2·3	—1·8
Bihar	—2·5	—2·5	—1·8	—1·2
South India	+0·6	—3·1	—2·7	—4·4

During the next week from the 4th to the 11th temperature was more or less considerably below the normal in Upper India and from the 4th to 8th in Baluchistan, as shown below :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF							
	4th Nov.	5th Nov.	6th Nov.	7th Nov.	8th Nov.	9th Nov.	10th Nov.	11th Nov.
	°	°	°	°	°	°	°	°
Baluchistan (Quetta)	—8·9	—7·6	—5·0	—4·8	—0·4	+2·9	+2·4	+1·4
Sind	—2·8	—3·0	—5·9	—4·9	—5·0	—2·9	—1·2	+0·5
Punjab	—1·9	—4·6	—5·2	—4·4	—4·0	—3·9	—3·1	—2·2

Temperature was considerably below the normal from the 4th to the 8th in Southern India due to the heavy rainfall accompanying the advance of the cyclonic storm of the first week of the month. This reduction is shown clearly by the following data :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF						
	4th Nov.	5th Nov.	6th Nov.	7th Nov.	8th Nov.	9th Nov.	10th Nov.
	°	°	°	°	°	°	°
South India	—4·4	—4·7	—5·0	—1·9	+1·6	+1·2	+1·6
Mysore	—0·3	—1·9	—5·0	—5·1	—1·0	+2·1	+1·0
Madras Coast	—1·7	—1·1	—2·1	—3·0	—2·0	—2·2	—0·4
Madras Deccan	+1·4	+0·8	+2·7	—2·2	—1·8	—2·1	+1·8

The variations of the temperature conditions from the normal over the remainder of India were generally small. There was throughout a moderate to considerable excess in the area of persistent increased temperature during this period, including Central India, Berar and the western districts of the Central Provinces. The following gives variation data of these provinces and of the Punjab and Rajputana for the period:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	5th Nov.	6th Nov.	7th Nov.	8th Nov.	9th Nov.	10th Nov.
	°	°	°	°	°	°
Gujarat	+1·7	—1·0	+0·7	—2·4	—0·3	+4·4
Rajputana	+2·2	—2·2	—3·0	—4·1	—2·7	+0·7
Central India	+5·4	+2·2	+0·8	+1·4	+2·0	+2·4
Berar	+3·3	+3·9	+1·7	+4·7	+3·7	+6·2
Central Provinces (West)	+4·8	+6·2	+2·8	+4·0	+3·8	+4·5

During the remainder of the first period, from the 11th to the 15th, the chief feature of the period was the continued excess of temperature in the area including Rajputana, Gujarat, Central India, Berar, the Central Provinces and the Deccan. The following gives comparative data:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	11th November.	12th November.	13th November.	14th November.	15th November.
	°	°	°	°	°
Gujarat	+8·1	+6·4	+7·0	+7·2	+5·9
Rajputana	+2·9	+4·0	+2·3	+4·0	+7·9
Central India	+3·6	+2·9	+2·8	+2·5	+4·3
Berar	+6·9	+6·7	+4·4	+2·6	+4·0
Central Provinces	+4·8	+4·9	+2·5	+2·1	+2·5
Bombay Deccan	+2·6	+4·8	+2·6	+3·1	+1·8
Madras Deccan	+3·8	+3·5	+3·1	+3·3	+2·5

Temperature fell in North-Eastern India and Burma during this period and was in slight to considerable defect in these areas on the 14th and 15th.

The following variation data for the 24 hours preceding 8 A.M. of the 15th illustrate the temperature conditions prevailing at the end of the first period:—

Area.	Variation from normal of		
	Mean maximum temperature, 15th November.	Mean minimum temperature, 15th November.	Mean temperature, 15th November.
	°	°	°
Burma	+2·3	—3·3	—0·5
Assam	—0·1	—1·5	—0·8
Bengal	—0·5	—4·7	—2·6
Orissa	+3·4	—1·9	+0·8
Bihar	—0·2	—2·6	—1·4
Chota Nagpur	+2·5	—1·0	+0·8
North-Western Provinces and Oudh	+3·3	—0·5	+1·4
Punjab	+0·4	+1·4	+0·9
Sind	+2·4	+1·8	+2·1
Rajputana	+6·5	+9·3	+7·9
Gujarat	+4·8	+6·9	+5·9
Central India	+5·2	+3·4	+4·3
Central Provinces	+5·1	—0·1	+2·5
Berar	+5·7	+2·2	+4·0
West Coast	0	+2·0	+1·0
Bombay Deccan	+2·9	+0·7	+1·8
Mysore	+0·5	+3·9	+2·2
Madras Coast	+0·8	+2·5	+1·7
Madras Deccan	+2·6	+2·3	+2·5
South India	—0·9	+2·8	+1·0

During the second period (of fine dry weather over the whole of India) temperature increased again in North-Eastern India and differed to no important extent from the normal in that area and Southern India. The chief feature was the continued excess in the area of persistent high temperature in Rajputana, Central India and the Deccan. Data for these provinces and for Sind and the Punjab are given below for every alternate day from the 15th to the 25th:—

Area.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	15th November.	17th November.	19th November.	21st November.	23rd November.	25th November.
	°	°	°	°	°	°
Punjab	+0·9	+2·1	+2·4	+1·4	+4·9	+4·3
Sind	+2·1	+3·5	+2·9	+3·3	+9·0	+6·0
Rajputana	+7·9	+4·9	+5·9	+3·5	+7·8	+7·7
Gujarat	+5·9	+8·0	+5·2	+4·6	+6·6	+7·1
Central India	+4·3	+3·0	+4·7	—0·2	+2·2	+5·4
Berar	+4·0	+5·4	+4·6	+3·2	+1·9	+4·6
Central Provinces	+2·5	+3·9	+1·8	+0·5	+0·9	+4·2

The preceding data indicate that the position of the area of greatest excess of temperature varied slightly during the period, shifting between Gujarat, Rajputana and Sind, and was in Rajputana both at the middle and the end of the period.

The following variation data for the 24 hours preceding 8 A.M. of the 25th illustrate the temperature conditions in India at the end of the period :—

AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 25th November.	Mean minimum temperature, 25th November.	Mean temperature, 25th November.
	°	°	°
Burma	+1·0	—1·5	—0·3
Assam	—0·8	+0·1	—0·4
Bengal	+0·7	+0·8	+0·8
Orissa	+1·9	0	+1·0
Bihar	+2·3	+3·7	+3·0
Chota Nagpur	+2·0	+1·5	+1·8
North-Western Provinces and Oudh	+3·3	+4·7	+4·0
Punjab	+3·2	+5·4	+4·3
Sind	+5·5	+6·4	+6·0
Rajputana	+6·8	+8·6	+7·7
Gujarat	+5·4	+8·7	+7·1
Central India	+5·9	+4·9	+5·4
Central Provinces	+5·5	+2·8	+4·2
Berar	+7·5	+1·6	+4·6
West Coast	—0·6	—2·3	—1·5
Bombay Deccan	+4·3	—1·4	+1·5
Mysore	—1·2	—3·6	—2·4
Madras Coast	+0·8	+1·0	+0·9
Madras Deccan	+2·4	—2·7	—0·2
South India	+0·1	—2·7	—1·3

During the last period of the month, from the 26th to the 30th, temperature varied very slightly from the normal in Burma, North-Eastern India and the south of the Peninsula. It was, on the other hand, more or less considerably in excess over North-Western and Central India and the north of the Peninsula. The following gives data in illustration :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	26th November.	27th November.	28th November.	29th November.	30th November.
	°	°	°	°	°
Punjab	+3·9	+4·6	+4·2	+2·4	+3·7
Sind	+5·8	+4·5	+6·0	+4·3	+4·6
Rajputana	+8·0	+8·1	+7·2	+3·0	+4·0
Gujarat	+5·6	+6·8	+6·3	+4·5	+4·7
Central India	+5·9	+5·6	+5·9	+5·2	+2·8
North-Western Provinces and Oudh.	+4·7	+5·7	+5·8	+4·3	+1·4
Bihar	+3·2	+3·4	+3·2	+3·7	+3·6
Chota Nagpur	+3·0	+4·0	+3·1	+3·7	+4·8
Central Provinces	+3·7	+4·5	+5·2	+4·0	+3·9
Berar	+4·0	+5·0	+4·9	+4·3	+3·5

The following table gives variation data for the 24 hours preceding 8 A.M. of the 30th and illustrates the temperature conditions in India at the end of the month :—

AREA.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, 30th November.	Mean minimum temperature, 30th November.	Mean temperature, 30th November.
	°	°	°
Burma	+1·9	—2·4	—0·3
Assam	—0·5	+1·2	+0·4
Bengal	+0·9	+0·9	+0·9
Orissa	+3·8	+0·8	+2·3
Bihar	+3·1	+4·0	+3·6
Chota Nagpur	+5·9	+3·6	+4·8
North-Western Provinces and Oudh	+2·7	+0·1	+1·4
Punjab	+4·2	+3·1	+3·7
Sind	+6·6	+2·6	+4·6
Rajputana	+4·8	+3·1	+4·0
Gujarat	+3·1	+6·3	+4·7
Central India	+3·3	+2·3	+2·8
Central Provinces	+4·1	+3·6	+3·9
Berar	+4·2	+2·7	+3·5
West Coast	+1·4	+3·4	+2·4
Bombay Deccan	+1·3	+1·4	+1·4
Mysore	—4·1	+2·5	—0·8
Madras Coast	—0·2	+3·0	+1·4
Madras Deccan	—1·4	+6·4	+2·5
South India	—7·0	+2·6	—2·2

The highest day temperatures of the month were registered in the Gangetic Plain between the 10th and 12th, and in the Punjab, Rajputana, Central India and the greater part of the Deccan during the first four days of the month. The following gives the highest maximum temperature at stations where it exceeded 96° :—

STATION.	Highest maximum temperature recorded in November 1898.	Date on which recorded.
	°	
Rajkot	100·4	2nd.
Pachpadra	99·6	1st.
Deesa	99·3	1st.
Bhuj	99·3	1st.
Oodeypore	93·0	1st.
Surat	97·7	1st and 2nd.
Ahmedabad	97·7	3rd.
Bhavnagar Para	97·6	1st and 3rd.
Hyderabad (Sind)	97·1	1st and 14th.
Jodhpore	97·1	1st and 2nd.
Nellore	96·9	15th.
Kotah	96·5	3rd.
Ahmednagar	96·3	10th.
Veraval	96·1	6th and 21st.
Cuddapah	96·1	2nd.

The lowest night temperatures of the month were recorded in Northern India and the adjacent hill districts to the north in the last week of the month. The following gives the most noteworthy :—

AREA.	STATION.	Lowest minimum temperature recorded in November 1898.	Date on which recorded.	Lowest minimum temperature recorded in November previous to 1898.	Year in which recorded.
		°		°	
HILLS	Dras	8·1	30th	—5·0	1896
	Srinagar	13·3	25th	20·1	1893
	Kalat	13·4	4th	5·8	1895
	Leh	14·0	30th	6·7	1888
	Pe hin	14·9	6th	9·9	1893
	Quetta	22·8	4th	14·0	1879
	Skardu	23·7	30th	16·7	1897
	Chitral	29·0	5th and 30th	30·0	1897
PLAINS	Peshawar	37·9	30th	24·7	1879
	Rawalpindi	38·4	29th	25·9	1879
	Khushab	40·4	20th	35·1	1893
	Umballa	41·0	21st and 30th	39·0	1893
	Dera Ismail Khan	41·5	6th and 7th	28·0	1879

With the exception of Srinagar and Chitral the minimum temperatures at these stations were not nearly so low as have been previously recorded.

The following table gives the variations of the mean temperature week by week during the month and also for the whole month :—

AREA.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING					
	5th November.	12th November.	19th November.	26th November.	3rd December.	For November 1898.
	°	°	°	°	°	°
Burma	+0·4	+0·9	+0·1	—0·1	—0·4	+0·4
Assam	—1·3	+0·2	0	—0·3	+0·3	—0·3
Bengal	—1·9	+1·5	—1·0	+0·9	0	+0·3
Orissa	—3·6	+1·6	+1·0	+0·7	+0·4	+0·5
Bihar	—1·7	+1·2	0	+1·6	+2·0	+0·9
Chota Nagpur	—2·4	+2·1	+1·1	+0·9	+2·9	+1·1
North-Western Provinces and Oudh.	—0·5	—0·7	+1·1	+1·7	+3·3	+1·1
Punjab	—2·2	—3·5	+1·0	+3·2	+3·0	+0·5
Sind	—1·7	—2·5	+3·4	+5·7	+4·2	+1·7
Rajputana	+2·6	—0·6	+5·4	+6·2	+4·6	+3·8
Gujarat	+3·8	+2·3	+6·9	+5·8	+5·1	+4·6
Central India	+3·1	+2·2	+3·9	+3·1	+4·1	+4·0
Central Provinces	+0·6	+3·1	+2·6	+2·2	+3·5	+2·6
Berar	+1·6	+4·8	+4·0	+3·5	+4·9	+3·8
West Coast	+1·1	+0·8	+0·5	—0·5	+2·6	+0·6
Bombay Deccan	+1·2	+2·7	+1·5	+0·7	+3·6	+1·6
Mysore	+0·3	—0·5	+0·5	—0·8	—0·2	—0·1
Madras Coast	—0·5	—1·3	+0·6	—0·1	+0·4	—0·2
Madras Deccan	+1·2	+0·8	+1·7	—0·3	+2·1	+0·9
South India	—2·3	+0·1	—1·2	—0·6	—0·5	—1·0

Winds.

Winds were slightly stronger than usual at Port Blair, but the percentage of steadiness was considerably below the normal.

Winds were steadier than usual at Rangoon and Diamond Island. The mean wind directions of Rangoon and Akyab were more easterly than usual. Winds were practically of normal strength at the stations in Burma.

In Bengal the variations of the wind direction from the normal were in opposite directions in the eastern and south-western districts of the province. The mean winds in the former area contained a stronger easterly element than usual, whereas in South-West Bengal and Orissa, as represented by Calcutta, Berhampore, Saugor Island and False Point, they were less easterly or more westerly than usual. The following gives data in illustration for five representative stations :—

STATION.	WIND DIRECTION.		
	Actual, November 1898.	Normal, November.	Westerly deflection.
Chittagong	N 13° E	N 19° W	— 32
Naryanganj	N 6° W	N 16° W	— 10
Calcutta	N 19° W	N 14° W	+ 5
Saugor Island	N 16° W	N 3° E	+ 19
False Point	N 26° E	N 27° E	+ 1

Winds were of normal strength and much steadier than usual in South and East Bengal, but were unusually light and unsteady in West and Central Bengal, as is shown by the following data :—

STATION.	VELOCITY IN MILES PER DIEM.			STEADINESS.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Actual percentage, November 1898.	Normal percentage, November.	Variation from normal, November 1898.
Burdwan	4	42	—38	48	64	—16
Berhampore	22	39	—17	20	54	—34

Winds were also lighter than usual and very unsteady in Bihar. The following gives data for two stations in that area :—

STATION.	VELOCITY IN MILES PER DIEM.			STEADINESS.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Actual percentage, November 1898.	Normal percentage, November.	Variation from normal, November 1898.
Patna	38	40	— 2	17	31	—14
Darbhanga	31	41	—10	22	40	—18

Winds were, on the whole, feebler than usual in Upper India and varied on the mean of the month very irregularly from the normal.

Winds were steadier and slightly weaker in Sind and Rajputana. The mean directions in Rajputana and Central India, as in Upper India, varied very irregularly from the normal, but were, on the whole, more westerly than usual.

The following gives mean data of the amount of the air movement in the different provinces of Northern and Central India and in Berar and the Central Provinces :—

PROVINCE.	VELOCITY IN MILES PER DIEM.		
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.
Assam	59	68	— 9
Bengal	59	71	—12
Bihar	35	41	— 6
Chota Nagpur	109	110	— 1
Orissa	58	97	—39
North-Western Provinces and Oudh	44	39	+ 5
Punjab	32	34	— 2
Sind	108	117	— 9
Rajputana	91	95	— 4
Central India	64	81	—17
Berar	125	104	+21
Central Provinces	72	64	+ 8

Winds were practically of normal steadiness but stronger than usual in the Central Provinces and Berar. Their mean directions were more northerly and less easterly than usual, more especially at the northern stations in this area. The variations of the mean wind directions differed considerably from station to station.

In the Deccan winds were generally more northerly and less easterly than usual. The deflections varied

considerably from station to station. Winds were stronger than usual and of normal steadiness.

Winds were also less easterly or more westerly on the West Coast. They were very unsteady in the Konkan, but steadier than usual in Malabar. The mean wind direction at Bombay was N. 9° E., the normal being N. 18° E.

Winds were, on the whole, of normal steadiness and strength in Mysore and slightly stronger than usual in Coorg. The easterly element in the mean wind directions was stronger than usual, as is shown by the following data :—

STATION.	WIND DIRECTION.		
	Actual, November 1898.	Normal, November.	Easterly deflection.
	°	°	°
Mercara	N 74 E	N 66 E	+ 8
Bangalore	N 66 E	N 61 E	+ 5
Chitaldroog	N 84 E	N 74 E	+10

The air movement varied little from the normal in amount in the Madras coast districts. It was slightly less vigorous than usual in November. Winds were more easterly than usual at the Coromandal coast stations and of normal steadiness. The following gives data in illustration :—

STATION.	WIND DIRECTION.			STEADINESS.		
	Actual, November 1898.	Normal, November.	Easterly deflection.	Actual percentage, November 1898.	Normal percentage, November.	Variation from normal, November 1898.
	°	°				
Cocanada	N64E	N64E	0	78	76	+2
Madras	N51E	N24E	+27	57	64	—7
Trichinopoly	N34E	N32E	+ 2	48	54	—6

The following gives data showing the mean strength of the air movement in different provinces of the Peninsula during the month :—

DIVISION.	VELOCITY IN MILES PER DIEM.		
	Average actual November 1898.	Average normal, November.	Variation from normal, November 1898.
Bombay Coast	149	147	+ 2
Bombay Deccan	219	169	+50
Mysore	142	143	— 1
Madras Coast	197	208	—11
Madras Deccan	105	77	+28

The winds differed somewhat irregularly from the normal at the hill stations in Northern India. They were in most cases much steadier than usual. The most interesting feature was the contrast between the mean wind directions as determined from the 8 hours and from the 10 and 16 hours observations.

The following gives the most striking cases :—

STATION.	MEAN WIND DIRECTION.	
	Table I.	Table II.
	°	°
Murree	S29 E	S67 E
Simla	N 47 E	S
Chakrata	N 3 E	S 3 E
Ranikhet	S 19 E	S 75 W
Muktesar	N 60 W	W

This contrast is, as pointed out in the Monthly Review for November 1897, due to the fact that in the Western Himalayas winds from southerly directions (from the plains to the hills) prevail from about 9 A.M. to 5 P.M., whereas during the remainder of the day winds from northerly directions (*i.e.*, blowing from the hills to the plains in the lower strata) obtain. The means of the 10 and 16 hours observations hence give approximately the direction of the up current, whilst the mean 8 P.M wind directions give that of the down air movement shortly before its termination. The latter is hence much more unsteady than the former.

Winds were normal in direction at Zanzibar and were more southerly than usual at the Seychelles and slightly weaker and less steady than usual at both stations.

The following gives data for the mean direction and strength of the winds at these two stations :—

STATION.	WIND DIRECTIN.		VELOCITY IN MILES PER DIEM.			STEADINESS.		
	Actual, November 1898.	Normal, November.	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Actual percentage, November 1898.	Normal percentage, November	Variation from normal, November 1898.
	°	°						
Zanzibar	S34E	S31E	102	115	—13	25	29	— 4
Fort Victoria (Seychelles)	S30E	S70E	103	140	—37	12	30	—18

Humidity and Cloud.

The air was somewhat damper than usual in the Peninsula to the south of Lat. 16°N. and in North Madras. The variations of the mean humidity of the month from the normal were, however, small except in the areas represented by the following stations :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
	"	"	"	%	%	
Mysore	·570	·70	0	74	68	+ 6
Bangalore	·554	·532	+ ·022	78	73	+ 5
Salem	·696	·660	+ ·036	80	75	+ 5
Vizagapatam	·669	·628	+ ·041	74	66	+ 8

The air contained less aqueous vapour and was drier than usual over the whole of the remainder of India. The deficiency was very marked in Lower Burma and the Andamans. The following gives data :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
	"	"	"	%	%	
Port Blair	·859	·923	—·064	78	82	— 4
Diamond Island	·763	·791	—·028	69	78	— 9
Rangoon	·710	·782	—·072	71	78	— 7

The deficiency was slight in Assam, Bengal, Orissa, Chota Nagpur, Bihar and the North-Western Provinces for which areas comparative data are given below :—

Province.	Absolute humidity.			Relative humidity.		
	Average actual, November 1898.	Average normal, November.	Variation of actual from normal, November 1898.	Average actual, November 1898.	Average normal, November.	Variation of actual from normal, November 1898.
	"	"	"	%	%	
Assam	·575	·603	—·028	77	79	—2
Bengal	·588	·606	—·018	71	74	—3
Orissa	·598	·605	—·007	70	71	—1
Chota Nagpur	·341	·360	—·019	50	54	—4
Bihar	·506	·501	+ ·005	66	67	—1
North-Western Provinces and Oudh.	·338	·356	—·018	54	57	—3

The deficiency was also small in the Konkan, and probably in Gujarat, Kathiawar and Cutch. The following gives comparative data for the Konkan stations :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
	"	"	"	%	%	
Bombay	·696	·694	+ ·002	66	70	—4
Ratnagiri	·649	·652	—·003	61	63	—2
Karwar	·707	·706	+ ·001	74	74	0

The air was abnormally dry over the remainder of India including Sind, the Punjab, Rajputana, Berar, the Central Provinces and the greater part of the Deccan. The following gives data in illustration :—

Province.	Absolute humidity.			Relative humidity.		
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.
	"	"	"	%	%	
Baluchistan (Quetta)	·134	·151	—·017	42	47	— 5
Sind	·375	·374	—·049	41	49	— 8
Punjab	·257	·313	—·056	45	53	— 8
Rajputana	·288	·300	—·012	35	42	— 7
Berar	·343	·403	—·060	40	52	—12
Central Provinces	·382	·405	—·023	48	54	— 6

Humidity was 10 or upwards below the normal at the four stations for which variation data are given below :—

Station.	Absolute humidity.			Relative humidity.		
	Actual, November, 1898.	Normal, November.	Variation from normal, November 1898.	Actual, November 1898.	Normal, November.	Variation from normal November 1898.
	"	"	"	%	%	
Buldana	·318	·395	—·077	37	50	—13
Jeypore	·239	·297	—·058	31	43	—12
Kurrachee	·383	·450	—·067	42	54	—12
Akola	·367	·410	—·043	43	53	—10

The air was very dry in the hill districts in Upper India. The following gives comparative data for four stations:—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
	"	"	"	%	%	
Srinagar . . .	·231	·227	+·004	68	78	—10
Murree . . .	·126	·158	—·032	31	42	—11
Simla	·138	·174	—·036	40	48	— 8
Chakrata . . .	·165	·199	—·034	47	55	— 8

Very low humidities were recorded in North-Western and Central India during the month. The following gives the most noteworthy:—

STATION.	Date.	Hour.	Lowest humidity recorded during November 1898.
			%
Meerut	19th Nov.	4 P.M.	11
Sutna	20th "	"	14
Allahabad	" "	"	16
Roorkee	15th "	"	18
Agra	5th "	"	20
Lucknow	16th "	"	26
Debra Dun	12th and 15th. "	"	30

The mean humidity conditions of the month were hence large and marked. The chief were—

(1) Slight to moderate excess in the amount of aqueous vapour present in the air and increased humidity in Southern India and North Madras.

(2) Abnormal dryness of the air in the north of the Peninsula, Central India, Rajputana, Sind and the Punjab and also in the hill districts of Upper India and Berar.

(3) Increased dryness of the air in Baluchistan and Persia.

The following table gives the lowest humidity for all second class observing stations at which it was 20 or less. The data are interesting, as they show that in the plains of Northern and Central India and in Baluchistan the lowest humidity percentages were in almost all cases registered at 4 P.M., whereas at the Himalayan hill stations in Upper India they were observed during the night hours (from the minimum observations) or in the morning hours at 8 A.M. or 10 A.M.

	STATION.	Date.	Hour.	Lowest humidity recorded during November 1898.
				%
HILL STATION	Murree . . .	21st Nov.	From min.	7
	Simla . . .	"	8 A.M.	8
	Chakrata . . .	11th "	10 "	9
	Simla . . .	21st "	"	12
	Quetta . . .	4th "	4 P.M.	13
	Leh	9th "	"	14
	Muktesar . . .	12th "	From min.	14
	Mount Abu . .	21st "	10 A.M.	15
	Murree . . .	"	8 "	18
PLAIN STATION	Peshawar . . .	18th "	4 P.M.	5
	Deesa . . .	2nd "	"	6
	Oodeypore . .	3rd "	10 A.M.	10
	Kurrachee . .	"	"	11
	Khandwa . . .	24th "	4 P.M.	12
	Saugor . . .	20th "	"	13
	" . . .	21st "	10 A.M.	13
	" . . .	"	4 P.M.	13
	Jeypore . . .	16th "	"	13
	Kurrachee . .	4th "	"	13
	Sutna . . .	20th "	"	14
	Buldana . . .	18th "	"	14
	" . .	22nd "	"	14
	Akola . . .	"	"	14
	Poona . . .	19th "	"	15
	Allahabad . .	20th "	"	16
	Sholapur . . .	1st, 2nd 4th&19th	"	17
	Lahore . . .	19th Nov.	"	18
	Roorkee . . .	15th "	"	18
	Jacobabad . .	12th "	10 A.M.	19
	Raipur . . .	1st "	4 P.M.	20
	" . . .	17th "	1 "	20
	Hoshangabad . .	21st "	"	20

There was less cloud in Baluchistan, the Punjab North-Western Provinces, Upper Sind, Bihar, Chota Nagpur, Bengal and the eastern districts of the Central

Provinces and Burma. The following gives comparative data :—

PROVINCE.	MEAN CLOUD AMOUNT.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
Baluchistan (Quetta)	1·3	1·5	—0·2
Punjab	0·8	1·7	—0·9
North-Western Provinces and Oudh	0·8	1·1	—0·3
Bihar	0·7	1·2	—0·5
Chota Nagpur	2·3	2·5	—0·2
Bengal	1·8	2·6	—0·8
Assam	2·6	3·1	—0·5
Burma	3·1	4·0	—0·9

The variations were small in actual amount except in Burma, Arakan, South-East Bengal and Upper Assam, as is shown by the data of the following stations :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
Rangoon	2·2	4·2	—2·0
Akyab	1·4	3·2	—1·8
Chittagong	1·2	2·9	—1·7
Sibsagar	2·8	4·1	—1·3

There was also less cloud than usual in the hill districts of Upper India, *e.g.*—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
Leh	3·6	4·1	—0·5
Srinagar	1·9	3·2	—1·3
Murree	1·7	3·0	—1·3
Simla	1·2	2·3	—1·1
Chakrata	1·1	1·7	—0·6
Ranikhet	0·9	1·5	—0·6

Cloud was, on the other hand, in slight excess at Darjeeling.

The mean cloud amount of the month was larger than usual at stations in Central India and the greater part of the Peninsula, as shown below :—

PROVINCE.	MEAN CLOUD AMOUNT.		
	Actual, November 1898.	Normal, November.	Variation from normal, November 1898.
Berar	2·7	2·0	+0·7
Central Provinces	1·7	1·8	—0·1
Bombay Deccan	3·2	3·3	—0·1
Madras Deccan	6·7	4·9	+1·8
West Coast	3·2	2·6	+0·6
Mysore	6·5	5·6	+0·9
Madras Coast	4·8	4·2	+0·6

The excess was large in the area including the stations for which data are given below :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual November 1898.	Normal, November.	Variation from normal, November 1898.
Salem	7·2	5·2	+2·0
Bellary	6·7	4·9	+1·8
Bangalore	6·5	4·9	+1·6
Cochin	5·7	4·4	+1·3

Rainfall.

Rainfall in November is generally due to the retreating south-west monsoon current in the Bay of Bengal. Under normal conditions the air current recurves in the Bay and advances as a current from the north-east to the Madras Coast districts, the Deccan and Southern India, to which it usually gives frequent moderate rain. The retreating current is, however, necessarily weak and unsteady. Hence the rainfall due to it is subject to even greater irregularity than the ordinary south-west monsoon rainfall in Northern and Central India.

In consequence of the weakness and irregularity of the current and the conditions of the air movement in the Bay, there is a strong tendency to the formation of severe cyclonic storms. These storms in the majority of cases advance westwards to the Madras Coast, but occasionally march along a northerly track into Orissa, or a north-easterly track into Burma and Arakan. Hence Burma and Orissa, in addition to the light rainfall they almost invariably receive when cyclonic storms are forming in the Bay during the month, occasionally obtain heavy cyclonic falls. Bengal also usually receives light rain during the existence of these cyclonic storms in the Bay.

The chief features of the rainfall distribution of the month of November 1898 were as follows :—

(1) The rainfall of the month was *nil* in the greater part of India including Baluchistan, the Punjab, the greater part of the North-Western Provinces, Rajputana, Central India, Cachar, Bengal (with the exception of North Bengal and Hills) and Burma (excepting Arakan, Lower Burma and Tenasserim), the Central Provinces, Bihar, Chota Nagpur and North Bombay and was hence in defect in all these areas, the deficiency being small in actual amount in Upper India and considerable to large in amount in Lower Burma and Arakan.

(2) It was more or less below the normal in 36 out of the 57 rainfall divisions. The deficiency was small in actual amount in the Punjab, Rajputana, Central India, Sind, Gujarat, Kathiawar, Bihar and Chota Nagpur, in which the normal rainfall of the month ranges between one and five-tenths of an inch, and over a large part of that area averaged less than a tenth of an inch and was hence practically *nil*. It was moderate to large in Burma, East Bengal, Orissa and Assam. The normal rainfall in Burma ranges between 1·5 inches in Upper Burma and 3·8 inches in Arakan. Burma received only 4 per cent. of its normal fall.

(3) It was practically normal in the West and South Deccan but in large percentage defect in Berar, Khandesh and the Central Provinces.

(4) It was in large excess in Mysore and South and Central Madras. The East Coast South received an average of 18·44 inches, the normal being 8·66 inches and the East Coast Central 12·28 inches. 3·06 inches above the normal.

The chief periods of rainfall in India during the month were as follows :—

(1) From the 1st to the 15th, when moderate to heavy rain was received in the Peninsula to the south of Lat. 20° N. This rain was in part due to a cyclonic storm of moderate intensity which passed across Southern India and gave heavy rain from the 4th to the 8th.

(2) From the 26th to the 30th, when rain fell in moderate amounts over South India.

The following table give mean actual, mean normal, and variation rainfall data for the 57 meteorological divisions or districts into which India is divided :—

Province.	Division.	Number of Rainy days		Rainfall.		
		Average actual, November 1898.	Average normal, November.	Average actual, November 1898.	Average normal, November.	Variation of actual from normal, November 1898.
				Inches.	Inches.	Inches.
Burma	Tenasserim*			0·25	1·59	−1·34
	Lower Burma (Deltaic)*			0·13	3·71	−3·58
	Central ditto*			0	1·93	−1·93
	Upper ditto*			0·01	1·49	−1·48
	Arakan*			0·15	3·78	−3·63
Bengal and Assam	Eastern Bengal		1·6	0	1·33	−1·33
	Assam (Surma)*			0·03	0·84	−0·81
	Do. (Hills)*			0·26	0·93	−0·67
	Do. (Brahmaputra)*			0·65	0·60	+0·05
	Deltaic Bengal	0	1·1	0	0·91	−0·91
	Central do.	0	0·8	0	0·57	−0·57
	North do.	0·4	0·3	0·12	0·15	−0·03
	Bengal Hills	2·6	0·9	0·78	0·41	+0·37
	Orissa	0	2·0	0·02	2·09	−2·07
	Chota Nagpur	0	0·8	0	0·48	−0·48
	Bihar (South)	0	0·4	0	0·24	−0·24
	Do. (North)	0	0·3	0	0·13	−0·13
North-Western Provinces and Oudh.	North-Western Provinces (East)	0·3	0·2	0·10	0·11	−0·01
	Oudh (South)	0·4	0·1	0·08	0·02	+0·06
	Do. (North)	0·4	0·1	0·09	0·04	+0·05
	North-Western Provinces (Central)	0·5	0·1	0·18	0·04	+0·14
	Do. do. (West)	0·1	0	0·03	0·01	+0·02
	Do. do. (East Submontane)	0	0·2	0·01	0·07	−0·06
	Do. do. (West do.)	0·8	0·3	0·34	0·12	+0·22
	Do. do. (Hills)	1·0	0·6	0·79	0·22	+0·57

Province.	Division.	Number of rainy days. Average actual, November 1898.	Number of rainy days. Average normal, November.	Rainfall. Average actual, November 1898.	Rainfall. Average normal, November.	Rainfall. Variation from normal, November 1898.
				Inches.	Inches.	Inches.
Punjab	Punjab (South-East)	0·1	0·2	0·05	0·03	+0·02
	Do. (South)	0	0·1	0	0·06	−0·06
	Do. (Central)	0	0·3	0	0·22	−0·22
	Do. (Submontane)	0	0·3	0	0·17	−0·17
	Do. (Hills)	0·1	0·9	0·05	0·72	−0·67
	Do. (North)	0	0·7	0	0·69	−0·69
	Do. (West)	0	0·2	0	0·14	−0·14
Bombay and Malabar Coast Districts (Madras).	Malabar	8·2	5·6	6·24	4·01	+2·23
	Travancore	9·9		6·61		
	Madras (South Central)	10·8	5·9	9·71	3·76	+5·95
	Coorg	8·3		4·96		
	Mysore*			6·05	2·56	+3·49
	Konkan	2·1	1·7	1·65	1·10	+0·55
	Bombay Deccan	2·4	2·4	1·40	1·44	−0·04
	Khandesh	0·8	1·4	0·40	0·92	−0·52
Central Provinces and Berar.	Berar*			0·13	0·71	−0·58
	Central Provinces (West)	0	0·7	0	0·38	−0·38
	Do. (Central)	0·1	0·6	0·02	0·37	−0·35
	Do. (East)	0	0·8	0	0·47	−0·47
Bombay (North)	Gujarat	0·2	0·4	00·7	0·18	−0·11
	Kathiawar	0·1	0·1	0·06	0·32	−0·26
	Sind	0		0	0·07	−0·07
	Baluchistan Hills	0		0	0·64	−0·64
Rajputana and Central India.	Central India (East)	0		0	0·34	−0·34
	Rajputana (East), Central India (West)	0		0	0·19	−0·19
	Rajputana (West)	0		0	0·12	−0·12
Madras	East Coast (North)	3·6	3·5	4·58	3·27	+1·31
	Do. (do.) (a)	3·0	4·6	1·28	2·80	−1·52
	Hyderabad (South)*			0·53	0·44	+0·09
	Madras (Central)	5·6	3·3	3·61	2·28	+1·33
	East Coast (Central)	10·2	7·6	12·28	9·22	+3·06
	Do. (South)	14·1	8·8	18·44	8·66	+9·78
	Madras (South)	10·5	8·3	7·87	6·21	+1·66

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

The only areas in India which received rain during the month were the Assam Valley and Hills, the Sikkim and Jalpaiguri districts of Bengal, the North-Western Provinces, the Konkan, Khandesh, the Deccan, Madras and Mysore.

No rain fell in Baluchistan or Kashmir. Light general rain was received in Persia on the 14th, 15th, 17th, 18th, 19th and 22nd.

The rainfall in the North-Western Provinces accompanied the feeble disturbance in North-Western India of the first week of the month. It gave light local showers from the 3rd to the 6th, chiefly in Oudh and the central, submontane and hill districts of the North-Western Provinces. The fall was fairly general and moderately heavy in the hill districts of Dehra, Naini Tal and Almora.

The following gives a summary of the rainfall of the month which was received during this period from the 3rd to the 6th :—

Division.	Number of rainy days. Average actual, November 1898.	Number of rainy days. Average normal, November.	Rainfall. Average actual, November 1898.	Rainfall. Average normal, November.	Rainfall. Variation from normal, November 1898.
			Inch.	Inch.	Inch
North-Western Provinces, East	0·3	0·2	0·10	0·11	−0·01
South Oudh	0·4	0·1	0·08	0·02	+0·06
North Oudh	0·4	0·1	0·09	0·04	+0·05
North-Western Provinces, Central.	0·5	0·1	0·18	0·04	+0·14
North-Western Provinces, West.	0·1	0	0·03	0·01	+0·02
North-Western Provinces, East Submontane.	0	0·2	0·01	0·07	−0·06
North-Western Provinces, West Submontane.	0·8	0·3	0·34	0·12	+0·22
North-Western Provinces, Hills.	1·0	0·6	0·79	0·22	+0·57

No rain fell in Bengal except in Sikkim and the Jalpaiguri district. The falls were light and the total amounts small in these areas, as is shown below :—

District.	Rainfall.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inch.	Inch.	Inch.	
Jalpaiguri	0·47	0·21	+0·26	+124
Sikkim	0·78	0·41	+0·37	+ 90

No rain fell in Sind and Cutch during the month and practically none in Gujarat and Kathiawar. The Konkan obtained frequent showers from the 8th to the 14th. The showers were moderately heavy in the North Kanara district but light in Kolaba and Thana. The following gives comparative data for these districts :—

District.	Rainfall.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inches.	Inches.	Inches.	
North Kanara	2·78	2·06	+0·72	+ 35
Ratnagiri	1·78	1·15	+0·63	+ 55
Kolaba	0·58	0·69	—0·11	— 16
Thana	0·77	0·20	+0·57	+285

The Karnatak and South Deccan districts obtained moderate general rain from the 8th to the 13th following the passage of the cyclonic storm through Southern India. The following gives comparative data for the districts in these two divisions :—

District.	Rainfall.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inches.	Inches.	Inches.	
Dharwar	2·58	1·63	+0·95	+58
Bijapur	2·54	1·52	+1·02	+67
Belgaum	1·43	1·65	—0·22	—13
Kolhapur	1·39	1·21	+0·18	+15
Satara	0·54	1·67	—1·13	—68
Sholapur	0·95	1·12	—0·17	—15
Poona	0·77	1·11	—0·34	—31

The rainfall of the month was hence in considerable to large excess in the Dharwar and Bijapur districts, and in considerable to large defect in the Poona and Satara districts.

The North Deccan or Khandesh division and the Surat district received light and sporadic showers, chiefly on the 10th, 11th and 12th. The following gives comparative data for these districts :—

District.	Rainfall.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inch.	Inches.	Inch.	
Ahmednagar	0·41	1·06	—0·65	—61
Nasik	0·72	0·83	—0·11	—13
Khandesh	0·19	0·73	—0·54	—74
Surat	0·14	0·26	—0·12	—46

The rainfall of the month was hence small in amount and in considerable to large percentage defect.

The rainfall of the month in the Madras Presidency was unusually abundant. It occurred during two periods, *viz.*, the 1st to the 15th and the 26th to the 30th. The precipitation during a part of the first period, *viz.*, from the 6th to the 10th, was heavy and accompanied the advance of a cyclonic storm of moderate intensity from the south-west of the Bay across Southern India. The rainfall due to the storm was heaviest in front of the storm centre (*i.e.*, in the advancing quadrant) and in the northern quadrant of the depression.

The following table giving district rainfall in 24 hours exceeding two inches shows the distribution of the heaviest rainfall accompanying the storm :—

District.	Date.	Average rainfall of 24 hours preceding 8 A.M. in district.
		Inches.
Godavari	6th November	2·08
,,	8th ,,	2·84
Nellore	6th ,,	2·06
,,	7th ,,	2·13
Chingleput	5th ,,	2·31
,,	6th ,,	3·93
North Arcot	5th ,,	2·15
,,	6th ,,	3·14
South Arcot	5th ,,	2·39
,,	6th ,,	6·50
Tanjore	2nd ,,	2·46
,,	4th ,,	3·33
Salem	6th ,,	2·86

The centre of the storm crossed the coast on the morning of the 6th to the south of Madras and advanced through the Chinglepur and South Arcot districts into Mysore.

The following gives actual rainfalls in 24 hours exceeding 8 inches :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
SOUTH ARCOT	Cuddalore	6th November	8·94
" "	Vanur	" "	8·80
" "	Manambadi	" "	8·68
NELLORE	Kandukar	7th "	10·36
GODAVARI	Razole	8th "	10·13
"	Narsapuram	" "	8·45

The preceding data establish clearly that the rainfall was heaviest in the districts of Chingleput and South Arcot through which the centre passed, and was also heavy in the districts of North Arcot, Nellore and Godavari in the north quadrant. This heavy rain also occurred in the North and South Arcot and Chingleput districts in front of the centre, *i.e.*, in the advancing quadrant.

The second burst of rain from the 26th to the 30th was in part due to a strong advance of north-east winds from the Bay across the Coromandel coast and in part to a disturbance which crossed Ceylon on the 29th and 30th and gave heavy rain in the Coromandel coast districts. The following gives data of the heaviest rainfall due to the second action :—

DISTRICT.	Date.	Average rainfall of 24 hours preceding 8 A.M. in district.	Heaviest rainfall in district.
		Inches.	Inches.
South Arcot	30th November	3·12	5·59
Chingleput	" "	2·96	5·03
Tanjore	" "	2·58	4·45
North Arcot	" "	2·49	5·45
Madras	" "	2·22	2·22
Trichinopoly	" "	2·11	3·35
Salem	" "	1·52	4·06

In the East Coast North division rain fell only during the first period. It was light in Ganjam, moderate in Vizagapatam and heavy in Godavari and Kistna. The rainfall of the month was hence in large defect in Ganjam normal in Vizagapatam and in large excess in the Godavari and Kistna districts, as shown below :—

DISTRICT.	RAINFALL.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inches.	Inches.	Inches.	
Ganjam	1·14	3·33	—2·19	—66
Vizagapatam	3·66	3·27	+0·39	+ 12
Godavari	8·13	3·22	+4·91	+152
Kistna	4·87	3·20	+1·67	+ 52

The East Coast Central and South divisions receivee daily rain throughout the two periods, *viz.*, the 1st to the 15th and the 26th to the 30th. The rainfall was excessive from the 4th to the 6th and on the 30th. The rainfall of the month was hence very largely above the normal. The following gives comparative data for the districts in these two divisions :—

DISTRICT.	RAINFALL.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inches.	Inches.	Inches.	
Nellore	12·28	9·22	+ 3·06	+ 33
Chingleput	19·57	11·46	+ 8·11	+ 71
North Arcot	14·79	7·64	+ 7·15	+ 94
South Arcot	24·21	8·72	+15·49	+178
Tanjore	18·92	10·42	+ 8·50	+ 82
Trichinopoly	12·55	4·53	+ 8·02	+177

The rainfall was from two to three times its normal amount in the South Arcot, North Arcot and Trichinopoly districts. The following gives examples of the very heavy downpours in the South Arcot district, which occurred chiefly during the advance of the cyclonic storm of the month :—

DISTRICT.	Station.	RAINFALL.			
		Actual, November 1898.	Normal, November.	Variation from normal, November 1898.	Percentage variation, November 1898.
		Inches.	Inches.	Inches.	
SOUTH ARCOT	Vanur	32·53	9·75	+22·78	+234
	Cuddalore	32·16	15·22	+16·94	+111
	Kallakurichi	27·76	6·31	+21·45	+340
	Panruti	26·86	7·93	+18·93	+239
	Ulundurpet	26·80	6·01	+20·79	+346
	Vridhachalam	23·37	7·87	+15·50	+197
	Tirukkoyilur	21·74	6·57	+15·17	+231

The Madras South and South Central divisions and Malabar also obtained frequent rain during the two periods of general rainfall in Southern India. The rainfall of the month was in very large excess in Salem and in moderate excess in the remaining districts in these divisions excepting Tinnevelly in which it was practically normal. The following gives comparative data :—

District.	Rainfall.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inches.	Inches.	Inches.	
Madura . . .	8·96	5·53	+3·43	+ 62
Tinnevelly . . .	6·49	7·11	—0·62	— 9
Malabar . . .	6·92	4·66	+2·26	+ 48
South Canara . .	5·04	3·07	+1·97	+ 64
Salem	12·01	3·80	+8·21	+216
Coimbatore	6·54	3·64	+2·90	+ 80

The Madras Central division obtained light to moderate rain from the 4th to the 13th and showers on the 27th, 29th and 30th. The rainfall in the four districts in this division was in slight to moderate excess. The following gives data :—

District.	Rainfall.			
	Average actual, November 1898.	Average normal, November.	Variation from normal, November 1898.	Percentage variation from normal, November 1898.
	Inches.	Inches.	Inches.	
Cuddapah . . .	6·19	3·85	+2·34	+61
Anantapur . . .	3·28	2·98	+0·30	+10
Bellary	2·01	1·30	+0·71	+55
Karnool . . .	2·38	1·50	+0·88	+59

The following gives a summary of the rainfall data for the eight divisions of the Madras Presidency :—

Division.	Number of rainy days.		Rainfall.			
	Average actual, Nov. 1898.	Average normal, Nov.	Average actual, Nov. 1898.	Average normal, Nov.	Variation from normal, Nov. 1898.	Percentage variation from normal, Nov. 1898,
			Inches.	Inches.	Inches.	
Malabar . . .	8·2	5·6	6·24	4·01	+2·23	+ 56
Madras, South Central	10·8	5·9	9·71	3·76	+5·95	+158
,, East Coast North.	3·6	3·5	4·58	3·27	+1·31	+ 40
Madras East Coast North (*a*).	3·0	4·6	1·28	2·80	—1·52	— 54
Madras Central . .	5·6	3·3	3·61	2·28	+1·33	+ 58
,, East Coast Central.	10·2	7·6	12·28	9·22	+3·06	+ 33
Madras East Coast South.	14·1	8·8	18·44	8·66	+9·78	+113
,, South . .	10·5	8·3	7·87	6·21	+1·66	+ 27

Table

Abstract of Observations taken at 8 A.M. at 214

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level, in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·022	...	...	...	...	...	...	...	88·0	+1·6	72·0	−1·1	80·0	+0·2	15·9	...	...	...	...	25·8
1	Tenasserim and Bay Islands.	Car-Nicobars	25	29·850	?	29·803	29·939	26th	29·816	5th	·123	78·1	85·0	?	75·6	?	80·3	?	9·4	87·8	24th	71·5	21st	16·3
		Port Blair	61	29·862	−·014	29·854	29·974	29th	29·801	3rd	·173	80·5	87·4	?	78·1*	?	82·7*	?	9·3	90·3	23rd	72·4	17th	17·9
		Mergui	96	29·858	?	29·886	29·989	29th	29·756	8th	·233	77·1	87·3	+0·1	71·0	+1·5	79·2	+0·8	16·3	90·6	2 days	65·4	24th	25·2
		Tavoy	26	29·941?	−·027	29·898?	30·064	29th	29·813	13th	·251	74·5	87·8	−0·2	67·8	−0·9	77·8	−0·6	20·0	91·7	2 days	60·1	24th	31·6
		Moulmein	94	29·855	−·036	29·887	30·003	29th	29·748	13th	·255	75·2	89·8	+1·5	71·0	−0·1	80·4	+0·7	18·8	93·0	9th	62·3	24th	30·7
2	Lower Burma	Rangoon	41	29·914	−·026	29·892	30·065	29th	29·798	13th	·267	75·6	89·7	+2·4	70·5	−2·4	80·1	0	19·2	91·2	6 days	64·3	2 days	26·9
		Bassein	27	29·937	−·013	29·900	30·085	29th	29·825	13th	·260	75·2	87·4	+1·5	71·1	−0·7	79·3	+0·4	16·3	89·2	2 days	64·2	25th	25·0
		Diamond Island	41	29·897	−·030	29·873	30·043	29th	29·782	15th	·261	80·9	87·6	+1·9	77·8	?	82·7	?	9·8	97·6	10th	74·2	26th	23·4
5	Arakan	Akyab	20	29·954	−·008	29·917	30·105	30th	29·841	13th	·264	72·9	86·5	+1·0	70·0	−1·9	78·3	−0·5	16·5	90·4	10th	63·8	30th	26·6
3	Central Burma	Toungoo	183	29·775	−·022	29·904	29·921	29th	29·650	13th	·271	72·7	91·2	+4·2	67·4	−2·9	79·3	+0·7	23·8	94·7	1st	60·1	26th	34·6
	II.—Burma Inland		...	...	−·024	...	...	...	...	...	...	...	88·5	+2·5	64·1	−1·6	76·3	+0·5	24·4	...	...	...	...	33·0
3	Central Burma	Thayetmyo	134	29·842	−·019	29·920	29·977	29th	29·716	13th	·261	75·9	92·2	+4·7	64·6	−3·4	78·4	+0·7	27·6	95·1	4th	57·2	22nd	37·9
4	Upper Burma	Minbu	165	29·819	?	29·931	29·962	29th	29·685	13th	·277	74·8	90·8	+1·7	67·6	−0·4	79·2	+0·7	23·2	93·6	10th	62·1	3 days	31·5
		Yamethin	657	29·209	?	29·928	29·417	29th	29·177	13th	·270	73·2	91·7	+2·7	64·9	−1·8	78·3	+0·5	26·8	93·5	16th	60·2	27th	33·3
		Mandalay	250	29·730	−·031	29·935	29·857	29th	29·601	13th	·253	73·6	90·2	+3·6	65·9	−1·3	78·1	+1·2	24·3	96·0	4th	61·1	21st	34·9
		Kindat	377	29·638	−·028	29·982	29·766	30th	29·498	13th	·268	68·5	82·5	+1·0	63·8	−0·7	73·2	+0·2	18·7	85·8	11th	59·5	2 days	26·3
		Bhamo	381	29·633	−·016	29·985	29·767	29th	29·483	13th	·284	64·6	83·3	+1·5	57·8	−1·7	70·6	−0·1	25·5	87·0	3 days	53·1	18th	33·9
4 (a)	Burma Hill Stations.	Maymyo	?			Not recorded.						62·6	75·8	?	43·9	?	59·8	?	31·9	78·4	7th	37·4	22nd	41·0
		Taunggyi	?			Not recorded.						62·5	75·2	?	50·2	?	62·7	?	25·0	78·2	2 days	46·0	3 days	32·2
		Lashio	?	27·219	−·035	?	27·332	27th	27·103	14th	·229	58·9	80·2	+3·4	52·3	−1·9	66·3	+0·8	27·9	85·5	9th	47·5	2 days	38·0
	III.—Assam		...	...	−·024	...	...	...	...	...	...	...	81·4	+0·4	61·4	−1·0	71·4	−0·3	20·0	...	...	...	...	29·3
7	Surma	Silchar	104	29·909	?	29·969	30·066	29th	29·734	13th	·272	68·5	86·6	+1·9	62·6	−1·2	74·6	+0·4	24·0	91·5	10th	56·4	2 days	35·1
9	Brahmaputra	Sibsagar	333	29·701	−·019	30·006	29·833	27th	29·556	13th	·277	63·0	77·5	−0·9	58·7	−1·1	68·1	−1·0	18·8	81·8	12th	52·9	22nd	28·9
		Dhubri	115	29·891	−·028	29·966	30·032	29th	29·761	13th	·271	68·0	80·1	+0·1	62·8	−0·8	71·5	−0·4	17·3	83·6	9th	59·8	4 days	23·8
	IV.—Bengal and Orissa		...	...	−·015	...	...	...	...	...	...	...	83·4	+0·7	63·3	−0·1	73·4	+0·3	20·1	...	...	...	...	29·3
6	East Bengal	Chittagong	87	29·889	−·018	29·927	30·044	29th	29·795	13th	·249	76·3	83·9	+1·1	63·1	?	73·5	?	20·8	87·7	10th	57·1	16th	30·6
		Noakhali	43	29·936	?	29·927	30·083	29th	29·838	13th	·245	70·7	82·7	?	59·9	?	71·3	?	22·8	86·9	10th	54·4	16th	32·5
		Comilla	36	29·950	?	29·935	30·095	30th	29·865	13th	·230	73·1	88·2	?	62·4 (a)	?	75·3 (a)	?	25·8	92·3	9th	57·0	15th & 16th	35·3
		Sirajganj	49	29·934	?	29·934	30·079	29th	29·816	13th	·263	68·5	82·8	?	64·1	?	73·7	?	18·7	86·8	9th	57·0	14th	29·8
		Narayanganj	26	29·962	−·013	29·937	30·110	29th	29·857	13th	·253	72·2	83·7	0	66·1	+0·2	74·9	+0·1	17·6	88·1	10th	61·8	16th	26·3
		Barisal	13	29·958	?	29·917	30·108	30th	29·853	13th	·255	78·2	83·9	+1·7	64·5	−0·9	74·2	+0·4	19·4	88·3	10th	60·2	30th	28·1
		Mymensingh	59	29·933	−·011	29·945	30·070	29th	29·836	13th	·234	70·0	81·7	−0·6	63·8	+0·6	72·8	0	17·9	86·5	9th	56·4	17th	30·1
10	Deltaic Bengal	Faridpur	46	29·944	?	29·940	30·096	29th	29·842	13th	·254	69·1	82·8	?	63·3	?	73·1	?	19·5	87·8	10th	58·0	3 days	29·1
		Jessore	33	29·967	−·014	29·948	30·109	30th	29·858	13th	·251	70·8	83·8	+0·5	63·1	−1·1	73·5	−0·3	20·7	88·0	10th	56·1	15th	31·9
		Calcutta	21	29·981	−·021	29·948	30·119	30th	29·878	13th	·241	70·0	82·1	+0·9	63·6	−1·0	72·9	−0·1	18·5	85·9	10th	57·7	16th	28·7
		Saugor Island	25	29·965	−·028	29·935	30·103	30th	29·861	13th	·242	72·4	83·5	+2·1	66·0	−1·0	74·8	+0·6	17·5	86·4	2 days	61·6	16th	24·8
		Krishnagar	47	29·952	?	29·959	30·097	30th	29·856	13th	·241	70·6	83·5	?	61·6	?	72·5	?	21·9	87·2	10th & 12th.	54·2	15th	33·0
		Midnapore	149	29·853	?	29·954	29·986	30th	29·752	13th	·234	69·8	84·9	?	62·2	?	73·6	?	22·7	88·3	13th	56·2	16th	32·1

* Mean of 27 days. (a) Mean of 24 days.

I.

Stations in India, Burma, etc., in November 1898.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 30th November 1898.	Normal rainfall for period, 1st October to 30th November.	Variation from normal of period, 1st October to 30th November.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·60	3·57	−3·22	...	...	...	...	**I.—Burma Coast and Bay Islands.**		
...	...	1	...	...	...	...	...	...	3·2	?	?	91	·871	8·1	11	?	?	9·29	?	?	22·23	?	?	1·82	Car-Nicobar†	Tenasserim and Bay Islands.	1
3	...	3	8	5	1	...	3	7	7·3	7·1	+ 3	83	·861	5·9	7	?	?	2·90	8·97	− 6·07	9·68	21·14	−11·46	0·91	Port Blair		
23	1	4	1	...	...	...	...	1	1·4	1·6	−13	80	·636	4·1	3	?	?	2·00	3·63	− 1·63	9·64	17·17	− 7·53	1·40	Mergui.		
27	1	1	...	...	...	...	...	1	1·1	?	?	82	·703	1·3	1	?	?	1·19	2·13	− 0·94	3·43	12·26	− 8·83	1·05	Tavoy.		
...	8	8	8	2	2	...	...	2	2·2	2·4	− 8	81	·706	3·2	1	2·18	− 1·18	0·25	2·32	− 2·07	6·44	10·42	− 3·98	0·25	Moulmein.		
...	2	10	12	3	1	..	1	1	2·9	4·4	−34	83	·740	2·6	0	3·18	− 3·18	0·01	2·95	− 2·97	3·24	9·72	− 6·48	0·01	Rangoon	Lower Burma.	2
7	2	18	...	...	...	...	...	3	3·5	3·1	+13	84	·745	1·9	0	5·55	− 5·55	0·06	4·21	− 4·15	7·74	12·42	− 4·68	0·03	Bassein.		
...	6	18	4	...	...	1	...	1	10·2	8·6	+19	74	·787	5·2	2	7·10	− 5·10	0·33	7·21	− 6·88	3·16	16·43	−13·27	0·15	Diamond Island.		
...	23	6	1	...	...	...	...	...	2·1	2·2	− 5	88	·715	1·9	0	3·09	− 3·09	0	2·94	− 2·94	6·83	13·38	− 6·55	0	Akyab	Arakan	5
9	10	2	...	...	...	1	1	7	1·1	1·7	−35	85	·695	1·8	0	2·36	− 2·36	0	1·37	− 1·37	1·72	8·13	− 6·41	0	Toungoo	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1·39	− 1·39	...	...	...	...	**II.—Burma Inland.**		
...	11	6	5	...	3	3	2	...	10·6	3·5	+203	68	·606	0·8	0	3·45	− 3·45	0	2·16	− 2·16	1·96	6·40	− 4·44	0	Thayetmyo.	Central Burma.	3
3	3	1	1	...	...	1	6	15	9·1	?	?	69	·604	1·8	0	?	?	0	1·18	− 1·18	3·47	4·22	− 0·75	0	Minbu	Upper Burma.	4
7	2	5	...	3	1	...	...	12	2·9	?	?	87	·710	0·9	0	?	?	0·02	1·13	− 1·11	3·03	5·87	− 2·84	0·02	Yamethin.		
29	...	1	...	...	...	...	...	...	0	?	?	83	·680	2·4	0	?	?	0	1·28	− 1·28	3·34	6·36	− 3·02	0	Mandalay.		
10	17	2	...	...	...	...	1	...	1·8	?	?	93	·656	4·4	0	?	?	0	1·73	− 1·73	6·57	7·88	− 1·31	0	Kindat.		
23	2	4	...	...	...	...	...	1	1·4	?	?	91	·556	2·3	0	?	?	0	0·87	− 0·87	2·30	4·63	− 2·33	0	Bhamo.		
2	6	3	2	2	...	2	7	6	?	?	?	83	·474	?	1	?	?	0·46	?	?	6·64	?	?	0·43	Maymyo	Burma Hill Stations.	4 (a)
1	1	1	1	13	9	4	...	...	?	?	?	76	·439	3·4	1	?	?	0·10	1·27	− 1·17	3·30	6·86	− 3·56	0·10	Taunggyi.		
			Not	rec	orde	d.			?	?	?	92	·459	8·2	0	?	?	0·04	1·24	− 1·20	1·94	4·43	− 2·49	0·04	Lashio.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·18	0·85	−0·67	...	...	...	...	**III.—Assam.**		
27	...	1	2	...	...	...	...	...	1·0	2·1	−52	87	·621	2·8	0	1·86	− 1·86	0·05	1·31	− 1·26	3·59	7·96	− 4·37	0·05	Silchar	Surma.	7
24	6	...	...	...	...	...	...	...	1·1	1·7	−35	99	·575	3·2	2	2·00	0	0·30	0·98	− 0·68	5·60	5·82	−0·22	0·14	Sibsagar	Brahmaputra.	6
1	1	13	14	...	1	...	...	...	4·7	4·9	− 4	85	·587	2·0	1	0·47	+ 0·53	0·20	0·26	− 0·06	4·19	3·76	+ 0·43	0·20	Dhubri.		
...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	0·03	1·01	−0·98	...	...	...	...	**IV.—Bengal and Orissa.**		
8	...	21	...	1	...	...	...	...	2·9	3·0	− 3	88	·657	1·3	0	1·96	− 1·96	0	1·53	− 1·53	5·93	7·77	− 1·84	0	Chittagong	East Bengal.	6
...	11	12	3	1	...	...	...	3	1·2	?	?	90	·677	1·1	0	1·58	− 1·58	0	1.81	− 1·81	11·98	9·51	+ 2·47	0	Noakhali.		
28	2	...	...	...	...	...	...	...	0·4	?	?	79	·645	0·9‡	0	1·88	− 1·88	0	1·14	− 1·14	9·85	6·34	+ 3·51	0	Comilla.		
14	7	3	...	...	...	1	2	3	0·6	?	?	90	·631	1·0‡	0	0·96	− 0·96	0	0·60	− 0·60	11·08	4·83	+ 6·25	0	Sirajganj.		
3	9	4	1	2	1	2	2	6	2·1	1·9	+11	86	·678	1·4	0	1·85	− 1·85	0	1·74	− 1·74	6·00	6·16	− 0·16	0	Narayanganj.		
12	8	5	...	1	..	...	...	4	0·9	?	?	82	·672	0·8	0	1·58	− 1·58	0	1·27	− 1·27	8·29	6·88	+ 1·41	0	Barisal.		
23	...	...	4	2	...	...	...	1	0·3	?	?	89	·662	2·0	0	1·00	− 1·00	0	0·61	− 0·61	12·96	6·23	+ 6·73	0	Mymensingh.		
30	...	...	...	...	...	...	...	...	0·8	?	?	91	·650	0·9	0	1·27	− 1·27	0	1·18	− 1·18	14·72	5·27	+ 9·45	0	Faridpur	Deltaic Bengal.	10
19	4	3	...	...	...	...	1	3	1·2	1·8	−33	85	·640	1·2	0	1·27	− 1·27	0	1·22	− 1·22	5·44	5·77	− 0·33	0	Jessore.		
9	9	3	1	2	...	...	2	4	2·0	3·0	−33	84	·613	1·5	0	1·00	− 1·00	0	0·66	− 0·66	6·48	5·05	+ 1·43	0	Calcutta.		
...	10	17	...	...	...	...	...	3	6·9	6·4	+ 8	86	·684	2·4	0	1·58	− 1·58	0	1·52	− 1·52	20·28	10·66	+ 9·62	0	Saugor Island.		
3	7	2	2	...	1	...	5	10	2·1	?	?	83	·618	1·9	0	0·88	− 0·88	0	0·94	− 0·94	5·55	5·16	+ 0·39	0	Krishnagar.		
13	14	...	...	...	...	...	..	3	0·4	?	?	71	·521	9·7	0	0·96	− 0·96	0	0·63	− 0·63	4·93	4·93	0	0	Midnapore.		

‡ Mean of 29 days. † Wind variables 29.

Table

Abstract of Observations taken at 8 A.M. at 214 Station.

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal.	Bankura	298	29·680	?	29·941	29·805	30th	29·559	13th	·246	67·9	84·2	?	62·2	?	73·2	?	22·0	88·6	12th	57·0	16th	31·6
		Raniganj	334	29·670	?	29·968	29·796	29th	29·553	13th	·243	66·7	84·4	?	60·7	?	72·6	?	23·7	89·3	12th	55·7	15th	33·6
		Burdwan	99	29·914	−·016	29·964	30·050	29th	29·801	13th	·249	70·7	84·6	+1·9	63·7	−0·4	74·2	+0·8	20·9	87·9	12th	59·3	15th	28·6
		Naya Dumka	489	29·509	?	29·977	29·639	30th	29·390	13th	·249	68·0	82·6	?	59·4	?	71·0	?	23·2	85·9	12th	54·0	15th	31·9
		Berhampore	67	29·936	−·028	29·954	30·070	30th	29·827	13th	·243	69·2	82·1	+0·3	64·5	+0·4	73·3	+0·4	17·6	84·5	9th	59·3	15th	25·2
		Rampur Boalia	70	29·926	?	29·947	30·066	29th	29·814	13th	·252	70·0	82·0	?	63·2	?	72·6	?	18·8	85·5	10th & 12th	58·5	15th	27·0
		Malda	72	29·931	?	29·957	30·061	29th	29·806	13th	·255	67·6	82·1	?	60·9	?	71·5	?	21·2	85·3	10th	55·2	14th & 15th	30·1
		Bogra †	61	29·908	?	29·923	30·012	25th	29·828	13th	·184	68·8	82·7	+0·6	63·1	+0·9	72·9	+0·8	19·6	86·5	10th	57·0	14th	29·5
12	North Bengal	Dinajpur	123	29·881	−·006	29·963	30·016	29th	29·762	13th	·254	67·8	82·5	+0·1	60·6	+0·3	71·6	+0·2	21·9	86·3	11th	54·9	15th	31·4
		Rangpur	123	29·890	?	29·971	30·030	29th	29·773	13th	·257					Not	recorded.							
		Jalpaiguri	284	29·770	−·022	29·973	29·843	2 days	29·585	13th	·258	66·7	80·3	−1·4	61·4	+1·8	70·9	+0·2	18·9	85·4	9th	59·1	2 days.	26·3
		Cooch Behar	156	29·847	?	29·965	29·981	29th	29·711	13th	·270	67·4	81·9	?	61·8	?	71·8	?	20·1	85·6	11th	58·6	24th	27·0
17	North Bihar	Purnea	125	29·899	−·002	29·934	30·031	29th	29·775	13th	·256	64·5	81·8	−0·1	59·8	+1·0	70·9	+0·5	22·0	86·2	9th	53·8	14th	32·4
14	Orissa	Balasore	46	29·966	−·008	29·961	30·097	30th	29·857	13th	·240	68·4	84·3	+1·6	61·8	−0·6	73·1	+0·5	22·5	87·4	3 days	56·5	2 days	30·9
		False Point	21	29·982	−·014	29·946	30·135	30th	29·881	13th	·254	72·2	83·9	+2·0	65·0	−0·7	74·5	+0·7	18·9	87·4	15th	60·5	16th	26·9
		Cuttack	80	29·928	−·012	29·953	30·066	30th	29·828	13th	·238	69·7	86·4	+1·4	65·5	−0·6	75·9	+0·4	20·9	90·4	2 days	61·2	16th	29·2
		Shortt's Island	?	29·963	?	?	30·097	30th	29·879	13th	·218	77·7	83·5	?	73·1	?	78·3	?	10·4	89·0	14th	69·0	30th	20·0
		Puri	20	29·966	?	29·949	30·137	30th	29·832	13th	·255	73·1	85·7	?	68·5	?	77·1	?	17·2	89·2	11th	65·1	4days	24·1
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·032	...	...	...	...	...	...	...	83·1	+1·9	57·3	+0·2	70·2	+1·1	25·9	...	...	...	...	35·4
15	Chota Nagpur	Hazaribagh	2,007	27·962	−·025	29·974	28·081	30th	27·861	13th	·220	65·6	79·2	+2·5	57·9	+0·2	68·5	+1·4	21·3	82·7	10th	53·7	21st	29·0
		Ranchi	2,128	27·848	?	29·973	27·965	30th	27·750	13th	·215	66·7	78·7	+2·3	57·2	+1·2	68·0	+1·8	21·5	82·7	12th	53·4	21st	29·3
		Daltonganj	730 ?	29·258	?	29·983	29·377	30th	29·164	16th	·213	60·3	84·0	?	51·8	?	67·9	?	32·2	88·1	12th	48·0	22nd	40·1
		Chaibassa	760	29·234	?	29·975	29·359	30th	29·134	13th	·225	65·5	84·1	+1·6	58·7	−1·3	71·4	+0·2	25·4	88·2	12th	53·4	22nd	34·8
16	South Bihar	Gaya	375	29·627	−·031	29·974	29·756	30th	29·516	13th	·240	66·3	85·6	+3·2	58·9	−0·2	72·3	+1·5	26·7	88·4	2 days	54·8	22nd	33·6
		Dehri	351	29·651	?	29·973	29·779	30th	29·515	13th	·264	65·5	84·2	?	59·8	?	72·0	?	24·4	88·3	10th	56·1	22nd & 23rd	32·2
		Patna	183	29·829	−·034	29·972	29·955	30th	29·687	13th	·268	67·3	82·2	+0·8	61·0	+1·1	71·6	+1·0	21·2	87·8	11th	55·6	14th	32·2
		Arrah	190	29·814	?	29·965	29·945	30th	29·667	13th	·278	65·1	84·2	?	56·8	?	70·5	?	27·4	89·1	10th & 11th	51·7	14th & 22nd	37·4
		Buxar	239	29·766	?	29·970	29·903	30th	29·632	13th	·271	66·7	84·1	?	59·0	?	71·6	?	25·1	87·6	10th & 11th	52·9	22nd	34·7
17	North Bihar	Bhagalpur	160	29·844	?	29·962	29·968	29th	29·723	13th	·245	69·5	83·6	?	59·9	?	71·8	?	23·7	87·2	9th	54·0	14th	33·2
		Darbhanga	166	29·836	−·034	29·963	29·973	29th	29·703	13th	·270	67·7	81·6	+0·8	62·2	+0·2	71·9	+0·5	19·4	86·2	11th	58·4	13th	27·8
		Muzaffarpur	178	29·832	?	29·972	29·955	29th	29·685	13th	·270	67·5	81·0	?	59·9	?	70·5	?	21·1	84·9	10th	55·5	13th	29·4
		Motihari	224	29·791	?	29·983	29·926	27th	29·647	13th	·279	64·7	80·9	?	56·9	?	69·0	?	24·0	86·0	11th	52·9	30th	33·1
		Chapra	181	29·838	?	29·981	29·958	27th & 30th	29·699	13th	·259	66·1	82·7	?	59·3	?	71·0	?	23·4	87·3	11th	54·5	14th	32·8
18	N.-W. P., East	Benares	267	29·751	?	29·987	29·894	30th	29·621	13th	·273	63·3	84·0	+2·0	54·3	−1·3	69·1	+0·4	29·7	88·2	10th & 11th.	47·2	21st	41·0
		Allahabad	309	29·701	−·030	29·979	29·848	30th	29·576	13th	·272	65·0	84·3	+2·2	55·5	+1·1	69·9	+1·7	28·8	89·1	3rd	48·4	30th	40·7
18	N.-W. P. (East Submontane).	Gorakhpur	256	29·743	−·026	29·968	29·863	29th	29·590	13th	·273	66·1	?	?	57·6	+0·1	?	?	?	?	...	53·1	14th & 30th	?
19	South Oudh	Lucknow	368	29·633	−·033	29·981	29·764	30th	29·482	13th	·282	60·7	84·5	+1·7	53·7	+1·8	69·2	+1·8	30·8	89·8	1st	47·7	21st	42·1
20	North Oudh	Bahraich	403	29·595	?	29·977	29·710	27th	29·427	13th	·283	64·4	83·3	?	55·3	?	69·3	?	28·0	88·4	10th	49·0	13th & 30th	39·4
21	N.-W. Provinces (Central).	Cawnpore	416	29·581	−·035	29·972	29·719	30th	29·444	13th	·275	64·3	85·8	+2·7	54·4	−0·9*	70·1	+0·9	31·4	89·8	16th	47·0	21st	42·8
		Mainpuri	516	29·473	?	29·977	29·601	30th	29·335	13th	·266	59·9	85·1	?	53·1	?	69·1	?	32·0	90·3	3rd	47·1	22nd	43·2

† Mean of 25 days.

* Mean of 28 days

1—*continued.*

in India, Burma, etc., in November 1898—continued.

Wind Direction. Number of winds from									Wind Velocity.			Hygrometry, 8 A.M.		Mean cloud amount.	Rainfall.										Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Mean velocity in miles per hour.	Normal.	Percentage variation.	Mean humidity.	Mean vapour tension.		Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 30th November 1898.	Normal rainfall for period 1st October to 30th November.	Variation from normal of period 1st October to 30th November.					
28	1	...	...	...	...	...	...	1	0·3	?	?	79	·542	1·4	0	0·85	− 0·85	0	0·52	− 0·52	2·70	4·34	− 1·64	0	Bankura .	Central Bengal	11
16	1	...	...	...	...	...	7	6	0·8	?	?	75	·496	1	0	0·65	− 0·65	0	0·50	− 0·50	3·24	3·81	− 0·57	0	Raniganj.		
19	7	1	...	...	...	...	1	2	0·3	1·9	−84	76	·574	1·3	0	0·88	− 0·88	0	0·67	− 0·67	3·22	4·28	− 1·06	0	Burdwan.		
23	4	...	...	...	...	...	...	3	0·3	?	?	74	·509	0·8	0	0·60	− 0·60	0	0·37	− 0·37	0·98	4·59	− 3·61	0	Naya Dumka		
22	5	1	...	...	...	...	2	...	0·9	1·7	−47	84	·601	1·5	0	0·63	− 0·63	0	0·56	− 0·56	9·18	4·39	+ 4·79	0	Berhampore.		
21	4	2	...	...	...	...	...	...	1·4	?	?	82	·603	1·1	0	0·53	− 0·53	0	0·31	− 0·31	8·61	4·42	+ 4·19	0	Rampur Boalia.		
...	13	12	...	...	1	...	2	2	1·2	?	?	85	·573	0·6	0	0·42	− 0·42	0	0·20	− 0·20	3·89	4·62	− 0·73	0	Malda.		
			Not	rec	orde	d.			?	?	?	86	·605	0·6	0	0·65	− 0·65	0	0·64	−0·64	15·02	4·38	+10·64	0	Bogra.		
1	8	10	4	1	...	1	3	2	2·4	?	?	83	·564	0·8	0	0·23	− 0·23	0	0·08	− 0·08	2·32	4·63	−2·31	0	Dinajpur .	North Bengal.	12
3	...	14	11	...	...	1	1	...	1·5	?	?	?	?	0·5	0	0·11	− 0·11	0	0·13	− 0·13	5·89	5·57	+ 0·32	0	Rangpur.		
1	11	6	3	1	...	...	1	7	1·0	?	?	85	·564	0·9	1	0·34	+ 0·66	0·16	0·16	0	1·92	5·48	− 3·56	0·14	Jalpaiguri.		
12	2	10	5	1	...	...	...	...	1·0	?	?	84	·563	3·4	1	?	?	0·30	0·07	+ 0·23	2·13	6·05	− 3·92	0·28	Cooch Behar		
12	3	3	4	1	2	2	2	1	1·8	1·2	+50	91	·560	1·2	0	0·19	− 0·19	0·01	0·08	− 0·07	1·50	3·65	− 2·15	0·01	Purnea .	North Bihar.	17
4	8	...	...	...	...	...	1	17	1·8	?	?	83	·578	1·4	0	1·73	− 1·73	0	1·32	− 1·32	12·78	7·45	+ 5·33	0	Balasore .	Orissa.	14
...	8	2	...	...	...	...	...	20	3·3	6·5	−49	83	·657	3·8	0	2·73	− 2·73	0	3·23	− 3·23	19·51	12·42	+ 7·09	0	False Point.		
14	4	5	1	...	...	...	4	2	1·5	1·7	−12	78	·574	2·2	0	1·88	− 1·88	0	1·73	− 1·73	8·11	7·37	+ 0·74	0	Cuttack.		
...	12	3	...	...	...	...	4	11	9·1	?	?	71	·676	1·9	0	?	?	0	2·40	− 2·40	19·87	6·24	+13·63	0	Shortt's Island		
1	22	6	1	...	...	...	...	...	8·1	?	?	77	·631	1·7	1	2·77	−1·77	0·53	3·48	− 2·95	11·05	12·38	− 1·33	0·53	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·03	0·23	− 0·20	...	...	...	...	V.—Gangetic Plain and Chota Nagpur.		
11	2	1	1	1	2	3	8	1	4·5	4·3	+5	64	·405	1·8	0	0·69	−0·69	0	0·29	− 0·29	2·04	3·70	− 1·66	0	Hazaribagh.	Chota Nagpur.	15
8	2	2	1	1	3	2	5	6	3·5	?	?	60	·397	1·4	0	0·80	− 0·80	0	0·43	− 0·43	2·40	3·38	− 0·98	0	Ranchi.		
3	4	1	2	1	12	3	3	1	2·5	?	?	77	·407	0·7	0	0·76	− 0·76	0	0·37	− 0·37	0·94	2·87	− 1·93	0	Daltonganj.		
9	2	2	...	...	1	4	7	5	0·3	?	?	78	·491	0·6	0	0·92	− 0·92	0	0·45	− 0·45	3·28	3·17	+ 0·11	0	Chaibassa.		
9	1	...	...	6	8	4	2	...	2·3	1·2	+91	70	·455	1·2	0	0·53	− 0·53	0	0·38	− 0·38	2·05	2·65	− 0·60	0	Gaya . .	South Bihar.	16
...	1	...	...	...	11	15	1	2	3·5	?	?	72	·452	0·6	0	0·54	− 0·54	0	0·28	− 0·28	1·84	2·91	− 1·07	0	Dehri.		
12	...	...	2	3	3	5	4	1	1·6	1·5	+7	73	·491	0·7	0	0·34	− 0·34	0	0·17	− 0·17	2·26	3·42	− 1·16	0	Patna.		
9	...	...	...	1	5	6	6	3	1·1	?	?	78	·482	0·7	0	0·46	− 0·46	0	0·20	− 0·20	1·26	3·19	− 1·93	0	Arrah.		
8	...	1	5	2	3	1	7	3	2·6	?	?	68	·446	1·1	0	0·42	− 0·42	0	0·46	− 0·46	0·30	3·72	− 3·42	0	Buxar.		
26	1	1	...	...	...	1	...	1	0·7	?	?	75	·536	0·8	0	0·26	− 0·26	0	0·21	− 0·21	0·60	3·01	− 2·41	0	Bhagalpur .	North Bihar.	17
6	1	1	4	3	4	2	4	5	1·3	1·8	−28	85	·572	0·6	0	0·19	− 0·19	0	0·07	− 0·07	1·64	2·91	− 1·27	0	Darbhanga.		
27	...	...	...	1	...	...	1	1	?	?	?	86	·580	0·4	0	0·40	− 0·40	0	0·17	− 0·17	0·61	3·28	− 2·67	0	Muzaffarpur.		
...	1	14	...	...	1	4	3	7	1·4	?	?	92	·566	0*	0	0·20	− 0·20	0	0·13	− 0·13	0·58	3·52	− 2·94	0	Motihari.		
24	...	...	1	1	...	2	2	...	0·9	?	?	79	·506	1·0	0	0·42	− 0·42	0	0·38	− 0·38	0·59	3·46	− 2·87	0	Chapra.		
15	...	1	1	2	...	10	1	...	1·4	2·1	−33	77	·455	1·3	0	0·82	− 0·82	0	0·36	− 0·36	0·04	2·66	− 2·62	0	Benares .	N.-W. P., East.	18
2	1	2	5	3	2	5	5	5	2·7	2·0	+35	70	·447	1·7	1	0·45	+ ·055	0·23	0·17	+ 0·06	0·23	2·00	− 1·77	0·17	Allahabad.		
8	5	4	...	1	2	4	2	4	1·0	0·9	+11	77	·484	1·2	0	0·18	− 0·18	0	0·10	− 0·10	0·05	3·87	− 3·82	0	Gorakhpur .	N.-W. P. (East Submontane).	23
26	...	1	...	1	...	...	2	...	1·1	1·4	−21	79	·421	0·6	0	0·09	− 0·09	0·01	0·05	− 0·04	3·72	0·88	+ 2·84	0·01	Lucknow .	South Oudh.	19
19	2	1	3	2	...	1	...	2	0·8	?	?	72	·440	0·5	2	?	?	0·23	0	+ 0·23	0·24	1·69	− 1·45	0·12	Bahraich .	North Oudh	20
13	3	2	4	2	...	1	5	...	1·6	?	?	65	·395	0·1	0	0	0	0·05	0·15	− 0·10	0·16	1·52	− 1·36	0·05	Cawnpore .	N.-W. Provinces (Central).	21
12	4	1	3	2	1	...	7	...	1·6	?	?	63	·330	0·9	0	?	?	0·05	0	+ 0·05	0·05	0·82	− 0·77	0·05	Mainpuri.		

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of Districts.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Mean actual pressure (reduced to 32°).	Pressure, 8 A.M., in inches. Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas		...	...	−·030	...	...	...	...	...	...	..	81·2	+0·7	49·4	+0·1	65·4	+0·4	31·8	...	...	...	...	42·0
24	N.-W. Provinces, West (Submontane).	Bareilly	568	29·431	?	29·994	29·550	30th	29·262	13th	·288	60·0	81·7	+0·8	52·2	0	66·9	+0·4	29·5	85·9	1st	44·7	20th	41·2
		Dehra Dun	2,233	27·735	−·040	30·012	27·855	27th	27·556	13th	·299	56·7	75·4	+1·1	50·6	−0·8	63·0	+0·2	24·8	79·5	3rd & 10th.	47·0	15th	32·5
		Roorkee	887	29·091	−·030	30·000	29·206	27th	28·908	13th	·298	55·9	80·2	−0·2	48·4	−0·8	64·3	−0·5	31·8	83·8	3days	42·5	30th	41·3
22	N.-W. P., West	Meerut	738	29·242	−·031	29·992	29·361	30th	29·085	13th	·276	55·9	81·7	+0·6	49·8	+0·2	65·8	+0·4	31·9	86·2	1st	44·1	20th	42·1
26	South-East Punjab.	Delhi	718	29·268	−·030	29·989	29·392	30th	29·123	13th	·269	60·8	82·9	−0·1	56·3	+0·9	69·6	+0·4	26·6	89·2	13th	49·9	13th	39·3
28	Central Punjab.	Lahore	702	29·290	−·026	30·010	29·418	28th	29·134	13th	·284	55·0	81·6	+0·3	49·3	?	65·5*	?	32·3	86·6	1st	43·2	20th	43·4
27	South Punjab	Sirsa	662	29·324?	−·032?	29·990?	29·467	30th	29·206	13th	·261	58·3	85·3*	+1·0	48·1	+0·1	66·8	+0·6	37·2	90·3	3 days	42·7	29th	47·6
		Patiala	818	29·172	?	30·003*	29·278	30th	29·056	14th	·222	58·5*	81·9*	?	49·3*	?	65·6*	?	32·6	85·1	3 days	44·5	21st	40·6
29	Punjab (Submontane).	Ludhiana	812	29·167	−·028	30·002	29·283	27th & 30th	29·012	13th	·271	55·6	80·9	+0·5	50·5	+0·4	65·7	+0·5	30·4	84·1	1st & 2nd.	44·6	3 days	39·5
		Sialkot	830	29·162	?	30·018	29·279	27th	29·005	13th	·274	55·1	81·3	+0·7	48·8	+0·2	65·1	+0·5	32·5	86·6	1st	42·6	20th	44·0
		Umballa	892	29·093	?	30·004	29·210	27th	28·918	13th	·292	55·4	83·4	?	46·9	?	65·2	?	36·5	87·5	10th	41·0	21st & 30th	46·5
31	North Punjab	Rawalpindi	1,643	28·309	−·023	30·043	28·424	28th	28·164	13th	·260	48·2	78·5	+1·9	42·8	+0·6	60·7	+1·3	35·7	84·1	1st	38·4	29th	45·7
	VII.—Indus Valley and N.-W. Rajputana.		...	...	−·032	...	...	...	...	...	...	...	86·2	+1·8	52·6	+0·5	69·4	+1·2	33·5	...	...	...	...	45·0
31	North Punjab	Peshawar	1,110	28·916	−·027	30·038	29·055	28th	28·750	13th	·305	50·0	77·6	+0·6	43·0	−1·2	60·4	−0·3	34·6	81·1	18th	37·9	30th	43·2
32	West Punjab	Khushab	612	29·406	?	30·032	29·534	28th	29·244	13th	·290	55·1	82·9	?	46·4	?	64·7	?	36·5	85·7	1st	40·4	20th	45·3
		Montgomery	558	29·444	−·030	30·004	29·585	28th	29·289	13th	·296	58·4	83·1	?	48·6	?	65·9	?	34·5	90·0	1st	44·0	28th	46·0
		D. I. Khan	594	29·443	−·026	30·024	29·577	28th	29·287	13th	·290	54·2	82·2	?	45·7	−1·1	64·0	?	36·5	86·3	19th	41·5	6th & 7th.	44·8
		Mooltan	420	29·591	−·038	30·008	29·751	28th	29·428	13th	·323	57·2	85·2	+1·1	50·9	−0·7	68·1	+0·2	34·3	91·3	1st	46·9	6th	44·4
47	Sind	Jacobabad	186	29·826	−·035	29·985	29·978	28th	29·667	14th	·311	58·2	89·0	+3·1	49·5	+0·1	69·3	+1·6	39·5	94·5	2nd & 23rd.	42·5	6th	52·0
		Hyderabad	96	29·928	?	29·981	30·073	28th	29·783	13th	·295	67·6	89·2	+2·0	60·8	+1·6	75·0	+1·8	28·4	97·1	1st & 14th.	52·5	3rd	44·6
		Kurrachee	30	29·989	−·035	29·971	30·132	30th	29·864	3rd	·268	71·6	90·0	+1·2	63·6	+2·4	76·8	+1·8	26·4	94·4	4 days	58·4	6th	36·0
51	West Rajputana	Bickaneer	771	29·224	?	29·996	29·382	28th	29·082	14th	·300	64·7	86·8	+2·9	57·8	+0·6	72·3	+1·8	29·0	93·2	2nd	52·6	7th	40·6
		Pachpadra	380	29·615	?	29·975	29·772	28th	29·493	3rd	·279	59·8	91·5	?	54·0	?	72·8	?	37·5	99·6	1st	48·1	7th	51·5
		Jodhpore	782	29·204	?	29·976	29·357	30th	29·071	2nd	·286	68·1	90·4	?	58·7	?	74·6	?	31·7	97·1	1st & 2nd.	50·2	13th	46·9
	VIII.—East Rajputana, Central India and Gujarat.		...	...	−·039	...	...	...	...	...	...	...	89·5	+4·0	61·1	+4·2	75·3	+4·2	28·5	...	...	...	...	41·6
50	East Rajputana	Jeypore	1,431	28·562	−·038	30·004	28·704	30th	28·410	3rd	·294	65·6	87·8	+3·2	57·5	+4·5	72·7	+3·9	30·3	94·5	2nd	49·2	30th	45·3
		Kotah	?	29·193	?	?	29·316	30th	29·024	3rd	·292	68·0	89·9	?	61·1	?	75·5	?	28·8	96·5	3rd	55·5	30th	41·0
		Sambhar	1,254	28·729	−·040	30·004	28·884	30th	28·585	3rd	·299	60·8	87·0	+4·5	54·4	+2·5	70·7	+3·5	32·6	94·5	2nd	47·9	8th & 30th.	46·6
		Ajmere	1,611	28·377	−·048	30·025	28·522	30th	28·245	3rd	·277	60·2	87·0	+3·9	54·3	+4·9	70·7	+4·4	32·7	93·4	2nd	46·8	29th	46·6
		Oodeypore	1,925	28·075	?	30·009	28·213	30th	27·960	3rd	·253	67·4	87·2	?	57·1	?	72·2	?	30·1	93·0	1st	50·4	20th & 21st.	42·6
		Deesa	466	29·518	−·042	29·952	29·663	30th	29·406	3rd	·257	73·2	95·4	+5·0	62·3	+5·5	78·9	+5·3	33·1	99·3	1st	56·1	29th	43·2
46	Kathiawar and Cutch.	Bhuj	395	29·598	−·030	29·955	29·747	30th	29·496	3rd	·251	75·6	92·8	+4·5	66·3	+4·3	79·6	+4·4	26·5	99·3	1st	58·5	8th	40·8
		Rajkot	429	29·537	−·049	29·927	29·669	28th	29·449	3rd	·220	75·1	93·8	+3·9	64·7	+6·2	79·3	+5·1	29·1	100·4	2nd	56·0	22nd	44·4
		Veraval	?	29·940	?	29·900	30·069	30th	29·830	9th	·239	76·5	89·5	?	70·2	?	79·8	?	19·3	96·1	6th & 21st	64·3	21st & 22nd.	31·8
		Bhavnagar Para	35	29·940	?	29·921	30·083	30th	29·841	3rd	·242	75·1	92·6	?	66·4	?	79·5	?	26·2	97·6	1st & 3rd.	56·7	22nd	40·9
49	Central India	Nowgong	757	29·247	−·037	29·999	29·388	30th	29·127	3rd	·261	62·1	82·9	?	55·7	+3·8	69·3	?	27·2	88·5	3rd	47·0	21st	41·5
		Indore	1,823	28·167	−·020	29·984	28·309	30th	28·068	3rd	·241	68·5	86·5	+4·7	57·6	+3·8	72·1	+4·3	28·9	90·2	2nd	49·6	21st	40·6
		Neemuch	1,630	28·378	−·045	30·010	28·516	30th	28·254	3rd	·262	68·7	88·1	+4·7	57·8	+3·6	72·9	+4·2	30·3	93·3	20th	50·4	21st	42·9

* Mean of 29 days.

I—*continued.*

in India, Burma, etc., in November 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 30th November 1898.	Normal rainfall for period 1st October to 30th November.	Variation from normal of period, 1st October to 30th November.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·17	0·15	+0·04	...	...	...	...	**VI.—Upper Sub-Himalayas.**		
23	...	2	1	1	...	1	...	2	0·7	1·7	− 59	76	·389	0·6	1	0·27	+0·73	0·19	0·13	+ 0·06	0·19	1·28	− 1·09	0·19	Bareilly	N.-W. Provinces, West (Submontane).	24
25	...	...	...	...	1	1	2	1	1·2	1·7	− 29	68	·314	0·7	2	0·66	+1·40	1·02	0·37	+0·65	1·02	1·36	−0·34	0·83	Dehra Dun.		
28	1	...	1	...	...	...	...	...	0·8	1·1	− 27	75	·337	0·5	1	0·64	+0·36	0·46	0·16	+ 0·30	0·46	0·59	− 0·13	0·46	Roorkee.		
22	...	3	...	1	...	1	3	...	1·2	1·3	− 8	64	·288	0·3	0	0·36	−0·36	0·04	0·08	− 0·04	0·04	0·50	− 0·46	0·04	Meerut	N.-W. P., West.	22
4	...	2	5	3	...	...	9	7	3·3	2·3	+ 43	46	·251	0·7	1	0·18	+0·82	0·31	0·07	+ 0·24	0·31	0·15	+ 0·16	0·31	Delhi	South-East Punjab, Central Punjab.	26
25	1	2	1	...	...	...	...	1	1·0	1·4	− 29	61	·264	0·4	0	0·27	−0·27	0	0·10	− 0·10	0	0·36	− 0·36	0	Lahore		23
...	3	3	5	10	...	2	2	5	6·2	2·0	+210	48	·237	0·2	0	0·09	−0·09	0	0·01	− 0·01	0	0·15	−0·15	0	Sirsa	South Punjab.	27
19	...	9	...	...	...	1	...	...	1·4‡	?	?	66*	·325*	0·1	0	?	?	0	?	?	0	?	?	0	Patiala.		
23	...	...	...	2	2	...	1	2	1·6	0·8	+100	55	·246	0·6	0	0·36	−0·36	0	0·09	− 0·09	0	0·49	− 0·49	0	Ludhiana	Punjab (Submontane).	29
13	1	9	5	...	...	...	...	2	1·0	1·0	0	60	·263	1·0	0	0·18	−0·18	0	0·09	− 0·09	0	0·40	− 0·40	0	Sialkot.		
24	1	...	2	1	...	...	1	1	1·1	?	?	70	·301	0·1	0	?	?	0	0·18	− 0·18	0	0·49	− 0·49	0	Umballa.		
30	...	...	...	...	...	...	...	...	1·0	1·1	− 9	58	·196	2·1	0	0·36	−0·36	0	0·35	− 0·35	0	0·90	− 0·90	0	Rawalpindi.	North Punjab.	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0·16	−0·16	...	...	...	...	**VII.—Indus Valley and N.-W. Rajputana.**		
24	...	...	...	1	3	1	...	1	1·7	2·1	− 19	61	·219	1·5	0	0·64	−0·64	0	0·57	− 0·57	0	0·68	− 0·68	0	Peshawar	North Punjab.	31
15	1	7	4	1	1	1	...	...	2·4	?	?	40	·178	0·7	0	0·40	−0·40	0	0·33	− 0·33	0	0·40	− 0·40	0	Khushab	West Punjab.	32
12	1	3	5	6	1	1	1	...	3·7	?	?	45	·218	0·3	0	0·20	−0·20	0	0·07	− 0·07	0	0·22	− 0·22	0	Montgomery.		
23	1	1	...	...	...	...	1	4	1·0	0·7	+ 43	64	·270	1·0	0	0·45	−0·45	0	0·21	− 0·21	0	0·26	− 0·26	0	D. I. Khan.		
19	3	7	...	...	...	...	...	1	0·9	1·5	− 40	59	·282	0	0	0·09	−0·09	0	0·10	− 0·10	0	0·10	− 0·10	0	Mooltan.		
19	2	...	1	...	...	1	2	5	1·7	1·6	+ 6	50	·247	0·4	0	0	0	0	0·16	− 0·16	0	0·16	− 0·16	0	Jacobabad	Sind.	7
8	11	2	...	...	...	1	...	8	?	6·1	?	40	·277	1·5	0	0·20	−0·20	0	0·06	− 0·06	0	0·06	− 0·06	0	Hyderabad.		
7	2	12	7	1	...	...	...	1	5·9	7·9	− 25	47	·366	0·8	0	0·09	−0·09	0	0·09	− 0·09	0	0·09	− 0·09	0	Kurrachee.		
...	5	7	4	...	2	3	4	5	4·4	2·4	+ 83	67	·418	0·9	0	?	?	0	0·08	− 0·08	0	0·18	− 0·18	0	Bickaneer	West Rajputana	1
2	5	10	5	2	1	1	...	1	4·4	2·1	+110	45	·236	1·1	0	?	?	0	0	0	0	0·05	− 0·05	0	Pachpadra. §		
12	3	13	1	...	...	...	...	1	2·3	?	?	32	·226	1·2	0	?	?	0	0·13	− 0·13	0	0·26	− 0·26	0	Jodhpore.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·05	0·23	−0·18	...	...	...	...	**VIII.—East Rajputana, Cen. India and Gujarat.**		
8	4	6	3	...	...	3	2	4	2·9	3·0	− 3	44	·276	1·4	0	0·20	−0·20	0	0·24	− 0·24	0	0·54	− 0·54	0	Jeypore	East Rajputana.	50
17	2	2	1	2	...	1	1	4	2·2	?	?	42	·289	0·7	0	?	?	0·01	0·03	− 0·02	0·01	0·53	− 0·52	0·01	Kotah.		
18	7	2	1	...	...	...	1	1	2·9	3·4	− 15	47	·252	1·1	0	0·30	−0·30	0	0·19	− 0·19	0	0·36	− 0·36	0	Sambhar.		
26	1	1	...	...	...	2	...	...	2·0	1·4	+ 43	58	·305	1·5	0	0·27	−0·27	0	0·19	− 0·19	0·05	0·50	− 0·45		Ajmere.		
14	5	1	...	...	...	...	1	9	3·2	?	?	44	·299	0·4	0	?	?	0	?	?	0	?	?	0	Dodeypore.		
...	...	3	16	6	2	1	1	1	6·2	7·5	− 17	38	·319	0·9	0	0·18	−0·18	0	0·16	− 0·16	0	0·51	− 0·51	0	Deesa.		
6	5	5	5	2	...	1	3	3	6·4	4·7	+ 36	45	·408	2·3	0	?	?	0	0·02	− 0·02	0	0·37	− 0·37	0	Bhuj	Kathiawar and Cutch.	46
3	9	...	11	...	1	1	5	...	18·0?	4·9	+267?	46	·404	2·8	1	0·18	+0·82	0·10	0·36	− 0·26	0·10	0·81	−0·71	0·10	Rajkot.		
...	10	14	2	1	...	...	...	3	4·9	?	?	56	·517	2·2	0	?	?	0	0·87	− 0·87	0	1·95	− 1·95	0	Veraval.		
1	2	5	3	...	...	4	6	9	5·9	?	?	49	·436	1·7	0	?	?	0·02	?	?	0·02	?	?	0·02	Bhavnagar Para.		
8	1	1	10	...	...	6	4	...	1·4	1·0	+ 40	76	·428	1·5	2	0·55	+1·45	0·42	0·25	+ 0·17	0·87	1·42	−0·55	0·32	Nowgong	Central India.	49
9	4	6	...	1	3	5	...	2	2·0	2·0	0	57	·400	1·1	0	0·73	−0·73	0	0·45	− 0·45	0·18	1·90	−1·72	0	Indore.		
6	4	12	2	1	...	2	2	1	5·0	7·5	− 33	46	·310	1·1	0	0·18	−0·18	0	0·21	− 0·21	0·08	0·70	−0·62	0	Neemuch.		

‡ Mean of 28 days. § Wind observation of 27 days.

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
45	Gujarat	Surat	39	29·934	−·038	29·916	30·078	30th	29·841	3rd	·237	74·5	93·7	+3·8	67·1	+4·8	80·4	+4·3	26·6	97·7	1st & 2nd.	58·0	22nd	39·7
		Ahmedabad	164	29·813	?	29·928	29·965	30th	29·705	3rd	·260	74·8	93·5	?	67·6	?	80·6	?	25·9	97·7	3rd	62·1	23rd & 24th.	35·6
22	N.-W. P., West	Agra	555	29·438	−·048	29·980	29·571	30th	29·292	3rd	·279	63·4	86·5	+2·4	57·4	+2·5	72·0	+2·5	29·1	92·0	1st & 2nd.	51·9	21st	40·1
21	N.-W.P., Central	Jhansi	858	29·145	−·029	29·991	29·291	30th	29·020	3rd	·271	68·7	87·8	+3·7	60·7*	+4·0	74·3	+3·9	27·1	95·1	3rd	50·9	30th	44·2
	IX.—Deccan	...	...	...	−·021	...	...	...	...	...	...	...	86·3	+3·2	60·5	+1·3	73·4	+2·3	25·9	...	...	...	...	37·0
23	Bombay (Deccan)	Belgaum	2,539	27·435	−·020	29·933	27·543	30th	27·284	8th	·259	69·7	81·7	+0·1	61·4	−0·2	71·6	−0·1	20·3	85·3	4th & 5th.	53·9	23rd	31·4
		Sholapur	1,590	28·377*	−·017*	29·939*	28·495	29th	28·251	6th	·244	73·3*	88·3†	+1·9	63·2	+0·6	76·0†	+1·3	25·6	92·2	4th	56·0	21st & 22nd.	36·2
		Poona	1,840	28·136	−·023	29·958	28·255	30th	28·015	6th	·240	68·9	89·0	+3·8	59·5	−0·2	74·3	+1·8	29·5	92·0	2nd & 3rd.	52·4	22nd	39·6
		Bijapur	1,946	28·019	?	29·936	28·139	29th	27·883	8th	·256	71·4	85·3	?	61·5	?	73·4	?	23·8	89·7	8th	54·1	4 days.	35·6
40	Khandesh	Malegaon	1,430	28·544	−·036	29·958	28·684	30th	28·469	9th	·215	71·0	90·0	+4·3	59·4	+2·6	74·7	+3·5	30·6	94·4	3rd & 4th.	49·5	21st	44·9
		Ahmednagar	2,152	27·833	?	29·957	27·946	30th	27·739	8th	·207	70·9	87·7	?	56·7	?	72·2	?	31·0	96·3	10th	47·9	22nd	48·4
41	Berar	Akola	930	29·059	−·023	29·967	29·207	30th	28·973	8th	·234	69·7	91·0	+5·1	59·0	+2·1	75·0	+3·6	32·0	93·9	3rd & 4th.	51·1	23rd	42·8
		Amraoti	1,215	28·776	−·016	29·972	28·923	30th	28·697	8th	·226	72·5	89·9	+4·7	63·9?	+3·2?	76·9?	+4·0	26·0	92·7	4th	57·3	26th	35·4
42	Central Provinces (West).	Khandwa	1,044	28·952	−·010	29·983	29·104	30th	28·868	3rd	·236*	69·7	91·7	+6·4	59·2	+3·5	75·5	+5·0	32·5	94·2	5 days	49·6	22nd	44·6
		Hoshangabad	1,006	28·998	−·019	30·002	29·163	30th	28·916	3rd	·247	65·9	86·6	+3·2	59·7	+3·1	73·2	+3·2	26·9	89·7	4th & 17th	49·3	21st	40·4
		Nagpur	1,025	28·974	−·010	29·985	29·123	30th	28·893	8th	·230	68·7	88·1	+4·1	61·3	+1·6	74·7	+2·9	26·8	91·6	17th	53·2	22nd	38·4
43	Central Provinces (Central).	Chanda	634	29·377	−·026	29·979	29·527	30th	29·286	6th	·241	68·0	87·5	+3·1	57·9	?	72·7	?	29·6	90·7	13th & 17th.	50·7	23rd	40·0
		Seoni	2,033	27·964	−·006	29·992	28·103	30th	27·892	13th	·211	66·6	83·9	+3·8	56·8	+1·7	70·4	+2·8	27·1	87·8	16th	50·0	22nd	37·8
		Jubbulpore	1,327	28·660	−·034	29·997	28·809	30th	28·576	13th	·233	62·8	84·6	+3·8	54·5	+2·2	69·6	+3·0	30·1	88·9	5th	45·9	22nd	43·0
		Saugor	1,807	28·200	−·016	29·995	28·341	30th	28·105	13th	·236	71·1	85·1	+4·4	61·6?	?	73·4?	?	23·5	89·3	3rd & 5th	56·1	23rd	33·2
49	Central India	Sutna	1,040	28·956	−·029	29·999	29·105	30th	28·844	13th	·261	64·7	83·8	+3·7	56·0	+3·2	69·9	+3·5	27·8	87·4	3rd & 16th	48·3	21st & 22nd	39·1
44	Central Provinces (East).	Raipur	970	29·030	−·012	29·983	29·175	30th	28·957	13th	·216	68·2	85·0	+2·9	60·9	+0·7	73·0	+1·8	24·1	89·3	12th	57·3	23rd	32·0
		Sambalpur	486	29·529	−·022	29·983	29·678	30th	29·440	13th	·238	67·7	84·9	+1·7	60·1	−2·3	72·5	−0·3	24·8	88·6	12th	54·2	21st	34·4
39	Hyderabad (North).	Aurangabad	1,865																					
		Indur	?				Not recorded.					71·6	85·6	?	59·7	?	72·6	?	25·9	87·8	4th & 18th.	53·1	23rd	34·7
		Bidar	2,165?	27·806?	?	29·932?	27·923	30th	27·684	6th	·239	72·5	83·6	?	64·6	?	74·1	?	19·0	87·4	1st	58·2	18th	29·2
53	Hyderabad (South).	Gulbarga	1,502	28·506?	?	29·979?	28·621	30th	28·356	6th	·265	71·5	87·1	?	62·1	?	74·6	?	25·0	90·1	4th	54·9	2nd	35·2
		Raichur	1,309	28·649	?	29·925	28·759	29th	28·503	7th	·256	73·8	86·6	?	67·9	?	77·3	?	18·7	89·6	1st	60·7	19th	28·9
		Hyderabad (Deccan).	1,690	28·285	−·028	29·956	28·404	30th	28·146	6th	·258	69·8	84·1	+1·2	62·7	+0·6	73·4	+0·9	21·4	88·4	3 days	55·3	24th	33·1
		Secunderabad	1,787	28·181	−·026	29·954	28·301	29th & 30th	28·052	6th	·249	69·0	85·0	+2·1	62·7	+0·6	73·9	+1·4	22·3	88·6	1st & 4th.	56·2	19th	32·4
		Hanamconda	?	29·108	?	?	29·236	30th	28·978	6th	·258	72·0	84·0	?	64·0	?	74·0	?	20·0	87·0	1st	58·2	19th & 23rd.	28·8
	X.—West Coast	.	...	...	−·030	...	...	...	...	...	...	...	86·9	+0·4	73·0	+0·8	80·0	+0·6	13·9	...	...	...	...	23·2
37	Konkan	Bombay	37	29·926	−·027	29·903	30·052	30th	29·791	8th	·261	78·3	88·9	+2·4	75·5	+2·4	82·2	+2·4	13·4	92·5	9th & 10th.	70·5	25th	22·0
		Ratnagiri	110	29·827	−·016	29·876	29·926	30th	29·675	8th	·251	78·8	91·3	+0·9	72·2	+2·3	81·8	+1·6	19·1	95·4	28th	66·9	20th	28·5
		Mormugao	60	29·887	?	29·883	29·975	28th	29·723	8th	·252	75·1	86·1	?	72·8	?	79·5	?	13·3	89·0	8th	67·3	26th	21·7
		Goa	199	29·738	?	29·875	29·827	29th	29·589	8th	·238	77·1	86·3	?	73·1	?	79·7	?	13·2	89·0	4 days	68·0	5 days	21·0
		Karwar	44	29·884	−·029	29·860	29·979	29th	29·707	8th	·272	72·5	87·5	+0·6	69·9	+0·4	78·7	+0·5	17·6	90·3	3 days	63·5	20th	26·8
33	Malabar	Cochin	10	29·906	−·038	29·844	29·971	30th	29·787	7th	·184	77·8	87·1	+0·2	74·3	+0·1	80·7	+0·2	12·8	91·5	28th	68·7	19th	22·8
		Calicut	27	29·889	−·039	29·846	29·953	30th	29·759	7th	·194	77·2	86·0	−1·1	72·9	−0·2	79·5	−0·7	13·1	88·3	4 days.	66·0	18th	22·3
		Mangalore	65	29·863	−·030	29·861	29·938	30th	29·685	8th	·253	77·8	86·7	−0·5	72·7	−0·1	79·7	−0·3	14·0	90·8	3 days	67·0	25th	23·8
		Trivandrum	198	29·719	?	29·850	29·778	30th	29·597	6th	·181	76·6	82·0	?	73·8	?	77·9	?	8·2	88·5	9th	68·5	21st	20·0

* Mean of 26 days.
† " 25 "

I—*continued.*

in India, Burma, etc., in November 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 30th November 1898.	Normal rainfall for period, 1st October to 30th November.	Variation from normal of period, 1st October to 30th November.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
12	3	4	5	4	2	...	...	...	1·4	5·9	− 76	62	·532	1·2	1	0·55	+0·45	0·13	0·19	− 0·04	0·13	1·70	− 1·57	0·13	Surat	Gujarat.	45
5	1	9	9	2	3	1	...	...	4·4	P	P	44	·375	2·4	0	P	P	0	0·21	− 0·21	0	0·83	− 0·83	0	Ahmedabad		
2	...	10	...	4	...	6	..	8	3·7	2·5	+ 48	53	·312	0·2	0	0·18	−0·18	0	0·05	− 0·05	0	0·52	− 0·52	0	Agra	N.-W. P., West	22
17	...	1	1	1	...	7	1	2	1·6	1·8	− 11	49	·351	0·9	1	0·36	+0·64	0·23	0·12	+ 0·11	0·23	0·82	− 0·59	0·20	Jhansi	N.W.P., Central	21
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·63	0·91	−0·41	...	...	...	...	IX.—Deccan.		
6	3	4	10	6	1	...	...	...	P	11·7	P	70	·513	3·4	2	2·73	− 0·73	1·18	2·11	− 0·93	5·65	8·50	−2·85	0·73	Belgaum	Bombay (Deccan).	38
1	1	11	6	5	...	1	...	1	12·4†	7·7	+ 61	52*	·433*	3·6*	1	1·73	− 0·73	0·39	1·15	− 0·76	3·21	6·25	− 3·04	0·39	Sholapur.‡		
9	...	1	8	8	...	1	1	2	7·0	5·8	+ 21	61	·439	2·6	1	2·64	− 1·64	0·45	1·31	− 0·86	1·38	6·11	− 4·73	0·31	Poona.		
3	...	4	13	8	1	...	...	1	3·3	P	P	72	·553	2·7	4	2·20	+ 1·80	2·91	1·14	+ 1·77	10·19	4·66	+ 5·53	1·93	Bijapur.		
5	...	2	3	1	...	6	10	3	8·2	4·0	+105	57	·444	2·6	1	1·75	− 0·75	0·46	0·64	− 0·18	0·46	3·48	− 3·02	0·41	Malegaon	Khandesh.	40
10	1	3	4	5	4	1	...	2	7·6	P	P	60	·458	3·2	0	P	P	0·02	0·97	− 0·95	0·48	4·31	− 3·83	0·02	Ahmednagar.		
5	...	9	5	7	4	...	...	...	4·3	3·4	+ 26	51	·378	2·6	1	1·18	− 0·18	0·17	0·75	− 0·58	0·42	4·25	− 3·83	0·17	Akola	Berar.	41
...	3	11	10	2	2	1	1	...	6·2	3·0	+107	47	·375	2·8	0	1·27	− 1·27	0·03	0·62	− 0·59	0·03	3·50	− 3·47	0·03	Amraoti.		
14	...	4	8	3	...	1	...	...	3·6	2·6	+ 38	49	·356	1·7	0	1·09	− 1·09	0	0·31	− 0·31	0	2·04	− 2·04	0	Khandwa	Central Provinces (West).	42
12	...	10	8	...	...	...	...	...	2·2	1·9	+ 16	62	·400	1·6	0	0·91	− 0·91	0	0·61	− 0·61	0	2·43	− 2·43	0	Hoshangabad.		
25	...	4	1	...	...	...	...	...	3·3	4·0	− 18	57	·406	2·5	0	1·09	− 1·09	0	0·90	− 0·90	0·15	3·85	− 3·70	0	Nagpur.		
18	3	7	1	1	...	...	...	...	1·6	1·8	− 11	71	·500	2·6	0	P	P	0	1·12	− 1·12	0·17	3·36	− 3·19	0	Chanda	Central Provinces (Central)	43
...	5	11	2	3	2	6	...	1	1·9	2·6	− 27	53	·352	1·3	0	0·82	− 0·82	0	0·60	− 0·60	0·97	2·96	− 1·99	0	Seoni.		
1	1	2	1	11	12	1	1	...	2·0	1·8	+ 11	67	·391	1·7	0	1·27	−1·27	0	0·50	− 0·50	0·16	2·57	− 2·41	0	Jubbulpore.		
...	3	6	4	7	6	8	1	...	4·2	2·3	+ 83	42	·318	1·2	0	0·55	− 0·55	0	0·45	− 0·45	0	1·90	− 1·90	0	Saugor.		
6	8	3	1	3	...	...	4	5	3·3	3·2	+ 3	56	·349	0·6	0	0·73	− 0·73	0	0·30	− 0·30	0·05	2·67	− 2·62	0	Sutna	Central India	49
19	1	5	1	2	1	...	1	...	3·1	3·3	− 6	62	·434	2·2	0	1·82	− 1·82	0	0·52	− 0·52	1·19	2·81	− 1·62	0	Raipur	Central Provinces (East).	44
...	12	15	1	...	...	...	...	1	2·3	1·4	− 64	74	·502	1·9	0	P	P	0	0·65	− 0·65	0·88	2·69	− 1·81	0	Sambalpur.		
28	1	2	3	...	1	...	...	...	3·0	P	P	72	·565	3·0	1	P	P	0·97	1·06	− 0·09	1·29	3·69	− 2·40	0·93	Aurangabad	Hyderabad (North).	39
...	...	8	11	7	...	3	1	...	5·2	P	P	68	·542	2·2	3	P	P	0·66	1·15	− 0·49	2·03	4·80	− 2·77	0·30	Indur.		
14	...	7	7	2	...	...	...	...	10·7	P	P	63	·491	2·6	1	P	P	0·54	0·64	− 0·10	2·96	3·70	− 0·74	0·49	Bidar.		
...	4	4	18	1	1	...	1	1	8·6	P	P	69	·587	2·8	1	P	P	0·30	0·80	− 0·50	0·72	5·58	− 4·86	0·21	Gulbarga	Hyderabad (South).	53
19	...	1	6	4	...	...	...	...	3·9	P	P	75	·556	3·4	4	P	P	2·97	1·76	+ 1·21	3·53	4·84	− 1·31	2·00	Raichur.		
8	...	3	15	4	...	...	...	...	4·6	3·5	+ 31	71	·509	3·1	3	P	P	0·95	1·76	− 0·81	1·48	4·84	− 3·36	0·36	Hyderabad (Deccan).		
19	6	1	...	...	3	...	...	1	4·6	P	P	76	·603	3·1	4	P	P	3·69	P	P	8·15	P	P	3·00	Secunderabad.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4·04	3·07	+0·97	...	...	...	...	Hanamconda.		
...	3	10	15	2	...	...	...	...	8·7	9·9	− 12	75	·733	2·1	1	1·09	− 0·09	0·13	0·66	− 0·53	0·61	3·13	− 2·52	0·12	X.—West Coast.		
6	...	1	13	9	1	...	...	...	4·8	9·0	− 47	62	·608	1·9	0	1·18	− 1·18	0·16	0·50	− 0·34	2·14	4·78	− 2·64	0·05	Bombay	Konkan.	37
2	...	3	7	18	...	...	...	...	7·4	P	P	83	·736	1·9	4	P	P	2·56	1·24	+ 1·32	6·89	8·25	− 1·36	1·07	Ratnagiri.		
...	2	11	16	1	...	...	...	...	7	P	P	73	·675	2·9	4	P	P	2·84	1·45	+1·39	9·04	7·42	+ 1·62	0·99	Mormugao.		
3	1	7	14	1	2	1	...	1	3·0	P	P	85	·672	2·6	4	3·82	+ 0·18	2·84	2·63	+ 0·21	11·02	10·31	+ 0·71	1·58	Goa.		
2	8	10	6	2	...	1	...	1	4·6	P	P	82	·788	5·5	13	10·09	+ 2·91	10·88	6·77	+ 4·11	31·49	20·78	+10·71	2·72	Karwar.		
9	1	4	9	7	...	...	...	...	6·8	P	P	86	·800	5·6	9	8·44	+ 0·56	8·23	5·06	+ 3·17	20·47	15·23	+ 5·24	4·31	Cochin	Malabar.	33
17	...	2	6	4	1	...	...	...	2·0	3·0	− 33	79	·757	5·1	8	5·10	+ 2·90	3·80	3·09	+ 0·71	11·55	10·91	+ 0·64	1·45	Calicut.		
15	3	1	2	1	...	...	3	5	3·2	P	P	83	·766	6·7	13	P	P	4·90	6·24	− 1·34	14·12	17·09	− 2·88	0·89	Mangalore.		
																									Trivandrum.		

‡ Wind direction of 26 days.

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	XI.—South India		...	...	−·025	...	...	...	...	...	...	...	83·6	−0·7	69·3	+0·4	76·5	−0·2	14·4	...	...	...	...	25·3
57	Madras (South)	Pamban	37	29·887	?	29·851	29·973	28th	29·732	6th	·241	79·8	84·2	?	76·2	?	80·2	?	8·0	87·3	8th & 10th.	74·2	3rd	13·1
		Tinnevelly	168	29·766	?	29·865	29·847	28th	29·591	6th	·256	77·8	87·8	?	73·7	?	80·7	?	14·1	94·2	9th	68·9	15th & 19th.	25·3
		Madura	447	29·477	−·025	29·865	29·559	30th	29·299	6th	·260	77·3	85·7	−1·6	72·0	−0·3	78·9	−1·0	13·7	89·9	7th	65·1	19th	24·8
34	Madras (South Central).	Salem	940	29·010	−·029	29·905	29·103	28th	28·807	7th	·296	74·0	84·6	−2·3	68·4	+0·4	76·5	−1·0	16·2	88·9	11th	59·9	17th	29·0
		Coimbatore	1,348	28·584	−·024	29·893	28·658	28th	28·413	6th	·245	73.4	84·0	−1·9	68·7	−0·4	76·3	−1·2	15·3	87·9	3 days	61·3	3 days	26·6
35	Coorg	Mercara	3,781	26·219	−·032	?	26·278	11th	26·084	7th	·194	64·7	74·0	−1·0	61·1	+0·8	67·6	−0·1	12·9	77·5	23rd	53·7	19th	23·8
36	Mysore	Chitaldroog	2,405	27·552	?	29·903	27·658	28th	27·393	7th	·265	70·7	80·2	?	64·1	?	72·2	?	16·1	85·6	1st	57·9	20th	27·7
		Bangalore	3,021	26·949	−·036	29·896	27·038	28th	26·756	6th	·282	67·8	77·8	−0·7	62·5	+0·5	70·2	−0·1	15·3	81·7	2nd & 14th.	54·9	24th	26·8
		Hassan	3,091	26·885	?	29·903	26·966	28th	26·724	7th	·242	69·4	78·2	?	61·0	?	69·6	?	17·2	81·6	1st & 10th.	51·8	19th	29·8
		Mysore	2,518	27·441	?	29·898	27·527	28th	27·268	7th	·259	71·0	80·4	?	64·2	?	72·3	?	16·2	84·4	3rd	56·4	18th & 24th.	28·0
56	Madras (East Coast, South).	Negapatam	31	29·895	−·027	29·856	29·982	28th	29·693	6th	·289	77·9	82·7	−1·0	74·6	+0·7	78·7	−0·2	8·1	87·0	10th & 14th.	71·0	19th	16·0
		Cuddalore	12	29·919	?	29·861	30·012	30th	29·680	6th	·332	75·7	82·6	?	70·3	?	76·5	?	12·3	86·3	11th & 13th.	66·2	4 days	20·1
		Trichinopoly	255	29·674	−·032	29·866	29·767	30th	29·487	6th	·280	76·2	85·1	−1·6	71·9	+0·2	78·5	−0·7	13·2	89·5	8th & 11th.	64·9	18th	24·6
		Madras	22	29·924	−·026	29·877	30·031	28th & 30th	29·600	6th	·431	77·5	84·0	−1·0	72·9	+0·6	78·5	−0·2	11·1	87·0	13th	66·5	18th & 24th.	20·5
55	Madras (East Coast, Central).	Nellore	71	29·878	?	29·883	29·998	29th	29·597	6th	·401	77·4	83·2	?	72·0	?	77·6	?	11·2	96·9	15th	66·1	17th	30·8
		Masulipatam	15	29·967	−·003	29·917	30·094	30th	29·785	6th	·309	75·9	84·1	−0·6	71·7	+0·3	77·3	−0·2	12·4	87·5	18th	67·7	22nd	19·8
54	Madras (Central)	Cuddapah	433	29·515	−·052	29·895	29·634	28th	29·280	6th	·354	76·0	86·9	+0·3	70·3	+1·0	78·6	+0·7	16·6	96·1	2nd	62·9	17th	33·2
		Kurnool	923	29·026	−·048	29·912	29·151	29th	28·851	6th	·300	72·4	88·7	+2·1	65·6	+1·4	77·1	+1·8	23·1	92·7	1st	54·7	19th	38·0
		Bellary	1,475	28·477	−·025	29·919	28·593	28th	28·300	6th	·293	73·1	86·5	+0·2	66·1	+0·4	76·3	+0·3	20·4	91·2	4th	58·1	20th	33·1
52	Madras (East Coast, North).	Cocanada	26	29·958	+·003	29·919	30·102	30th	29·825	6th	·277	75·3	83·0	−0·2	70·9	+0·2	77·0	0	12·1	87·1	17th	66·0	24th	21·1
		Vizagapatam	31	29·964	−·001	29·933	30·117	30th	29·841	6th	·276	75·9	83·9	−1·3	69·5	+0·1	76·7	−0·6	14·4	86·3	1st & 17th	63·4	23rd	22·9
		Waltair	?				Not	record	ed.			76·7	83·2	?	71·7	?	77·6	?	11·5	85·7	15th	66·9	16th	18·8
		Gopalpur	21	29·988	?	29·949	30·147	30th	29·885	13th	·262	71·9	83·3	?	65·7	?	74·5	?	17·6	86·3	14th	60·1	30th	26·2
	XII.—Hill Stations.																							
48	Beluchistan	Sharigh*	?	25·922	?	?	26·020	27th	25·800	3rd	·220	58·5	75·0	?	42·3	?	58·6	?	32·7	81·5	25th	33·0	6th	48·5
		Pishin	?			Not	record	ed.				?	69·5	?	21·8	?	45·7	?	47·7	77·5	6th	14·9	6th	62·6
		Quetta	5,502	24·762	−·002		24·853	18th & 28th.	24·672	14th	·181	42·2	66·6	+2·9	30·7	−0·2	48·7	+1·4	35·9	74·7	9th	22·8	4th	51·9
		Kalat	?			Not	record	ed.				50·5	65·1	?	24·3	?	44·8	?	40·8	77·3	10th	13·4	4th	63·9
		Chaman	4,311	25·833	?	?	25·942	30th	25·756	14th	·186	51·6	68·7	?	41·8	?	55·2	?	26·9	76·8	10th	34·1	3rd & 4th	42·7
30	Punjab	Leh	11,503	19·790	+·022	?	19·934	20th	19·535	2nd	·299	27·0	46·5	−1·3	19·8	−0·3	33·2	−0·8	26·7	55·1	1st	14·0	30th	41·1
		Srinagar	5,204	25·011	?	?	25·174	8th	24·861	13th	·313	33·9	63·8	?	27·5	?	45·7	?	36·3	69·8	1st	22·8	29th & 30th.	47·0
		Skardu	?				Not	record	ed.			35·3	54·4	?	31·8	?	43·2	?	22·6	65·4	15th	23·7	30th	41·7
		Dras	?	20·833	?	?	20·995	20th	20·670	2nd	·325	28·3	44·7	?	16·8	?	30·7	?	27·9	54·3	23rd	8·1	30th	46·2
		Gilgit	?	25·301	?	?	25·504	20th	25·040	2nd	·464	46·7	60·2	?	42·6	?	51·5	?	17·6	67·6	2nd	36·1	30th	31·5
		Chitral	?	24·793	?	?	24·900	7 days	24·600	13th & 14th	·300	43·6	65·9	?	35·2	?	50·6	?	30·7	73·1	1st	29·0	5th & 30th	44·1
		Killa Drosh	?			Not	record	ed.				45·8	67·3	?	43·9	?	55·6	?	23·4	74·7	14th	40·0	26th & 28th	34·7
		Fara Chinar	6,000	24·550	?	?	24·651	28th	24·416	13th	·235	52·6	65·8	?	39·4	?	52·6	?	26·4	72·4	22nd	33·3	19th	39·1
		Cherat	?	25·792	?	?	25·895	28th	25·649	13th	·246	55·9	66·8	?	48·8	?	57·8	?	18·0	73·3	11th	42·1	27th & 30th.	31·2

* Mean of 25 days.

I—*continued.*

in India, Burma, etc., in November 1898—continued.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 30th November 1898.	Normal rainfall for period, 1st October to 30th November.	Variation from normal of period, 1st October to 30th November.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	10·23	6·40	+ 3·84	...	...	...	...	**XI.—South India.**		
1	5	8	...	3	...	3	...	10	13·2	?	?	85	·862	3·6	12	8·00	+ 4·00	11·59	9·55	+ 2·04	31·73	16·41	+15·32	1·94	Pamban	Madras (South)	57
...	8	5	...	2	1	2	4	8	3·6	?	?	80	·771	5·6	12	10·50	+ 1·50	5·52	9·99	− 4·47	15·09	16·00	− 0·91	0·95	Tinnevelly.		
3	13	7	1	...	...	1	...	5	3·7	3·8	− 3	78	·745	5·7	14	7·09	+ 6·91	7·97	4·66	+ 3·31	20·25	12·87	+ 7·38	2·45	Madura.		
15	...	5	5	...	...	2	1	2	3·4	3·3	+ 3	84	·720	6·6	12	7·36	+ 4·64	11·63	3·96	+ 7·67	15·61	10·85	+ 4·76	3·00	Salem	Madras (South Central).	38
2	...	...	19	...	1	1	6	1	0·6	2·6	− 77	87	·727	6·8	11	8·09	+ 2·91	5·69	3·72	+ 1·97	14·93	9·66	+ 5·27	1·46	Coimbatore.		
1	...	11	12	1	3	...	...	2	7·7	3·7	+108	86	·532	5·8	7	7·20	− 0·20	3·56	3·34	+ 0·22	11·79	12·94	− 1·15	1·11	Mercara	Coorg.	35
1	2	3	14	7	...	2	1	...	7·3	?	?	77	·581	5·6	7	?	?	7·15	2·23	+ 4·92	10·67	7·22	+ 3·45	1·87	Chitaldroog	Mysore.	36
1	1	11	13	...	2	...	1	1	6·4	3·7	+ 73	86	·587	6·4	9	6·09	+ 2·91	5·69	3·59	+ 2·10	9·34	10·74	− 1·40	1·75	Bangalore.		
1	1	15	8	2	2	1	...	...	2·8	?	?	81	·574	6·3	10	?	?	5·92	1·93	+ 3·99	17·36	7·61	+ 9·75	1·56	Hassan.		
...	3	16	6	...	1	2	2	...	8·4	?	?	82	·609	6·5	9	?	?	4·58	1·70	+ 2·88	7·10	8·31	− 1·21	1·15	Mysore.		
...	2	5	1	1	4	3	1	13	11·3	5·2	+147	83	·808	7·6	16	13·09	+ 2·91	27·78	15·95	+11·83	39·97	26·54	+13·43	8·76	Negapatam	Madras (East Coast, South).	56
...	11	2	1	2	1	2	2	9	1·2	?	?	92	·817	5·8	18	11·80	+ 6·20	32·16	13·72	+18·44	43·40	22·39	+21·01	8·94	Cuddalore.		
19	4	2	...	...	1	...	1	3	3·4	4·2	− 19	84	·760	6·9	11	8·45	+ 2·55	8·23	5·37	+ 2·86	13·28	12·86	+ 0·42	1·83	Trichinopoly.		
...	12	7	3	2	2	...	...	4	6·2	6·8	− 9	86	·815	6·0	14	13·00	+ 1·00	19·79	13·21	+ 6·58	36·10	24·21	+11·89	3·14	Madras.		
12	2	1	1	...	...	...	6	8	4·3	?	?	87	·823	6·5	12	9·40	+ 2·60	13·27	10·44	+ 2·83	23·68	19·48	+ 4·20	4.23	Nellore	Madras (East Coast, Central).	55
5	16	8	...	1	...	...	...	...	6·8	5·5	+ 24	84	·757	4·3	9	5·91	+ 3·09	12·42	7·06	+ 5·36	16·52	16·40	+ 0·12	4·55	Masulipatam		
...	3	8	10	7	1	1	...	...	?	?	?	81	·728	4·8	10	7·00	+ 3·00	5·29	4·67	+ 0·62	8·07	11·00	− 2·93	1·48	Cuddapah	Madras (Central)	54
28	...	1	1	...	...	...	...	...	?	?	?	72	·583	4·3	2	3·17	− 1·17	0·44	1·15	− 0·71	1·03	6·18	− 5·15	0·21	Kurnool.		
12	3	2	11	...	...	...	...	2	4·1	3·3	+ 24	65	·534	5·7	4	3·62	+ 0·18	1·80	2·13	− 0·33	5·50	6·42	− 0·92	0·77	Bellary.		
...	17	9	...	...	...	...	...	4	11·4	?	?	73	·632	3·2	5	4·30	+ 0·70	14·20	7·41	+ 6·79	21·54	17·77	+ 3·77	4·22	Cocanada.	Madras (East Coast, North)	52
11	7	8	...	...	2	...	1	1	?	2·4	?	76	·688	4·6	5	7·18	− 2·18	12·16	6·90	+ 5·26	21·84	17·44	+ 4·40	3·32	Vizagapatam.		
...	3	17	1	2	...	...	5	1	11·4	?	?	76	·693	4·6	No rain gauge.										Waltair.†		
...	16	1	...	...	...	...	...	13	9·6	7·0	+ 37	78	·608	1·1	2	4·33	− 2·33	1·61	4·99	− 3·38	15·08	14·34	+ 0·74	0·84	Gopalpur.		
																									XII.—Hill Stations.		
3	13	1	...	1	...	2	...	5	4·7	?	?	23	·111	0·7	0	?	?	0	0·98	− 0·98	0	1·15	− 1·15	0	Sharigh	Baluchistan.	48
Not recorded.									?	?	?	?	?	?					0·75			0·81			Pishin.		
29	...	...	...	...	1	...	...	...	0·9	2·7	− 67	55	·148	1·3	0	0·09	− 0·09	0·03	0·27	− 0·24	0·03	0·34	− 0·31	0·03	Quetta.		
...	6	...	6	1	12	1	2	2	?	?	?	42	·153	0	0	?	?	0	0·35	− 0·35	0	0·42	− 0·42	0	Kalat.		
...	1	...	14	12	1	1	...	1	7·2	?	?	41	·159	0·9	0	?	?	0	0·48	− 0·48	0	0·57	− 0·57	0	Chaman.		
...	...	...	...	...	2	15	9	4	1·8	1·9	− 5	59	·087	2·9	0	?	?	0	0·10	− 0·10	0·03	0·33	− 0·30	0	Leh	Punjab.	30
11	1	1	4	8	2	1	1	1	3·5	?	?	81	·166	1·4	0	?	?	0	0·25	− 0·25	0·38	0·88	− 0·50	0	Srinagar.		
18	...	2	...	...	2	4	3	1	5·9	?	?	93	·192	2·6	0	?	?	0	0·13	− 0·13	0·08	0·15	− 0·07	0	Skardu.		
27	...	...	1	...	...	1	...	1	2·5	?	?	86	·132	2·8	0	?	?	0	2·00	− 2·00	0·76	3·64	− 2·88	0	Dras.		
28	...	...	...	...	...	1	1	...	0·6	?	?	41	·136	4·1	0	?	?	0	0·07	−0·07	0·15	0·23	− 0·08	0	Gilgit.		
28	1	...	...	...	...	...	...	1	2·3	?	?	54	·153	0·3	0	?	?	0·05	?	?	0·09	?	?	0·05	Chitral.		
12	10	...	4	...	...	...	4	...	?	?	?	25	·077	2·5	0	?	?	0	?	?	0·08	?	?	0	Killa Drosh.		
...	9	2	3	5	3	1	2	5	4·8	?	?	33	·130	1·7	0	?	?	0	?	?	0·03	?	?	0	Para Chinar.		
1	20	2	...	...	3	1	...	3	14·1	?	?	29	·129	1·6	0	?	?	0	0·24	− 0·24	0·02	0·34	− 0·32	0	Cherat.		

† Wind observation 29 days.

Table

Abstract of Observations taken at 8 A.M. at 214 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
		Murree	6,333	23·894	−·029	?	23·977	28th	23·784	13th	·193	51·4	60·7	−0·3	47·0	+2·0	53·9	+0·9	13·7	68·2	22nd	42·5	5th	25·7
		Poo	?			Not	record	ed.				?	58·4	?	33·8	?	46·2	?	24·6	66·4	11th	29·9	27th	36·5
		Simla	7,224	23·171	−·013	?	23·263	27th	23·036	13th	·227	48·2	56·3	+0·7	44·8	+0·9	50·6	+0·8	11·5	61·4	11th	36·2	5th	25·2
25	North-Western Provinces.	Chakrata	7,022	23·348	+·006	?	23·440	27th	23·210	13th	·230	48·0	61·3	+1·9	43·3	−0·2	52·3	+0·9	18·0	68·7	17th	33·8	4th	34·9
		Mussooree	6,705	23·607	?	?	23·719	27th	23·473	13th	·246	49·6	56·1	−2·1	44·4	−0·3	50·3	−1·2	11·7	62·2	17th	34·5	4th	27·7
		Ranikhet	6,069	24·176	+·007	?	24·270	27th	24·026	13th	·244	51·1	61·5	−0·8	47·3	+0·6	54·4	−0·2	14·2	66·1	3 days	37·2	4th	28·9
		Muktesar	?	22·903	?	?	23·017	28th	22·797	14th	·220	48·2	57·7	?	41·8	?	49·7	?	15·9	66·7	17th	31·9	4th	34·8
13	Bengal	Yatung	10,480?				Not	record	ed.			?	47·5	?	28·7	?	38·1	?	18·8	55·1	22nd	22·9	23rd	32·2
		Darjeeling	7,409	23·011	−·049	?	23·088	2 days	22·924	13th	·164	46·4	53·5	−1·0	?	?	?	?	?	61·2	10th	?		?
		Gantok	5,660	24·552	?	?	24·628	10th & 27th	24·403	13th	·225	52·1	63·2	?	36·0	?	49·6	?	27·2	78·6	10th	32·4	20th & 24th	46·2
	Central India	Mount Abu	3,945	26·131	−·033	?	26·246	30th	26·030	3rd	·216	68·2	75·4	+2·1	61·2	+4·1	68·3	+3·1	14·2	79·7	1st	54·4	8th	25·3
		Pachmarhi	3,528	26·530	−·019	?	26·654	30th	26·433	18th	·221	64·7	76·9	+4·9	52·9	+1·9	64·9	+3·4	24·0	80·7	3rd & 5th	44·3	21st	36·4
	South India	Wellington	6,200	24·232	−·043	?	24·302	30th	24·098	6th	·204	59·4	67·2	+0·4	52·7	+0·2	60·0	+0·3	14·5	71·2	8th	38·7	18th	32·5
XIII.—Extra India.																								
	Ceylon	Trincomalee	12	29·893	?	29·831	29·973	30th	29·758	6th	·215	78·0	84·7	?	74·3	?	79·5	?	10·4	89·0	11th & 12th	71·0	18th	18·0
		Colombo	40	29·879	−·046	29·845	29·950	30th	29·763	6th	·187	77·9	86·0	?	73·7	?	79·9	?	12·3	90·5	27th	72·0	4 days	18·5
	Persia	Meshed	3,104			Not	record	ed.				35·7	?	?	32·5	?	?	?	?	?	...	28·0	18th	?
		Teheran	?(c)	26·201 25·490	?	?	26·345 25·630	1st & 2nd 1st	26·010 25·320	20th 20th	·335 ·310	45·9	59·2	?	40·3	?	49·7	?	18·9	70·4	7th	34·2	17th	36·2
		Ispahan	?	c 24·542	?	?	24·650	1st	24·290	14th	·360	43·7	61·1	?	35·6	?	48·4	?	25·5	71·6	1st	29·6	30th	42·0
		Bushire	14	30·048	−·020	30·021	30·242	30th	29·855	14th	·387	67·9	77·4	−1·6	63·5	+1·4	70·5	−0·1	13·9	85·6	3rd	58·7	18th & 26th	26·9
		Jask	?	30·088	?	?	30·231	27th	29·925	14th	·306	74·1	82·5	?	66·7	?	74·6	?	15·8	90·3	3rd	61·3	7th	29·0
	Arabia	Muscat	20	30·047	?	30·015	30·181	30th	29·883	14th	·298	76·3	78·8	?	73·7	?	76·3	?	5·1	82·2	3rd & 4th	69·9	27th	12·3
		Baghdad	220	29·977	+·002	30·186	30·172	29th	29·705	14th	·467	54·7	74·1	−2·5	51·1	+1·1	62·6	−0·7	23·0	88·1	1st	43·4	27th	44·7
		Aden	94	29·908	−·050	29·935	30·067	30th	29·823	5th	·244	78·0	84·1	−2·1	74·3	+1·0	79·2	−0·6	9·8	93·3	2nd	69·4	25th	23·9
		Perim	?	29·751	?	?	29·901	30th	29·633	5th	·268	80·8	87·0	?	77·4‡	?	82·3‡	?	9·6	89·7	3 days	74·6	24th & 25th	15·1
	Afghanistan	Kabul	?				Not	record	ed.			35·2	81·1	?	30·3	?	55·7	?	50·8	91·1	22nd	24·4	4th	66·7
	Central Asia	Kashgar	?§	25·811	?	?	26·330?	5th	25·322	2nd	1·008?	31·1	48·3	?	27·3	?	37·8	?	21·0	61·2	19th	21·7	26th	39·5
	Arabian Sea Islands.	Amini Divi	15																					
		Minicoy	10	29·874	?	29·809	29·941	11th	29·763	7th	·178	80·9	84·9	?	?	?	?	?	?	87·5	9th & 12th	?	...	?
	Africa	Zanzibar	73	29·931	−·026	29·931	30·005	30th	29·875	5th	·130	80·3	84·6	?	77·1	?	80·9	?	7·5	88·0	5th	75·0	18th	13·0
		Danga (Zanzibar)	?	Not	recorded							80·3	90·7	?	72·1	?	81·4	?	18·6	95·4	2nd	68·1	8th	27·3

‡ Mean of 28 days.

NOTE.—When a query is inserted against any reading or in the variation returns for any

§ Aneroid corrected.

(c) " uncorrected.

I—*concluded.*

in India, Burma, etc., in November 1898—concluded.

Wind Direction. Number of winds from: Calm.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Wind Velocity. Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M. Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall. Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 30th November 1898.	Normal rainfall for period, 1st October to 30th November.	Variation from normal of period, 1st October to 30th November.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
22	...	...	...	5	3	...	...	...	3·5	5·1	−31	30	·116	1·8	0	0·73	−0·73	0	1·08	− 1·08	0·03	2·73	− 2·70	0	Murree.		
...	1	...	4	5	5	4	10	1	?	?	?	?	?	1·3	1	?	?	0·20	?	?	0·20	?	?	0·11	Poo.		
14	5	6	1	1	3	...	...	...	3·6	1·9	+ 89	33	·107	0·6	0	1·18	−1·18	0·13	0·54	− 0·41	0·13	1·76	− 1·63	0·08	Simla.		
13	16	...	...	1	...	...	...	...	8·9	4·5	+ 98	49	·158	0·5	1	?	?	0·24	0·59	− 0·35	0·33	1·43	− 1·10	0·17	Chakrata	North-Western Provinces.	25
...	1	1	7	4	...	...	4	13	?	?	?	51	·182	0·8	2	?	?	2·25	0·40	+ 1·85	2·25	1·44	+ 0·81	1·90	Mussooree.		
14	...	5	...	2	5	1	3	...	2·9	1·2	+142	56	·206	0·6	1	1·00	0	0·90	0·33	+ 0·57	0·90	1·81	− 0·91	0·89	Ranikhet.		
...	...	1	1	8	...	4	...	16	1·6	?	?	42	·136	1·0	1	?	?	1·03	?	?	1·03	?	?	0·99	Muktesar.		
			Not	rec	ord	ed.			?	?	?	?	?	?	0	?	?	0·02	0·34	−0·32	1·34	2·83	− 1·49	0·02	Yatung	Bengal.	13
...	...	9	6	9	1	2	3	...	?	1·7	?	87	·275	3·8	2	0·61	+1·39	0·75	0·20	+0·55	2·53	6·03	− 3·50	0·32	Darjeeling.		
26	...	4	...	...	...	...	...	...	2·2	?	?	82	·318	4·2	5	?	?	1·98	1·43	+ 0·55	5·82	8·32	− 2·50	0·53	Gantok.		
11	3	6	1	...	...	1	6	2	5·6	3·7	+51	41	·277	1·3	0	0·18	−0·18	0	0·27	− 0·27	0	0·98	− 0·90	0	Mount Abu	Central India.	
25	...	...	...	3	1	1	...	...	4·6	2·5	+84	56	·345	1·9	0	1·09	−1·09	0	0·71	− 0·71	0·18	3·34	− 3·16	0	Pachmarhi.		
16	4	6	1	2	1	...	...	...	2·9	2·7	+ 7	77	·397	6·3	15	13·22	+1·78	8·13	8·45	−0·32	20·92	20·55	+ 0·37	2·01	Wellington.	South India.	
																									XIII.—Extra India.		
5	2	3	...	1	1	16	...	2	3·3	?	?	87	·841	3·2	17	?	?	21·16	16·23	+4·93	25·47	26·19	−0·72	4·93	Trincomalee	Ceylon.	
...	9	6	4	2	...	5	3	1	7·6	5·8	+31	88	·849	6·0	15	?	?	16·66	13·25	+3·41	26·72	26·76	+9·96	3·86	Colombo.		
			Not	reco	rded				?	?	?	74	·154	3·6	1	?	?	0·90	0·51	+0·39	0·95	1·30	−0·35	0·90	Meshed	Persia.	
19	6	4	...	...	...	...	1	...	2·6	?	?	59	·177	4·3	2	?	?	0·63	1·04	−0·41	0·80	1·21	−0·41	0·26	Teheran.		
16	...	2	2	5	2	1	2	...	1·8	?	?	70	·199	4·2	1	?	?	0·28	1·16	−0·88	0·28	1·46	−1·18	0·28	Ispahan.		
3	2	15	8	2	...	...	...	...	5·7	?	?	79	·541	1·5	4	?	?	2·65	2·16	+0·49	2·65	2·26	+0·39	0·91	Bushire.		
...	9	12	5	1	...	...	...	3	8·9	?	?	63	·532	0·9	1	?	?	0·16	0·63	−0·47	0·16	0·70	−0·54	0·16	Jask.		
2	1	...	...	3	4	8	10	2	4·6	?	?	66	·603	2·9	2	?	?	0·55	0·94	−0·39	0·55	0·98	−0·43	0·37	Muscat	Arabia.	
13	1	1	1	1	1	2	1	9	2·2	?	?	67	·280	3·2	2	?	?	0·70	1·03	−0·33	0·70	1·07	−0·37	0·60	Baghdad.		
1	...	9	15	3	1	...	...	1	11·3*	11·6	+ 2	72	·688	4·2	0	?	?	0	0·21	−0·21	0	0·23	−0·23	0	Aden.		
...	...	...	24	6	...	...	...	...	15·3	?	?	69	·727	5·4	1	?	?	0·13	0·06	+0·07	0·13	0·15	−0·02	0·13	Perim.		
7	2	2	1	...	1	2	12	3	?	?	?	58	·121	0·7	1	?	?	0·15	0·91	−0·76	0·15	0·94	−0·79	0·15	Kabul	Afghanistan.	
21	2	...	2	...	3	...	2	...	1·0	?	?	48†	·094†	3·7	0	?	?	0	0·04	−0·04	0	0·11	−0·11	0	Kashgar	Central Asia	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Amini Devi	Arabian Sea Islands.	
4	6	5	...	2	2	1	7	3	5·4	?	?	81	·850	4·7	13	?	?	8·15	?	?	18·98	?	?	2·85	Minicoy		
1	1	2	6	6	8	2	1	1	?	?	?	79	·817	6·1	10	?	?	7·37	7·87	−0·50	8·68	11·59	− 2·91	2·22	Zanzibar	Africa.	
2	1	13	6	3	1	3	1	...	?	?	?	81	·837	5·5	10	?	?	4·09	?	?	6·41	?	?	0·80	Danga (Zanzibar.)		

station, the data for that station are not utilized in calculating the Provincial variations.

* Mean of 29 days.
† Mean of 19 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 85

Meteorological Province.	Station.	Elevation of barcistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Iles Islands.	Port Blair	...	29·870	29·771	·099	29·820	−·024	29·811	87·3	78·1†	9·2	90·3	72·4	17·9	84·9	84·1	81·5	+ 0·9	74·2	78·7	77·8	76·9
	Rangoon	...	·921	·799	·122	·860	−·038	·837	89·7	70·3	19·4	91·3	64·2	27·1	83·2	86·1	78·0	+ 0·1	68·3	74·8	74·6	72·6
	Diamond Island	...	·923	·805	·118	·863	−·034	·839	87·2	77·7	9·5	92·0	74·1	17·9	83·6	85·0	81·5	+ 2·4	72·2	76·5	75·2	74·6
	Cocos Island	111	·820	·721	·099	·770	−·042	·812	85·5	78·3	7·2	89·1	74·3	14·8	83·5	82·1	80·7	+ 1·5	71·8	75·9	74·9	74·2
	Akyab	...	·965	·815	·120	·908	−·031	·871	86·3	70·0	16·3	90·5	63·8	26·7	77·7	83·1	77·8	− 0·1	68·1	72·8	76·8	72·6
Assam.	Silchar	...	·915	·780	·135	·844	−·030	·900	86·4	62·6	23·8	91·3	56·4	34·9	76·9	84·0	73·2	+ 0·5	60·6	70·0	70·8	67·1
	Sibsagar	...	·714	·567	·147	·640	−·034	·937	77·3	58·8	18·5	81·8	53·7	28·1	69·1	76·0	66·8	− 0·7	58·8	66·4	68·9	64·7
	Dhubri	...	·912	·772	·140	·836	−·024	·908	80·1	62·8	17·3	83·7	59·6	24·1	73·1	78·7	69·8	− 0·2	62·1	67·3	69·6	66·3
Bengal and Orissa.	Chittagong	...	·891‡	·782	·109	·835	−·042	·866	83·7	63·0	20·7	87·6	56·9	30·7	78·3‡	81·1	73·1	− 0·9	62·7	71·5‡	70·6	68·3
	Narayanganj	...	·973	·861	·112	·913	−·031	·888	83·6	66·1	17·5	88·2	61·7	26·5	78·9	81·6	75·2	+ 0·7	64·6	70·7	70·1	68·5
	Calcutta (Alipore)	...	·993	·878	·115	·928	−·033	·895	82·0	63·6	18·4	85·7	57·7	28·0	76·9	80·9	72·4	0	62·9	68·3	68·3	66·5
	Saugor Island	...	·974	·862	·112	·912	−·039	·882	83·4	66·0	17·4	86·4	61·8	24·6	78·9	80·4	73·6	+ 0·2	64·1	71·1	69·8	68·3
	Burdwan	...	·926	·804	·122	·858	−·024	·906	84·7	63·8	20·9	88·0	59·3	28·7	78·0	81·7	73·5	0	61·8	69·6	69·2	66·9
	Berhampore	...	·948	·838	·110	·886	−·027	·902	82·0	64·5	17·5	84·5	59·3	25·2	76·7	81·4	73·1	0	62·2	69·2	69·0	66·8
	False Point	...	·988	·884	·104	·935	−·037	·898	83·9	65·0	18·9	87·4	60·5	26·9	79·9	81·0	73·3	+ 0·3	64·2	72·1	72·5	69·6
	Cuttack	...	·938	·819	·119	·878	−·028	·901	86·4	65·4	21·0	90·3	61·4	28·9	78·7	83·4	75·0	+ 0·3	63·6	68·5	68·2	66·8
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	27·982	27·880	·102	27·927	−·039	·900	79·1	57·9	21·2	82·7	53·7	29·0	73·7	76·6	67·6	+ 0·8	52·9	60·1	60·5	57·8
	Patna	...	29·845	29·729	·116	29·782	−·034	·921	82·1	61·0	21·1	87·8	55·6	32·2	75·6	80·6	70·8	+ 0·4	57·9	65·8	66·2	63·3
	Darbhanga	...	·843	·737	·106	·785	−·038	·909	81·5	62·2	19·3	86·2	58·4	27·8	76·1	79·2	70·9	− 0·4	60·7	67·7	68·3	65·6
	Allahabad	...	·718	·602	·116	·650	−·035	·918	84·2	55·5	28·7	89·1	48·5	40·6	75·5	82·6	68·6	− 0·4	53·1	62·8	64·4	60·1
	Lucknow	...	·648	·541	·107	·587	−·043	·919	84·6	53·7	30·9	88·0	47·7	40·3	75·3	80·3	68·1	+ 0·3	51·8	62·6	64·6§	59·7
Upper Sub-Himalayas.	Dehra Dun	...	27·770	27·676	·094	27·712	−·032	·947	75·3	50·6	24·7	79·8	46·8	33·0	66·9	70·1	60·9	− 1·5	47·3	56·1	57·3	53·6
	Roorkee	...	29·117	29·008	·109	29·051	−·034	·925	79·9	48·2	31·7	83·8	42·5	41·3	69·3	76·7	62·6	− 1·3	46·4	59·1	60·4	55·3
	Meerut	...	·262	·155	·107	·200	−·047	·921	81·4	49·9	31·5	85·2	44·3	40·9	68·8	78·2	64·3	− 0·5	48·1	56·3	59·7	54·7
	Lahore	...	·312	·213	·099	·252	−·043	·940	81·4	49·3	32·1	85·6	43·4	42·2	68·7	80·9	63·8	+ 1·4	44·8	56·1	60·6	53·8
	Ludhiana	...	·191	·093	·098	·131	−·035	·931	80·9	50·7	30·2	84·5	44·5	40·0	69·9	78·3	64·0	+ 1·0	46·6	55·9	58·4	53·6
Indus Valley and N.-W. Rajputana.	Peshawar	...	28·928	28·820	·108	28·864	−·041	·990	77·4	43·0	34·4	81·1	38·3	42·8	66·3	72·6	57·6	− 1·0	38·3	53·5	56·1	49·3
	Mooltan	...	29·612	29·515	·097	29·554	−·032	·953	85·0	51·0	34·0	89·3	47·1	42·2	70·2	81·9	65·8	+ 0·2	45·7	57·5	62·7	55·3
	Jacobabad	...	·849	·733	·116	·781	−·035	·928	88·9	49·4	39·5	94·5	42·3	52·2	77·5	85·0	66·8	+ 1·1	44·5	59·1	63·8	55·8
	Kurrachee	...	·997‖	·888‖	·109	·937	−·047	·918	90·0	63·7	26·3	94·5	58·6	35·9	82·5	85·4	75·3	+ 1·2	54·6	64·3	68·0	62·3
East Rajputana, Central India, and Gujarat.	Jeypore	...	28·582	28·477	·105	28·520	−·042	·915	87·4	57·3	30·1	94·4	48·9	45·5	79·3	84·7	70·7	+ 3·0	48·2	58·7	61·0	56·0
	Ajmere	...	·390	·288	·102	·336	−·060	·916	86·7	54·3	32·4	93·5	46·8	46·7	76·7	85·1	69·1	+ 3·3	48·1	60·7	64·8	57·9
	Oodeypore	...	·084	27·970	·114	·027	?	·902	86·9	57·3¶	29·6	91·9	50·2	41·7	79·8	84·7	71·5	?	51·3	59·9	62·0	57·7
	Deesa	...	29·528	29·416	·112	29·465	−·046	·882	95·2	62·3	32·9	98·8	56·1	42·7	86·4	92·7	78·5	+ 4·5	52·4	64·7	66·7	61·2
	Agra	...	·455	·338	·117	·386	−·058	·909	86·4	57·2	29·2	92·0	51·9	40·1	76·5	82·7	70·5	+ 2·5	50·6	61·3	64·6	58·8
Deccan.	Belgaum	...	27·410	27·303	·107	27·351	−·033	·798	81·7	61·4	20·3	85·2	53·9	31·3	76·2	80·0	70·3	− 0·5	59·4	64·8	64·6	62·9
	Sholapur	...	(a) 28·381	(b) 28·256	·125	28·316	−·031	·845	(b) 88·6	(c) 63·2	25·4	92·0	56·1	35·9	(c) 80·4	(b) 86·8	74·7	+ 1·0	(c) 57·2	(a) 65·4	(b) 65·8	62·4
	Poona	...	·136	·012	·124	·076	−·029	·844	88·7	59·5	29·2	91·8	52·4	39·4	79·7	86·4	73·8	+ 1·4	56·0	63·8	64·9	61·6
	Akola	...	29·062	·924	·138	·989	−·043	·870	90·8	59·0	31·8	94·0	51·1	42·9	82·2	89·2	75·4	+ 3·0	53·8	65·3	66·3	61·8
	Buldana	2,132	27·858	27·748	·110	27·799	−·033	·858	85·7	63·2	22·5	89·5	58·3	31·2	80·8	83·5	74·8	+ 2·6	54·4	62·2	62·2	59·6
	Khandwa	...	28·954	28·826	·128	28·886	−·032	·882	91·6	59·2	32·4	94·6	49·6	45·0	82·1	90·0	75·0	+ 4·5	52·9	64·2	66·1	61·1

† Mean of 27 days. § Mean of 20 days. ¶ Mean of 29 days.
‡ „ „ 28 „ ‖ „ „ 24 „

II.

Stations in India, Burma, etc., for November, 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of winds from										Wind steadiness.		Wind velocity.		Rainfall.			
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·809†	·899	·869	·859	−·064	84†	75	74	78	−4	6·3	6·8	6·6	+1·3	1	3	10	12	14	2	...	8	10	N. 70° E.	N. 81° E.	25	44	176	165	...	...	Port Blair	Burma Coast and Bay Islands.
·671	·754	·705	·710	−·072	90	66	57	71	−7	2·1	2·3	2·2	−2·0	...	4	20	23	11	1	...	1	...	N. 78° E.	N. 63° E.	75	56	69	97	...	...	Rangoon	
·719	·822	·748	·763	−·028	75	71	62	69	−9	4·6	6·6	5·6	+1·1	4	5	22	16	6	...	...	...	7	N. 55° E.	N. 60° E.	62	59	252*	222	...	...	Diamond Island,	
·693	·797	·771	·754	−·039	71	69	70	70	−8	3·4	3·0	3·2	−1·4	1	13	26	12	1	1	...	...	6	N. 38° E.	N. 80° E.	72	33	?	?	3·77	1·63	Cocos Island.	
·666	·745	·843	·751	−·006	90	78	74	81	+1	1·3	1·4	1·4	−1·8	...	1	12	14	5	2	3	11	12	N. 23° E.	N. 3° E.	18	31	50	55	...	...	Akyab	
·507	·645	·579	·577	−·040	87	70	51	69	−7	3·1	2·6	2·9	−0·6	46	...	1	6	...	...	2	4	1	E.	S. 80° E.	1	26	38*	41	...	...	Silchar	Assam.
·499	·614	·614	·576	−·011	100	87	68	85	+1	2·9	2·6	2·8	−1·3	26	28	2	...	...	...	4	...	...	N. 3° W.	N. 67° E.	45	48	30*	39	...	...	Sibsagar	
·514	·594	·606	·571	−·033	96	73	62	77	0	1·3	2·6	2·0	+0·5	7	4	16	28	2	2	...	1	...	N. 73° E.	N. 54° E.	68	50	108*	124	...	...	Dhubri	
·569	·684‡	·618	·624	−·060	98	70‡	57	75	−4	1·2‡	1·1	1·2	−1·7	7	1	26	...	4	...	1	1	18	N. 13° E.	N. 19° W.	50	48	72*	63	...	...	Chittagong	
·596	·643	·589	·609	−·012	92	65	54	70	−2	1·8	2·8	2·3	0	...	12	13	5	2	5	3	6	14	N. 6° W.	N. 16° W.	28	36	51	50	...	...	Narayanganj.	Bengal and Orissa.
·569	·579	·527	·558	−·026	96	62	50	70	−3	1·5	2·0	1·8	−0·7	1	27	5	2	2	...	1	11	11	N. 19° W.	N. 14° W.	64	59	49	62	...	...	Calcutta (Alipore).	
·576	·659	·588	·608	−·029	90	66	56	71	−4	2·0	2·4	2·2	−0·7	...	24	7	1	2	3	4	2	17	N. 16° W.	N. 3° E.	59	60	157	167	...	...	Saugor Island.	
·531	·613	·546	·563	+·019	89	64	50	68	+2	1·1	2·3	1·7	−0·9	22	20	5	3	...	...	...	2	8	N. 2° W.	N. 4° W.	48	64	4*	42	...	...	Burdwan.	
·533	·616	·546	·565	0	88	67	51	69	−4	1·1	1·6	1·4	−1·0	40	8	3	...	...	...	2	5	2	N. 29° W.	N. 20° W.	20	54	22*	39	...	...	Berhampore	
·595	·686	·687	·656	+·028	96	67	64	76	+2	3·4	3·8	3·6	0	...	12	18	7	5	4	...	1	13	N. 26° E.	N. 27° E.	50	59	77*	153	...	...	False Point	
·568	·562	·490	·540	−·041	90	57	43	63	−4	1·8	2·7	2·3	−0·3	7	12	21	2	...	...	1	4	13	N. 5° E.	N. 13° E.	59	40	38	40	...	...	Cuttack	
·342	·352	·329	·341	−·019	71	42	36	50	−4	2·0	2·5	2·3	−0·2	2	13	6	4	4	3	1	9	18	N. 26° W.	N. 30° W.	43	45	109*	110	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·445	·509	·454	·469	+·002	82	57	43	61	−1	0·5	0·8	0·7	−0·9	13	3	5	4	4	6	4	9	12	N. 70° W.	N. 61° W.	17	31	38*	40	...	...	Patna	
·513	·567	·547	·542	+·008	92	63	55	70	0	0·6	0·7	0·7	−0·1	11	2	3	7	3	6	6	14	8	S. 78° W.	S. 85° W.	22	40	31	41	...	...	Darbhanga	
·377	·405	·368	·383	−·029	85	46	34	55	−7	1·6	2·1	1·9	+0·7	7	10	7	7	1	3	3	8	14	N. 21° W.	N. 52° W.	34	23	76*	49	...	...	Allahabad	
·364	·399	·402§	·388	+·018	87	46	39§	57	+1	0·9	0·5	0·7	−0·4	60	...	...	...	...	...	...	...	...	?	N. 40° W.	?	40	15* (a)	34	...	...	Lucknow	
·287	·318	·314	·306	−·036	78	48	43	56	−5	0·5	0·6	0·6	−0·8	12	...	1	...	5	8	13	10	3	S. 44° W.	S. 89° W.	48	17	34	34	...	...	Dehra Dun	Upper Sub-Himalayas.
·294	·367	·309	·323	−·022	87	53	34	58	0	0·5	0·7	0·6	−0·4	40	1	1	3	8	3	...	2	2	S. 47° E.	N. 88° W.	13	4	20	26	...	...	Roorkee	
·316	·292	·267	·292	−·043	87	41	28	52	−4	0·4	0·3	0·4	−0·4	24	...	4	4	1	...	2	22	3	N. 81° W.	N. 57° W.	30	40	33*	29	...	...	Meerut	
·241	·287	·260	·263	−·052	68	41	25	45	−5	0·3	0·8	0·6	−0·8	29	11	...	5	2	1	...	4	8	N. 13° W.	N. 45° W.	25	18	23	32	...	...	Lahore	
·265	·263	·226	·251	−·062	72	36	24	44	−9	0·4	0·8	0·6	−1·3	28	...	...	...	6	4	...	...	22	N. 56° W.	N. 45° W.	22	33	35*	23	...	...	Ludhiana	
·177	·254	·246	·226	−·046	63	40	31	45	−8	1·4	1·6	1·5	−0·8	41	4	5	1	4	1	1	1	2	N. 43° E.	N. 76° E.	10	12	44*	51	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·241	·307	·315	·289	−·062	64	42	29	45	−8	0·1	0·7	0·4	−0·6	37	2	19	...	1	...	...	...	1	N. 41° E.	S. 27° W	33	5	25*	30	...	...	Mooltan	
·232	·258	·310	·267	−·031	65	28	26	40	−4	0·3	1·2	0·8	−0·6	41	2	1	...	...	...	1	5	10	N. 53° W.	N. 13° W.	25	11	41*	40	...	...	Jacobabad	
·316	·369	·464	·383	−·067	53	34	39	42	−12	0·9	1·7	1·3	+0·1	1	3	15	16	2	4	11	8	...	N. 88° E.	N. 85° W.	20	18	175*	193	...	...	Kurrachee	
·230	·241	·216	·239	−·058	49	23	20	31	−12	1·5	1·8	1·7	+0·2	4	4	12	1	3	5	8	11	12	N. 59° W.	N. 19° W.	27	36	72	66	...	...	Jeypore	East Rajputana, Central India and Gujarat.
·266	·336	·368	·323	+·001	61	36	30	42	−5	1·1	1·7	1·4	+0·3	4	1	17	1	2	6	7	11	11	N. 49° W.	N. 14° E.	22	7	54	38	...	...	Ajmere	
·303¶	·274	·277	·285	?	64¶	27	23	38	?	0·5	1·1	0·8	?	11	3	6	17	8	1	4	6	4	N. 88° E.	?	25	?	76	?	...	...	Oodeypore	
·269	·326	·311	·302	+·021	47	26	20	31	−3	0·9	1·2	1·1	−0·4	...	7	8	14	11	4	4	4	7	N. 79° E.	N. 61° E.	27	48	148†	181	...	...	Deesa	
·286	·344	·371	·334	+·007	60	37	33	43	−3	0·2	0·6	0·4	−0·4	...	...	10	...	12	...	11	...	27	N. 49° W.	N. 68° W.	25	43	86*	62	...	...	Agra	
·489 (c)	·476 (a)	·424 (b)	·463	−·001	88 (c)	53 (a)	43 (b)	61	+2	3·3 (a)	2·6 (b)	3·0	−0·4	An	emo	gra	ph	out	of or	der.			?	N. 76° E.	?	64	? (d)	267	...	...	Belgaum	Deccan.
·409	·447	·378	·411	−·049	68	43	30	47	−6	3·4	3·5	3·5	−0·1	...	1	21	12	14	...	...	...	1	N. 44° E.	N. 77° E.	19	65	243*	199	...	...	Sholapur	
·418	·399	·352	·390	−·026	80	40	29	50	+1	2·7	3·2	3·0	+0·3	3	1	14	19	16	1	3	1	2	S. 86° E.	N. 82° E.	60	60	194*	138	...	...	Poona	
·356	·402	·344	·367	−·043	69	36	25	43	−10	2·3	3·0	2·7	+1·0	5	3	17	11	14	2	3	1	4	N. 35° E.	N. 61° E.	78	49	100*	85	...	...	Akola	
·322	·333	·298	·318	−·077	54	32	26	37	−13	2·6	2·6	2·6	+0·3	...	8	13	18	10	6	...	...	5	N. 76° E.	N. 64° E.	53	52	149*	122	*Nil*	*Nil*	Buldana	
·332	·380	·345	·352	−·017	64	34	24	41	−8	1·4	1·9	1·7	+0·1	4	1	19	13	9	3	6	...	5	N. 80° E.	N. 58° E.	42	52	87	64	...	...	Khandwa	

* Corrected. (a) Mean of 26 days. (b) Mean of 23 days. (c) Mean of 25 days. (d) Mean of 22 days.

Tabl

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 8

Meteorological Province.	Station.	Elevation of barometer cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L., and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—*concld.*	Hoshangabad	...	29·005	28·881	·124	28·939	−·026	29·911	86·5	59·7	26·8	89·9	49·1	40·8	77·4	84·5	72·6	+2·0	54·9	63·8	65·5	61·4
	Nagpur	...	28·982	·851	·131	·913	−·024	·896	88·1	61·3	26·8	91·9	53·4	38·5	78·5	86·1	75·1	+2·4	55·5	63·7	65·7	61·6
	Nagpur (Sanitary Commissioner's Office).	...	·997	·870	·127	·930	?	·902	90·1	60·2	29·9	94·1	51·6	42·5	80·2	87·8	74·6	?	55·3	65·1	67·7	62·7
	Jubbulpore	...	·669	·554	·115	·608	−·043	·900	84·6	54·3	30·3	88·7	45·7	43·0	74·8	82·8	69·0	+2·3	51·9	62·0	63·6	59·2
	Saugor	...	·214	·108	·106	·157	−·029	·916	84·9	61·8	23·1	89·3	56·1	33·2	79·4	82·4	72·7	+3·1	?	60·7	61·4	?
	Sutna	...	·962	·853	·109	·901	−·034	·911	83·6	56·0	27·6	87·4	48·1	39·3	77·3	81·8	68·8	+2·3	51·8	61·1	61·9	58·3
	Raipur	...	29·036	·914	·122	·971	−·025	·887	85·0	60·8	24·2	89·1	57·1	32·0	77·2	83·3	73·4	+1·4	55·7	64·6	64·6	61·6
	Hyderabad (Deccan).	...	28·288	·175	·113	·230	−·045	·868	84·0	62·6	21·4	88·7	55·5	33·2	77·9	80·6	72·5	+0·5	60·3	67·2	66·9	64·8
West Coast	Bombay	...	29·930	29·815	·115	29·867	−·043	·844	88·9	75·4	13·5	92·4	70·5	21·9	81·9	85·7	81·1	+2·0	69·1	73·2	75·6	72·6
	Ratnagiri	...	·829	·715	·114	·766	−·036	·813	91·4	72·1	19·3	95·5	66·8	28·7	86·6	86·3	80·1	+1·3	67·1	72·2	75·5	71·6
	Karwar	...	·892	·770	·122	·825	−·040	·801	87·4	69·9	17·5	90·6	63·8	26·8	80·1	85·1	77·8	+0·3	68·1	72·7	75·2	72·0
	Cochin	...	·913	·824	·089	·863	−·036	·799	87·2	74·3	12·9	91·5	68·6	22·9	82·2	83·5	79·5	−0·4	72·2	75·5	75·6	74·4
South India.	Salem	...	·019	28·903	·116	28·966	−·033	·850	84·1	68·4	15·7	88·9	60·0	28·9	77·8	80·1	74·8	−1·3	67·2	72·2	72·7	70·7
	Mercara	...	26·233	26·144	·089	26·194	−·033	?	73·7	61·1	12·6	77·5	53·9	23·6	67·3	69·6	66·4	−1·1	59·0	62·7	63·9	61·9
	Chitaldroog	...	27·555	27·447	·108	27·501	−·045	·833	79·6	64·1	15·5	84·7	57·9	26·8	74·6	77·4	71·3	−0·5	61·1	66·6	66·5	64·7
	Bangalore	...	26·958	26·856	·102	26·910	−·037	·835	77·6	62·5	15·1	81·7	54·9	26·8	72·3	74·0	69·2	−0·6	61·5	65·9	66·0	64·5
	Hassa	...	·892	·795	·097	·847	−·048	·828	77·8	61·0	16·8	81·6	51·8	29·8	73·6	75·2	68·8	−0·8	60·1	65·5	65·5	63·7
	Mysore	...	27·445	27·335	·110	27·390	−·046	·826	80·2	64·2	16·0	84·2	56·6	27·6	74·8	77·4	71·5	−1·4	62·7	67·4	68·0	66·0
	Trichinopoly	...	29·684	29·566	·118	29·630	−·031	·819	84·9	71·9	13·0	89·7	64·9	24·8	79·7	81·8	77·2	−1·2	70·6	73·4	74·4	72·8
	Madras	...	·934	·831	·103	·882	−·039	·833	83·8	72·9	10·9	87·1	66·6	20·5	80·6	80·1	77·7	−0·4	?	75·4	74·7	74·3
	Bellary	...	28·485	28·357	·128	28·421	−·040	·838	86·3	66·1	20·2	91·0	57·9	33·1	79·6	83·2	75·0	−0·2	62·6	66·5	67·2	65·4
	Cocanada	...	29·967	29·854	·113	29·906	−·050	·868	82·8	70·8	12·0	86·9	66·0	20·9	80·2	81·1	76·4	−0·5	68·1	71·2	70·8	70·0
	Vizagapatam	...	·971	·861	·110	·911	−·021	·880	83·7	69·3	14·4	86·2	63·5	22·7	80·9	80·7	76·9	−1·3	67·8	72·0	72·2	70·7
Hill Station, Baluchistan.	Quetta	...	24·773	24·686	·087	24·720	−·006	?	66·3	30·7	35·6	74·5	22·6	51·9	55·9	62·1	47·4	0	26·7	43·3	45·9	38·6
Hill Stations, Punjab.	Leh	...	19·750	19·680	·110	19·736	+·003	?	46·1	19·8	26·3	52·6	14·0	38·6	35·0	42·4	32·8	+0·3	17·9	28·6	33·6	26·7
	Srinagar	...	25·019	24·906	·113	24·953	−·046	?	63·4	27·7	35·7	68·4	22·9	45·5	46·1	60·1	44·7	−0·3	25·7†	41·3†	54·7†	40·6
	Murree	...	23·913	23·873	·040	23·883	−·036	?	60·5	47·0	13·5	68·0	42·3	25·7	55·6	56·2	52·5	+1·7	35·4	42·1	43·7	40·4
	Kailang	10,087	21·010	20·893	·117	20·961	?	?	55·2	24·6	30·6	60·7	19·0	41·7	41·4	47·0	36·0	+2·3	23·1	30·7	32·5	28·8
	Simla (Ridge)	...	23·194	23·138	·056	23·156	−·014	?	56·0	44·8	11·2	61·4	36·2	25·2	51·6	51·7	49·2	−0·5	36·3	39·9	41·5	39·2
Hill Stations, N.-W. P.	Chakrata	...	·369	·304	·065	·326	−·017	?	61·2	43·2	18·0	68·8	33·8	35·0	56·1	53·0	50·0	−0·5	36·6	44·2	43·3	41·4
	Ranikhet	...	24·195	24·116	·079	24·142	−·016	?	61·4	47·3	14·1	66·3	37·2	29·1	57·6	57·7	53·3	−0·7	41·3	46·7	47·7	45·2
	Muktesar	...	22·907	22·872	·035	22·890	?	?	57·4	41·8	15·6	66·6	31·9	34·7	53·0	52·5	48·4	?	34·3	42·1	43·0	39·8
Hill Station, Nepal.	Katmandu	4,388	25·672	25·586	·086	25·625	−·073	?	72·2	44·8	27·4	76·3	40·7	35·6	60·9	66·6	57·1	−1·2	43·6	54·4	56·8	51·6
Hill Station, Bengal.	Darjeeling	...	23·036‡	22·950	·086	22·990	−·053	?	53·3	?	?	61·2	?	?	49·7‡	49·7	?	?	41·0	47·3‡	47·4	45·2
Hill Stations, Central India.	Mount Abu	...	26·147	26·075	·072	26·104	−·038	?	75·1	61·3	13·8	79·2	54·4	24·8	71·6	72·4	67·5	+2·8	50·2	56·1	56·3	54·2
	Pachmarhi	...	·555	·465	·090	·506	−·021	?	76·7	53·0	23·7	80·9	44·1	36·8	72·0	74·2	65·0	+3·0	48·5	56·9	58·5	54·6
	Chikalda	3,642	·435	·335	·100	·381	−·023	?	78·5	61·1	17·4	82·2	56·1	26·1	73·7	75·7	69·9	+3·0	53·4	59·3	60·4	57·7

† Mean of 28 days. ‡ Mean of 29 days.

II—*continued.*

Stations in India, Burma, etc., for November, 1898—continued.

Vapour Tension.					Humidity.					Cloud.				Wind Direction.											Wind Steadiness.		Wind Velocity.		Rainfall.			
														Number of winds from																		
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.	Station.	Meteorological Province.
																									%	%						
·376	·426	·395	·399	−·001	73	45	33	50	− 4	1·4	1·0	1·2	−0·3	26	...	24	4	3	...	3	...	...	N. 59° E.	N. 66° E.	42	46	56	49	...	...	Hoshangabad.	Deccan—*concld.*
·376	·424	·375	·392	−·039	68	43	31	47	− 8	2·1	2·2	2·2	−0·3	31	1	13	12	3	...	...	...	...	N. 71° E.	N. 54° E.	42	60	77	95	...	...	Nagpur.	
·385	·433	·429	·416	?	73	42	33	49	?	1·6	1·5	1·6	?	16	15	23	4	...	...	...	...	2	N. 30° E.	?	63	?	31*	?	...	...	Nagpur (Sanitary Commissioner's Office).	
·362	·400	·350	·371	−·007	85	46	31	54	− 4	1·7	2·1	1·9	+0·2	4	10	11	4	5	11	6	3	6	N. 49° E.	N. 45° E.	8	25	48	39	...	...	Jubbulpore.	
?	·303	·286	?	?	?	30	26	?	?	0·8	1·9	1·4	+0·1	2	15	8	7	6	6	4	6	6	N. 17° E.	N. 31° E.	20	39	114*	57	...	...	Saugor.	
·338	·342	·309	·330	+·009	74	36	29	46	− 2	0·5	1·4	1·0	−0·2	5	13	7	9	3	1	1	4	17	N. 2° W.	N. 8° W.	43	41	64*	81	...	...	Sutna.	
·380	·442	·365	·396	−·049	70	47	32	50	− 8	1·7	1·9	1·8	−0·5	19	6	17	9	2	1	...	5	1	N 45° E.	N. 34° E.	38	54	52*	79	...	...	Raipur.	
·506	·541	·493	·513	−·019	87	57	48	64	− 3	3·5	3·3	3·4	+0·2	16	...	1	23	20	...	...	...	...	S. 70° E.	S. 72° E.	67	67	93*	88	...	...	Hyderabad (Deccan).	West Coast
·630	·706	·753	·696	+.002	71	65	61	66	− 4	1·8	2·1	2·0	−0·1	...	2	11	17	2	...	...	10	18	N. 9° E.	N. 18° E.	35	52	209	235	...	...	Bombay.	
·604	·604	·739	·649	−·003	76	48	59	61	− 2	2·1	2·3	2·2	+0·7	...	2	2	11	11	1	4	10	19	N. 49° W.	N. 5° E.	13	22	211*	191	...	...	Ratnagiri.	
·672	·707	·742	·707	+·001	91	69	62	74	0	2·2	3·3	2·8	+0·4	7	5	3	1	...	...	2	7	35	N. 45° W.	N. 31° W.	71	46	71	60	...	...	Karwar.	
·766	·795	·784	·782	−·025	90	72	69	77	− 2	4·9	6·4	5·7	+1·3	5	17	7	...	...	...	4	14	13	N. 37° W.	S. 81° W.	59	24	105	100	...	...	Cochin.	
·658	·720	·709	·696	+·036	94	76	71	80	+ 5	6·9	7·5	7·2	+ 2·0	17	1	17	14	1	...	4	5	1	N. 61° E.	N. 87° E.	35	24	81	74	...	...	Salem.	South India.
·479	·521	·532	·511	−·013	88	78	74	80	0	4·8	6·6	5·7	−0·5	15	2	8	26	1	2	...	2	4	N. 71° E.	N. 66° E.	48	53	175*	116	...	...	Mercara.	
·503	·558	·519	·527	+·033	84	66	55	68	+ 3	5·8	5·6	5·7	+1·0	3	5	9	26	12	1	...	1	3	N. 84° E.	N. 74° E.	63	72	142*	160	...	...	Chitaldroog.	
·542	·567	·552	·554	+·022	94	72	67	78	+ 5	6.6	6·3	6·5	+1·6	...	5	21	25	3	2	1	...	3	N. 66° E.	N. 61° E.	72	64	157*	108	...	...	Bangalore.	
·577	·537	·521	·525	−·011	95	65	66	73	0	6·5	6·6	6·6	+0·2	2	2	29	21	4	1	1	...	...	N. 67° E.	N. 71° E.	78	77	68*	86	...	...	Hassan.	
·557	·582	·572	·570	0	92	67	62	74	+ 6	7·3	6·8	7·1	+0·6	...	5	18	20	7	2	4	2	2	N. 74° E.	N. 78° E.	55	72	199*	219	...	...	Mysore.	
·737	·744	·753	·745	+·011	94	74	70	79	+ 3	7·0	7·9	7·5	+0·6	23	4	26	2	...	...	...	2	3	N. 34° E.	N. 32° E.	48	54	82	93	...	...	Trichinopoly	
?	·812	·792	·801	+·030	?	78	78	85	+ 4	6·7	6·3	6·5	+0·5	...	18	20	9	6	6	1	...	...	N. 51° E.	N. 24° E.	57	64	145	156	...	...	Madras.	
·531	·490	·472	·498	−·042	82	48	42	57	− 5	6·5	6·8	6·7	+1·8	5	1	11	39	1	...	...	...	3	N. 77° E.	N. 81° E.	77	55	105*	77	...	...	Bellary.	
·656	·645	·620	·640	−·063	86	63	59	69	− 6	3·0	3·5	3·3	+0·1	...	3	30	18	6	1	...	...	2	N. 64° E.	N. 64° E.	78	76	249*	259	...	...	Cocanada.	
·663	·667	·677	·669	+·041	93	63	66	74	+ 8	4·6	4·7	4·7	+1·2	5	17	22	1	7	2	2	3	1	N. 33° E.	N. 58° E.	54	51	?	51	...	...	Vizagapatam	
·108	·152	·143	·134	−·017	64	35	26	42	− 5	1·3	1·3	1·3	−0·2	42	4	...	...	1	1	1	4	7	N. 53° W.	N. 51° W.	18	40	17*	54	...	...	Quetta.	Hill Station, Baluchistan.
·085	·107	·120	·104	+·012	78	52	45	58	+ 4	3·4	3·7	3·6	−0·5	...	...	...	...	...	3	34	16	7	S. 64° W.	S. 21° W.	84	34	45	44	...	...	Leh.	Hill Stations, Punjab.
·116†	·208†	·369†	·231	+·004	75†	65†	70†	68	−10	1·3	2·4	1·9	−1·3	16	15	5	2	1	2	2	7	10	N. 23° W.	N. 16° E.	38	18	66*	66	...	...	Srinagar.	
·089	·130	·158	·126	−·032	27	30	35	31	−11	1·4	1·9	1·7	−1·3	35	2	...	...	9	9	2	...	3	S. 67° E.	S. 40° E.	5	20	85*	149	...	...	Murree.	
·112	·085	·065	·087	−·015	85	33	21	46	− 6	2·5	5·0	3·8	+0·1	...	1	1	...	6	7	24	12	9	S. 56° W.	S. 52° W.	60	61	51	33	0·03	0·03	Kailang.	
·128	·126	·159	·138	−·036	44	34	42	40	− 8	0·9	1·5	1·2	−1·1	13	8	10	1	1	15	11	1	...	S.	S. 12° W.	14	18	86	101	...	...	Simla (Ridge).	
·150	·164	·182	·165	−·034	55	41	46	47	− 8	0·9	1·2	1·1	−0·6	20	4	...	...	2	34	...	...	...	S. 3° E.	S. 61° W.	52	30	215	115	...	...	Chakrata.	
·200	·209	·227	·212	−·038	62	46	49	52	− 7	0·8	1·0	0·9	−0·6	15	1	6	1	...	3	15	16	3	S. 75° W.	S. 53° W.	40	35	81*	37	...	...	Ranikhet.	Hill Stations, N.-W. P.
·128	·157	·181	·155	?	48	41	46	45	?	0·7	0·8	0·8	?	...	1	5	...	19	1	10	...	24	W.	?	14	?	44*	?	...	...	Muktesar.	
·272	·349	·352	·324	−·013	91	65	54	70	− 2	2·7	3·8	3·3	+0·8	1	...	...	10	7	...	7	30	5	S. 75° W.	N. 80° W.	40	45	14	14	*Nil*	*Nil*	Katmandu.	Hill Station, Nepal.
?	(‡) ·303	·305	?	?	?	(‡) 85	85	?	?	4·8	5·7	5·3	+0·9	...	5	7	19	2	2	1	10	13	N. 20° E.	N. 79° W.	27	12	?	64	...	...	Darjeeling.	Hill Stations, Bengal.
·240	·275	·272	·262	+·018	44	35	34	38	− 1	1·5	1·7	1·6	+0·1	...	12	9	3	2	3	9	12	10	N. 45° W.	N. 54° E.	35	21	132*	94	...	...	Mount Abu	Hill Stations, Central India.
·296	·292	·313	·300	−·013	72	37	37	49	− 6	1·8	2·2	2·0	−0·1	33	3	10	6	2	...	1	1	4	N. 42° E.	N. 46° E	25	41	84*	63	...	...	Pachmarhi.	
·325	·343	·352	·340	−·026	60	41	40	47	− 8	2·1	2·3	2·2	−0·2	36	7	2	1	4	5	4	..	1	S. 47° E.	N. 7° W	4	19	149*	114	*Nil*	*Nil*	Chikalda.	

* Corrected.

Tabl

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 8

Meteorological Province.	Station.	Elevation of barometer cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bul Mean minimum.	Temperature, Wet-bul Mean 10 hours.	Temperature, Wet-bul Mean 16 hours.	Temperature, Wet-bul Mean daily.
Hill Station, South India.	Wellington	...	24·239	24·168	·071	24·204	−·042	?	67·0	52·6	14·4	71·4	38·8	32·6	63·0	62·4	58·7	+0·2	51·2	57·3	58·5	55·7
Extra India.	Aden	...	29·914	29·810	·104	29·866	−·040	29·892	83·9	74·3	9·6	93·5	69·5	24·0	81·1	82·3	78·9	0	68·8	72·4	71·5	70·9
	Perim	...	·758	·654	·104	·710	−·058	?	86·4	77·4†	9·0	89·7	74·6	15·1	83·8	83·0	81·1	+0·2	71·5	74·4	73·7	73·2
	Minicoy	...	·878	·781	·097	·829	?	·764	84·9	?	?	87·5	?	?	82·0	81·6	?	?	?	76·6	76·2	?
	Zanzibar	...	·933	·809	·124	·871	−·049	·871	84·7	77·1	7·6	88·0	75·0	13·0	81·2	84·3	80·8	+1·2	73·7	75·8	76·2	75·2
	Port Victoria (Seychelles).	15	·954	·870	·084	·912	−·030	·851	83·5	74·6	8·9	85·2	71·0	14·2	82·1	82·9	78·9	−0·1	71·5	75·2	75·1	73·9
	Mauritius	181	?	?	?	·839	−·056	·968	?	?	?	89·9	58·3	31·6	?	?	75·2	−0·2	?	?	?	?

† Mean of 28 days. ‡ Mean of 29 days.

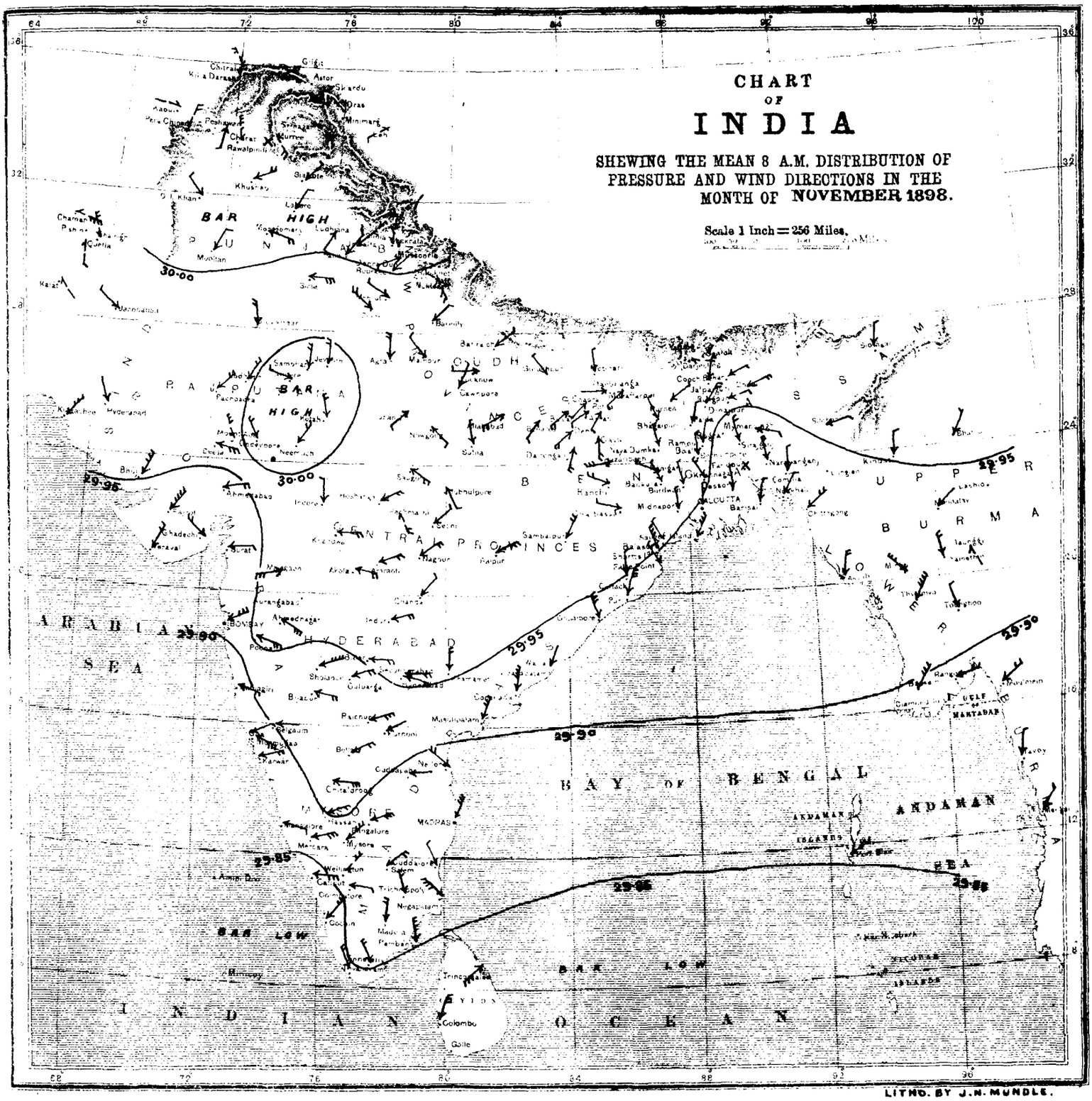
II—*concluded.*

Stations in India, Burma, etc., for November, 1898—concluded.

Vapour tension.					Humidity.					Cloud.				Wind direction.											Wind steadiness.		Wind velocity.		Rainfall.		Station.	Meteorological Province.
														Number of winds from																		
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·371	·419	·453	·414	−·002	91	73	80	81	− 2	7·1	7·5	7·3	+0·5	8	8	11	5	17	9	1	...	1	S. 77° E.	S. 41° E.	40	54	70	55	...	...	Wellington.	Hill Station, S. India.
·632	·681	·631	·648	−·005	75	64	58	66	0	3·9	3·2	3·6	+1·4	2	...	9	25	16	4	3	1	...	S. 75° E.	S. 87° E.	68	66	291‡	311	...	...	Aden.	Extra India.
·697†	·722	·707	·709	+·037	74†	62	62	66	+ 4	4·8	4·4	4·6	+2·8	...	...	...	28	18	14	...	...	...	S. 57° E.	S. 62° E.	82	82	378	491	...	...	Perim.	
?	·844	·832	?	?	?	78	77	?	?	5·0	4·6	4·8	?	...	13	8	6	3	5	4	11	10	N. 24° W.	?	28	?	129*	?	...	...	Minicoy.	
·787	·821	·794	·800	−·019	84	77	68	76	− 5	7·0	4·9	6·0	+0·3	...	8	5	10	6	19	5	3	4	S. 34° E.	S. 31° E.	25	29	102*	115	...	...	Zanzibar.	
·730	·782	·766	·759	−·060	85	71	68	75	− 7	4·9	4·7	4·8	−2·1	11	3	4	4	13	9	2	4	10	S. 30° E.	S. 70° E.	12	30	103	140	3·62	2·01	Port Victoria (Seychelles).	
?	?	?	·611	?	?	?	?	74	+ 2	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	214	260	0·90	0·31	Mauritius.	

* Corrected.

G. I. C. P. O.—No. 83 Meteor—7-3-99.—385.



Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2 miles per hour	...	one feather	added to the wind arrow
,, ,,	2 to 5 ,, ,, ,,	...	two feathers	,, ,, ,, ,,
,, ,,	5 to 10 ,, ,, ,,		three ,,	,, ,, ,, ,,
,, ,,	10 to 20 ,, ,, ,,	...	four ,,	,, ,, ,, ,,
	over 20 ,, ,, ,,	...	five ,,	,, ,, ,, ,,

LITHO. BY J. N. MUNDLE

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

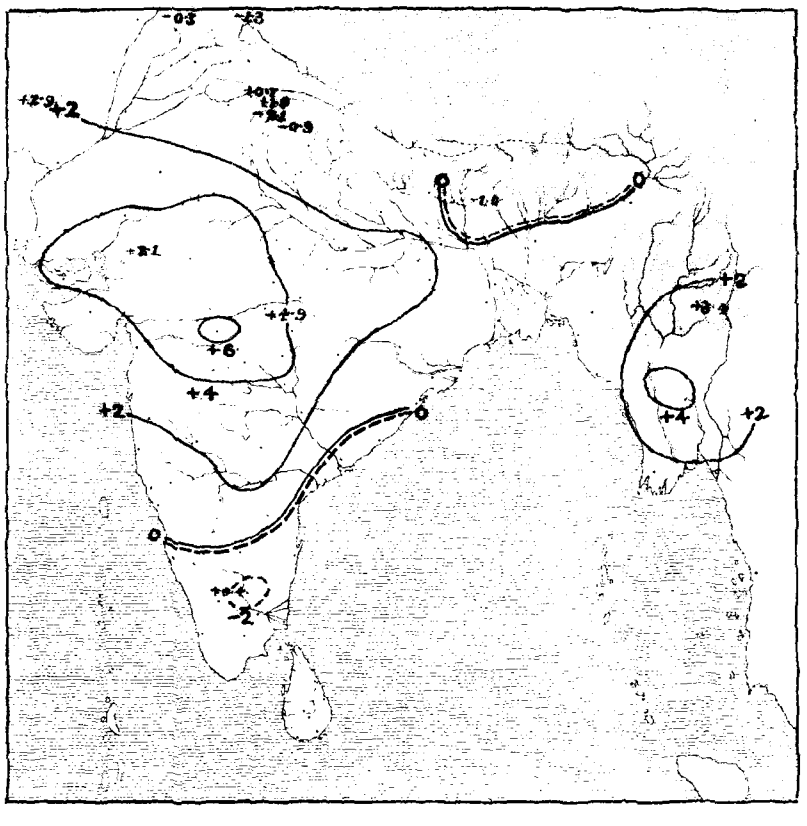
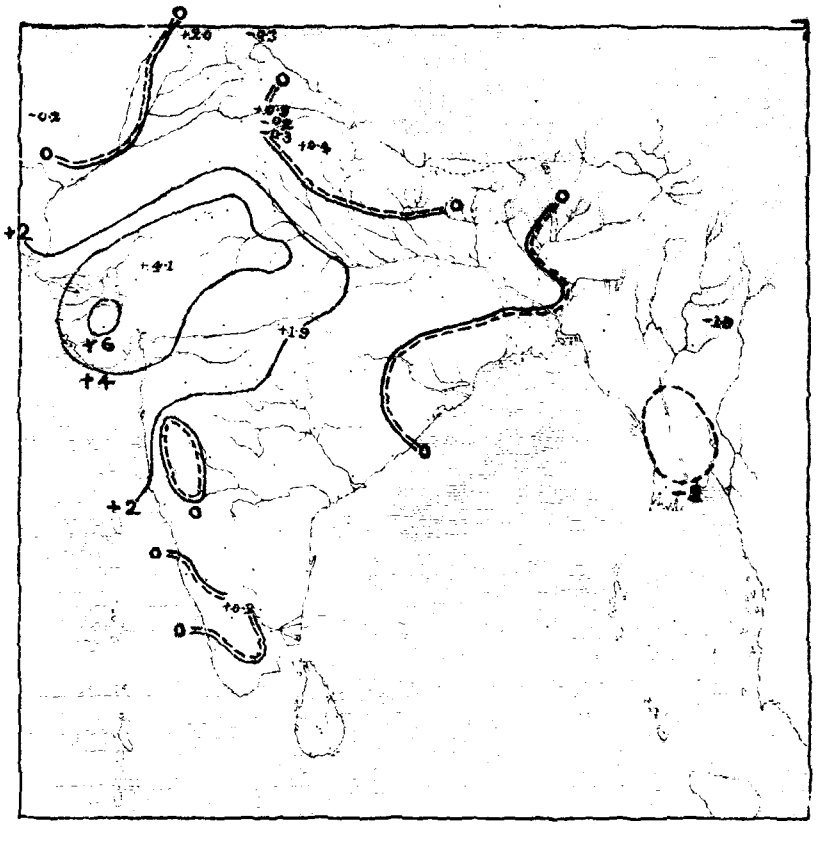


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

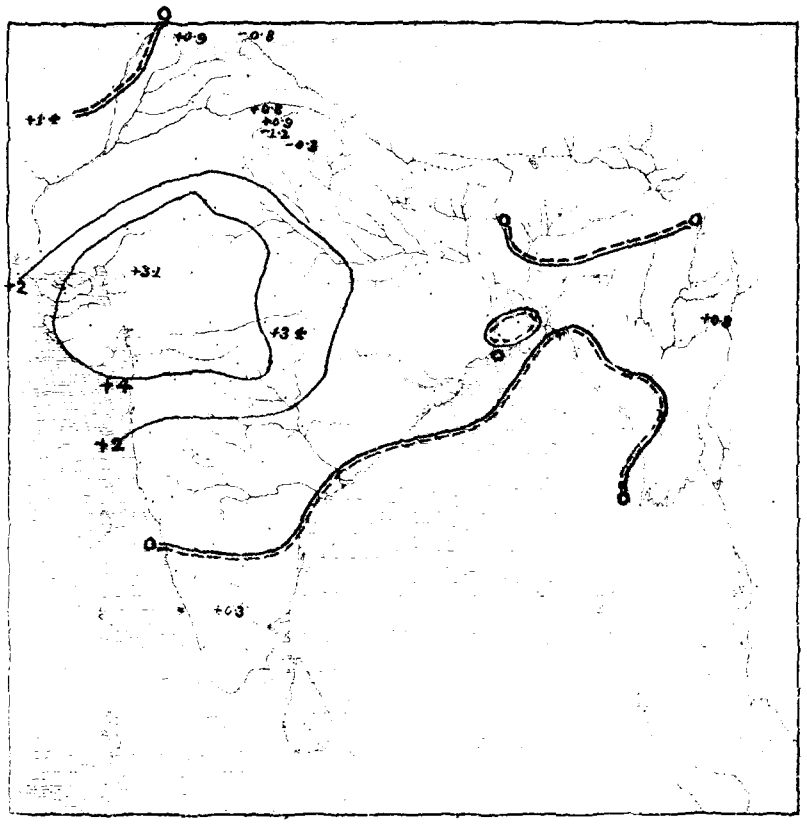
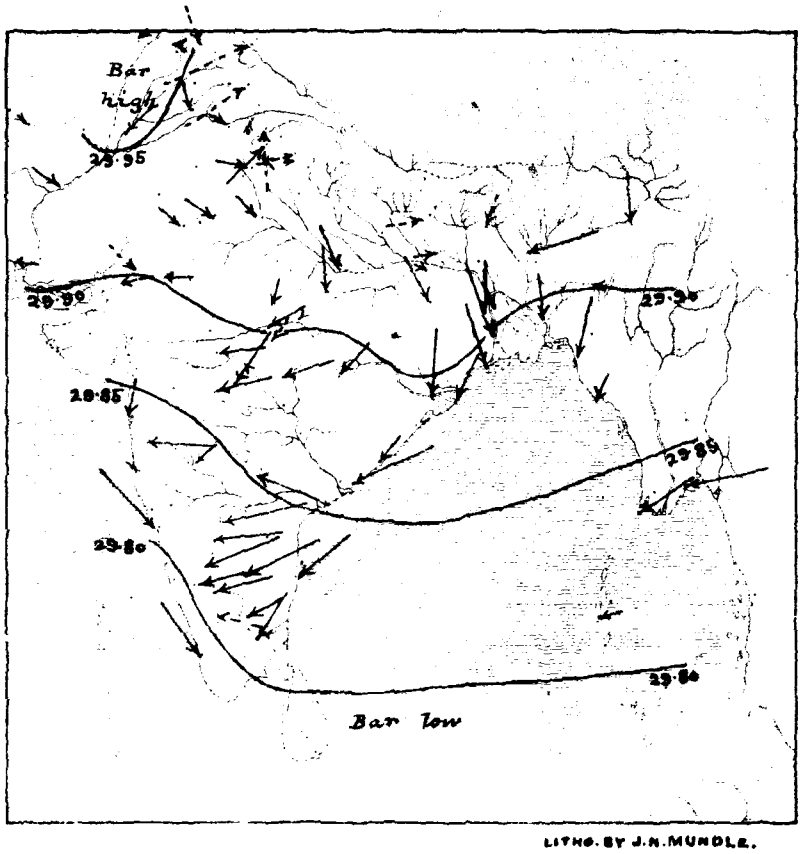


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF NOVEMBER 1898.

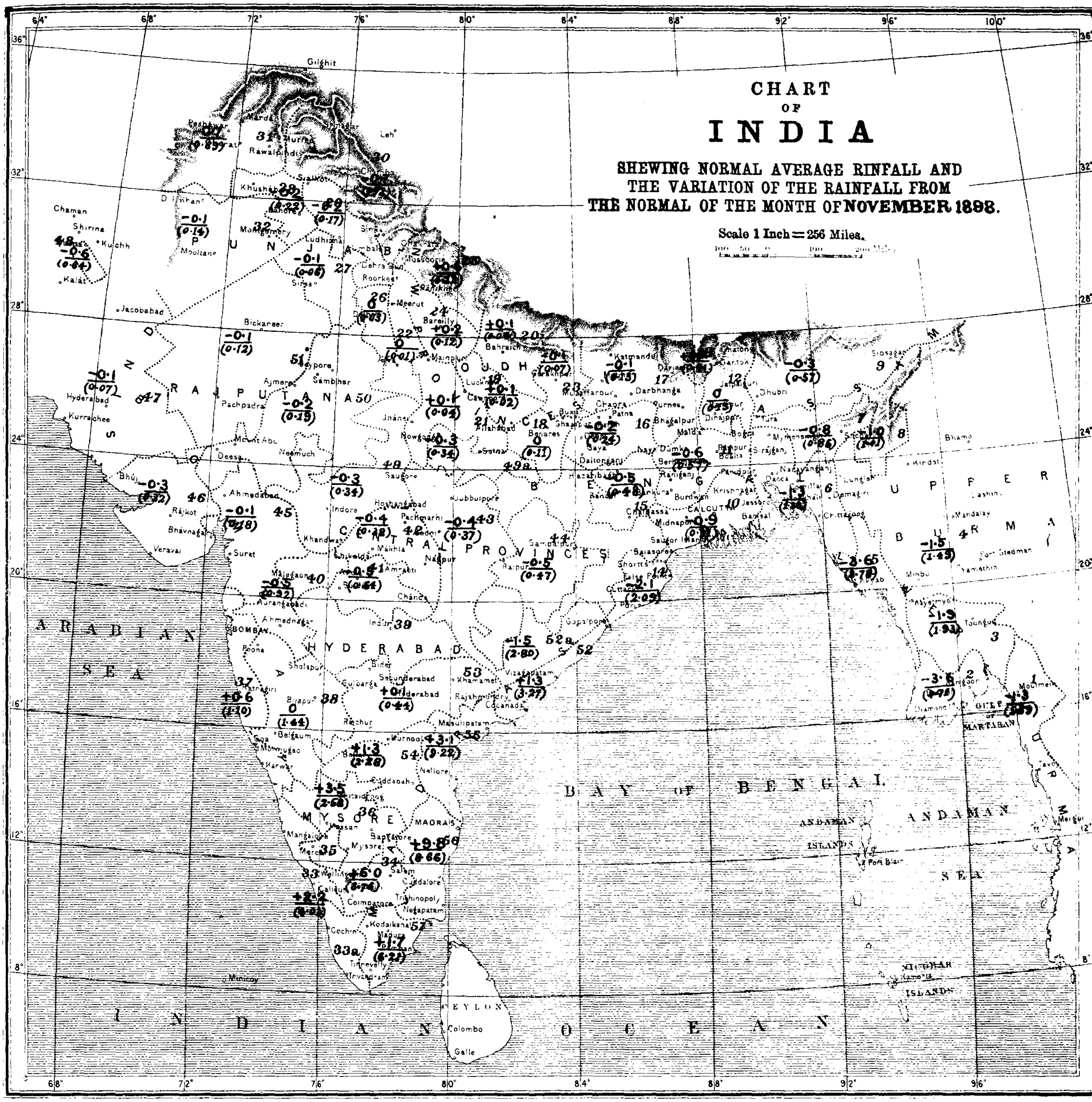


LITHO. BY J.N. MUNDLE.

Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of ⅗th of an inch being equal to 100 per cent.



Reg. No. 243, Wr., I.—June 98.—52,50. LITHO. BY J. N. [illegible] Calcutta.

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim	17. North Bihar	33. Malabar	48. Baluchistan Hills
2. Lower Burma, Deltaic	18. North Western Provinces, East	33a Travancore	49. Central India, East
3. Central do.	19. South Oudh	34. Madras, South Central	49a Do. do.
4. Upper do.	20. North do.	35. Coorg	50. Rajputana East, Central India West
5. Arakan	21. North Western Provinces, Central	36. Mysore	51. West Rajputana
6. East Bengal	22. Do. do., West	37. Konkan	52. East Coast, North
7. Assam, Surma	23. Do. do., East Submontane	38. Bombay Deccan	52(a). Do. do. (a)
8. Do., Hills	24. Do. do., West do.	39. Hyderabad, North	53. Hyderabad, South
9. Do., Brahmaputra	25. Do. do., Hills	40. Khandesh	54. Madras, Central
10. Deltaic Bengal	26. South East Punjab	41. Berar	55. East Coast, Central
11. Central do.	27. South do.	42. Central Provinces, West	56. East Coast, South
12. North do.	28. Central do.	43. Do., Central	57. Madras, South
13. Bengal Hills	29. Punjab, Submontane	44. Do., East	
14. Orissa	30. Do., Hills	45. Gujarat	
15. Chota Nagpur	31. North Punjab	46. Kathiawar	
16. South Bihar	32. West do.	47. Sind	

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GOVERNMENT OF INDIA.

METEOROLOGICAL DEPARTMENT.

MONTHLY WEATHER REVIEW

PUBLISHED BY ORDER OF

THE GOVERNMENT OF INDIA.

CALCUTTA, DECEMBER, 1898.

INTRODUCTION.

THIS review of the weather in India during the month of December 1898 is based on observations taken daily at 8 A.M. at 217 stations, and on additional observations taken at 10 A.M. and 4 P.M. at 83 stations. The rainfall summary is based on the rainfall data of the meteorological observatories and on the weekly rainfall telegrams received during the month from the District Officers throughout India, and the rainfall statements of the month published by the Provincial Governments which had been received up to the date of the publication of the review. A summary of the weather in the Bay of Bengal and the Arabian Sea, based on information extracted from the logs of vessels entering the ports of Calcutta and Bombay, is also given.

Summary of the chief features of the weather in India during the month of December, 1898.

The most important feature in the meteorology of the month of December is the final withdrawal of the south-west humid winds from the south of the Bay and the extension of the north-east monsoon winds over the whole of the Bay. This change usually occurs in the third or fourth week of the month. During the early part of the month the north-east winds which prevail on the Coromandel Coast and in East Ceylon continue to give light to heavy rain. This rainfall is heaviest in the South Coromandel Coast districts and diminishes rapidly westwards from the coast into the interior.

Cyclonic storms are also of occasional occurrence during the month, and the final withdrawal of the retreating south-west monsoon current from the south of the Bay is frequently immediately preceded by the formation of a cyclonic storm in the south-west of the Bay. These storms almost invariably march westwards to the South Coromandel Coast between Negapatam and Cuddalore or Pondicherry and usually break up in the Madura, Tinnevelley and Coimbatore districts. They occasionally give excessive cyclonic rain to the South Coromandel Coast districts.

Another important feature is the occasional appearance of shallow depressions in Upper India. These depressions originate sometimes in Baluchistan and Persia and sometimes in North-Western India. They generally give very little rain if they occur during the early part of December. In the latter part of December and in January and February, these depressions and storms of the cold weather frequently give moderate general rain to Northern India and moderate to heavy snow to the hill districts. They usually march in an easterly direction across Northern India. When they enter India from Baluchistan they frequently give rise to the formation of secondary or subsidiary depressions in the Punjab. These subsidiary storms are usually much deeper and more intense than the primary storms and give heavy rain in the Punjab, and stormy weather and heavy snow in the hills.

At the commencement of the month pressure was in moderate to considerable excess over the head of the Peninsula and the north of the Bay and normal in the south of the Bay. Gradients were hence steeper than usual in the Bay, and moderately strong north-east winds were blowing across the Coromandel Coast and giving moderate to heavy rain in Southern India (*i.e.*, to the south of Lat. 15°N). Pressure decreased on the 1st, 2nd and 3rd, rapidly in Northern India and slightly in Southern India and the south of the Bay. Rain ceased and fine weather with passing clouds set in over Southern India on the 3rd. The rainfall in Southern India during this short burst was very heavy in the coast districts south of Nellore.

The following gives district rainfalls in 24 hours exceeding one inch in amount :—

District.	Date.	Rainfall.	
		Average actual of 24 hours preceding 8 A.M. in district.	Heaviest in district.
		Inches.	Inches.
Nellore	1st December	1·83	11·01
Chingleput	Ditto	3·15	5·65
North Arcot	Ditto	2·31	7·54
South ,,	Ditto	2·35	5·53
Salem	Ditto	1·20	3·64
Cuddapah	Ditto	1·98	8·40

Temperature was in moderate to considerable excess in North-Western and Central India at the beginning of the month. It increased rapidly over a part of that area on the 2nd and 3rd, and was considerably to very largely above the normal on the 3rd and following days in the areas for which variation data are given below :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	2nd December.	3rd December.	4th December.	5th December.	6th December.
	°	°	°	°	°
Gujarat	+3·2	+6·1	+5·8	+2·8	+1·7
Central India	+3·5	+3·0	+3·6	+3·8	+5·1
Central Provinces	+2·0	+2·8	+5·1	+7·1	+8·3
Berar	+6·9	+6·3	+8·7	+10·9	+12·5
Bombay Deccan	+5·3	+7·4	+6·8	+8·3	+7·9

The excess was much greater in the night than the day temperature, as is shown by the following statement giving variations for the stations at which temperature was in greatest excess on each day of the period :—

Date.	Station.	Variation from normal of		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
2nd Dec.	Akola	+4·8	+10·7	+ 7·8
3rd ,,	Malegaon	+1·2	+20·0	+10·6
4th ,,	Khandwa	+8·6	+19·4	+14·0
5th ,,	Ditto	+9·1	+22·2	+15·7
6th ,,	Akola	+9·7	+20·1	+14·9

Temperature was during the same period in slight to moderate defect in North-Eastern India and in moderate to large defect in Upper India and Baluchistan. The following gives comparative data :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	2nd December.	3rd December.	4th December.	5th December.	6th December.
	°	°	°	°	°
Baluchistan	—3·5	—8·3	—10·9	—11·3	—8·9
Sind	+5·3	+1·3	— 2·8	— 3·9	—3·7
Punjab	+1·9	+0·7	— 1·0	— 3·5	—4·1
Bihar	—0·1	—0·5	— 1·9	— 1·4	—0·5
Bengal	—1·6	—2·1	— 2·9	— 2·7	—1·3
Burma	—1·7	—1·7	— 1·4	— 1·3	—1·2

The sharp contrasts of temperature in North-Western and Central India gave rise to feeble local disturbance shown chiefly by the occurrence of thunderstorms in the districts to the north of the area of greatest excess of temperature.

Local showers were received in Central India on the 6th, in Kathiawar, Gujarat, Central India and Rajputana on the 7th and 8th and in Rajputana on the 9th. Kashmir also received light rain or snow on the 8th and 9th. This disturbance passed away on the 9th and fine weather continued in Northern and Central India until the 11th.

The chief features of the temperature conditions from the 7th to the 12th were similar to those of the first period of the month. Temperature was in very large excess in a

broad belt of country at the head of the Peninsula. The following gives data :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	7th December.	8th December.	9th December.	10th December.	11th December.	12th December.
	°	°	°	°	°	°
Central India	+3·7	+3·0	+3·5	+6·0	+7·9	+9·5
Berar	+10·3	+10·4	+9·6	+10·9	+10·0	+10·7
Bombay Deccan	+7·1	+5·4	+5·2	+6·5	+6·8	+6·9
Central Provinces	+6·7	+7·1	+7·4	+9·2	+10·0	+11·7
Chota Nagpur	+0·6	+2·4	+4·2	+6·3	+6·9	+6·7
Orissa	+0·8	+1·2	+2·8	+4·6	+6·9	+7·7

The excess was most marked in the night temperature. The following gives variation data for the stations at which temperature was in greatest excess on each day of this period :—

DATE.	Station.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
			°	°
7th Dec.	Khandwa	+7·7	+17·7	+12·7
8th ,,	Ditto	+7·2	+19·0	+13·1
9th ,,	Ditto	+8·4	+14·4	+11·4
10th ,,	Ditto	+9·9	+16·4	+13·2
11th ,,	Ditto	+9·9	+17·6	+13·8
12th ,,	Jubbulpore	+11·7	+16·1	+13·9

Temperature was during the period in slight to large defect in Upper India and Baluchistan. The following gives data for that area :—

DIVISION	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	7th December.	8th December.	9th December.	10th December.	11th December.	12th December.
	°	°	°	°	°	°
Baluchistan	−2·2	−7·4	−9·9	−9·7	−8·6	−9·9
Sind	−3·5	−4·2	−4·5	−5·0	−4·5	−5·7
Punjab	−3·6	−2·8	−1·4	−0·6	+0·2	+0·9
Rajputana	+1·3	−4·9	−1·4	+0·1	+3·2	+4·4

The air was very dry during these two periods (*i.e.*, from 1st to the 12th) over Northern and Central India and the Upper India hill districts.

The following gives the lowest humidities of the month recorded during the period at typical stations in Northern India :—

STATION.	Date.	Hour.	Lowest humidity recorded in December 1898.
			%
Simla	5th December	8 A.M.	3
Muktesar	6th ,,	,,	5
Chakrata	11th ,,	,,	6
Deesa	12th ,,	4 P.M.	12
Bhuj	4th ,,	8 A.M.	13
Rajkot	2nd ,,	,,	13
Kurrachee	7th ,,	4 P.M.	14
Hyderabad (Sind)	4th ,,	8 A.M.	15
Jodhpore	12th ,,	,,	15
Roorkee	3rd ,,	4 P.M.	15
Meerut	4th ,,	10 A.M.	15
Allahabad	2nd ,,	4 P.M.	19
Calcutta	4th ,,	,,	23
Saugor Island	4th ,,	,,	34

The area of greatest excess of temperature was transferred on the 12th eastwards from the west to the north-east of the Central Provinces. The abnormal temperature conditions again gave rise to a short period of unsettled weat her. Thunderstorms giving showers of rain, hail or snow occurred on the 12th and 13th in Kashmir, the hill districts of Upper India and the western districts of the North-Western Provinces. This change of weather accompanied a remarkable increase of humidity in the hill districts of Upper India. Thus, humidity at Chakrata increased from a percentage of 6 at 8 A.M. of the 11th to a percentage of 96 at the same hour of the 12th. At Simla it increased in the same interval from 8 to 78. Fine dry weather prevailed from the 14th to the 16th. Temperature was during this period largely in excess, as hitherto, in the broad belt across the head of the Peninsula, including Berar, the Central Provinces, Central India, Chota Nagpur and Orissa. The following gives data:—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	13th December.	14th December.	15th December.	16th December.	17th December.
	°	°	°	°	°
Berar	+12·0	+10·6	+9·2	+8·8	+5·4
Central Provinces	+10·3	+9·1	+5·7	+2·4	+0·9
Central India	+7·5	+4·3	−3·7	−3·2	−1·3
Chota Nagpur	+8·5	+8·5	+3·8	+1·7	+1·3
Orissa	+6·6	+8·0	+7·8	+5·7	+3·4

Temperature was, on the other hand, in moderate to large defect in Upper India and Baluchistan during the greater part of the period, as shown below :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of				
	13th December.	14th December.	15th December.	16th December.	17th December.
	°	°	°	°	°
Baluchistan	—10·7	—5·7	—0·6	+5·8	+12·9
Sind	— 5·7	—5·5	—4·2	—1·7	+ 0·1
Punjab	— 0·4	—2·0	—2·0	—0·2	+ 1·8
Rajputana	+ 0·3	—4·3	—4·6	—1·8	+ 1·5

A feeble cold weather depression and storm formed in Persia on the 15th and 16th. It advanced eastwards through Baluchistan on the 17th, into Sind on the 18th and Rajputana on the 19th and 20th, and gradually filled up as it passed across North-Eastern India on the 21st and 22nd. The disturbance gave much cloud and a few local showers in the plains of Northern India. Kashmir received light snow. The disturbance was preceded by a warm wave and followed by a cool wave of slight intensity. The advance of these waves gave rapid changes of the temperature conditions from the 17th to the 23rd in Northern and Central India. The following data show the progress of the warm wave across Northern India. The cool wave was very feeble and only affected Baluchistan and Upper India :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of					
	16th December.	17th December.	18th December.	19th December.	20th December.	21st December.
	°	°	°	°	°	°
Baluchistan	+5·8	+12·9	+6·9	—0·3	—1·3	—4·5
Punjab	—0·2	+ 1·8	+1·1	+1·6	+2·4	+1·2
Sind	—1·7	+0·1	+2·3	+1·8	+1·5	—1·1
Rajputana	—1·8	+1·5	+4·1	+6·6	+4·6	+3·1
North-Western Provinces and Oudh.	—1·8	—1·6	0	+1·7	+2·1	+4·6
Bihar	—2·4	—2·3	—1·6	—0·4	+1·7	+2·4
Chota Nagpur	+1·7	+1·3	—0·4	—1·2	+1·8	+3·2
Bengal	+1·9	—0·9	—2·0	—2·0	—1·2	+0·3

Weather was showery during this period in South Madras and Ceylon. The Madura and Tinnevelly districts received almost daily rain during this period.

Dry weather obtained over India during the next three days, from the 22nd to the 24th.

Temperature was excessive during the period in the areas for which data are given below :—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of			
	21st December.	22nd December.	23rd December.	24th December.
	°	°	°	°
Berar	+7·6	+6·8	+6·4	+5·8
Central Provinces	+5·8	+6·4	+5·0	+3·2
Central India	+6·8	+4·5	—0·9	—0·5
North-Western Provinces and Oudh.	+4·6	+4·3	+1·7	—0·5
Chota Nagpur	+3·2	+5·7	+6·0	+3·2

Weather was much disturbed during the remainder of the month. Southern India received a moderately heavy burst of rain from the 24th to the 30th. The distribution of the heaviest rainfall is indicated by the following statement giving district rainfalls in 24 hours exceeding one inch :—

District.	Date.	Rainfall.	
		Average actual in 24 hours preceding 8 A.M. of date in district.	Heaviest in district.
		Inches.	Inches.
South Arcot	25th December	2·10	6·34
Madras	,, ,,	1·20	1·20
Tanjore	,, ,,	1·15	4·00
Madras	26th ,,	4·10	4·10
Chingleput	,, ,,	3·80	6·68
Tanjore	,, ,,	2·81	4·64
South Arcot	,, ,,	2·69	5·80
Trichinopoly	,, ,,	2·34	6·85
North Arcot	,, ,,	1·66	3·39
South Arcot	27th ,,	2·06	4·71
Madras	,, ,,	1·84	1·84
Tanjore	,, ,,	1·67	3·68
Tinnevelly	,, ,,	1·31	2·68
Madura	,, ,,	1·23	3·00
Trichinopoly	,, ,,	1·20	2·15
Tanjore	29th ,,	1·12	1·90
Ditto	30th ,,	1·46	3·61

The hill districts of Upper India and Kashmir received light to moderate snow from the 24th to the 26th due to a very shallow depression which passed eastwards from Kathiawar through Rajputana into North-Eastern India.

A depression advanced from Persia on the 26th into Baluchistan on the 28th, Sind on the 29th, Rajputana on the 30th, and the eastern districts of the North-Western Provinces, Bihar and Baghelkhand on the 31st. It gave moderate to heavy snow in the hill districts of Upper India and light rain in the Punjab and west submontane districts of the North-Western Provinces.

The storm was preceded by a well marked warm wave and followed by a cool wave of moderate intensity. The following variation data illustrate the changes of the temperature conditions in Northern and Central India during the advance of the storm :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF					
	26th December.	27th December.	28th December.	29th December.	30th December.	31st December.
	°	°	°	°	°	°
Baluchistan	—0·6	+2·0	+6·2	+1·7	—3·9	—11·1
Punjab	+1·4	+1·6	+1·2	+2·5	—3·4	— 5·1
Sind	+0·9	+1·5	+4·7	+9·6	+1·0	— 3·2
North-Western Provinces and Oudh.	+2·4	+1·5	+1·0	—0·6	+1·4	+ 3·1
Rajputana	+2·4	—0·3	—2·0	+0·8	+6·2	— 2·9
Central India	+4·5	+0·8	—2·1	—2·3	+0·9	+ 3·0
Bihar	+1·0	+3·4	+3·3	+0·5	—2·3	+ 0·6
Chota Nagpur	+3·5	+3·3	+3·7	—1·2	—1·9	+ 2·8
Bengal	+0·1	+1·0	+3·0	+1·0	—1·7	— 2·0

An interesting feature of the storm was the great reduction of temperature at the hill stations in Upper India, a result of the snowfall. The following gives variation data for four stations :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF		
	29th December.	30th December.	31st December.
	°	°	°
Murree	—6·1	—16·0	—12·1
Simla	—6·9	—10·2	—14·2
Chakrata	—4·0	— 7·3	—14·3
Ranikhet	—5·8	— 7·5	—13·8

Very low minimum temperatures were registered at these stations at the end of the month. The following gives the more remarkable :—

STATION.	Lowest minimum temperature recorded in December, 1898.	Date on which recorded.	Lowest minimum temperature recorded in December previous to 1898.	Year in which recorded.
	°		°	
Leh	— 1·5	24th	— 9·5	1894
Skardu	8·2	31st	12·3	1896
Dras	—26·0	24th	—24·0	1896
Minimarg	3·0	23rd & 29th	0·5	1897
Astor	8·0	31st	11·0	1897
Murree	25·0	30th	22·4	1890
Simla	24·1	31st	21·0	1877
Quetta	15·8	13th	10·8	1878
Chaman	21·1	31st	23·1	1897
Mussooree	30·0	31st	30·0	1890

A noteworthy feature was the great dryness of the air in Berar, the Central Provinces and Deccan, during the last week of the month. The following gives the more remarkable humidities recorded in that area:—

STATION.	Date.	Hour.	Lowest humidity recorded in the last week of December, 1898.
			%
Akola	27th Dec.	4 P.M.	15
Buldana	,, ,,	,,	15
Hoshangabad	24th ,,	10 A.M.	16
Poona	28th ,,	4 P.M.	16
Sholapur	,, ,,	10 A.M.	16
Khandwa	27th ,,	4 P.M.	20
Belgaum	24th ,,	,,	22
Chikalda	28th ,,	,,	23
Nagpur	,, ,,	,,	23
Saugor	29th ,,	,,	23
Raipur	,, ,,	,,	26
Jubbulpore	30th ,,	,,	30

Pressure.—The mean pressure of India averaged ·028″ below the normal and was hence in considerable defect. Pressure was locally in slight defect in Northern and Central India and in slight excess in the Peninsula (except in Malabar where it was normal). The local variations were small in amount except in Lower Burma, Central Bihar and the Circars where they slightly exceeded ·02″.

The vertical pressure anomalies were generally small in amount, but were large and negative for Leh and Murree, indicating a local deficiency of pressure in the

middle atmospheric strata over Kashmir. The following table gives the mean pressure variations and anomalies of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	Variation from normal of mean 8 A.M. pressure of December, 1898.	Pressure anomaly, December, 1898.
		"
Burma Coast and Bay Islands	—·009	+·019
Burma Inland	—·037	—·009
Assam	—·047	—·019
Bengal and Orissa	—·026	+·002
Gangetic Plain and Chota Nagpur	—·042	—·014
Upper Sub-Himalayas	—·035	—·007
Indus Valley and North-West Rajputana	—·033	—·005
East Rajputana, Central India and Gujarat	—·035	—·007
Deccan	—·025	+·003
West Coast	—·026	+·002
South India	—·015	+·013

Temperature.—The variations of the mean temperature conditions of the month from the normal were unusually large.

The mean maximum temperature of the month was in slight to considerable defect in Baluchistan and the Upper India plains and hill districts. The deficiency was 3°·6 at Quetta representing Baluchistan and averaged 4° at the hill stations in Upper India. It averaged 1°·2 in the Upper Sub-Himalayas and 0°·5 in Rajputana, Central India and Gujarat.

The mean maximum temperature of the month was in excess over the remainder of India. The excess was moderate to considerable in Central Burma, ranging between 2° and 4° and was considerable to large in the area including the Deccan, Khandesh, Berar, the Central Provinces, Central India, Chota Nagpur and Orissa. It was 5° or upwards in the central area represented by the stations for which data are given below :—

STATION.	MEAN MAXIMUM TEMPERATURE.		
	Actual, December, 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Akola	88·5	82·0	+6·5
Amraoti	87·4	81·7	+5·7
Khandwa	87·0	81·7	+5·3
Raipur	83·4	78·3	+5·1
Nagpur	85·3	80·3	+5·0
Chanda	86·6	81·6	+5·0

The mean minimum temperature of the month was slightly below the normal in Lower Burma, Arakan, East Bengal, Sind, the South-West Punjab and the hill districts of Baluchistan and Upper India where the deficiency averaged 2°. The mean minimum temperature was in excess over the remainder of India. The excess was large over the Bombay Deccan, Khandesh, Berar and the Central Provinces. The following gives comparative data for the stations in that area at which the excess was over 6°:—

STATION.	MEAN MINIMUM TEMPERATURE.		
	Actual, December, 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Akola	59·7	50·0	+9·7
Khandwa	57·8	48·9	+8·9
Malegaon	57·6	50·3	+7·3
Hoshangabad	57·1	50·7	+6·4
Jubbulpore	51·5	45·2	+6·3
Amraoti	61·7	55·4	+6·3

The chief feature of the mean temperature of the month was the large excess in the Central Deccan, Khandesh, Berar and the Central Provinces. It ranged between 4° and 8° in that area. The following gives data for stations at which the variations exceeded 4°:—

PROVINCE.	STATION.	MEAN DAILY TEMPERATURE.		
		Actual, December, 1898.	Normal, December.	Variation of actual from normal.
		°	°	°
BERAR	Akola	74·1	66·0	+8·1
	Amraoti	74·6	68·6	+6·0
CENTRAL PROVINCES	Khandwa	72·4	65·3	+7·1
	Jubbulpore	65·9	60·6	+5·3
	Raipur	71·1	65·8	+5·3
	Nagpur	72·0	66·8	+5·2
	Chanda	71	66·3	+5·1
	Seoni	68·1	63·1	+5·0
	Hoshangabad	69·6	64·8	+4·8
	Saugor	67·8	63·5	+4·3
KHANDESH	Malegaon	72·3	66·8	+5·5
DECCAN	Sholapur	75·4	71·0	+4·4
	Poona	72·9	68·6	+4·3
	Hyderabad (Deccan)	73·3	69·1	+4·2

The central area of this abnormally high temperature was hence defined by the stations of Akola, Khandwa and Amraoti.

The temperature conditions in Central Burma represented on a smaller scale with respect to the Indo-Malayan Peninsula, the conditions obtaining at the head of the Indian Peninsula.

Temperature was in moderate to considerable excess in Central Burma, although it was normal in the coast districts.

The mean temperature of the month was in slight to considerable defect in Baluchistan, the Upper India hill districts, Sind and the South-West Punjab. The deficiency was most marked at Leh (—4°·4), Murree (—3°·6), Quetta (—2°·9) and Simla (—2°·8).

The following table gives variation data of the month for the eleven meteorological provinces :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL OF		
	Mean maximum temperature, December, 1898.	Mean minimum temperature, December, 1898.	Mean daily temperature, December, 1898.
	°	°	°
Burma Coast and Bay Islands	+0·7	—0·7	0
Burma Inland	+2·2	+1·9	+2·1
Assam	+0·6	+0·4	+0·5
Bengal and Orissa	+0·9	+0·8	+0·9
Gangetic Plain and Chota Nagpur	+1·7	+2·3	+2·1
Upper Sub-Himalayas	—1·2	+1·9	+0·3
Indus Valley and North-West Rajputana.	—0·5	—0·8	—0·7
East Rajputana, Central India and Gujarat.	—0·5	+4·1	+1·8
Deccan	+4·1	+5·8	+4·9
West Coast	+0·7	+1·8	+1·3
South India	+0·7	+1·5	+1·1

Winds—Were on the mean of the month weaker than usual at Port Blair and in Burma. They were also below their normal strength in Bengal and more northerly and less westerly than usual at the majority of the interior stations and also at Chittagong and Narayanganj. They were, on the other hand, somewhat stronger than usual in Bihar and the eastern districts of the North-Western Provinces. They were even more unsteady than usual in the western districts of the North-Western Provinces and the East Punjab. Winds were remarkably unsteady in Berar and the Central Provinces and varied irregularly in mean direction from the normal. At several stations the mean winds were from south-east instead of north-east. Winds were slightly weaker than usual on the Madras Coast, but were above their normal intensity in the West Deccan, Malabar and Mysore. They were also more directly from the east than usual in Mysore.

Humidity.—The variations from the normal conditions were, on the mean of the month, less marked than during the previous two or three months. The air was generally drier over the whole of Northern and Central India, the north of the Peninsula and Burma. The mean humidity of the month was in considerable defect (5 to 13) in the areas represented by the stations of Allahabad, Saugor, Khandwa, Hoshangabad, Akola and Buldana and in the Indus Valley and at Port Blair. It was, on the other hand, in moderate to considerable excess in the hill districts of Northern India. The mean humidity of the month was 12 above the normal at Darjeeling and 10 above at Simla. The air was slightly damper in the greater part of the Peninsula (except Malabar and Coorg). The following table gives variation data of the mean aqueous vapour pressure and mean humidity of ten meteorological provinces for the month of December 1898 :—

METEOROLOGICAL PROVINCE.	MEAN ABSOLUTE HUMIDITY.		MEAN RELATIVE HUMIDITY.	
	Average actual, December, 1898.	Variation of actual from normal, December, 1898.	Average actual, December, 1898.	Variation of actual from normal, December, 1898.
	"	"	%	
Burma Coast and Bay Islands	·664	—·024	72	—3
Assam	·461	—·005	74	—2
Bengal and Orissa	·476	+·014	68	—2
Gangetic Plain and Chota Nagpur	·352	+·008	60	—3
Upper Sub-Himalayas	·269	—·011	61	—1
Indus Valley and North-West Rajputana.	·235	—·040	47	—7
East Rajputana, Central India and Gujarat.	·298	+·029	51	+3
Deccan	·369	+·031	50	—2
West Coast	·649	+·026	66	—1
South India	·555	+·031	70	+3

Cloud.—There was more cloud than usual in Baluchistan, North-Western and Central India and the hill districts of Upper India. The excess was large (exceeding 2·0) in the area represented by the stations of Meerut, Roorkee, Dehra-Dun and the adjoining hill stations of Ranikhet and Simla. Cloud was also in slight excess in the Andamans, the Deccan, West Coast and South India. It was below the normal in the remainder of India. The deficiency was largest in Bengal and Orissa where it averaged 0·7. The following table gives variation data of the mean cloud

amount of ten meteorological provinces for the month of December, 1898:—

Meteorological Province.	Mean cloud amount.	
	Average actual, December, 1898.	Variation of actual from normal, December, 1898.
Burma Coast and Bay Islands	3·2	−0·1
Assam	2·5	−0·1
Bengal and Orissa	1·3	−0·7
Gangetic Plain and Chota Nagpur	1·5	−0·1
Upper Sub-Himalayas	4·4	+2·0
Indus Valley and North-West Rajputana	2·2	−0·2
East Rajputana, Central India and Gujarat	3·0	+1·4
Deccan	2·1	+0·1
West Coast	2·1	+0·3
South India	4·1	+0·2

Rainfall.—The month was practically rainless in Burma, and the scanty rainfall in this and the preceding month affected the crops to some extent.

Southern India, on the other hand, received abundant rainfall. The rainfall distribution of the retreating south-west monsoon of 1898 was hence inverse to that of 1897. The rainfall in Southern India was heavy and considerably above the normal in the South Coromandel Coast districts. It occurred chiefly during two periods, *viz.*, the 1st to the 3rd and the 25th to the 30th. The rainfall over the remainder of India was, as usual in December, small in amount. A series of feeble disturbances gave somewhat more frequent rain than usual in Rajputana and the submontane and hill districts of Upper India. The precipitation of the month was in moderate excess in the Upper Sub-Himalayas and Rajputana. It was normal or below it in the remaining provinces. The deficiency was, on the whole, most marked in Burma and the Deccan, areas which usually receive light to moderate rain in December. The rainfall in these provinces and in Bengal and Orissa was practically *nil* in December.

The following table gives comparative data of the eleven meteorological provinces:—

Meteorological Province.	Rainfall.			
	Mean actual for December, 1898.	Mean normal for December, 1898.	Variation from normal.	Percentage variation from normal.
	Inches.	Inches.	Inch.	
Burma Coast and Bay Islands	0·15	0·98	−0·95*	− 97
Burma Inland	0·02	0·56	−0·54	− 96
Assam	0·45	0·40	+0·05	+ 13
Bengal and Orissa	0·05	0·22	−0·17	− 77
Gangetic Plain and Chota Nagpur	0·13	0·22	−0·09	− 41
Upper Sub-Himalayas	1·17	0·45	+0·77*	+171
Indus Valley and North-West Rajputana.	0·25	0·16	+0·08	+ 50
East Rajputana, Central India, and Gujarat.	0·43	0·16	+0·28*	+175
Deccan	0·13	0·47	−0·35*	− 74
West Coast	0·52	0·72	−0·20	− 28
South India	3·56	2·66	+0·90	+ 34

* A reference to Table I will show that means in columns 2 and 3 are derived from a smaller number of stations than the means in the first column. The sum of the figures in columns 2 and 3 therefore will not agree with the figures in column 1.

Atmospheric Pressure.

The mean pressure of the Indian land area for the month of December 1898, was 0·028″ below the normal and was hence in considerable defect. Pressure was, relatively to the general condition, in slight defect in the Punjab, Upper Sind, Rajputana, the Gangetic Plain, Central India, Chota Nagpur, North Bengal, Assam, Upper Burma, Malabar and Ceylon and was in excess over the remainder of India and Burma. The local anomalies were generally small in

amount and were less than ·020″ in amount at all stations except those for which data are given below :—

STATION.	Variation from normal of mean 8 A.M. pressure of December, 1898.	Pressure anomaly, December, 1898.
	″	″
Masulipatam	+·004	+·032
Cocanada	−·001	+·027
Vizagapatam	−·002	+·026
Tavoy	−·005	+·023
Madura	−·006	+·022
Bassein	−·007	+·021
Patna	−·061	−·033
Ajmere	−·056	−·028
Darbhanga	−·050	−·022

Pressure at the level of the hill stations in India was generally in defect. The variations generally differed little in amount from those at the neighbouring plains stations, except at Leh and Murree where pressure was in somewhat larger defect than at Lahore and Peshawar. The following gives data for nine pairs of stations :—

HILL STATION.	Variation of actual from normal pressure, December, 1898.	PLAIN STATION.	Variation of actual from normal pressure, December, 1898.	Vertical pressure anomaly (Hill-Plain).
	″		″	″
Quetta	−·027	Jacobabad	−·036	+·009
Leh	−·065	Lahore	−·033	−·032
Murree	−·071	Peshawar	−·045	−·026
Simla	−·035	Ludhiana	−·037	+·002
Chakrata	−·020	Roorkee	−·037	+·017
Ranikhet	−·014	Bareilly	−·029	+·015
Darjeeling	−·053	Dhubri	−·047	−·006
Mount Abu	−·041	Deesa	−·034	−·007
Pachmarhi	−·046	Hoshangabad	−·030	−·016

The vertical anomalies were hence generally small in amount, but were large and negative in the case of Murree and Leh, indicating a local deficiency of pressure in the middle atmospheric strata over Kashmir.

Barometric depressions and cyclonic storms of the month.

At the commencement of the month, pressure was normal in Upper India and South India and in excess in the intermediate area. The excess was largest in amount (averaging ·06″) in the East Deccan, North Madras and the Central Provinces. Light to moderate rain was falling in Southern India and fine dry weather obtained elsewhere. Pressure fell on the 2nd and 3rd, rapidly in Northern India and slightly in Southern India. Rain fell off in Southern India with the decreasing gradients in the Bay and ceased on the 3rd. Pressure increased generally but slightly to briskly on the 4th and 5th. The chief feature of this period was the abnormally high temperature in South Rajputana, Central India, Gujarat, Berar and the Central Provinces. Weather became feebly unsettled in that area on the 6th. Skies clouded over and pressure changed irregularly. Light to moderate thundershowers occurred in Kathiawar, Gujarat, Central India and Rajputana on the 7th and 8th. Weather was also disturbed in Kashmir during this period and snow fell in the valley and on the surrounding mountain ranges. The fall at Minimarg was nearly two feet in depth.

The pressure conditions in India on the 9th were approximately normal. Pressure was in large excess in Persia and strongly pronounced high pressure conditions obtained in that area. Pressure decreased on the 10th and 11th, chiefly in North-Western India and was in moderate to considerable defect in Northern India and in slight excess in South India on the 11th. Fine weather prevailed over the whole of India on these days. The pressure changes in India during the next two days were generally slight though somewhat irregular. Pressure fell briskly to rapidly in Kashmir on the 12th and increased slightly on the 13th. Weather was locally disturbed in Kashmir and in the hill and adjacent submontane districts of the North-Western Provinces. Light snow fell in Kashmir. Severe thunderstorms (with hail) visited Mussooree and Chakrata. The fall at Mussooree was 1·18 inches and at Chakrata 1·07 inches.

Pressure increased briskly to rapidly over the greater part of India on the 15th and was practically normal over the whole of India on that day. The pressure changes on the 16th and 17th were of little importance. Pressure fell over the whole of India on the 18th, the fall being largest in Sind and Kashmir. Pressure was in large defect in the Lower Indus Valley on this day. This low pressure wave appears to have originated in Persia and Asiatic Turkey. Pressure was in large defect at Baghdad on the 14th and 15th and in moderate to considerable defect at Bushire, Teheran and Ispahan on the 15th and 16th.

Weather was cloudy and showery during this period in Persia. The low pressure wave passed through Persia on the 15th and 16th, and Baluchistan on the 17th, into Sind on the 18th. It continued to advance eastwards through Rajputana on the 19th and 20th, Bundelkhand and Baghelkhand on the 21st and gradually disappeared in North-Eastern India during the next 36 hours. Its influence on the weather was very slight. It gave cloud but little or no rain in its passage across Northern India. Light snow fell in Kashmir on the 18th, 19th and 20th, and light rain or snow in the hill districts of the Punjab and North-Western Provinces on the 21st and 22nd.

Pressure on the 23rd was in slight excess in Upper India and in slight defect in South Madras and Ceylon.

The pressure changes in Persia, Upper India and Kashmir were large and complicated during the last ten days of the month. The following gives the variations from the normal at ten stations :—

STATION.	VARIATION FROM NORMAL OF 8 A. M. PRESSURE OF DATE.									
	22nd December	23rd December.	24th December	25th December	26th December.	27th December.	28th December	29th December.	30th December.	31st December.
	"	"	"	"	"	"	"	"	"	"
Baghdad	−·353	+·032	−·046	−·326	−·237	+·005	+·271	+·233	+·157	+·184
Bushire	−·064	+·029	−·030	−·143	−·122	−·037	+·135	+·163	+·107	+·111
Teheran	−·094	−·144	−·194	−·241	−·311	?	−·061	+·036	+·101	+·011
Ispahan	−·102	−·112	−·122	−·212	−·322	−·182	−·202	+·038	+·088	−·022
Quetta	+·059	−·002	−·037	−·101	−·083	−·078	−·160	−·209	−·118	−·094
Murree	−·025	−·003	−·031	−·069	−·061	−·089	−·109	−·191	−·267	−·186
Srinagar	+·091	+·165	+·135	+·023	−·035	−·018	−·020	−·192	−·296	−·156
Minimarg	+·078	+·153	+·151	−·007	−·073	−·038	−·029	−·235	−·306	−·186
Leh	−·031	+·117	+·153	−0·37	−·109	−·070	−·063	−·267	−·357	−·236
Kashgar	+·154	+·151	+·031	−·160	·189	−·145	−·170	−·241	−·171	+·019

The data indicate that a depression or low pressure wave was transmitted eastwards between the 25th and 29th. It advanced from Baghdad on the 25th, across West and Central Persia on the 26th, Baluchistan on the 28th and Upper India and Kashmir on the 29th. The disturbance associated with this low pressure wave gave cloudy weather throughout the period in Persia, Baluchistan and Upper India. Baghdad received ·95 inch of rain on the 22nd and Bushire ·43 inch on the 23rd. Baluchistan obtained some light local showers from the 24th to the 26th.

In India pressure gave way briskly in Kathiawar on the 23rd and 24th and rapidly in Cutch, Lower Sind and South-West Rajputana on the 24th. This fall was apparently a local action due to the unusually high temperature which had prevailed in these areas for some days previously. The very shallow depression was transferred to Rajputana on the 25th, but was so slight that it was not shown as a closed area of low pressure in the chart of the day. It was transferred eastwards during the next 24 hours into the North-Western Provinces, Bundelkhand and Baghelkhand. It apparently passed eastwards through Bengal during the next 36 hours. The disturbance gave much cloud in North-Western India. Moderate snow fell in the hills and light local showers in the plains, chiefly in the submontane districts of the North-Western Provinces. The depression which affected Persia on the 25th and 26th passed into Baluchistan on the 28th, on which day a shallow depression lay over that area and Upper Sind. Skies were clear at 8 A.M. of that day over the greater part of North-Western India, but had clouded over in Baluchistan and were partially clouded in Kashmir and the North Punjab.

Pressure decreased rapidly in Sind and West Rajputana during the next 24 hours and the depression lay over that area at 8 A.M. of the 29th. The following data show that a feeble but fairly regular cyclonic circulation obtained in the depression :—

STATION.	PRESSURE.			WIND.		CLOUD.	RAINFALL.	WEATHER.
	8 A. M. reduced to sea level and constant gravity at Lat 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"		"		Inch.	
Kurrachee	29·908	−·106	−·178	W	13	2	...	Fine.
Hyderabad	·888	−·112	−·204	WSW		5	...	Fine.
Bhuj	·986	−·071	−·073	WSW	6	0	...	
Bickaneer	·981	−·126		SSE	6	7	0·09	Fine.
Jacobabad	·869	−·093	−·229	ENE	3	10	0·05	Fine.

Skies were now overcast over the Punjab and Upper Sind and partially clouded in Rajputana. Light to moderate showers had fallen in the West, North and Central Punjab and in parts of Baluchistan and Upper Sind.

Pressure increased briskly to rapidly in Baluchistan and Sind and fell rapidly in East Rajputana and also at Simla and the adjacent submontane stations during the next 24 hours. The primary depression had advanced into East Rajputana at 8 A.M. of the 30th, and there was a tendency shown to the formation of a secondary depression over and at the foot of the Simla hills. The following

data indicate the position of the primary depression at 8 A.M.—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea-level and constant gravity at Lat 45°	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles past 24 hours.			
	"	"					Inch.	
Jeypore	29·891	—·139	—·213	SW	3	7		Fine.
Agra	·873	—·131	—·218	SE	6	9		Fine.
Delhi	·877	—·118	—·206	E	5	5	0·07	
Sirsa	·896	—·059	—·199	NE	5	10	0·28	Drizzling.
Bickaneer				NNW	8	9	0·35	

Skies had cleared in Baluchistan and Sind and were densely clouded in the East Punjab and North-Western Provinces. General rain had fallen in the South-East and East Punjab and the western districts of the North-Western Provinces and moderate to heavy snow in the Upper India Himalayas down to about 5,000 feet.

Pressure increased briskly to rapidly during the next 24 hours in North-Western India and fell briskly to rapidly in Bihar, Chota Nagpur and the eastern districts of the North-Western Provinces to which area the primary depression had advanced at 8 A.M. of the 31st. The following data show its position and character at that hour:—

Station.	Pressure.			Wind.		Cloud.	Rainfall.	Weather.
	8 A.M. reduced to sea level and constant gravity at Lat. 45°.	Change in past 24 hours.	Variation from normal.	Direction at 8 A.M.	Average hourly velocity in miles during past 24 hours.			
	"	"	"					
Hazaribagh	29·911	—·101	—·146	SSW	7	1	...	
Patna	·896	—·094	—·194	E	2	2	...	
Gorakhpur	·907	—·055	—·155	NNE	1	3	...	Fine.
Benares	·858	—·122	—·216	E	2	8	...	
Allahabad	·891	—·067	—·190	ENE	4	10	...	
Sutna	·919	—·061	—·170	SW	4	2	...	Fine.
Jubbulpore	·928	—·061	—·140	Calm	1	5	...	

The primary depression was well-marked. Skies were heavily clouded to the north and north-east of the central depression, but were generally clear in Bengal. The secondary depression had filled up. Light to moderate rain had again fallen in the South-East Punjab and he western districts of the North-Western Provinces and moderate to heavy snow in the Simla and Kumaon hills. The depression continued to advance eastwards and gave much cloud and some local showers in its passage through Bengal on the 1st and 2nd of January 1899.

Southern India received a moderately heavy burst of rain from the 25th to the 30th.

The character and distribution of the rainfall are indicated by the following statement giving average district rainfalls exceeding one inch in 24 hours:—

District.	Date.	Rainfall.	
		Average actual of 24 hours preceding 8 A.M. in district.	Heaviest in district.
		Inches.	Inches.
South Arcot	25th December	2·10	6·34
Madras	" "	1·20	1·20
Tanjore	" "	1·15	4·00
Madras	26th "	4·10	4·10
Chingleput	" "	3·80	6·68
Tanjore	" "	2·81	4·64
South Arcot	" "	2·69	5·80
Trichinopoly	" "	2·34	6·85
North Arcot	" "	1·66	3·39
South Arcot	27th "	2·06	4·71
Madras	" "	1·84	1·84
Tanjore	" "	1·67	3·68
Tinnevelly	" "	1·31	2·68
Madura	" "	1·23	3·00
Trichinopoly	" "	1·20	2·15
Tanjore	29th "	1·12	1·90
Tanjore	30th "	1·46	3·61

The conditions under which this rainfall occurred are imperfectly shown by the available data.

The following gives the mean strength of the winds in the Bay from the 21st to the end of the month:—

Date.	Mean force of wind.
21st December 1898	3·1
22nd "	2·9
23rd "	3·7
24th "	3·9
25th "	3·8
26th "	3·3

Date.	Mean force of wind.
27th December	2·8
28th "	3·0
29th "	3·1
30th "	3·3
31st "	2·9

The normal strength of the winds in the Bay in December is 3·2. The preceding data indicate that winds were slightly below their normal strength on the 21st and 22nd, but were considerably above it from the 23rd to the 25th.

Heavy rain fell in the South Coromandel coast districts on the 24th, 25th and 26th. North-east winds prevailed over the whole of the Bay on these dates, and it is hence probable that the rainfall was due to intensified north-east winds in the south-west of the Bay.

Winds shifted to east over the south of the Bay (to the south of Lat. 12°N) on the 26th, whilst north-west to west winds prevailed to the south of Ceylon. Pressure also fell locally to the east and north-east of that island and a low pressure area was formed on the 27th. It was apparently transferred westwards across Ceylon on the 28th and 29th into the Arabian Sea. The easterly winds to the north of this belt gave heavy rain in Ceylon and the southern districts of Madras, (chiefly Madras, Trichinopoly, Tanjore and Tinnevelly) from the 27th to the 30th when dry weather again set in over Southern India.

Summary of the Reports of the Weather and Snowfall in the Mountain Districts to the North and North-west of India.

I.—Afghan Mountain Districts.

(1) *Wana District* (Waziristan).—The Political Officer has sent the following snowfall report for Waziristan for the month of December:—

"Snow fell as under in this district:—

20th and 21st.—Snow fell slightly, between 2 and 3 inches, on the Marwattai Hills (10,000 feet) and Inzar, which melted away soon after.

24th and 27th to 29th.—Heavy fall of snow occurred on the following hills:—

Marwattai	10,000 feet,	about 9 inches.
Pirghal		
Kundighar	8,000 "	" 6 "
Kotkan	7,900 "	" 6 "
Janimela	9,400 "	" 9 "

The weather was mild up to the 26th, but was unusually cold during the remainder of the month.

On the 31st about 3 to 6 inches of snow were lying on the hills above 8,000 feet. The snowfall of the month was heavier than in December 1897."

(2) *Hills bordering Dera Ismail Khan.*—"Snow fell on the 28th, 29th and 30th on the highest peaks of the Suleman range, *viz.*, Ubashta, Marmaz, Kat, Nawa Tesa, and Nizrai Ghar.

The depth varied on the dates above mentioned from 1 foot 6 inches to 3 feet, but it soon melted, the sun being strong. The month was much colder and drier than usual."

(3) *Kurram.*—The Civil Surgeon has forwarded the following report of this district for the month of December:—

"The following gives a statement of the snowfall of the month:—

1st.—Snow fell on the highest peaks (about 15,000 to 16,000 feet high) of the Sufed Koh.

7th.—Slight snow on the highest peaks.

12th.—Snow fell down to 12,000 feet.

16th to 18th.—Much snow fell down to about 10,000 feet.

24th to 27th.—Snow fell down to about 10,000 feet, and a slight fall at 8,000 feet.

28th.—Four and half inches fell in Parachinar station, and the fall descended down the Wad towards Kohat to a distance of 7 miles.

The month was unusually cold. More snow is said to have fallen in the month under report than in December 1897."

(4) *Kabul.*—The following snowfall report has been received from Kabul:—

"*18th.*—Snow fell from 9 P.M. to 7 A.M., but melted. Accumulation only 1 inch.

24th and 25th.—Snow fell to a depth of 3 inches.

28th.—Snow began to fall at night and continued falling till 4 P.M. Accumulation about 6 inches.

The Paghman and adjoining hills were all covered with snow at the end of the month. The total fall at Kabul during the month was 10 inches, and hence much less than in December 1897 when 3½ feet snow was received."

II.—KASHMIR AND PUNJAB HIMALAYAS.

(1) *Ladakh.*—The following account of the snowfall in the Leh district has been received from the Superintendent of the Leh Observatory:—

"During the nights from the 8th to 9th December, from the 10th to 11th, and from the 13th to 14th, snow fell to a depth of one-fifth of an inch. In all three cases snow melted before noon over the whole Indus Valley. It melted rapidly on the higher elevations and on the 16th no snow was left even on the Kardong pass (17,500 feet).

Heavy snow fell from the night of the 16th to the morning of the 18th. The depth of the fall at Leh was 6 inches. The snowfall extended over the whole Indus Valley and side valleys. The depth of snow is said to be less near the source of the Indus.

Light falls occurred on the 19th, 21st and 22nd, the total amount of which was about one inch.

Heavy snow fell from the evening of the 29th until the morning of the 31st. The depth at Leh was about 5 inches.

At the time of each snowstorm we had misty and rather warm weather. During the intervals it became exceedingly cold. All the snowstorms seem to have extended over the whole Indus Valley and probably over Nubra.

At the end of the month all hills and valleys round about Leh were covered with snow.

The accumulation at Leh on the 31st of December was 9½ inches. The Kardong pass was closed from the 18th.

The total fall of the month was larger in amount than in December 1897, but was similar in amount to that of December 1896."

(2) *Chamba.*—The following interesting report for the period 1st of September to the 31st December has been received from the Deputy Conservator of Forests for the Chamba district:—

"Owing to the small snowfall in the winter of 1897-98 and to the slight rain that fell during the summer months there was a serious drought in the Pangi Valley, causing much damage to crops.

On the 25th September a storm commenced giving slight snow on the high ranges, and from the 27th to 29th it snowed heavily, the snow-line descending to 9,000 feet, which was an unusually low altitude for the time of year.

Then followed a long break of dry fine weather until the 8th December, when snow fell on the high ranges and hail down to 8,000 feet.

On the 12th December a general storm caused a good deal of snow to fall on the high ranges, and heavy hail and sleet fell down to 7,000 feet.

Snowstorms occurred on the 19th to 21st December descending to 5,500 feet on the 21st, on the 29th to 31st December descending to rather below 3,000 feet and on the 2nd, 3rd, 5th and 6th January. The following table gives snowfall data of the period under report:—

DATE.	BHANDAL VALLEY.		TISA VALLEY.			Kalatop 8,000 feet.	Dalhousie 6,500 feet.	Surkhigaili 4,500 feet.	MAIN RAVI VALLEY.						Kilar 8,300 feet.	Langera 7,500 feet.
	Bhandal 6,000 feet.	Chadbhurt 6,500 feet.	Tisa 5,000 feet.	Chatri.	Khangu.				Chamba 3,000 feet.	Bakani 5,000 feet.	Sao 4,000 feet.	Chitrari 6,000 feet.	Olansa 7,000 feet.	Barmaur 8,000 feet.		
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in	ft. in.
September 28th	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0 7	...
December 12th	...	...	...	...	...	...	...	...	...	...	...	...	0 3	0 4	?	0 4
" 19th	...	...	...	...	...	0 2	...	...	...	...	...	...	...	...	...	...
" 20th	...	...	0 1	1 6	2 2	0 3	...	...	...	0 4	...	0 11	1 5	...	...	...
" 21st	0 5	0 9	...	...	...	3 1	0 6	...	...	...	...	0 4	0 7	...	...	...
" 29th	1 4	2 6	3 0	5 3	6 3	5 11	2 0	2 0	...	1 2	1 7	1 5	1 11	...	...	...
" 30th			1 9	4 1	4 5				0 6	1 6		2 7	2 10	...	...	...
" 31st	0 1	0 2	...	...	...	...	...	...	...	0 2	...	0 4	0 6	...	...	...
TOTAL	1 10	3 5	4 10	10 10	12 10	9 5	2 6	2 0	0 6	3 2	1 7	5 7	7 6	0 4	0 7?	0 4

The storms of the 27th to 29th September and of the 8th and 12th December were of a general character. After the disturbed weather of the last week of September, a long fine break occurred until 7th December when it began to get cloudy and only cleared again on the 14th December. From 16th December to the end of the month the weather was unsettled and there were few days on which snow did not fall on the higher ranges.

The storms of 29th and 30th December and 5th and 6th January were general over the country and the sky was more or less cloudy in the interior. It was quite clear along the Dalhousie range from the 24th to 28th December.

The snowfalls have been much greater in the interior at places nearer to the high ranges than at the same altitudes on the outer Dalhousie Range.

On the 15th December there was said to be 3 feet of snow on the Padri Pass, between the Chamba territory and Badrawara.

Although the snow began to fall much about the usual date, the falls in December were much heavier than usual, and descended to a much lower elevation than usual."

(3) *Simla Hill districts.*—A report for the period 15th November to 15th December for these districts received from the Deputy Conservator of Forests, Bashahr Division, states that "there was only one snowstorm during the period, *viz.*, on the 12th and 13th December. No information has been received of the depth of the snow due to the storm. On the 13th the depth of snow at 8,000 feet on the Kanawar range was about one foot and the passes into Kanawar were all closed.

The storm of the 12th was accompanied by a south-east wind and commenced at 2 A.M. At 8 A.M. the weather being cloudy and a northerly wind blowing the thermometer went up to 38°.

On the morning of the 13th the sky cleared and fine weather set in.

This snowfall appears to have been general over the inner ranges only. It is estimated that the depth of snow on the several passes between 15,000 and 16,000 feet is about 4 feet.

The snow has come in good time and is seasonable when compared with falls of normal years."

III.—NORTH-WESTERN PROVINCES HIMALAYAS.

Almora District.—The following is a statement of the snowfall on the higher ranges in this district from the 16th September to the 15th December :—

Malla Danpur.—The snow fell as under :—

"13th to 17th September 1898	0'	5"
21st and 22nd " "	0'	4"
7th to 9th October 1898	1'	6"
11th to 12th " "	1'	0"
22nd " "	1'	0"
6th and 7th November 1898	0'	4"
12th and 13th " "	1'	0"
TOTAL	5'	7"

This was the depth on the well known passes of Pindari, Kaphini and Kantela.

Malla Johar :—

21st September 1898	3'	0"
22nd " "	3'	0
8th October "	3'	0
10th " "	3'	0
18th " "	3'	0
3rd November "	6'	0
23rd " "	6'	0
7th December "	3'	0
8th " "	3'	0
13th " "	3'	0
14th " "	3'	0
TOTAL	39'	0

This was the depth on the well known peaks of Uttamdhura and Ralamdhura.

Malla Byans, Chandans and Darma :—

14th October 1898	0'	4"
3rd November "	1'	0"
4th " "	0'	4"
1st December "	0'	4"
12th " "	1'	0"
13th " "	1'	0
TOTAL	4'	0"

The weather was colder than usual, and the snowfall of the period considerably larger than in the same period of the preceding year."

Summary of special Storm Reports.

Hailstorms and thunderstorms are of occasional occurrence in Northern and Central India during the cold weather. December 1898 was, however, finer than usual, and only three local cold-weather storms were reported during the month, details of which are given below :—

13th.—Severe gale and duststorm at Saugor from 3-50 P.M. to 4-45 P.M. The velocity of the wind between 4-25 and 4-35 was 67 miles per hour.

21st.—Thunderstorm with hail at Simla from 4-25 P.M. to 5-30 P.M.

23rd.—Duststorm at Jask from 3-50 to 4-10 P.M.

The following hailstorms in Assam during the month have been reported by the local authorities :—

27th.—Hailstorm in the Dhopabar mouza, south of the Sibsagar district. The storm advanced from west to east and the hailstones are reported to have been about an inch in circumference. They damaged the standing crops in twelve villages.

Hailstorm in parts of the Marangi and Manbhoa mouzas of the Golaghat subdivision of Sibsagar. The storm inflicted slight damage upon the standing crops. It advanced from south-west to north-east.

28th.—Hailstorm in seven villages of the Golaghat subdivision of Sibsagar. The crops in two villages were damaged to the extent of 12 annas. The largest stones were about half an inch in diameter.

The following earthquakes which occurred during the month have been reported :—

1st.—Earthquake during the night of 30th and 1st at Shiraz.

2nd.—Earthquake at Shiraz at 10 A.M.

3rd.—Severe earthquake shock at Shiraz at 8 A.M.

26th.—Earthquake at Mount Abu at 4·52 A.M. (Madras time) lasting 15 seconds.

Brief Summary of the weather in the Arabian Sea and Bay of Bengal during the month.

Arabian Sea.—Ordinary north-east monsoon winds prevailed with even greater steadiness than usual throughout the month over the whole of the Arabian Sea, except in the east where variable winds were experienced on the 7th. Winds were more or less above their normal strength on at least 28 days during the month. They were strongest on the 22nd (when they averaged 4·6 in force) and feeblest on the 26th and 27th (3·1). The mean force of the winds for the whole of the month was 3·8 or 0·5 above the normal of the month. Weather was feebly disturbed with occasional showers and squalls in the south-east on most days and in the centre, west and east during the first twelve or thirteen days.

Bay of Bengal:—Except in the extreme south where winds were somewhat unsteady during the last week of the month ordinary north east winds obtained steadily over the whole Bay area during the month. Winds were slightly stronger than usual during the first two days, but fell off on the 3rd, and were below their normal intensity to a slight extent until the 13th at 8 A.M., of which day the mean air movement as deduced from the data of 16 vessels was 2·9 or 0·3 below the normal of the month. Winds increased rapidly during the next three days and averaged 4·3 or 1·1 above the normal at 8 A.M. of the 17th. The air movement continued above its normal intensity during the next three days, but took off again on the 21st, and was 0·3 below its normal strength on the 22nd. Gradients increased rapidly during the next 24 hours and were steeper than usual until the 25th during which period winds were considerably stronger than usual. Gradients diminished during the next 48 hours. The air movement hence fell to an average of 2·8 on the morning of the 27th, and was somewhat feebler than usual during the remainder of the month. Weather was generally fine, except in the south-west where it was more or less rainy and squally during two periods, *viz.*, the 1st to the 3rd and the 17th to the 30th.

Temperature of the Air.

The temperature conditions in December 1898 differed from the normal to a large extent. The chief features of the variations were, however, similar to those of the preceding month but were more pronounced.

The mean maximum or day temperature was above the normal over the whole area, with the exception of North-Western India and Baluchistan in which it was in slight to moderate defect. The deficiency was more than 2° at the following plains stations :—

PROVINCE.	STATION.	MEAN MAXIMUM TEMPERATURE.		
		Actual, December, 1898.	Normal, December.	Variation of actual from normal.
		°	°	°
KATHIAWAR	Rajkot	83·0	85·4	—2·4
RAJPUTANA	Deesa	83·0	85·1	—2·1
	Jeypore	75·4	77·6	—2·2
PUNJAB	Delhi	71·7	74·4	—2·7

The deficiency was large at the hill stations in Upper India, as shown below :—

PROVINCE.	STATION.	MEAN MAXIMUM TEMPERATURE.		
		Actual, December, 1898.	Normal, December.	Variation of actual from normal.
		°	°	°
PUNJAB	Leh	31·3	38·1	—6·8
	Murree	49·3	53·7	—4·4
	Simla	47·9	51·3	—3·4
N.-W. PROVINCES	Ranikhet	54·0	58·2	—4·2
BALUCHISTAN	Quetta	53·5	57·1	—3·6
BENGAL	Darjeeling	46·8	48·9	—2·1

The excess in the day temperature over the remainder of India was moderate to large in two areas. The first

included Central Burma, for which temperature data are given in the following table :—

Station.	Mean Maximum Temperature.		
	Actual, December, 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Mandalay	85·7	82·1	+3·6
Toungoo	87·4	84·0	+3·4
Thayetmyo	87·5	84·4	+3·1
Lashio	76·0	73·1	+2·9
Yamethin	87·0	84·5	+2·5

The second area in which the maximum temperature was more than 2° above the normal included Orissa, Chota Nagpur, South Bihar, Baghelkhand, the Central Provinces, Berar, Khandesh and the West and Central Deccan. In the central part of this area including nearly the whole of the Central Provinces and Berar the excess ranged between 4° and 6½°. The following gives comparative data for stations in this area :—

Province.	Station.	Mean Maximum Temperature.		
		Actual, December, 1898.	Normal, December.	Variation of actual from normal.
		°	°	°
Berar	Akola	88·5	82·0	+6·5
	Amraoti	87·4	81·7	+5·7
Central Provinces	Khandwa	87·0	81·7	+5·3
	Raipur	83·4	78·3	+5·1
	Nagpur	85·3	80·3	+5·0
	Chanda	86·6	81·6	+5·0
	Pachmarhi	73·5	69·2	+4·3
	Jubbulpore	80·2	76·0	+4·2
	Seoni	81·4	77·2	+4·2
	Saugor	79·2	75·9	+3·3

Abnormally high maximum temperatures were recorded during the month at these stations, in some cases higher than have been previously observed in December.

Province.	Station.	Highest maximum temperature recorded in December, 1898.	Date on which recorded.	Highest maximum temperature recorded in December previous to 1898.	Year in which recorded.
		°		°	
Berar	Akola	93·4	12th	97·8	1896
	Amraoti	92·2	12th	92·7	1896
Central Provinces.	Khandwa	92·2	12th	99·7	1875
	Chanda	90·2	11th & 12th	93·5	1877
	Nagpur	89·6	12th	92·1	1896
	Raipur	88·8	13th	88·5	1877
	Jubbulpore	87·9	12th & 13th	87·1	1877
	Seoni	87·3	12th	87·0	1875
	Saugor	87·3	12th	89·3	1856
	Pachmarhi	79·7	12th	79·7	1896

The mean minimum temperature of the month was in slight defect in Sind and the South-West Punjab and in East Bengal, Arakan and Lower Burma. The variations exceeded 2° at the following stations for which comparative data are given below :—

Province.	Station.	Mean Minimum Temperature.		
		Actual, December 1898.	Normal, December.	Variation of actual from normal.
		°	°	°
East Bengal	Chittagong	55·8	58·4	—2·6
Arakan	Akyab	62·2	64·4	—2·2

The mean minimum temperature of the month was in moderate defect at the hill stations in Northern India and in Baluchistan, as shown below :—

Station.	Mean Minimum Temperature.		
	Actual, December 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Murree	37·2	40·0	—2·8
Simla	38·0	40·1	—2·1
Leh	11·6	13·6	—2·0
Quetta	26·7	28·8	—2·1

The mean minimum temperature was above the normal over the remainder of the country. The excess was more than 2° in two areas. The first included Upper

Burma and Upper Assam. Data for that area are given below :—

Station.	Mean minimum temperature.		
	Actual, December 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Lashio	52·2	47·3	+4·9
Bhamo	54·1	50·4	+3·7
Yamethin	53·5	50·4	+3·1
Sibsagar	53·6	50·5	+3·1

The second area included the greater part of the interior of India, *viz.*, the North-Western Provinces, Bihar, Chota Nagpur, Orissa, Rajputana, Central India, the Central Provinces, Berar, Bombay and the Deccan. In this area the excess ranged between 2° and 10° in amount and exceeded 6° in a central area defined by the stations for which data are given below :—

Station.	Mean minimum temperature.		
	Actual, December 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Akola	59·7	50·0	+9·7
Khandwa	57·8	48·9	+8·9
Malegaon	57·6	50·3	+7·3
Hoshangabad	57·1	50·7	+6·4
Jubbulpore	51·5	45·2	+6·3
Amraoti	61·7	55·4	+6·3

The night temperature was hence more largely in excess in this area than the day temperature.

The mean temperature of the month was normal or in slight defect in Sind, West Rajputana and the greater part of the Punjab and also in East Bengal, Arakan and Tenasserim, chiefly due to lower night temperatures than usual.

It was in moderate to considerable defect in Persia, Baluchistan and the hill stations in Upper India, as shown below :—

Station.	Mean daily temperature.		
	Actual, December 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Leh	21·5	25·9	−4·4
Murree	43·3	46·9	−3·6
Quetta	40·1	43·0	−2·9
Simla	43·0	45·8	−2·8
Mussooree	44·1	46·6	−2·5
Ranikhet	47·9	50·4	−2·5

The mean temperature of the month was more than 2° in excess over the greater part of Upper Burma, as shown below :—

Station.	Mean daily temperature.		
	Actual, December 1898.	Normal, December.	Variation of actual from normal.
	°	°	°
Lashio	64·1	60·2	+3·9
Mandalay	73·6	70·4	+3·2
Yamethin	73·3	70·5	+2·8
Bhamo	65·6	63·4	+2·2

It was also more than 2° in excess over the large area including Orissa, Chota Nagpur, South Bihar, Central India, the Central Provinces, Konkan, Khandesh, Berar and the greater part of the Deccan. In the central part of this area defined by the stations for which data are given below, the excess ranged between 4° and 8° :—

Province.	Station.	Mean daily temperature.		
		Actual, December 1898.	Normal, December.	Variation of actual from normal.
		°	°	°
Berar	Akola	74·1	66·0	+8·1
	Amraoti	74·6	68·6	+6·0
Central Provinces	Khandwa	72·4	65·3	+7·1
	Jubbulpore	65·9	60·6	+5·3
	Raipur	71·1	65·8	+5·3
	Nagpur	72·0	66·8	+5·2
	Chanda	71·4	66·3	+5·1
	Seoni	68·1	63·1	+5·0
	Hoshangabad	69·6	64·8	+4·8
	Saugor	67·8	63·5	+4·3
Khandesh	Malegaon	72·3	66·8	+5·5
Deccan	Sholapur	75·4	71·0	+4·4
	Poona	72·9	68·6	+4·3
	Hyderabad	73·3	69·1	+4·2

The following summarizes the chief features of the temperature conditions of the month:—

(1) Temperature, both by day and night, was in slight to considerable excess in Upper and Central Burma and was in very slight defect in Tenasserim.

(2) Temperature was in slight defect, both by day and night, in Sind, West Rajputana and the South-West Punjab and in moderate to considerable defect, both by day and night, in Baluchistan and the hill districts of Upper India.

(3) Temperature was in excess over nearly the whole of the remainder of India, and the excess was slightly greater in the night than the day temperature.

(4) The excess was unusually large in a central area including Berar, the Central Provinces and North Deccan. In some parts of this area the month was the warmest on record.

The following table gives temperature data for each of the 56 meteorological divisions into which India is divided:—

Province.	Division.	Actual temperature.					Variation from normal of		
		Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Burma	Tenasserim	87·1	64·2	75·7	22·8	31·0	+0·2	—1·6	+1·8
	Lower Burma (Deltaic)	86·6	65·1	75·8	21·5	28·2	+0·8	—0·1	+0·9
	Central do.	87·5	59·8	73·7	27·7	36·8	+3·3	—1·0	+4·3
	Upper do.	82·5	58·6	70·6	23·9	34·9	+2·0	+2·4	—0·4
	Arakan	81·7	62·2	72·0	19·5	28·6	—0·2	—2·2	+2·0
Bengal and Assam	Eastern Bengal	77·7	54·1	65·9	23·6	32·7	0	—0·8	+0·8
	Assam (Surma)	80·6	54·4	67·5	26·2	36·9	+1·1	—0·8	+1·9
	Do. (Brahmaputra)	73·5	54·3	63·9	19·3	31·1	+0·4	+1·1	—0·7
	Deltaic Bengal	78·4	56·0	67·2	22·5	32·4	+1·5	+0·2	+1·3
	Central do.	77·7	55·0	66·4	22·8	33·6	+0·8	+1·2	—0·4
	North do.	75·9	52·9	64·4	23·0	32·6	—0·4	+0·6	—1·0
	Bengal Hills	55·2	32·5	43·8	22·8	33·0	—2·1	—0·3	—1·8
	Orissa	81·8	62·7	72·3	19·1	29·3	+2·9	+3·2	—0·3
	Chota Nagpur	77·3	52·0	64·7	25·4	37·4	+3·0	+2·8	+0·2
	Bihar (South)	76·7	52·8	64·8	23·9	33·8	+1·6	+2·2	—0·6
	Do. (North)	75·4	51·6	63·5	23·8	33·7	+0·5	+0·9	—0·4
North-Western Provinces and Oudh.	North-Western Provinces (East)	76·9	50·2	63·6	26·7	39·3	+2·0	+2·6	—0·6
	Oudh (South)	76·0	49·3	62·7	26·7	39·6	+0·6	+3·7	—3·1
	Do. (North)	75·6	49·1	62·4	26·5	44·9	...	...	...
	North-Western Provinces (Central)	76·5	51·3	63·8	25·2	39·9	+0·7	+3·4	—2·7
	Do. do. (West)	73·7	50·1	61·9	23·6	40·6	—0·8	+4·0	—4·8
	Do. do. (Submontane, East)	74·8	51·4	63·1	23·4	33·3	+0·5	+1·2	—0·7
	Do. do. (Submontane, West)	70·0	47·1	58·6	22·9	37·8	—1·2	+2·2	—3·4
	Do. do. (Hills)	51·9	39·1	45·5	12·8	33·9	—3·1	—1·4	—1·7
Punjab	Punjab (South-East)	71·7	50·6	61·2	21·1	35·8	—2·7	+2·1	—4·8
	Do. (South)	72·4	43·9	58·2	28·5	46·5	—1·3	—0·3	—1·0
	Do. (Central)	69·7	43·4	56·6	26·3	42·4	—1·8	+2·8	—4·6
	Do. (Submontane)	70·5	44·3	57·4	26·2	42·0	—0·8	+1·5	—2·3
	Do. (Hills)	44·9	26·2	35·6	18·8	42·0	—4·9	—2·3	—2·6
	Do. (North)	67·5	38·0	52·7	29·5	43·7	—0·2	+0·7	—0·9
	Do. (West)	72·1	41·2	56·8	30·9	44·8	—0·9	—0·3	—0·6
Bombay and Malabar Coast Districts (Madras).	Malabar	87·5	72·3	79·9	15·2	22·0	+0·4	+0·6	—0·2
	Madras (South Central)	84·4	66·3	75·4	18·1	26·3	—1·0	+0·6	—1·6
	Coorg	75·1	59·1	67·1	16·0	23·8	+0·6	+1·5	—0·9
	Mysore	79·5	59·7	69·7	19·8	27·7	+0·2	+0·8	—0·6
	Konkan	87·1	70·8	79·0	16·2	25·1	+0·9	+2·6	—1·7
	Bombay Deccan	85·6	60·6	73·1	25·0	33·7	+2·7	+4·3	—1·6
	Hyderabad (North)	85·0	62·9	73·9	22·1	30·2	...	...	...
	Khandesh	86·1	57·4	71·8	28·7	44·7	+8·7	+7·3	—3·6

Province.	Division.	Actual temperature. Mean maximum.	Mean minimum.	Mean of day.	Mean daily range.	Absolute range.	Variation from normal of Maximum.	Minimum.	Daily range.
		°	°	°	°	°	°	°	°
Central Provinces and Berar.	Berar	88·0	60·7	74·4	27·3	42·8	+6·1	+8·0	−1·9
	Central Provinces (West)	84·7	57·8	71·3	26·9	42·6	+4·5	+6·9	−2·4
	Do. (Central)	81·9	54·7	68·3	27·2	42·5	+4·2	+5·6	−1·4
	Do. (East)	83·3	57·8	70·6	25·5	37·5	+4·5	+4·3	+0·2
Bombay (North)	Gujarat	86·1	61·8	73·9	24·4	38·3	+1·4	+5·8	−4·4
	Kathiawar & Cutch	83·3	58·6	71·0	24·7	42·4	−2·2	+2·4	−4·6
	Sind	78·8	49·3	64·1	29·5	47·8	−0·1	−1·4	+1·3
	Baluchistan Hills	55·8	29·4	42·6	26·4	50·9	−3·6	−2·1	−1·5
Rajputana and Central India.	Central India (East)	77·8	51·8	64·8	26·1	42·5	+1·8	+4·9	−3·1
	Rajputana (East), Central India (West)	77·0	52·3	64·7	24·7	42·5	−1·5	+4·2	−5·7
	Do. (West)	76·6	49·3	63·0	27·3	44·0	−1·1	−1·3	+0·2
Madras	East Coast (North)	82·2	66·6	74·4	15·6	24·7	+1·8	+2·4	−0·6
	Hyderabad (South)	85·6	63·1	74·4	22·5	29·2	+3·7	+5·5	−1·8
	Madras (Central)	87·2	63·8	75·6	23·4	30·4	+2·1	+1·8	+0·3
	East Coast (Central)	84·8	69·5	77·1	15·4	21·1	+1·0	+2·4	−1·4
	Do. (South)	83·8	71·1	77·5	12·7	21·9	+0·3	+1·3	−1·0
	Madras (South)	83·9	72·8	78·4	11·1	17·7	−1·3	+0·7	−2·0

Temperature was in general excess in India at the commencement of the month. The variations were generally slight to moderate in amount but exceeded 3° in the divisions for which data are given below:—

Division.	Variation from normal of Mean maximum temperature, 1st December 1898.	Mean minimum temperature, 1st December 1898.	Mean temperature, 1st December 1898.
	°	°	°
Punjab	+4·3	+2·6	+3·5
Sind	+5·6	+2·0	+3·8
Rajputana	+5·1	+3·7	+4·4
Gujarat	+3·4	+4·3	+3·9
Berar	+3·7	+3·5	+3·6
Bombay Deccan	+0·8	+5·7	+3·3

Temperature increased rapidly in the area including Central India, North Bombay, Berar and the Central Provinces on the 2nd and 3rd and was in considerable to very large excess over that area during the next week.

The following gives mean variation data for that area from the 3rd to the 9th:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of 3rd December.	4th December.	5th December.	6th December.	7th December.	8th December.	9th December.
	°	°	°	°	°	°	°
Gujarat	+6·1	+5·8	+2·8	+1·7	−2·4	−5·0	−1·6
Berar	+6·3	+8·7	+10·9	+12·5	+10·3	+10·4	+9·6
Bombay Deccan	+7·4	+6·8	+8·3	+7·9	+7·1	+5·4	+5·2
Central Provinces.	+2·8	+5·1	+7·1	+8·3	+6·7	+7·1	+7·4
Central India	+3·0	+3·6	+3·8	+5·1	+3·7	+3·0	+3·5

The abnormal character of the temperature conditions in this area of abnormally high temperature is shown more fully by the following data giving the variations of the maximum, minimum, and mean temperatures at two stations on each day during the period:—

Date.	Station.	Variation from normal of Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
3rd December	Malegaon	+1·2	+20·0	+10·6
,, ,,	Khandwa	+5·4	+12·2	+8·8
4th ,,	Khandwa	+8·6	+19·4	+14·0
,, ,,	Akola	+6·0	+14·2	+10·1
5th ,,	Khandwa	+9·1	+22·2	+15·7
,, ,,	Malegaon	+9·4	+18·1	+13·8
6th ,,	Akola	+9·7	+20·1	+14·9
,, ,,	Khandwa	+8·6	+20·6	+14·6
7th ,,	Khandwa	+7·7	+17·7	+12·7
,, ,,	Akola	+7·3	+16·4	+11·9
8th ,,	Khandwa	+7·2	+19·0	+13·1
,, ,,	Akola	+9·0	+16·2	+12·6
9th ,,	Khandwa	+8·4	+14·4	+11·4
,, ,,	Akola	+8·1	+13·6	+10·9

The area of greatest excess of temperature during this period was hence defined by the stations of Khandwa, Akola and Malegaon.

Skies were lightly clouded during the period, the humidity above the normal and winds lighter than usual but from the normal north-easterly direction in that area.

A cool wave passed through Baluchistan on the 3rd into Upper India on the 4th. This cool wave reduced and

maintained temperature below the normal in Upper India from the 4th to the 9th, as is shown by the following data:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	3rd December.	4th December.	5th December.	6th December.	7th December.	8th December.	9th December.
	°	°	°	°	°	°	°
Baluchistan (Quetta).	—8·3	—10·9	—11·3	—8·9	—2·2	—7·4	—9·9
Sind . .	+1·3	—2·8	—3·9	—3·7	—3·5	—4·2	—4·5
Punjab . .	+0·7	—1·0	—3·5	—4·1	—3·6	—2·8	—1·4
Rajputana .	+2·8	+1·4	—0·8	+2·0	+1·3	—4·9	—1·4

A feeble disturbance gave showery weather in Gujarat, Rajputana and Central India on the 7th, 8th and 9th but produced no marked change in the temperature. A very feeble disturbance affected Kashmir and the Upper India hill districts on the 12th and 13th. Its influence on the temperature conditions was also slight. Temperature continued steadily below the normal in Baluchistan and Upper India from the 10th to the 15th or 16th. The following gives comparative data:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	10th December.	11th December.	12th December.	13th December.	14th December.	15th December.	16th December.
	°	°	°	°	°	°	°
Baluchistan (Quetta).	—9·7	—8·6	—9·9	—10·7	—5·7	—0·6	+5·8
Sind . .	—5·0	—4·5	—5·7	—5·7	—5·5	—4·2	—1·7
Punjab . .	—0·6	+0·2	+0·9	—0·4	—2·0	—2·0	—0·2
Rajputana .	+0·1	+3·2	+4·4	+0·3	—4·3	—4·6	—1·8

Temperature was more or less in excess over the remainder of India during the period, the excess being considerable to large in the areas for which comparative data are given below:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of						
	10th December.	11th December.	12th December.	13th December.	14th December.	15th December.	16th December.
	°	°	°	°	°	°	°
Central India .	+6·0	+7·9	+9·5	+7·5	+4·3	—3·7	—3·2
Berar . .	+10·9	+10·0	+10·7	+12·0	+10·6	+9·2	+8·8
Central Provinces.	+9·2	+10·0	+11·7	+10·3	+9·1	+5·7	+2·4
Bombay Deccan	+6·5	+6·8	+6·9	+5·0	+4·5	+3·4	+4·3
Chota Nagpur.	+6·3	+6·9	+6·7	+8·5	+8·5	+3·8	+1·7
Orissa . .	+4·6	+6·9	+7·7	+6·6	+8·0	+7·8	+5·7
Bihar . .	+3·9	+3·4	+3·4	+5·6	+6·1	+1·9	—2·4

The following gives variation data for the two stations at which temperature on each day of the period was most largely above the normal:—

Date.	Station.	Variation from normal of		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
10th December .	Khandwa . .	+9·9	+16·4	+13·2
	Akola . .	+10·1	+14·8	+12·5
11th " .	Khandwa . .	+9·9	+17·6	+13·8
	Akola . .	+9·3	+13·9	+11·6
12th " .	Jubbulpore . .	+11·7	+16·1	+13·9
	Saugor . .	+11·4	+15·1	+13·3
13th " .	Jubbulpore . .	+11·7	+17·5	+14·6
	Akola . . .	+10·2	+14·2	+12·2
14th " .	Jubbulpore . .	+8·8	+14·2	+11·5
	Akola . .	+8·8	+12·7	+10·8
15th " .	Sambalpur . .	+7·5	+13·4	+10·5
	Akola . . .	+8·5	+11·6	+10·1

A feeble disturbance passed from Persia on the 16th into Upper India on the 18th and 19th. It gave snow in Kashmir and the Upper India hill districts and some showers in the North-Western Provinces. The warm wave which preceded it passed through Baluchistan on the 16th and 17th, and across North-Western India on the 18th and 19th, and the area of deficient temperature previously in Upper India was transferred eastwards across Northern India in front of it. The following variation data illustrate these changes:—

Division.	Variation from normal of mean temperature of 24 hours preceding 8 A.M. of			
	16th December.	17th December.	18th December.	19th December.
	°	°	°	°
Baluchistan (Quetta) .	+5·8	+12·9	+6·9	—0·3
Punjab	—0·2	+1·8	+1·1	+1·6
Sind	—1·7	+0·1	+2·3	+1·8
North-Western Provinces and Oudh.	—1·8	—1·6	0	+1·7
Rajputana . . .	—1·8	+1·5	+4·1	+6·6
Bihar	—2·4	—2·3	—1·6	—0·4
Chota Nagpur . .	+1·7	+1·3	—0·4	—1·2
Bengal . . .	+1·9	—0·9	—2·0	—2·0

Temperature was also reduced very considerably in the

belt across the head of the Peninsula, as shown by the following variation data :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M OF			
	16th December	17th December.	18th December.	19th December.
	°	°	°	°
Gujarat . . .	+1·1	+3·5	+5·2	+4·5
Central India . .	—3·2	—1·3	+2·0	+3·1
Berar	+8·8	+5·4	+3·9	+4·1
Central Provinces . .	+2·4	+0·9	+1·2	+2·6
Bombay Deccan . .	+4·3	+3·2	+2·6	+3·1

The variations of the temperature conditions from the normal were generally small on the 20th. Temperature again increased rapidly in the interior on the 21st and 22nd, and was in large excess in the area including the North-Western Provinces (South), Central India, the Central Provinces, Berar and Chota Nagpur on the 22nd and 23rd, and was in considerable to large excess over the greater part of that area on the 24th and 25th.

The following gives variation data for these areas from the 21st to the 25th :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF				
	21st December.	22nd December.	23rd December.	24th December.	25th December.
	°	°	°	°	°
Central India	+6·8	+4·5	—0·9	—0·5	+1·9
Berar	+7·6	+6·8	+6·4	+5·8	+5·1
Central Provinces . . .	+5·8	+6·4	+5·0	+3·2	+4·1
North-Western Provinces and Oudh.	+4·6	+4·3	+1·7	—0·5	—0·1
Chota Nagpur	+3·2	+5·7	+6·0	+3·2	+3·6

The following gives variation data for each day of the two stations at which temperature was in greatest excess during the period :—

DATE.	STATION.	VARIATION FROM NORMAL OF		
		Maximum temperature.	Minimum temperature.	Mean temperature.
		°	°	°
21st . . .	Khandwa. .	+6·4	+13·9	+10·2
	Akola . .	+7·6	+11·8	+9·7
22nd . . .	Sutna . .	+9·8	+14·8	+12·3
	Jubbulpore .	+8·8	+14·2	+11·5
23rd . . .	Seoni . .	+5·7	+8·0	+6·9
	Nagpur . .	+6·0	+7·7	+6·9
24th . . .	Akola . .	+3·5	+9·8	+6·7
	Nagpur . .	+7·9	+4·2	+6·1
25th . . .	Akola . .	+5·1	+8·9	+7·0
	Chaibassa .	+1·9	+10·3	+6·1

Temperature was hence during this period in large excess over the broad belt of country stretching across the head of the Peninsula

The temperature conditions changed rapidly and largely during the last week of the month due to two disturbances which affected Upper India. The first influenced the weather feebly from the 24th to the 26th but the second largely from the 29th to the end of the month when a heavy fall of snow occurred in the Upper India hills. The first disturbance was followed by a moderate reduction of temperature in North-Western India.

The second disturbance was preceded by a well marked warm wave. The following variation data show its progress across Northern India :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	28th December.	29th December.	30th December.	31st December.
	°	°	°	°
Baluchistan (Quetta) .	+6·2	+1·7	—3·9	—11·1
Sind	+4·7	+9·6	+1·0	—3·2
Punjab	+1·2	+2·5	—3·4	—5·1
Rajputana . . .	—2·0	+0·8	+6·2	—2·9
North-Western Provinces and Oudh.	+1·0	—0·6	+1·4	+3·1
Bihar . . .	+3·3	+0·5	—2·3	+0·6
Chota Nagpur . .	+3·7	—1·2	—1·9	+2·8

The warm wave was hence passing through Baluchistan on the 28th, Upper India on the 29th, Rajputana and the western districts of the North-Western Provinces on the 30th and the eastern districts of the North-Western Provinces on the 31st. A well marked cool wave followed the preceding warm wave, as is shown by the following data :—

DIVISION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	28th December.	29th December.	30th December.	31st December.
	°	°	°	°
Baluchistan (Quetta) .	+6·2	+1·7	—3·9	—11·1
Sind	+4·7	+9·6	+1·0	—3·2
Punjab	+1·2	+2·5	—3·4	—5·1
Rajputana . . .	—2·0	+0·8	+6·2	—2·9

The reduction of temperature accompanying the storm was very large in the hill districts, much larger than in the

neighbouring plains. The following data show the amount of reduction for six stations :—

STATION.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF 24 HOURS PRECEDING 8 A.M. OF			
	28th December.	29th December.	30th December.	31st December.
	°	°	°	°
Leh	—11·9	—5·6	+ 1·6	—10·3
Srinagar . . .	— 2·6	—1·5	— 5·1	— 2·6
Murree	— 3·5	—6·1	—16·0	—12·1
Simla	— 9·2	—6·9	—10·2	—14·2
Chakrata . . .	— 6·4	—4·0	— 7·3	—14·3
Ranikhet . . .	— 7·8	—5·8	— 7·5	—13·8

Very low night temperatures were registered in the Upper India hills during the snowstorms and after the weather cleared up. The following gives the more noteworthy :—

STATION.	Lowest minimum temperature recorded in December 1898.	Date on which recorded.	Lowest minimum temperature recorded in December previous to 1898.	Year in which recorded.
	°		°	
Dras	—26·0	24th	—24·0	1896
Skardu	8·2	31st	12·3	1896
Minimarg . . .	3·0	23rd and 29th	0·5	1897
Astor	8·0	31st	11·0	1897
Murree	25·0	30th	22·4	1890
Simla	24·1	31st	21·0	1877
Chakrata . . .	25·3	31st	23·0	1877
Quetta	15·8	13th	10·8	1878
Chaman . . .	21·1	31st	23·1	1897

The following table gives the variations of the mean temperature week by week during the month and also for the whole month :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN TEMPERATURE OF WEEK ENDING				
	10th December 1898.	17th December 1898.	24th December 1898.	31st December 1898.	For whole month December 1898.
	°	°	°	°	°
Burma . . .	—0·7	+2·0	+0·5	+1·8	+1·2
Assam . . .	+1·2	+2·9	—1·0	—1·2	+0·5
Bengal . . .	—0·5	+2·3	—0·1	+0·4	+0·4
Orissa . . .	+1·0	+6·6	+2·0	+3·7	+3·1
Bihar . . .	+0·9	+2·2	+1·6	+1·0	+1·3
Chota Nagpur . .	+2·0	+5·3	+2·6	+2·0	+2·9
North-Western Provinces and Oudh.	+0·8	+1·4	+2·0	+1·2	+1·5
Punjab . . .	—2·5	—0·3	+1·1	—0·1	—0·1
Sind	—3·9	—3·9	+0·5	+2·1	—0·8
Rajputana . . .	—0·3	—0·2	+2·0	+0·8	+0·8
Gujarat . . .	—0·1	—1·8	+1·0	—0·3	+1·3
Central India . .	+4·3	+3·0	+2·8	+1·0	+3·4
Central Provinces .	+7·3	+7·2	+4·1	+3·0	+5·1
Berar . . .	+10·5	+9·5	+5·6	+3·4	+7·1
West Coast . .	+1·1	+0·9	+1·4	+1·1	+1·3
Bombay Deccan .	+6·7	+4·9	+2·5	+1·6	+4·0
Mysore . . .	—0·8	0	+0·8	+2·7	+0·5
Madras Coast . .	—0·2	+3·0	+2·2	+2·8	+1·7
Madras Deccan . .	+2·1	+2·5	+1·8	+4·1	+2·5
South India . .	—1·4	+0·6	+1·1	—0·1	0

Winds.

Winds were on the mean of the month weaker and less steady than usual at Port Blair, and in Lower Burma.

Winds were more northerly and less westerly than usual at all the interior and east coast stations in Bengal with the exception of Berhampore. They were, on the other hand, more westerly than usual at Saugor Island and False Point.

The following gives data illustrating this contrast between the coast and interior stations :—

STATION.	MEAN WIND DIRECTION.		
	Actual, December 1898.	Normal, December.	Westerly deflection.
Calcutta	N 10° W	N 23° W	—13
Narayanganj	N 20° W	N 36° W	—16
Saugor Island	N 15° W	N 3° E	+18
False Point	N 37° W	N 32° E	+69

Winds were less steady than usual in Bengal.

The air movement was on the whole stronger than usual in Bihar, the eastern districts of the North-Western Provinces and Chota Nagpur. Its mean direction varied very slightly but somewhat irregularly from the normal in different parts of that area.

Winds were very light and unsteady in the Punjab and western districts of the North-Western Provinces, as is shown by the following comparison :—

Station.	Mean wind velocity in miles per diem.			Mean steadiness.		
	Actual, December 1898.	Normal, December.	Variation from normal.	Actual percentage, December 1898.	Normal percentage, December.	Variation from normal.
Roorkee . . .	50	32	+18	2	15	−13
Meerut . . .	44	37	+ 7	35	44	− 9
Lahore . . .	26	33	− 7	11	20	− 9
Peshawar . . .	41	61	−20	10	8	+ 2
Mooltan . . .	21	27	− 6	13	8	+ 5

The mean direction of the air movement of the month was abnormal in Lower Sind and winds were less steady than usual in Rajputana, as shown below :—

Station.	Mean wind direction.		Mean steadiness.		
	Actual, December 1898.	Normal, December.	Actual percentage, December 1898.	Normal percentage, December.	Variation from normal.
Kurrachee . . .	S 74° E	N 41° E	79	23	+56
Deesa . . .	N 69° E	N 44° E	47	50	− 3
Ajmere . . .	S 66° W	S 84° E	6	9	− 3

The air movement was more unsteady and lighter than usual at Quetta and probably in Baluchistan generally. The following data illustrate this feature :—

Station.	Mean wind velocity in miles per diem.			Mean steadiness.		
	Actual, December 1898.	Normal, December.	Variation from normal.	Actual percentage, December 1898.	Normal percentage, December.	Variation from normal.
Quetta . . .	40	59	−19	19	29	−10

Winds were remarkably and abnormally unsteady in Berar and the Central Provinces. The mean wind directions varied somewhat irregularly from the normal, and in several cases contained a southerly instead of the normal northerly component.

The following illustrates these features :—

Station.	Mean wind direction.		Mean steadiness.		
	Actual, December 1898.	Normal, December.	Actual percentage, December 1898.	Normal percentage, December.	Variation from normal.
Buldana . . .	S 81° E	N 82° E	7	43	−36
Khandwa . . .	S 78° E	N 62° E	18	42	−24
Nagpur . . .	E	N 57° E	9	54	−45
Raipur . . .	N 55° E	N 33° E	14	47	−33
Saugor . . .	N 30° E	N 48° E	16	34	−18

Winds were lighter than usual at the eastern stations and somewhat stronger at the western stations in that area.

Winds were stronger in the West Deccan and Mysore and were somewhat more easterly and less northerly than usual in the latter area. The following data illustrate these features :—

Station.	Mean wind direction.		Mean wind velocity in miles per diem.		
	Actual, December 1898.	Normal, December.	Actual, December 1898.	Normal, December.	Variation from normal.
Poona . .	S 64° E	N 85° E	166	133	+33
Sholapur . . .	S 58° E	S 83° E	203	182	+21
Mercara . . .	N 86° E	N 73° E	206	147	+59
Bangalore . . .	N 88° E	N 70° E	201	116	+85
Mysore . . .	N 89° E	N 80° E	273	26.	+12

Winds were of normal strength in the Konkan and slightly stronger than usual in Malabar. They varied irregularly in direction from the normal.

Winds were on the mean of the month weaker and more easterly than usual on the Madras Coast. The following gives comparative data for two stations :—

Station.	Mean wind direction.		Mean wind velocity in miles per diem.		
	Actual, December 1898.	Normal, December.	Actual, December 1898.	Normal, December.	Variation from normal.
Cocanada . . .	N 87° E	N 69° E	207	241	−34
Madras . . .	N 45° E	N 25° E	158	178	−20

The following gives comparative data of the mean air movement in Northern and Central India :—

PROVINCE.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Percentage variation from normal.
Punjab	34	37	− 3	− 8
Rajputana	92	101	− 9	− 9
Central India	72	85	−13	−15
North-Western Provinces and Oudh.	57	45	+12	+27
Bihar	56	47	+ 9	+19
Chota Nagpur	166	119	+47	+39
Bengal Inland	33	47	−14	−30
Bengal Coast	125	160	−35	−22

The following gives comparative data of the mean velocity of the air movement during the month in the Peninsula :—

DIVISION.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Percentage variation from normal.
Central Provinces	59	62	− 3	− 5
Berar	125	106	+19	+18
Bombay Deccan	185	158	+27	+17
Madras	110	103	+ 7	+ 7
Bombay Coast	159	152	+ 7	+ 5
Madras Coast	183	210	−27	−13
Mysore	192	168	+24	+14

Winds were generally slightly stronger than usual at the hill stations in Northern India, as is shown by the following data :—

STATION.	MEAN WIND VELOCITY IN MILES PER DIEM.			
	Actual, December 1898.	Normal, December.	Variation from normal.	Percentage variation from normal.
Leh	1	28	−16	−57
Simla	85	98	−13	−13
Ranikhet	59	37	+22	+59
Mount Abu	130	93	+37	+40
Murree	180	175	+ 5	+ 3
Chakrata	187	106	+81	+76

The mean winds of the month at these stations differed in direction from the normal very irregularly from station to station. This is illustrated by the following data :—

STATION.	MEAN WIND DIRECTION.	
	Actual, December 1898.	Normal, December.
Srinagar	N 84° W	S 84° E
Murree	S 20° E	S 56° E
Simla	S 15° E	S 11° W
Chakrata	S 51° E	S 64° W
Ranikhet	N 52° W	S 51° W
Darjeeling	N 18° W	N 55° W

Winds were very unsteady at the hill stations, more especially at Chakrata (5 per cent.), Muktesar (5 per cent.) and Ranikhet (11 per cent.).

North-easterly winds prevailed over the Arabian Sea and extended as far south as Zanzibar.

The most noteworthy abnormal features of the air-movement of the month were as follows :—

(1) Increased northing and diminished westing of the winds in the interior of Bengal.

(2) The lightness, variability and irregularity of the winds in the Upper India plains and hills.

(3) Abnormal variability of the winds in Berar and the Central Provinces.

(4) Lightness of winds in the east as compared with the west of the Peninsula.

Humidity and cloud.

The variations of the humidity conditions from the normal were less marked than during the previous two or three months. The air was drier than usual over nearly the whole of Northern and Central India, Burma and the

north of the Peninsula. The following gives comparative data :—

DIVISION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Average actual, December 1898.	Average normal, December.	Variation from normal.
	"	"	"	%	%	
Andamans . . .	·796	·827	—·031	73	79	—6
Burma . . .	·619	·640	—·021	72	74	—2
Assam . . .	·461	·466	—·005	74	76	—2
Bengal . . .	·454	·459	—·005	68	71	—3
Bihar	·404	·399	+·005	67	70	—3
Chota Nagpur . .	·288	·274	+·014	50	52	—2
North-Western Provinces and Oudh.	·308	·297	+·011	61	61	0
Punjab . . .	·228	·262	—·034	53	59	—6
Sind	·254	·303	—·049	43	50	—7
Central Provinces .	·346	·321	+·025	49	53	—4
Central India . .	·301	·262	+·039	50	50	0
Berar . . .	·350	·328	+·022	43	50	—7

The deficiency was considerable in the area represented by the stations for which comparative data are given below :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, December 1898.	Normal, December.	Variation from normal.	Actual, December 1898.	Normal, December.	Variation from normal.
	"	"	"	%	%	
Akola . . .	·369	·331	+·038	44	51	—7
Buldana . . .	·330	·324	+·006	41	47	—6
Khandwa . . .	·350	·319	+·031	44	50	—6
Hoshangabad . .	·353	·339	+·014	50	55	—5
Saugor . . .	·279	·272	+·007	41	47	—6
Allahabad . . .	·324	·340	—·016	57	66	—9

The deficiency was also considerable to large at Peshawar, Mooltan and Kurrachee, and hence probably in the whole Indus Valley.

There were two exceptions to the decreased humidity in Northern India. The first included Rajputana. The following gives data for that area :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, December 1898	Normal, December.	Variation from normal.	Actual, December 1898.	Normal, December.	Variation from normal.
	"	"	"	%	%	
Deesa . . .	·308	·254	+·054	44	36	+8
Mount Abu . .	·231	·215	+·016	46	42	+4
Ajmere . . .	·318	·283	+·035	57	53	+4

The second included the hill districts of Upper India and Sikkim where humidity was in considerable to large excess. The following gives data in illustration :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, December 1898	Normal, December.	Variation from normal.	Actual, December 1898.	Normal, December.	Variation from normal.
	"	"	"	%	%	
Darjeeling . .	·233	·201	+·032	88	76	+12
Simla . . .	·140	·137	+·003	55	45	+10
Chakrata . . .	·158	·151	+·007	60	51	+ 9
Ranikhet . . .	·210	·201	+·009	67	58	+ 9
Murree . . .	·135	·137	—·002	53	49	+ 4

This condition of increased humidity apparently did not extend into the interior as the mean humidity of the month was 7 below the normal at Leh.

The air was damper over the Peninsula (excepting the North Deccan, Malabar and Coorg). The variations of the mean relative humidity of the month from the normal were small and less than 5 except at the stations for which data are given below :—

STATION.	ABSOLUTE HUMIDITY.			RELATIVE HUMIDITY.		
	Actual, December 1898.	Normal, December.	Variation from normal.	Actual, December 1898.	Normal, December.	Variation from normal.
	"	"	"	%	%	
Poona . . .	·396	·324	+·072	52	43	+9
Ratnagiri . . .	·626	·546	+·080	62	56	+6
Belgaum . . .	·405	·372	+·033	55	50	+5

The following gives the lowest humidity recorded during the month at representative plains stations in India :—

STATION.	Date.	Hour.	Lowest humidity, recorded in December 1898.
			%
Deesa	12th	4 P.M.	12
Saugor	18th	,,	12
Bhuj	4th	8 A.M.	13
Rajkot	2nd	,,	13
Khandwa	19th	4 P.M.	13
Kurrachee	7th	,,	14
Bhavnagar	27th	8 A.M.	14
Sutna	17th	4 P.M.	15
Buldana	27th	,,	15
Akola	27th	,,	15
Roorkee	3rd	,,	15
Meerut	4th	10 A.M.	15
Hyderabad (Sind)	4th	8 A.M.	15
Jodhpore	12th	,,	15
Hazaribagh	3rd	4 P.M.	17
Jeypore	5th	10 A.M.	17
Allahabad	2nd	4 P.M.	19
Calcutta	4th	,,	23
Ahmedabad	15th	8 A.M.	25
Saugor Island	4th	4 P.M.	34

The first week of the month was very dry over the whole of Northern India, and the third and fourth weeks in Central India, Berar and the Central Provinces.

The lowest humidities of the month were recorded at the hill stations. The following gives the most noteworthy :—

STATION.	Date.	Hour.	Lowest humidity recorded during December 1898.
			%
Simla	5th	8 A.M.	3
,,	7th	10 A.M.	12
,,	11th	10 A.M.	13
Muktesar	6th	10 AM.	8
,,	6th	8 A.M.	5
,,	11th	From the minimum readings.	7
Chakrata	11th	8 A.M.	6

The minimum humidities were hence recorded at the Himalayan hill stations during the night and morning hours and in the plains during the heat of the day at 4 P.M.

The chief abnormal features of the mean hygrometric conditions of the month were :—

(1) Decreased humidity over nearly the whole of Northern and Central India, Burma and the north of the Peninsula.

(2) Increased humidity in the hill districts of North-Western India.

(3) Slight to considerable excess of aqueous vapour and humidity in the greater part of the Peninsula, greatest in the South Konkan and West Deccan.

The mean cloud amount of the month was more or less in excess in two areas. The first and larger area included Baluchistan, North-Western and Central India.

The following gives comparative data for this area of increased cloud :—

PROVINCE.	MEAN CLOUD AMOUNT.		
	Average actual, December 1898.	Average normal, December.	Variation from normal.
Baluchistan (Quetta)	3·4	2·9	+0·5
Upper Sind	2·3	2·2	+0·1
Punjab	3·4	2·8	+0·6
Rajputana	3·2	1·8	+1·4
Central Provinces	1·9	1·7	+0·2
Berar	2·3	2·1	+0·2

The excess was very large in the area represented by the three stations for which comparative data are given below :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, December 1898.	Normal, December.	Variation from normal.
Dehra Dun	5·5	2·6	+2·9
Roorkee	4·3	2·2	+2·1
Meerut	3·9	1·8	+2·1

Cloud was also largely in excess in the hill districts of North-Western India, more especially in the East Punjab

and North-Western Provinces hill districts. The following gives data :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, December 1898.	Normal, December.	Variation from normal.
Ranikhet	6·0	2·6	+3·4
Chakrata	4·9	3·1	+1·8
Simla	6·1	3·9	+2·2
Leh	6·7	5·6	+1·1

There was also a slight excess of cloud in parts of the Peninsula. The following gives data for stations at which the excess was more than 0·5 :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, December 1898.	Normal, December.	Variation from normal.
Bellary	5·2	3·7	+1·5
Chitaldroog	3·7	3·1	+0·6
Hassan	4·6	4·0	+0·6
Cochin	4·0	3·1	+0·9
Ratnagiri	1·8	1·1	+0·7

The mean cloud amount of the month was also in excess in the Andamans at Port Blair (+0·6) and perhaps at Diamond Island (+1·3). It was in defect over the remainder of India, generally by small amounts. The following gives comparative data :—

PROVINCE.	MEAN CLOUD AMOUNT.		
	Average Actual, December 1898.	Average Normal, December.	Variation from normal.
Burma	2·5	2·8	—0·3
Assam	2·5	2·6	—0·1
Bengal	1·1	2·0	—0·9
Bihar	0·7	1·3	—0·6
Chota Nagpur	2·1	2·1	0
Madras Coast	2·9	3·3	—0·4

The deficiency was 1·0 or upwards at the coast stations in the north and north-east of the Bay, as shown below :—

STATION.	MEAN CLOUD AMOUNT.		
	Actual, December 1898.	Normal, December.	Variation from normal.
Chittagong	0·6	2·2	—1·6
Akyab	0·9	2·3	—1·4
Saugor Island	1·3	2·3	—1·0

The chief abnormal features of the cloud distribution of the month were :—

(1) Cloud was in excess in Baluchistan, North-Western and Central India. The excess was large and marked in Rajputana, the South-East Punjab, the western districts of the North-Western Provinces and the adjacent hills.

(2) Cloud was in slight excess in the Madras Deccan, Mysore and Malabar.

(3) Cloud was in defect over nearly the whole of the remainder of India. The deficiency was small except at the coast stations in the north and north-east of the Bay.

The average amount of cloud during the month was less than 1·0 (and hence practically *nil*) at stations for which data are given below :—

STATION.	Actual mean cloud amount, December 1898.
Chittagong	0·6
Darbhanga	0·6
Patna	0·8
Akyab	0·9
Berhampore	0·9

Rainfall.

December is usually the month of least rainfall in India. The normal rainfall of the month is less than an inch in amount over the whole of India, with the exception of the coast districts of South Madras. The average rainfall of the month slightly exceeds 10 inches at the South Coromandel Coast stations, but diminishes rapidly inland and northwards, and is less than one inch in amount to the west of a line joining Madura, Coimbatore, Salem,

Cuddapah and Ongole, and is less than three or four-tenths of an inch over the whole of Northern and Central India and the Deccan and also in Burma.

The chief periods of disturbance and of rainfall were as follows :—

1st.—The 1st to the 3rd, when moderate to heavy rain fell over Southern India.

2nd.—The 7th to the 9th, when light local showers were received in Kashmir, Gujarat, Rajputana and Central India.

3rd.—The 11th to the 13th, when light to moderate showers fell in Kashmir, the Upper India hills and North-Western Provinces.

4th.—The 26th and 27th, when light to moderate rain fell in the Upper India plains and hills and Baluchistan.

5th.—The 29th to the 31st, when light to moderate showers were received in the coast and southern districts of Southern India, and moderate rain in the North and East Punjab, and moderate to heavy snow in the Upper India hill districts.

No rain fell in Sind, Berar, Bihar and practically over the whole of Bengal (excepting Sikkim), Assam Surma, Burma, the greater part of the Deccan and North Madras.

The chief abnormal features of the rainfall of the month were :—

(1) Heavy rainfall in Southern India.

(2) Absence of rain in Burma and the greater part of Bengal.

(3) Heavier precipitation than usual in the western and hill districts of the North-Western Provinces and nearly the whole of the Punjab, especially in the hill districts.

(4) Scanty rainfall in Berar, the Central Provinces and Deccan.

The following table gives comparative rainfall data for 57 meteorological divisions of the empire :—

Province.	Division.	Number of rainy days. Average actual, December 1898.	Number of rainy days. Average normal, December.	Rainfall. Average actual, December 1898.	Rainfall. Average normal, December.	Rainfall. Variation from normal.
				Inches.	Inch.	Inches.
Burma	Tenasserim*	...	...	0	0	0
	Lower Burma (Deltaic)*	...	...	0	0·24	— 0·24
	Central do.*	...	...	0	0·14	— 0·14
	Upper do.*	...	...	0·02	0·68	— 0·66
	Arakan*	...	...	0·06	0·38	— 0·32
Bengal and Assam	Eastern Bengal	0·2	0·4	0·10	0·29	— 0·19
	Assam (Surma)*	...	...	0·07	0·65	— 0·58
	Do. (Hills)*	...	...	0·15	0·44	— 0·29
	Do. (Brahmaputra)*	...	...	0·50	0·39	+ 0·11
	Deltaic Bengal	0·2	0·3	0·09	0·18	— 0·09
	Central do.	0	0·2	0·01	0·11	— 0·10
	North do.	0·1	0·2	0·03	0·10	— 0·07
	Bengal Hills	1·3	0·7	0·36	0·25	+ 0·11
	Orissa	0·7	0·5	0·26	0·32	— 0·06
	Chota Nagpur	0·6	0·3	0·23	0·23	0
	Bihar (South)	0·2	0·2	0·05	0·15	— 0·10
	Do. (North)	0	0·3	0	0·10	— 0·10
North-Western Provinces and Oudh.	North-Western Provinces (East)	0·1	0·4	0·03	0·26	— 0·23
	Oudh (South)	0·8	0·6	0·19	0·41	— 0·22
	Do. (North)	1·1	0·6	0·27	0·38	— 0·11
	North-Western Provinces (Central)	1·0	0·5	0·25	0·35	— 0·10
	Do. do. (West)	2·1	0·5	0·53	0·34	+ 0·19
	Do. do. (Submontane, East)	0	0·4	0·01	0·20	— 0·19
	Do. do. (do. West)	3·4	0·8	1·29	0·48	+ 0·81
	Do. do. (Hills)	3·8	1·1	1·79	0·51	+ 1·28
Punjab	Punjab (South-East)	2·1	0·6	0·70	0·30	+ 0·40
	Do. (South)	1·5	0·5	0·61	0·27	+ 0·34
	Do. (Central)	1·4	0·5	0·40	0·30	+ 0·10
	Do. (Submontane)	2·0	0·8	1·34	0·58	+ 0·76
	Do. (Hills)	5·9	1·3	3·83	0·88	+ 2·95
	Do. (North)	1·2	0·9	0·60	0·54	+ 0·06
	Do. (West)	0·3	0·2	0·07	·12	— 0·05

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

Province.	Division.	Number of rainy days. Average actual, December 1898.	Number of rainy days. Average normal, December.	Rainfall. Average actual, December 1898.	Rainfall. Average normal, December.	Rainfall. Variation from normal.
				Inches.	Inches	Inches.
Bombay and Malabar Coast Districts (Madras).	Malabar	0·9	1·4	0·39	0·80	— 0·41
	Travancore	3·2	...	1·76	...	...
	Madras (South Central)	3·2	2·6	1·90	1·40	+ 0·50
	Coorg	0·3	...	0·09	...	..
	Mysore*	...	...	0·33	0·69	— 0·36
	Konkan	0·3	0·3	0·12	0·14	— 0·02
	Bombay Deccan	0·5	0·7	0·15	0·41	— 0·26
	Khandesh	0·6	0·8	0·22	0·56	— 0·34
Central Provinces and Berar.	Berar*	...	...	0	0·77	— 0·77
	Central Provinces (West)	0·2	0·5	0·11	0·52	— 0·41
	Do. do. (Central)	0·2	0·5	0·10	0·33	— 0·23
	Do. do. (East)	0·2	0·5	0·05	0·30	— 0·25
Bombay (North)	Gujarat	0·6	0·1	0·18	0·06	+ 0·12
	Kathiawar	0·8	0·1	0·29	0·05	+ 0·24
	Sind	0·1	...	0·03	0·11	— 0·08
	Baluchistan Hills	0·7	...	0·19	0·98	— 0·79
Rajputana and Central India.	Central India (East)	0·9	...	0·28	0·39	— 0·11
	Rajputana (East) and Central India (West)	1·7	...	0·57	0·30	+ 0·27
	Rajputana (West)	1·1	...	0·33	0·13	+ 0·20
Madras	East Coast (North)	0·2	0·8	0·06	1·00	— 0·94
	Do. (do.) (a)	0	0·7	0	0·34	— 0·34
	Hyderabad (South)*	...	...	0	0·27	— 0·27
	Madras (Central)	0·9	0·9	0·80	0·46	+ 0·34
	East Coast (Central)	1·4	2·9	3·07	2·72	+ 0·35
	Do. (South)	7·2	5·2	9·04	5·13	+ 3·91
	Madras (South)	8·5	4·8	5·08	3·93	+ 1·15

* NOTE.—The figures entered against divisions marked with an asterisk have been obtained from the weekly telegraphic reports.

No rain fell in Burma during the month.

The month was even drier than usual in Bengal, Bihar and Orissa. Light local showers of little importance were received in Bengal, chiefly on the 28th and 29th, in South Bihar on the 27th, and in Orissa and Chota Nagpur on the 15th and 16th and again from the 27th to the 29th. The average total rainfall of the month was a tenth of an inch or less in all divisions except in Orissa, Chota Nagpur and Bihar.

The following gives comparative data for these three divisions and shows that the rainfall in these divisions was practically normal :—

Division.	Number of rainy days. Average actual, December 1898.	Number of rainy days. Average normal, December.	Rainfall. Average actual, December 1898.	Rainfall. Average normal, December.	Rainfall. Variation from normal.	Percentage variation from normal.
			Inch.	Inch.	Inch.	
Orissa	0·7	0·5	0·26	0·32	—0·06	—19
Chota Nagpur	0·6	0·3	0·23	0·23	0	0
Bihar	0·1	0·3	0·03	0·13	—0·10	—77

The North-Western Provinces received somewhat more frequent rain than usual in December. Local showers gave light and irregularly distributed rain on the 8th and 9th, the 12th and 13th, the 21st and 22nd and the 26th. The rainfall in these periods was most general and largest in amount in the submontane and hill districts and was practically *nil* in the north-east and south-east divisions. The hill and submontane districts obtained a moderate burst of rain on the 30th and 31st. The heaviest reported fall in 24 hours was 2·13 inches on the 30th at Lansdowne in Garhwal.

The following gives a comparative statement of the rainfall of the month for the eight divisions of the province :—

Division.	Number of rainy days. Average actual, December 1898.	Number of rainy days. Average normal, December.	Number of rainy days. Variation from normal.	Rainfall. Average actual, December 1898.	Rainfall. Average normal, December.	Rainfall. Variation from normal.	Percentage variation from normal.
				Inches.	Inch.	Inches.	
North-Western Provinces (East).	0·1	0·4	—0·3	0·03	0·26	—0·23	— 88
South Oudh	0·8	0·6	+0·2	0·19	0·41	—0·22	— 54
North Oudh	1·1	0·6	+0·5	0·27	0·38	—0·11	— 29
North-Western Provinces, Central.	1·0	0·5	+0·5	0·25	0·35	—0·10	— 29
North-Western Provinces, West.	2·1	0·5	+1·6	0·53	0·34	+0·19	+ 56
North-Western Provinces, East Submontane.	0	0·4	—0·4	0·01	0·20	—0·19	— 95
North-Western Provinces, West Submontane.	3·4	0·8	+2·6	1·29	0·48	+0·81	+169
North-Western Provinces Hills.	3·8	1·1	+2·7	1·79	0·51	+1·28	+251

The preceding data show that the precipitation was in moderate excess (in actual amount) in the west-submontane and hills divisions and was scanty and practically *nil* in the eastern divisions.

The Punjab received some local rain in each of the first four periods of feeble disturbance of the month, *viz.*, on the 7th and 8th, the 12th and 13th, the 21st and the 25th and 26th. The precipitation in all these periods occurred chiefly in the hill districts and in the Gurgaon, Rohtak, Delhi, Karnal, Hoshiarpur and Gurdaspur districts. Fairly general rain was received during the last disturbance of the month from the 29th to the 31st. Heavy snow fell during this period in the Simla Hills and Kulu. The following falls exceeding 2 inches were registered during this period :—

DISTRICT.	Station.	Date.	Rainfall during 24 hours preceding 8 A.M. of date.
			Inches.
SIMLA. . . .	Kasauli . . .	31st December.	2·06
KANGRA . . .	Nurpur . . .	30th „ .	2·51
„ . . .	Hamirpur . . .	30th „ .	2·50

The rainfall of the month was above the normal in all divisions except the western. The excess was considerable in amount in the hills division and moderate in the submontane and south-east divisions.

The following is a comparative statement of the rainfall of the month in this province :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.			Percentage variation from normal.
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Average actual, December 1898.	Average normal, December.	Variation from normal.	
				Inches.	Inch.	Inches.	
South-East Punjab .	2·1	0·6	+1·5	0·70	0·30	+0·40	+133
South Punjab . .	1·5	0·5	+1·0	0·61	0·27	+0·34	+126
Central „ . .	1·4	0·5	+0·9	0·40	0·30	+0·10	+ 33
Punjab Submontane .	2·0	0·8	+1·2	1·34	0·58	+0·76	+131
„ Hills . .	5·9	1·3	+4·6	3·83	0·88	+2·95	+335
North Punjab . .	1·2	0·9	+0·3	0·60	0·54	+0·06	+ 11
West „ . .	0·3	0·2	+0·1	0·07	0·12	—0·05	— 42

Baluchistan received light local showers between the 25th and 29th. The rainfall of the month was very scanty and in large defect, as is shown by the following statement :—

PROVINCE.	NUMBER OF RAINY DAYS.		RAINFALL.			
	Average actual, December 1898.	Average normal, December.	Average actual, December 1898.	Average normal, December.	Variation from normal.	Percentage variation from normal.
			Inch.	Inch.	Inch.	
Baluchistan Hills .	0·7	...	0·19	0·98	—0·79	— 81

Kashmir received light to moderate showers between the 17th and 20th and from the 25th to the 30th. Heavy snow fell on the higher ranges during the last period. The rainfall of the month was probably above the normal to a moderate extent.

Light thundershowers fell in Rajputana during the feeble disturbance of the 7th to the 9th. The following gives a comparison of the rainfall of the month with the normal in the larger states :—

STATE.	RAINFALL.			
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Percentage variation from normal.
	Inches.	Inch.	Inch.	
Ulwar	0·27	0·45	—0·18	—40
Bhurtpore	0·40	0·29	+0·11	+38
Dholpur	0·16	...	...	...
Kerowlee	0·37	0·33	+0·04	+12
Tonk	0·37	0·23	+0·14	+61
Deoli	0·69	0·18	+0·51	+283
Kotah	0·81	0·25	+0·56	+224
Ajmere Merwara . . .	0·84	0·28	+0·56	+200
Oodeypore	0·62	0·13	+0·49	+377
Sirohee	1·09	0·14	+0·95	+679
Jeypore	0·50	0·34	+0·15	+47
Jodhpore	0·33	0·13	+0·20	+154

The statement shows that the rainfall was in moderate excess in the southern and central states, more especially in Sirohee, Kotah and Ajmere.

Light showers fell in Bhopal, Gwalior and Bundelkhand in Central India during the feeble disturbance of the 7th to the 11th and some showers were received in Rewah on the 27th. The following is a comparative statement of the rainfall of the month in the larger states :—

STATE.	RAINFALL.			
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Percentage variation from normal.
	Inch.	Inch.	Inch.	
Bundelkhand	0·20	0·48	—0·28	—58
Rewah	0·07	0·45	—0·38	—84
Gwalior	0·42	0·30	+0·12	+40
Bhopal	0·07	0·45	—0·38	—84
Indore	0·19	0·20	—0·01	— 5
Rutlam	0·45	0·23	+0·22	+96

The rainfall in the Bombay Presidency was small in amount and less than the normal of the period. Some light local showers fell in the South Konkan on the 1st, the only rain of the month in the Konkan. Light local showers were received in the Deccan districts during the first week of the month and in Gujarat, Kathiawar and Cutch on the 7th, 8th and 9th. The month was practically rainless in Sind.

The following is a comparative statement :—

DIVISION.	NUMBER OF RAINY DAYS.			RAINFALL.			
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Average actual, December 1898.	Average normal, December.	Variation from normal.	Percentage variation from normal.
				Inch.	Inch.	Inch.	
Konkan	0·3	0·3	0	0·12	0·14	—0·02	—14
Bombay Deccan	0·5	0·7	—0·2	0·15	0·41	—0·26	—63
Khandesh	0·6	0·8	—0·2	0·22	0·56	—0·34	—61
Gujarat	0·6	0·1	+0·5	0·18	0·06	+0·12	+200
Kathiawar	0·8	0·1	+0·7	0·29	0·05	+0·24	+480
Sind	0·1	...	...	0·03	0·11	—0·08	—73

The Madras Presidency received rain during three periods.

The first period was from the 1st to the 3rd. Heavy rain fell in the coast districts south of Nellore and light to moderate rain in the South and South-Central divisions and Malabar. The following statement giving average district rainfalls exceeding one inch in amount shows the distribution of the heaviest rainfall :—

DISTRICT.	DATE.	RAINFALL.	
		Average actual of 24 hours preceding 8 A.M. in district.	Heaviest in district.
		Inches.	Inches.
Nellore	1st December	1·83	11·01
Chingleput	Ditto	3·15	5·65
North Arcot	Ditto	2·31	7·54
South Arcot	Ditto	2·35	5·53
Salem	Ditto	1·20	3·64
Cuddapah	Ditto	1·98	8·40

The second period was from the 17th to the 23rd. Light showers were received in the South Coromandel coast districts and moderate rain in the southern districts. The chief feature of the period was moderate daily rain in the Tinnevelly district.

The third period extended from the 25th to the 30th. The Chingleput, North and South Arcot, Coimbatore and the Nilgiris districts, obtained moderate rain from the 25th to the 27th and the districts of Tanjore, Trichinopoly, Madura and Tinnevelly moderately heavy rain from the 26th to the 30th.

The following giving average district rainfalls in 24 hours exceeding one inch shows the distribution of the heaviest rainfall :—

DISTRICT.	Date.	Average rainfall of 24 hours preceding 8 A.M. in district.	Heaviest rainfall in district.
		Inches.	Inches.
South Arcot	25th December	2·10	6·34
Madras	,, ,,	1·20	1·20
Tanjore	,, ,,	1·15	4·00
Madras	26th ,,	4·10	4·10
Chingleput	,, ,,	3·80	6·68
Tanjore	,, ,,	2·81	4·64
South Arcot	,, ,,	2·69	5·80
Trichinopoly	,, ,,	2·34	6·85
North Arcot	,, ,,	1·66	3·39
South Arcot	27th ,,	2·06	4·71
Madras	,, ,,	1·84	1·84
Tanjore	,, ,,	1·67	3·68
Tinnevelly	,, ,,	1·31	2·68
Madura	,, ,,	1·23	3·00
Trichinopoly	,, ,,	1·20	2·15
Tanjore	29th ,,	1·12	1·90
Tanjore	30th ,,	1·46	3·61

The following gives comparative data for eight divisions of the Presidency :—

Meteorological Division.	Number of rainy days.			Rainfall.			
	Average actual, December 1898.	Average normal, December.	Variation from normal.	Average actual, December 1898.	Average normal, December.	Variation from normal.	Percentage variation from normal.
				Inches.	Inches.	Inches.	
Malabar . .	0·9	1·4	—0·5	0·39	0·80	—0·41	— 51
Madras, South-Central.	3·2	2·6	+0·6	1·90	1·40	+0·50	+ 36
Madras, East Coast, North.	0·2	0·8	—0·6	0·06	1·00	—0·94	— 94
Ditto ditto (a)	0	0·7	—0·7	0	0·34	—0·34	—100
Madras, Central	0·9	0·9	0	0·80	0·46	+0·34	+ 74
East Coast, Central.	1·4	2·9	—1·5	3·07	2·72	+0·35	+ 13
East Coast, South.	7·2	5·2	+2·0	9·04	5·13	+3·91	+ 76
Madras, South.	8·5	4·8	+3·7	5·08	3·93	+1·15	+ 29

The actual distribution of the rainfall of the month is shown more clearly by the following statement giving the comparative data for each of the 22 collectorates of the Presidency based on the rainfall statement of the month published in the *Madras Gazette* :—

District.	Number of rainy days.		Rainfall.			Percentage variation from normal.
	Average actual, December 1898.	Average normal, December.	Average actual, December 1898.	Average normal, December.	Variation from normal.	
			Inches.	Inches.	Inches.	
Ganjam . . .	0·3	1·1	0·15	1·43	—1·28	— 90
Vizagapatam . .	0·2	0·8	0·05	1·10	—1·05	— 95
Godavari . . .	0·1	0·6	0·02	0·70	—0·68	— 97
Kistna	0	0·7	0·01	0·53	—0·52	— 98
Nellore . . .	1·4	2·9	3·07	2·72	+0·35	+ 13
Chingleput . . .	5·9	4·7	9·02	5·03	+3·99	+ 79
Madras . . .	6·0	5·2	10·06	5·28	+4·78	+ 91
North Arcot . . .	4·5	3·3	4·85	2·83	+2·02	+ 71
South Arcot . .	6·4	5·4	10·68	5·64	+5·04	+ 89
Tanjore . . .	10·8	7·3	12·35	8·02	+4·33	+ 54
Trichinopoly . .	8·6	5·2	7·39	3·69	+3·70	+100
Madura . . .	8·3	4·9	5·16	4·03	+1·13	+ 28
Tinnevelly . . .	8·6	4·6	4·97	3·80	+1·17	+ 31
Malabar . . .	1·2	1·8	0·48	1·02	—0·54	— 53
South Canara . .	0·3	0·9	0·23	0·48	—0·25	— 52
Salem	3·3	2·7	2·40	1·47	+0·93	+ 63
Coimbatore . . .	3·1	2·5	1·26	1·31	—0·05	— 4
Nilgiris . . .	3·3	4·5	1·72	2·95	—1·23	— 42
Cuddapah . . .	2·0	1·7	2·37	1·06	+1·31	+124
Anantapur . . .	1·1	0·7	0·38	0·24	+0·14	+ 58
Bellary . . .	0·4	0·4	0·09	0·17	—0·08	— 47
Kurnool . . .	0	0·6	0	0·25	—0·25	—100

Table

Abstract of Observations taken at 8 A.M. at 217 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	I.—Burma Coast and Bay Islands.		...	...	−·009	...	...	...	...	...	...	...	85·9	+0·7	67·4	−0·7	76·7	0	18·5	...	...	...	...	·3
1	Tenasserim and Bay Islands.	Car. Nicobars¶	25	29·920	?	29·872	29·942	19th & 20th.	29·909	5 days	·033	79·9	84·7	?	77·3	?	81·0	?	7·4	86·9	26th	73·5	10th	13·4
		Port Blair	61	29·919	+·001	29·911	29·975	16th	29·872	14th	·103	79·2	87·4	?	76·9*	?	82·1*	?	10·5	90·5	15th	72·6	29th	17·9
		Mergui	96	29·924	?	29·952†	30·021	16th	29·879	31st	·142	73·9	86·5	−0·5	66·3	?	76·4	?	20·2	89·1	4th	62·3	3 days	26·8
		Tavoy	26	29·999	−·005	29·956	30·085	16th	29·916	2nd	·169	68·5	87·3	−0·6	61·5	?	74·4	?	25·8	91·7	2 days	56·0	7th	35·7
		Moulmein	94	29·931	−·011	29·964	30·019	16th	29·857	31st	·162	69·6	87·4	+0·2	64·9	−1·6	76·2	−0·7	22·5	91·0	23rd	60·4	8th	30·6
2	Lower Burma	Rangoon	41	29·983	−·013	29·962	30·070	16th	29·914	31st	·156	69·9	87·9	+0·6	64·9	?	76·4	?	23·0	90·7	15th	61·8	2 days	28·9
		Bassein	27	30·002	−·007	29·965	30·088	16th	29·933	3rd	·155	68·9	85·2	+0·8	65·2	−0·1	75·2	+0·4	20·0	88·7	25th	61·3	29th	27·4
		Diamond Island	41	29·978	−·002	29·954	30·054	16th	29·906	3rd	·148	77·5	83·5	−0·8	73·4	+1·4	78·5	+0·3	10·1	87·6	1st	66·7	20th	20·9
5	Arakan	Akyab	20	30·015	−·014	29·978	30·094	16th	29·949	3rd	·145	64·8	81·7‡	−0·2	62·2	−2·2	72·0	−1·2	19·5	83·4	2 days	54·8	31st	28·6
3	Central Burma	Toungoo	183	29·838	−·017	29·970	29·919	16th	29·749	31st	·170	67·0	87·4	+3·4	61·8	−0·8	74·6	+1·3	25·6	89·7	3 days	57·1	31st	32·6
	II.—Burma Inland		...	...	−·037	...	...	...	...	...	...	...	83·4	+2·2	58·5	+1·9	71·0	+2·1	24·9	...	...	...	...	35·9
3	Central Burma	Thayetmyo	134	29·899	−·025	29·980	29·974	2 days	29·820	31st	·154	67·4	87·5	+3·1	57·8	−1·1	72·7	+1·0	29·7	90·1	4 days	49·2	31st	40·9
4	Upper Burma	Minbu	165	29·870	?	29·984	29·949	19th	29·775	3rd	·174	66·8	85·9	+2·0	60·6	+0·0	73·3	+1·5	25·3	89·1	30th	55·0	2 days	34·1
		Yamethin	657	29·363	−·035	29·992	29·432	7th	29·272	3rd	·160	67·0	87·0	+2·5	59·5	+3·1	73·3	+2·3	27·5	90·5	1st	53·7	31st	36·8
		Mandalay	250	29·780	−·044	29·989	29·880	17th	29·687	3rd	·193	67·1	85·7	+3·6	61·5	+2·7	73·6	+3·2	24·2	90·0	15th	52·2	19th	37·8
		Kindat	377	29·649	?	30·002	29·737	18th	29·545	3rd	·192	59·9	77·1	+1·4	57·4*	+1·8	67·3	+1·6	19·7	80·3	1st	49·3	31st	31·0
		Bhamo	381	29·686	−·044	30·024	29·757	18th	29·556	3rd	·201	57·5	77·0	+0·6	54·1	+3·7	65·6	+2·2	22·9	81·5	2 days	46·7	26th	34·8
4(a)	Burma Hill Stations.	Maymyo	?			Not	recorde	d.				56·6	73·8†	?	39·2†	?	56·5	?	34·6	76·6	10th & 29th.	34·6	19th	42·0
		Taunggyi	?			Not	recorde	d.				58·0	72·2	?	46·2	?	59·2	?	26·0	76·2	2 days	41·1	27th	35·1
		Lashio	?	27·227	−·046	?	27·310	19th	27·161	31st	·149	54·9	76·0	+2·9	52·2	+4·9	64·1	+3·9	23·8	73·1	14th	48·5	22nd	30·6
	III.—Assam		...	...	−·047	...	...	...	...	...	...	...	75·9	+0·6	54·3	+0·4	65·1	+0·5	21·6	...	...	...	...	33·0
7	Surma	Silchar	104	29·966	?	30·028	30·076	17th	29·872	3rd	·204	59·7	80·6	+1·1	54·4	−0·8	67·5	+0·2	26·2	83·4	3 days	46·5	30th	36·9
9	Brahmaputra	Sibsagar	333	29·733	−·047	30·044	29·842	17th	29·617	14th	·225	56·8	71·8	+0·1	53·6	+3·1	62·7	+1·6	18·2	76·3	2 days	46·4	2 days	29·9
		Dhubri	115	29·938	−·047	30·016	30·050	16th	29·816	3rd	·234	59·0	75·2	+0·6	54·9	−1·0	65·1	−0·2	20·3	79·1	10th	46·8	30th	32·3
	IV.—Bengal and Orissa		...	...	−·026	...	...	...	...	...	...	...	78·3	+0·9	56·1	+0·8	67·3	+0·9	22·2	...	...	...	...	32·2
6	East Bengal	Chittagong	87	29·952	−·024	29·991	30·034	16th	29·870	3rd	·164	61·8	78·7	+0·8	55·8	−2·6	67·3	−0·9	22·9	81·7	15th	50·1	31st	31·6
		Noakhali	43	29·995	?	29·987	30·092	16th	29·906	3rd	·186	60·7	77·8	?	52·0	?	64·9	?	25·8	80·5	3 days	44·0	31st	36·5
		Comilla	36	30·019	?	30·004	30·097	16th	29·922	3rd	·175	63·6	79·2	?	54·1	?	66·6	?	25·1	81·4	8 days	48·1	31st	33·3
		Sirajganj	49	29·992	?	29·994	30·118	16th	29·891	3rd	·227	59·0	76·9	?	?	?	?	?	?	80·2	15th	?	...	?
		Narayanganj	26	30·025	−·015	30·000	30·138	16th	29·933	3rd	·205	62·8	77·5	−0·9	57·0	−0·3	67·3	−0·6	20·5	80·6	15th	51·3	31st	29·3
		Barisal	13	30·023	−·026	29·982	30·126	16th	29·935	3rd	·191	63·8	78·6	+1·4	55·8	−0·4	67·3	+0·5	22·8	82·3	15th	51·2	2 days	31·1
		Mymensingh	59	29·988	−·016	30·001	30·096	16th	29·899	3rd	·197	60·1	75·2	−1·3	54·1	+0·1	64·7	−0·6	21·1	77·9	2nd	47·1	23rd	30·8
10	Deltaic Bengal	Faridpur	46	30·008	?	30·004	30·109	16th	29·913	3rd	·196	58·8	77·1	?	54·0	?	65·6	?	23·1	81·2	15th	48·0	21st	33·2
		Jessore	33	30·029	−·018	30·010	30·138	16th	29·940	3rd	·198	61·4	77·5	−0·3	54·3	−0·9	65·9	−0·6	23·2	81·6	1st	48·1	31st	33·5
		Calcutta	21	30·045	−·026	30·013	30·146	16th	29·967	14th	·179	62·3	77·6	+1·5	56·7	+0·6	67·2	+1·1	20·9	81·8	15th	51·2	5th	30·6
		Saugor Island	25	30·026	−·040	29·996	30·122	16th	29·951	3rd	·171	65·3	79·1	+3·3	60·0	+0·9	69·6	+2·1	19·1	83·0	12th	54·5	5th	28·5
		Krishnagar	47	30·024	?	30·022	30·144	16th	29·934	3rd	·210	62·8	78·0	?	53·8	?	65·9	?	24·2	82·9	1st	47·4	31st	35·5
		Midnapore	149	29·912	?	30·016	30·021	16th	29·822	31st	·199	63·8	81·2	?	56·9	?	69·2	?	24·4	85·3	3 days.	52·2	4th & 5th	33·1

* Mean of 24 days. † Uncorrected. ¶ Mean of 30 days.

I.

in India, Burma, etc., in December 1898.

Wind Direction, Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 31st December 1898.	Normal rainfall for period, 1st October to 31st December.	Variation from normal of period, 1st October to 31st December.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·15	0·98	−0·95	...	...	...	...	I.—Burma Coast and Bay Islands.		
...	2	2	13	...	...	...	...	...	4·9	?	?	78	·797	7·7	2	?	?	1·29	?	?	23·52	?	?	1·10	Car Nicobars.‖¶	Tenasserim and Bay Islands.	1
...	6	11	4	5	...	...	...	5	5·8	7·2	− 19	79	·793	5·3	2	?	?	0·24	5·94	− 5·70	9·92	27·08	− 17·16	0·13	Port Blair.		
14	6	7	2	1	...	...	...	1	1·6	1·8	− 11	73	·605	1·0	0	?	?	0	0·57	− 0·57	9·64	17·74	− 8·10	0	Mergui.		
28	1	2	...	...	...	...	...	...	0·5	?	?	82	·575	0	0	?	?	0	0·06	− 0·06	3·43	12·32	− 8·89	0	Tavoy.		
...	1	15	6	8	1	...	...	...	2·5	2·6	− 4	91	·660	0·9	0	0·18	−0·18	0	0·05	− 0·05	6·44	10·47	−4·03	0	Moulmein.		
...	2	10	8	3	2	3	3	...	2·2	4·9	− 55	85	·624	1·1	0	0·45	−0·45	0	0·09	− 0·09	3·24	9·81	− 6·57	0	Rangoon.	Lower Burma.	2
13	2	9	1	...	...	...	...	6	3·2	2·7	+ 19	87	·619	1·4	0	0·55	−0·55	0	0·14	− 0·14	7·74	12·56	− 4·82	0	Bassein.		
1	14	10	5	...	...	...	1	...	7·4	7·4	0	72	·695	4·6	0	0·90	−0·90	0	0·87	− 0·87	3·16	17·30	−14·14	0	Diamond Island.		
19	3	7	1	...	...	...	...	1	2·2	2·2	0	90	·552	1·2	0	1·27	−1·27	0	0·88	− 0·88	6·83	14·26	− 7·43	0	Akyab.	Arakan.	5
14	6	1	...	1	...	2	1	6	1·2	2·3	− 48	86	·578	0·9	0	0·36	−0·36	0	0·20	− 0·20	1·72	8·33	− 6·61	0	Toungoo.	Central Burma.	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·02	0·56	−0·54	...	...	...	...	II.—Burma Inland.		
...	3	2	6	2	12	2	3	1	12·0	3·2	+275	74	·498	0·5	0	0·36	−0·36	0	0·10	− 0·10	1·96	6·50	− 4·54	0	Thayetmyo.	Central Burma.	3
8	3	...	...	1	2	1	3	13	7·1	?	?	74	·490	1·7	0	?	?	0	1·09	− 1·09	3·47	5·31	− 1·84	0	Minbu.	Upper Burma.	4
7	3	...	...	13	1	...	...	7	3·4	?	?	86	·570	0	0	?	?	0	0·87	− 0·87	3·03	6·74	− 3·71	0	Yamethin.		
10	2	7	1	1	5	1	...	4	0·1	?	?	95	·637	3·4	0	?	?	0	0·26	− 0·26	3·34	6·62	− 3·28	0	Mandalay.		
21	7	1	...	...	...	2	...	...	1·5	?	?	97	·508	2·7	0	?	?	0	0·54	− 0·54	6·57	8·42	− 1·85	0	Kindat.		
31	...	...	...	...	...	...	...	...	1·0	?	?	97	·466	1·7	0	?	?	0·09	0·48	− 0·39	2·30	5·11	− 2·81	0·09	Bhamo.		
4	2	1	...	...	4	10	8	2	?	?	?	88	·403	0	0	?	?	0	?	?	6·64	?	?	0	Maymyo.	Burma Hill Stations.	4(a)
...	...	...	...	9	19	3	...	...	?	?	?	76	·378	2·0	0	?	?	0	1·12	− 1·12	3·30	8·89	− 5·59	0	Taunggyi.		
				Not recorded.					?	?	?	93	·403	6·0	0	?	?	0	0·82	− 0·82	1·94	5·25	− 3·31	0	Lashio.		
...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	0·45	0·40	+0·05	...	...	...	...	III.—Assam.		
27	...	...	3	1	...	...	...	...	1·0	1·9	− 47	93	·488	1·5	0	0·71	−0·71	0·05	0·52	− 0·47	3·64	8·48	− 4·84	0·05	Silchar.	Surma.	7
24	...	3	...	...	...	4	...	...	1·2	1·6	− 25	99	·466	3·7	3	1·81	+1·19	1·22	0·57	+ 0·65	6·82	6·39	+ 0·43	0·70	Sibsagar.	Brahmaputra.	9
7	3	6	8	...	3	3	1	...	2·8	4·5	− 38	90	·458	0·9	0	0·13	−0·13	0·07	0·10	− 0·03	4·76	3·86	+ 0·40	0·07	Dhubri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·05	0·22	− 0·17	...	...	...	...	IV.—Bengal and Orissa.		
3	8	18	2	...	...	...	...	...	3·6	3·2	+ 13	88	·489	0·8	0	0·92	−0·92	0	0·77	− 0·77	13·60	8·54	+ 5·06	0	Chittagong	East Bengal.	6
...	13	10	2	1	...	1	...	4	1·3	?	?	90	·485	1·5	0	0·58	−0·58	0	0·60	− 0·60	11·98	10·11	+ 1·87	0	Noakhali.		
29	2	...	...	...	...	...	...	...	0·4	?	?	76	·450	0·5	0	0·54	−0·54	0·05	0·36	− 0·31	9·90	6·70	+ 3·20	0·03	Comilla.		
24	4	...	...	...	...	...	1	2	0·6	?	?	91	·466	1·4‡	0	0·46	−0·46	0	0·13	− 0·13	11·08	4·96	+ 6·12	0	Sirajganj.		
10	4	5	2	1	...	3	2	4	2·1	1·9	+ 11	86	·494	?	0	0·54	−0·54	0·03	0·25	− 0·22	16·54	6·41	+10·13	0·03	Narayanganj.		
25	3	1	...	...	...	...	...	2	0·8	?	?	85	·506	1·0	2	0·54	+1·46	0·49	0·39	+ 0·10	16·97	7·27	+ 9·70	0·28	Barisal.		
27	...	1	1	1	...	...	...	1	0·3	?	?	90	·473	?	0	0·31	−0·31	0·03	0·13	− 0·10	12·99	6·36	+ 6·63	0·02	Mymensingh.		
29	2	...	...	...	...	...	...	...	0·9	?	?	90	·454	0·2	0	0·31	−0·31	0	0·11	−0·11	14·72	5·38	+9·34	0	Faridpur.	Deltaic Bengal.	10
27	3	1	...	...	...	...	...	...	1·2	1·7	− 29	85	·465	0·2	1	0·35	+0·65	0·27	0·18	+ 0·09	14·83	5·95	+ 8·88	0·19	Jessore.		
7	9	5	1	...	...	...	4	5	2·1	3·0	− 30	82	·461	0·4	0	0·46	−0·46	0	0·24	− 0·24	6·48	5·29	+ 1·19	0	Calcutta.		
...	13	12	...	...	...	...	2	4	7·1	6·0	+ 18	87	·544	1·9	0	0·65	−0·65	0·02	0·28	− 0·26	20·30	10·94	+ 9·36	0·82	Saugor Island.		
5	6	1	2	1	...	...	7	9	2·2	?	?	79	·456	0·8	0	0·19	−0·19	0·01	0·08	− 0·07	5·56	5·24	+ 0·32	0·81	Krishnagar.		
10	13	2	...	...	1	...	1	4	2·3	?	?	68	·409	0·5	0	0·31	−0·31	0	0·26	− 0·26	4·93	5·19	− 0·26	0	Midnapore.		

‡ Mean of 20 days. ‖ 12 Variables.

Table

Abstract of Observations taken at 8 A.M. at 217 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
11	Central Bengal	Bankura	298	29·731?	?	29·998?	29·852	16th	29·636	28th	·216	61·0	79·7	?	56·5	?	68·1	?	23·2	84·1	1st	51·3	30th	32·8
		Raniganj	334	29·722	?	30·026	29·842	16th	29·628	3rd	·214	59·7	79·5	?	55·0	?	67·2	?	24·5	84·4	1st	49·2	30th	35·2
		Burdwan	99	29·974	−·023	30·027	30·096	16th	29·879	3rd	·217	62·8	80·3	+2·6	57·7	+1·8	69·0	+2·2	22·6	85·1	2 days	52·1	30th	33·0
		Naya Dumka	489	29·561	?	30·079	29·682	16th	29·448	31st	·234	60·0	76·8	?	52·7	?	64·8	?	24·1	81·4	1st & 15th	44·0	30th	37·4
		Berhampore	67	29·996	−·033	30·014	30·105	16th	29·896	3rd	·209	60·8	76·3	+0·3	56·7	+1·4	66·3	+0·9	20·1	81·6	15th	49·1	31st	32·5
		Rampur Boalia.	70	29·982	?	30·004	30·102	16th	29·873	3rd	·224	60·7	76·0	?	55·2	?	65·6	?	20·8	80·1	1st	49·1	31st	31·0
		Malda	72	29·981	?	30·010	30·091	16th	29·865	3rd	·226	57·9	76·2	?	51·9	?	64·1	?	24·3	80·3	15th	46·1	31st	34·2
		Bogra	61	29·989	?	30·006	30·104	16th	29·884	3rd	·220	58·7	76·5	−0·4	54·1	+0·5	65·3	+0·1	22·4	80·3	2 days	47·9	30th	32·4
12	North Bengal	Dinajpur	123	29·927	−·031	30·013	30·033	16th	29·815	3rd	·218	58·1	77·0	+0·4	51·2	−0·1	64·1	+0·2	25·8	80·5	15th	44·5	31st	36·0
		Rangpur	123	29·939	?	30·023	30·044	16th	29·832	3rd	·212	Not recorded.												
		Jalpaiguri	284	29·763	−·032	30·021	29·860	16th	29·655	3rd	·205	58·4	74·2	−1·1	53·6	+1·2	63·9	+0·1	20·6	77·4	3 days	47·1	16th	30·3
		Cooch Behar	156	29·886	?	30·008	30·003	17th	29·811	3rd	·192	57·6	76·4	?	53·9	?	65·2	?	22·5	79·1	10th	47·6	16th	31·5
17	North Bihar	Purnea	125	29·940	−·022	30·028	30·061	16th	29·821	3rd	·240	51·0	76·0	+0·1	50·7	+1·3	63·4	+0·7	25·3	79·2	1st	44·3	2 days	34·9
14	Orissa	Balasore	46	30·029	?	30·025	30·134	16th	29·933	28th	·201	63·9	81·5	+2·7	57·6	+3·2	69·5	+3·0	23·9	85·9	14th	51·5	2 days	34·4
		False Point	21	30·044	−·025	30·007	30·127	16th	29·975	28th	·152	67·5	80·6	+3·3	59·6	+2·3	70·1	+2·8	21·0	83·4	2 days	53·0	5th	30·4
		Cuttack	80	29·985	−·028	30·011	30·059	16th	29·899	28th	·160	65·4	84·6	+2·6	62·4	+4·1	73·5	+3·4	22·2	89·4	15th	55·1	5th	34·3
		Shortt's Island	?	30·050	?	?	30·148	17th	29·927	2nd	·221	73·3	79·7	?	69·1	?	74·4	?	10·6	85·2	1st	64·4	5th	20·8
		Puri	20	30·048	?	30·011	30·125	16th	29·970	28th	·155	70·0	82·7	?	65·0	?	73·9	?	17·7	84·7	3 days	58·1	2nd	26·6
	V.—Gangetic Plain and Chota Nagpur.		...	...	−·042	...	...	...	...	...	...	...	76·2	+1·7	51·4	+2·3	63·8	+2·1	24·8	...	...	...	...	36·4
15	Chota Nagpur	Hazaribagh	2,007	27·990	−·036	30·025	28·087	16th	27·881	31st	·206	58·3	74·2	+2·6	52·1	+1·9	63·2	+2·3	22·1	79·7	14th	46·9	17th & 30th	32·8
		Ranchi	2,128	27·878	?	30·037	27·967	16th	27·775	31st	·192	59·7	75·1	+3·1	52·5	+2·9	63·8	+3·0	22·6	80·9	13th	46·2	30th	34·7
		Daltonganj	730?	29·285	?	30·021	29·409	16th	29·141	31st	·268	54·4	78·5	?	47·6	?	63·0	?	30·9	85·0	13th	40·2	17th	44·8
		Chaibassa	760	29·282	?	30·032	29·382	16th	29·179	31st	·203	60·1	81·5	+3·4	55·6	+3·6	68·6	+3·5	25·9	87·6	14th	50·4	3 days	37·2
16	South Bihar	Gaya	375	29·678	−·041	30·030	29·791	16th	29·558	31st	·233	59·1	78·4	+2·6	53·1	+2·0	65·8	+2·3	25·3	81·9	13th	48·9	2 days	33·0
		Dehri	351	29·701	?	30·029	29·836	16th	29·560	31st	·276	59·6	77·3	?	54·6	?	66·0	?	22·7	81·8	13th	49·6	5th	32·2
		Patna	183	29·879	−·061	30·027	30·001	16th	29·750	31st	·251	58·3	74·7	+0·6	53·4	+2·3	64·1	+1·5	21·3	78·6	1st	46·4	30th	32·2
		Arrah	190	29·865	?	30·020	29·986	16th	29·748	31st	·238	56·6	76·5	?	50·0	?	63·2	?	26·5	80·3	1st	43·7	16th	36·6
		Buxar	239	29·818	?	30·027	29·940	16th	29·674	31st	·266	59·7	76·8	?	53·0	?	64·9	?	23·8	80·7	13th	45·9	16th	34·8
17	North Bihar	Bhagalpur	160	29·897	?	30·017	30·024	16th	29·778	3rd	·246	59·9	76·9	?	51·7	?	64·3	?	25·2	82·1	1st	44·2	30th	37·9
		Darbhanga	166	29·883	−·050	30·014	29·996	17th	29·765	3rd	·231	58·4	74·9	+0·8	54·4	+0·4	64·7	+0·6	20·5	78·2	2 days	48·5	30th	29·7
		Muzaffarpur	178	29·879	?	30·022	30·000	16th	29·754	3rd	·246	58·1	74·2	?	51·8	?	63·0	?	22·4	77·9	14th	46·3	16th & 30th	31·6
		Motihari	224	29·841	?	30·039	29·976	16th	29·710	3rd	·266	54·4	74·7	?	48·9	?	61·8	?	25·8	79·0	14th	42·9	16th	36·1
		Chapra	181	29·885	?	30·032	30·009	16th	29·765	31st	·244	57·0	75·5	?	51·9	?	63·7	?	23·6	79·5	1st	47·3	30th	32·2
18	N.-W. Provinces East.	Benares	267	29·800	−·031	30·042	29·926	16th	29·619	31st	·307	55·6	76·4	+1·6	50·1	+2·3	63·3	+2·0	26·3	81·6	13th	42·4	16th	39·2
		Allahabad	309	29·757	−·035	30·041	29·879	16th	29·607	31st	·272	57·1	77·4	+2·4	50·3	+2·9	63·9	+2·7	27·1	81·7	2nd & 13th	42·4	16th	39·3
23	N.-W. Provinces (East Sub-montane).	Gorakhpur	256	29·787	−·042	30·020	29·927	16th	29·676	3rd & 31st	·251	57·1	74·8	+0·5	51·4	+1·2	63·1	+0·9	23·4	78·4	14th	45·1	30th	33·3
19	South Oudh	Lucknow	368	29·685	−·036	30·038	29·812	16th	29·564	31st	·248	54·1	76·0	+0·6	49·3	+3·7	62·7	+2·2	26·7	82·3	2nd	42·7	16th & 17th	39·6
20	North Oudh	Bahraich	403	29·639	?	30·032	29·787	16th	29·527	31st	·260	55·5	75·6	?	49·1	?	62·4	?	26·5	88·4	19th	43·5	5th	44·9
21	N.-W. Provinces (Central).	Cawnpore	416	29·639	−·043	30·041	29·764	16th	29·515	31st	·249	55·4	76·7	+1·0	49·5	+2·4	63·1	+1·7	27·2	83·8	2nd	42·0	17th	41·8
		Mainpuri	516	29·531	?	30·042	29·651	16th	29·395	30th	·256	54·2	74·6	?	49·5	?	62·1	?	25·1	82·8	2nd	43·1	2 days	39·7

I—*continued.*

in India, Burma, etc., in December 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 31st December 1898.	Normal rainfall for period, 1st October to 31st December.	Variation from normal of period, 1st October to 31st December.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
30	...	...	...	...	...	...	...	1	0·3	?	?	70	·378	1·2	0	0·38	− 0·38	0	0·15	− 0·15	2·70	4·49	− 1·79	0	Bankura	Central Bengal	11
13	3	...	...	...	...	...	3	12	1·1	?	?	70	·363	0·9	0	0·31	− 0·31	0·04	0·09	− 0·05	3·28	3·90	− 0·62	0·04	Raniganj.		
29	2	...	...	...	...	...	...	...	0·2	1·9	−89	74	·425	0·5	0	0·19	− 0·19	0	0·15	− 0·15	3·22	4·43	− 1·21	0	Burdwan.		
23	2	1	...	...	...	...	...	5	0·5	?	?	72	·375	1·0	0	0·36	− 0·36	0	0·17	− 0·17	0·98	4·76	− 3·78	0	Naya Dumka		
23	2	...	1	...	1	1	2	1	0·9	1·6	−44	82	·441	0·4	0	0·42	− 0·42	0	0·12	− 0·12	9·18	4·51	+ 4·67	0	Berhampore.		
14	10	2	...	...	1	...	1	3	2·3	?	?	83	·445	0·5	0	0·23	− 0·23	0	0·07	− 0·07	8·61	4·49	+ 4·12	0	Rampur Boalia.		
...	11	7	...	...	1	1	7	4	1·4	?	?	86	·416	0	0	0·23	− 0·23	0·04	0·13	− 0·09	3·93	4·75	− 0·82	0·04	Malda.		
		Not	reco	rded.					?	?	?	87	·438	0	1	0·23	+ 0·77	0·21	0·10	+ 0·11	15·23	4·48	+10·75	0·21	Bogra.		
...	6	1	1	1	1	6	3	12	2·1	?	?	86	·423	0·7	0	0·23	− 0·23	0	0·08	− 0·08	2·32	4·71	− 2·39	0	Dinajpur	North Bengal.	12
13	5	4	4	...	2	...	3	...	1·3	?	?	?	?	0·1‡	0	0·23	− 0·23	0	0·08	− 0·08	5·89	5·65	+ 0·24	0	Rangpur.		
2	4	5	3	6	2	1	4	4	1·0	?	?	91	·444	0·2	0	0·27	− 0·27	0	0·09	− 0·09	1·92	5·57	− 3·65	0	Jalpaiguri.		
20	3	1	2	5	...	...	...	...	0·8	?	?	94	·450	1·8†	0	?	?	0	0·11	− 0·11	2·13	6·16	− 4·03	0	Cooch Behar		
16	...	1	...	...	1	6	6	1	1·9	1·3	+46	92	·386	1·0	0	0·23	− 0·23	0·01	0·11	− 0·10	1·51	16·93	−15·42	0·01	Purnea	North Bihar.	17
...	13	...	...	...	...	1	3	14	2·3	?	?	81	·493	0·9	1	0·58	+ 0·42	0·21	0·28	− 0·07	12·99	7·73	+ 5·26	0·13	Balasore	Orissa.	18
3	11	...	...	...	...	...	2	15	3·3	6·3	−48	86	·584	1·9	1	0·73	+ 0·27	0·14	0·59	− 0·45	19·65	13·01	+ 6·64	0·14	False Point.		
24	1	2	1	...	...	...	3	...	1·2	1·3	−8	81	·515	1·5	0	0·62	− 0·62	0	0·25	− 0·25	8·11	7·62	+ 0·49	0	Cuttack.		
...	6	15	...	...	3	...	3	4	?	?	?	73	·596	1·2‡	0	?	?	0	0·01	− 0·01	19·87	6·25	+13·62	0	Shortt's Island.		
3	19	6	1	...	...	1	...	1	8·1	?	?	78	·580	0·7‡	0	0·73	− 0·73	0	0·50	− 0·50	11·05	12·88	− 1·83	0	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·13	0·22	−0·09	...	...	...	...	**V.—Gangetic Plain and Chota Nagpur.**		
10	1	...	...	...	2	2	14	2	6·2	4·6	+35	63	·307	1·1	1	0·46	+ 0·54	0·14	0·22	− 0·08	2·18	3·92	− 1·74	0·10	Hazaribagh.	Chota Nagpur.	15
8	1	...	...	...	1	3	7	11	3·8	?	?	64	·334	1·5	1	0·42	+ 0·58	0·17	0·21	− 0·04	2·57	3·59	− 1·02	0·14	Ranchi.		
13	2	...	...	...	11	2	3	...	2·8	?	?	81	·345	1·5	1	0·42	+ 0·58	0·23	0·21	+ 0·02	1·17	3·08	− 1·91	0·23	Daltonganj.		
17	1	1	...	...	2	5	4	1	3·3	?	?	82	·428	1·6	2	0·65	+ 1·35	0·37	0·28	+ 0·09	3·65	3·45	+ 0·20	0·24	Chaibassa.		
12	...	...	...	5	6	3	5	...	3·1	1·3	+138	72	·363	1·5	0	0·31	− 0·31	0·07	0·18	− 0·11	2·12	2·83	− 0·71	0·07	Gaya	South Bihar.	16
...	...	...	...	2	8	17	3	1	4·2	?	?	70	·362	0·7	0	0·38	− 0·38	0	0·32	− 0·32	1·84	3·23	− 1·39	0	Dehri.		
7	...	...	2	...	1	2	16	3	2·4	1·7	+41	75	·372	0·4	0	0·31	− 0·31	0·04	0·13	− 0·09	2·30	3·55	− 1·25	0·04	Patna.		
12	1	...	1	1	...	3	11	2	1·8	?	?	78	·364	0·8*	0	0·27	− 0·27	0·07	0·16	− 0·09	1·33	3·35	− 2·02	0·07	Arrah.		
2	...	3	4	1	4	2	14	1	4·4	?	?	69	·360	1·5‡	0	0·38	− 0·38	0·04	0·18	− 0·14	0·34	3·90	− 3·56	0·04	Buxar.		
24	...	...	...	...	1	6	...	...	1·0	?	?	73	·378	0·9	0	0·27	− 0·27	0	0·07	− 0·07	0·60	3·08	− 2·48	0	Bhagalpur	North Bihar.	17
8	1	...	2	1	4	5	6	4	2·1	2·0	+ 5	88	·437	0·7	0	0·27	− 0·27	0	0·12	− 0·12	1·64	3·03	− 1·39	0	Darbhanga.		
21	...	1	1	...	...	...	5	3	?	?	?	86	·420	0·6‡	0	0·19	− 0·19	0	0·10	− 0·10	0·61	3·38	− 2·77	0	Muzaffarpur		
...	3	2	1	...	1	2	11	11	2·5	?	?	93	·396	0·2	0	0·46	− 0·46	0·02	0·14	− 0·12	0·60	3·66	− 3·06	0·02	Motihari.		
21	...	...	...	...	1	4	4	1	1·6	?	?	83	·289	1·0¶	0	0·31	− 0·31	0·02	0·14	− 0·12	0·61	3·60	− 2·99	0·02	Chapra.		
15	...	1	1	1	1	10	2	...	1·8	2·4	−25	80	·361	1·6	0	0·45	− 0·45	0·13	0·24	− 0·11	0·17	2·90	− 2·73	0·07	Benares	N.-W. Provinces East.	18
4	1	2	4	2	...	2	12	4	4·2	2·5	+68	76	·358	2·3	0	0·64	− 0·64	0·10	0·32	− 0·22	0·33	2·32	− 1·99	0·08	Allahabad.		
11	2	1	1	...	2	1	8	5	1·4	0·9	+56	82	·384	1·9	0	0·45	− 0·45	0·02	0·17	− 0·15	*0·07	4·04	− 3·97	0·02	Gorakhpur	N.-W. Provinces (East Sub-montane).	23
20	...	1	1	...	1	...	5	3	1·3	1·7	−24	79	·333	3·3	0	0·82	− 0·82	0·21	0·35	− 0·14	3·93	1·23	+ 2·70	0·07	Lucknow	South Oudh.	19
17	1	...	1	1	...	...	3	8	1·3	?	?	76‡	·343	1·5	2	?	?	0·46	0·45	+ 0·01	0·70	2·14	− 1·44	0·21	Bahraich	North Oudh.	20
13	3	2	1	2	...	2	7	1	2·5	?	?	73‡	·326‡	1·9	0	0·50	− 0·50	0·18	0·23	− 0·05	0·34	1·75	− 1·41	0·09	Cawnpore	N.-W. Provinces (Central).	21
12	1	...	3	1	1	1	11	1	2·1	?	?	72	·306	4·9	2	?	?	0·51	0·48	+ 0·03	0·56	1·30	− 0·74	0·23	Mainpuri.		

‡ Mean of 30 days. † Mean of 23 days. * Mean of 28 days. ¶ Mean of 29 days.

Table

Abstract of Observations taken at 8 A.M. at 217 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	VI.—Upper Sub-Himalayas.		...	...	−·035	...	...	...	...	...	...	...	70·6	−1·2	45·1	+1·9	57·8	+0·3	25·5	...	...	...	...	41·1
24	N.-W. Provinces, West (Sub-montane).	Bareilly	568	29·470	−·029	30·045	29·583	16th	29·360	31st	·223	52·9	72·3	−0·4	49·1	+3·6	60·7	+1·6	23·2	79·3	2nd	41·7	5th	37·6
		Dehra Dun	2,233	27·753	−·046	30·062	27·833	23rd	27·646	30th	·187	50·2	67·0	−1·2	46·9	+1·3	57·0	+0·1	20·1	77·5	12th	42·9	31st	35·5
		Roorkee	887	29·128	−·037	30·052	29·221	7th	28·991	30th	·230	49·2	70·7	−1·9	45·2	+1·8	58·0	−0·1	25·5	77·3	1st & 2nd.	36·9	5th	40·4
22	N.-W. P., West.	Meerut	738	29·285	−·040	30·046	29·369	16th	29·142	30th	·227	50·5	71·5	−1·5	47·6	+3·6	59·6	+1·1	23·9	79·7	1st	41·1	5th	38·6
26	South-East Punjab.	Delhi	718	29·316	−·040	30·049	29·415	16th	29·154	30th	·261	52·7	71·7	−2·7	50·6	+2·1	61·2	−0·3	21·1	81·2	1st	45·4	14th	35·8
28	Central Punjab.	Lahore	702	29·340	−·033	30·076	29·432	23rd	29·186	30th	·246	45·8	69·7	−1·8	43·4	+2·8	56·6	+0·5	26·2	79·6	1st	37·2	6th & 7th	42·4
27	South Punjab	Sirsa	662	29·397?	?	30·080?	29·502	23rd	29·225	30th	·277	49·9	73·7	−1·3	42·0	−0·3	57·9	−0·8	31·7	83·8	1st	32·2	31st	51·6
		Patiala	818	29·204	?	30·052	29·298	23rd	29·030	30th	·268	50·6	71·0	?	45·8	?	58·4	?	25·2	79·3	1st	38·0	5th & 6th.	41·3
29	Punjab (Sub-montane).	Ludhiana	812	29·210	−·037	30·058	29·299	23rd	29·043	30th	·256	48·9	69·9	−1·3	45·7	+2·4	57·8	+0·6	24·2	78·1	1st	37·5	5th	40·6
		Sialkot	830	29·200	−·020	30·071	29·284	7th	29·040	30th	·244	47·2‡	70·3‡	−0·2‡	42·7‡	+0·5‡	56·5‡	+0·2‡	27·6	77·5	1st	36·0	7th	41·5
		Umballa	892	29·130	?	30·054	29·221	7th	28·958	30th	·263	49·1	71·4	?	44·6	?	58·0	?	26·8	80·0	1st	36·0	6th	44·0
31	North Punjab	Rawalpindi	1,643	28·339	−·037	30·099	28·416	16th	28·168	30th	·248	41·2	67·6	+0·1	37·0	+0·7	52·3	+0·4	30·6	75·5	1st & 2nd.	31·4	6th & 7th.	44·1
	VII.—Indus Valley and North-West Rajputana.		...	...	−·033	...	...	...	...	...	...	...	74·7	−0·5	45·4	−0·8	60·1	−0·7	29·3	...	...	...	...	45·2
31	North Punjab	Peshawar	1,110	28·952	−·045	30·094	29·041	22nd	28·803	30th	·238	42·6	67·3	−0·5	38·9	+0·6	53·1	+0·1	28·4	73·2	1st & 3rd.	29·9	30th	43·3
32	West Punjab	Khushab	612	29·451	?	30·093	29·538	22nd	29·308	30th	·230	44·7	71·9	?	40·0†	?	56·2†	?	31·9	77·9	3rd	34·0	6th	43·9
		Montgomery	558	29·495	−·039	30·070	29·586	22nd	29·358	30th	·228	47·2	71·3	−1·2	41·3	?	56·3	?	30·0	79·5	1st & 2nd.	36·0	14th	43·5
		D. I. Khan	594	29·497	−·038	30·093	29·584	16th	29·357	29th	·227	45·1	71·4	−2·0	39·1	−1·5	55·4	−1·8	32·3	78·8	1st	34·0	14th & 15th.	44·8
		Mooltan	420	29·653	?	30·080	29·764	16th	29·461	29th	·273	48·3	73·9	+0·2	44·5	+1·0	59·3	+0·6	29·4	84·3	1st	37·5	14th	46·8
47	Sind	Jacobabad	186	29·894	−·036	30·058	30·013	22nd	29·710	29th	·303	48·2	77·0	+0·4	42·5	−0·9	59·8	−0·3	34·5	86·5	2nd	34·0	13th	52·5
		Hyderabad	96	30·004	−·020	30·060	30·110	22nd	29·835	29th	·275	56·4	78·4	−0·2	50·9	−1·4	64·7	−0·8	27·5	89·6	2nd	42·0	13th	47·6
		Kurrachee	30	30·073	−·018	30·055	30·171	22nd	29·926	29th	·245	60·3	81·0	−0·6	54·4	−1·8	67·7	−1·2	26·6	89·4	1st	46·0	15th	43·4
51	West Rajputana	Bickaneer	771	?29·297*	?	?30·091*	29·411	23rd	29·166	19th	·245	53·6	74·1	−1·1	48·5	−1·3	61·3	−1·2	25·6	84·7	1st	42·1	5th & 24th.	42·6
		Pachpadra	380	29·675	?	30·044	29·779	23rd	29·547	30th	·232	50·7	78·5	?	47·0	?	62·8	?	31·5	88·1	2nd	39·2	15th	48·9
		Jodhpore	782	29·259	?	30·050	29·359	23rd	29·118	30th	·241	58·5	77·2	?	52·5	?	64·9	?	24·7	86·6	1st	46·2	21st & 31st	40·4
	VIII.—East Rajputana, Central India and Gujarat.		...	...	−·035	...	...	...	...	...	...	...	79·7	−0·5	55·0	+4·1	67·3	+1·8	24·7	...	...	...	...	41·4
50	East Rajputana	Jeypore	1,431	28·602	−·043	30·079	28·724	16th	28·436	30th	·288	55·0	75·4	−2·2	51·2	+3·1	63·3	+0·5	24·2	83·5	1st & 2nd.	41·2	14th & 15th.	42·3
		Kotah	819	29·220	?	?	29·344	16th	29·070	30th	·274	59·2	78·1	?	55·3	?	66·7	?	22·8	87·0	2nd	48·0	15th & 16th.	39·0
		Sambhar	1,254	28·774	−·047	30·071	28·901	16th	28·606	30th	·295	53·8	75·0	−0·3	49·8	+4·1	62·4	+1·9	25·2	83·4	1st	40·0	15th	43·4
		Ajmere	1,611	28·415	−·056	30·089	28·531	16th	28·261	30th	·270	52·9	74·8	−1·4	49·7	+5·4	62·3	+2·0	25·1	83·4	1st	38·4	15th	45·0
		Oodeypore	1,925	28·106	?	30·077	28·226	16th	27·965	30th	·261	58·6	75·7	?	52·0†	?	63·8†	?	23·7	83·0	2nd	41·8	15th	41·2
		Deesa	466	29·580	−·034	30·026	29·667	16th	29·475	25th	·192	62·6	83·0	−2·1	56·0	+4·0	69·5	+1·0	27·0	91·8	1st	47·6	14th	44·2
46	Kathiawar and Cutch.	Bhuj	395	29·674	−·010	30·043	29·761	22nd	29·585	30th	·176	63·7	80·0	−2·0	57·5	+1·9	68·8	−0·1	22·5	88·3	1st	47·0	14th	41·3
		Rajkot	429	29·613	−·024	30·016	29·688	22nd	29·531	24th	·157	63·4	83·0	−2·4	55·0	+2·9	69·0	+0·3	28·0	90·4	18th & 19th.	42·0	14th	48·4
		Veraval	?	30·015	?	29·975	30·089	22nd	29·940	24th	·149	68·6	84·8	?	63·7	?	74·3	?	21·1	91·6	1st	54·3	28th	37·3
		Bhavnagar Para	35	30·010	?	29·990	30·096	16th	29·950	30th	·146	65·1	85·3	?	58·1	?	71·7	?	27·2	90·6	11th	48·2	14th	42·4
49	Central India	Nowgong	757	29·303	−·036	30·069	29·430	16th	29·174	30th	·256	54·8	75·6	+0·4	50·7	+5·0	63·2	+2·7	24·9	81·0	21st	40·0	15th	41·0
		Indore	1,823	28·198	−·026	30·047	28·299	17th	28·130	30th	·169	60·6	81·0	+2·5	53·5	+4·6	67·3	+3·6	27·5	87·2	11th	45·6	3 days	41·6
		Neemuch	1,630	28·415	−·041	30·083	28·525	16th	28·300	30th	·225	58·8	77·4	−0·5	51·4	?	64·4	?	26·0	84·3	12th	46·5	15th	43·8
45	Gujarat	Surat	39	29·993	−·033	29·976	30·063	17th	29·935	25th	·128	68·1	88·1	+1.4	62·6	+5·8	75·3	+3·6	25·5	92·6	2nd & 25th.	52·1	29th	40·5
		Ahmedabad	164	29·883†	?	30·002†	29·985	16th	29·797	25th	·188	66·1	84·1	?	60·9	?	72·5	?	23·2	90·2	3 days	54·2	13th & 29th.	36·0
22	N.-W. P., West	Agra	555	29·496	−·047	30·050	29·617	16th	29·326	30th	·291	55·2	75·8	−0·1	52·6	+4·4	64·3	+2·2	23·2	84·0	1st & 2nd.	45·9	15th & 24th.	38·1
21	N.-W.P., Central	Jhansi	858	29·199	−·027	30·064	29·318	16th	29·067	30th	·251	59·6	78·2§	+0·3§	54·9	+4·3	66·1§	+2·3	23·3	86·1	21st	47·9	27th	38·2

* Mean of 29 days. ‡ Mean of 28 days. † Mean of 30 days. § Mean of 25 days.

I—*continued.*

in India, Burma, etc., in December 1889—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 31st December 1898.	Normal rainfall for period, 1st October to 31st December.	Variation from normal of period 1st October to 31st December.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·17	0·45	+0·77	...	...	...	...	VI.—Upper Sub-Himalayas.		
21	...	3	...	...	...	...	1	6	1·1	2·2	−50	79	·320	4·0	3	0·64	+2·36	0·71	0·31	+0·40	0·90	1·59	−0·69	0·30	Bareilly	N.-W. Provinces, West (Sub-montane).	24
27	1	...	...	...	1	1	1	...	1·9	1·7	−41	79	·292	4·7	5	1·10	+3·90	3·30	0·62	+2·68	4·32	1·98	+2·34	0·90	Dehra Dun.		
23	1	...	1	1	1	1	...	3	2·2	1·3	+69	83	·297	3·9	6	0·91	+5·09	2·63	0·33	+2·30	3·09	0·92	+2·17	0·83	Roorkee.		
21	...	1	...	...	...	4	3	2	1·6	1·6	0	68	·254	4·4	2	1·00	+1·00	0·50	0·32	+0·18	0·54	0·82	−0·28	0·11	Meerut	N.-W. Provinces, West.	22
2	1	...	4	1	1	1	14	7	3·9	2·7	+44	60	·252	5·1	4	0·55	+3·45	0·29	0·30	+0·59	1·20	0·45	+0·75	0·30	Delhi	South-East Punjab.	26
23	1	2	2	...	...	...	3	...	1·1	1·5	−27	74	·230	2·9	1	0·55	+0·45	0·37	0·38	−0·01	0·37	0·74	−0·37	0·28	Lahore	Central Punjab	28
...	2	6	...	6	1	6	1	9	5·3	2·2	+141	58	·208	2·9	1	0·73	+0·27	0·28	0·35	−0·07	0·28	0·50	−0·22	0·28	Sirsa	South Punjab.	27
23	4	...	...	2	1	...	...	1	1·8	?	?	77	·286	3·7	2	?	?	0·65	?	?	0·65	?	?	0·40	Patiala.		
18	...	3	1	1	...	...	3	5	2·2	0·8	+175	66	·237	4·1	2	1·27	+0·73	1·99	0·53	+1·46	1·99	1·02	+0·97	1·01	Ludhiana	Punjab (Sub-montane).	29
22	1	5	1	...	...	...	...	2	1·2	1·1	+ 9	69‡	·225‡	3·2	2	0·82	+1·18	0·51	0·63	−0·12	0·51	1·03	−0·52	0·30	Sialkot.		
21	2	...	2	2	...	...	...	4	1·5	?	?	78	·272	2·9	4	?	?	1·33	0·44	+0·89	1·33	0·93	+0·40	0·70	Umballa.		
30	...	...	1	...	...	...	...	...	1·8	1·1	+64	63	·167	3·5	2	1·27	+0·73	0·88	0·76	+0·12	0·88	1·66	−0·78	0·48	Rawalpindi	North Punjab.	31
..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·25	0·16	+0·08	...	...	...	...	VII.—Indus Valley and North-West Rajputana.		
17	...	...	...	2	3	4	...	...	1·7	2·4	−29	64	·177	3·6	1	0·64	+0·36	0·40	0·34	+0·06	0·40	1·02	−0·62	0·40	Peshawar	North Punjab.	31
18	3	4	1	...	2	1	1	1	2·5	?	?	49	·146	2·7	0	0·20	−0·20	0·07	0·16	−0·09	0·07	0·56	−0·49	0·04	Khushab	West Punjab.	32
8	4	6	4	2	2	1	...	4	3·2	?	?	56	·182	3·0	2	0·40	+1·60	0·41	0·28	+0·13	0·41	0·50	−0·09	0·23	Montgomery		
24	3	...	1	...	...	...	...	3	1·3	0·8	+63	66	·199	3·4	2	0·27	+1·73	0·45	0·24	+0·21	0·45	0·50	−0·05	0·33	D. I. Khan		
21	2	5	...	1	1	...	...	1	0·6	1·3	−54	64	·218	2·4	0	0·18	−0·18	0	0·20	−0·20	0	0·30	−0·30	0	Mooltan.		
23	1	...	2	...	...	...	1	4	2·3	1·6	+44	59	·199	3·4	0	0·09	−0·09	0·05	0·10	−0·05	0·05	0·26	−0·21	0·05	Jacobabad	Sind.	47
8	10	2	...	...	...	1	1	9	?	6·5	?	38	·181	2·4	0	0	0	0	0	0	0	0·06	−0·06	0	Hyderabad.		
3	2	16	7	1	...	...	1	1	5·3	9·2	−42	48	·262	2·0	0	0·10	−0·10	0	0·16	−0·16	0	0·25	−0·25	0	Kurrachee.		
5	5	3	2	4	2	3	1	6	4·3	2·4	+79	58	·242	3·4	1	?	?	0·44	0·16	+0·28	0·44	0·34	+0·10	0·35	Bickaneer	West Rajputana	51
...	5	12	4	4	2	1	1	2	4·5	2·1	+114	63	·240	3·6	2	?	?	0·44	0·03	+0·41	0·44	0·08	+0·36	0·21	Pachpadra.		
9	4	14	2	1	...	...	1	...	2·5	?	?	49	·238	3·6	2	?	?	0·45	0·12	+0·33	0·45	0·38	+0·07	0·29	Jodhpore.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·43	0·16	+0·28	...	...	...	...	VIII.—East Rajputana, Central India and Gujarat.		
10	3	6	2	...	...	2	2	6	3·0	3·4	−12	63	·273	4·0	2	0·30	+1·70	0·48	0·08	+0·40	0·48	0·62	−0·14	0·31	Jeypore	East Rajputana	50
20	1	...	...	1	...	2	2	5	2·2	?	?	63	·320	2·9	3	?	?	0·82	0·29	+0·53	0·83	0·82	+0·01	0·38	Kotah.		
16	6	1	1	2	2	1	1	1	3·2	3·7	−14	62	·259	3·5	2	0·60	+1·40	0·49	0·19	+0·30	0·49	0·55	−0·06	0·25	Sambhar.		
24	...	2	...	1	2	1	1	...	2·2	1·4	+57	72	·293	3·0	1	0·45	+0·55	0·37	0·15	+0·22	0·42	0·65	−0·23	0·29	Ajmere.		
19	...	...	3	1	...	1	4	3	2·7	?	?	57	·285	2·5	2	?	?	0·71	?	?	0·71	?	?	0·35	Oodeypore.		
...	1	9	14	3	...	1	1	2	6·1	8·1	−25	56	·320	2·4	2	0·09	+1·91	0·48	0·06	+0·42	0·48	0·57	−0·09	0·31	Deesa.		
7	3	5	4	1	...	2	5	4	7·5	5·1	+47	45	·264	3·2	1	?	?	0·22	0·08	+0·14	0·22	0·45	−0·23	0·15	Bhuj	Kathiawar and Cutch.	46
3	10	1	12	...	2	1	2	...	7·0¶	4·8	+46	49	·289	2·4	1	0	+1·00	0·19	0·04	+0·15	0·29	0·85	−0·56	0·12	Rajkot.		
...	13	16	1	1	...	...	...	...	4·7	?	?	54	·383	3·2	2	?	?	0·34	0·09	+0·25	0·34	2·04	−1·70	0·20	Veraval.		
...	5	3	...	2	...	3	5	13	6·2	?	?	56	·362	2·7	0	?	?	0·01	?	?	0·03	?	?	0·01	Bhavnagar Para.		
4	4	2	5	...	1	6	5	4	1·5	1·2	+25	80	·365	3·2	0	0·64	−0·64	0·08	0·55	−0·47	0·95	1·97	−1·02	0·06	Nowgong	Central India.	49
11	4	6	2	...	2	5	1	...	2·4	2·1	+14	63	·339	2·6	1	0·55	+0·45	0·19	0·21	−0·02	0·37	2·11	−1·74	0·16	Indore.		
5	1	13	10	...	...	2	...	...	6·1	8·1	−25	55	·277	2·5	3	0·73	+2·27	0·90	0·25	+0·65	0·98	0·95	+0·03	0·52	Neemuch.		
9	7	10	5	...	...	...	...	...	1·3	5·0	−74	61	·427	2·0	0	0·18	−0·18	0·03	0·02	+0·01	0·16	1·72	−1·56	0·03	Surat	Gujarat.	45
4	4	15	4	2	1	...	...	1	4·8	?	?	53	·344	2·8	1	?	?	0·51	0·03	+0·48	0·51	0·86	−0·35	0·48	Ahmedabad		
4	...	6	...	4	...	5	...	12	3·6	2·6	+38	69	·303	2·3	1	0·55	+0·45	0·71	0·19	+0·52	0·71	0·71	0	0·54	Agra	N.-W. P., West	22
15	1	3	...	1	...	5	3	3	2·5	2·3	+ 9	58	·299	2·7	2	0·36	+1·64	0·75	0·13	+0·62	0·98	0·95	+0·03	0·58	Jhansi	N.-W. P., Central	21

¶ Mean of 24 days.

Table

Abstract of Observations taken at 8 A.M. at 217 stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
	IX.—Deccan		...	...	−·025	...	...	...	...	...	...	...	84·7	+4·1	59·2	+5·8	72·0	+4·9	25·4	...	...	...	...	37·4
38	Bombay, Deccan	Belgaum	2,539	27·452	−·017	29·962	27·513	17th	27·397	30th	·116	68·4	82·5	+1·3	60·1	+2·1	71·3	+1·7	22·4	85·3	7th	57·4	19th	27·9
		Sholapur	1,590	28·430	−·018	30·002	28·512	17th	28·366	31st	·146	70·9	87·8	+2·9	62·8*	+5·9*	75·4*	+4·4	25·0	90·2	4 days	56·6	28th	33·6
		Poona	1,840	28·175	−·032	30·010	28·266	17th	28·114	31st	·152	66·6	87·2	+3·8	58·6	+4·8	72·9	+4·3	28·6	90·5	5th	48·0	28th	42·5
		Bijapur	1,946	28·076	?	30·005	28·153	17th	28·008	30th	·145	69·1	84·9	?	60·9*	?	72·9*	?	24·0	87·2	5 days	54·1	19th	33·1
40	Khandesh	Malegaon	1,430	28·582	?	30·011	28·688	17th	28·519	31st	·169	66·2	86·9	+3·7	57·6	+7·3	72·3	+5·5	29·3	92·4	5th	45·5	29th	46·9
		Ahmednagar	2,152	27·873	?	30·014	27·954	17th	27·811	31st	·143	67·6	85·2	?	57·2	?	71·2	?	28·0	88·9	5th	46·4	28th	42·5
41	Berar	Akola	930	29·105?	?	30·017?	29·206	16th	29·020	31st	·186	68·6	88·5	+6·5	59·7	+9·7	74·1	+8·1	23·8	93·4	12th	46·7	29th	46·7
		Amraoti	1,215	28·825	−·019	30·034	28·917	16th	28·724	31st	·193	68·2	87·4	+5·7	61·7	+6·3	74·6	+6·0	25·7	92·2	12th.	53·4	19th	38·8
42	Central Provinces, West.	Khandwa	1,044	28·993	−·019	30·037	29·110	16th	28·933	30th	·177	64·6	87·0	+5·3	57·8	+8·9	72·4	+7·1	29·2	92·2	12th	44·6	18th	47·6
		Hoshangabad	1,006	29·039	−·030	30·055	29·171	16th	28·954	31st	·217	61·0	81·9	+3·1	57·1	+6·4	69·6	+4·8	24·8	88·2	12th	46·3	17th	41·9
		Nagpur	1,025	29·012	−·028	30·034	29·117	16th	28·910	31st	·207	64·9	85·3	+5·9	58·6	+5·3	72·0	+5·2	26·7	89·6	12th	51·2	18th	38·4
43	Central Provinces, Central.	Chanda	634	29·424	?	30·032	29·527	16th	29·342	31st	·185	64·4	86·6	+5·0	56·2	+5·1	71·4	+5·1	30·4	90·2	11th & 12th.	47·2	19th	43·0
		Seoni	2,033	27·994	?	30·045	28·092	16th	27·888	31st	·204	61·6	81·4	+4·2	54·8	+5·8	68·1	+5·0	26·6	87·3	12th	46·0	17th & 18th.	41·3
		Jubbulpore	1,327	28·700	?	30·051	28·818	16th	28·585	31st	·233	58·5	80·2	+4·2	51·5	+6·3	65·9	+5·3	28·7	87·9	12th & 17th	41·4	17th	46·5
		Saugor	1,807	28·236	−·020	30·064	28·354	16th	28·134	30th	·220	62·8	79·2	+3·3	56·3	+5·3	67·8	+4·3	22·9	87·3	12th	48·1	16th	39·2
49	Central India	Sutna	1,040	29·005	−·033	30·064	29·123	16th	28·868	31st	·255	57·6	77·3	+2·6	51·4	+5·2	64·4	+3·9	25·9	85·9	13th	42·3	16th	43·6
44	Central Provinces, East.	Raipur	970	29·071	−·028	30·033	29·164	17th	28·970	31st	·194	63·9	83·4	+5·1	58·7	+5·4	71·1	+5·3	24·7	88·8	13th	52·3	17th	36·5
		Sambalpur	486	29·576	−·031	30·035	29·661	1st	29·467	31st	·194	63·8	83·2	+3·9	56·9	+3·1	70·1	+3·5	26·3	88·6	13th	50·2	19th	38·4
39	Hyderabad (North).	Aurangabad†	1,865	28·181	?	30·029	28·248	16th	28·140	4th	·108	70·6	87·2	?	60·4	?	73·8	?	26·8	91·0	5th	51·0	28th	40·0
		Indur	?			Not	recorded					71·2	85·9	?	59·7	?	72·8	?	26·2	88·9	12th	52·4	19th	36·5
		Bidar	2,165?	27·848	?	29·979	27·926	16th	27·796	30th	·130	71·8	84·0	?	66·1	?	75·0	?	17·9	87·5	12th	63·7	4th	23·8
53	Hyderabad (South).	Gulbarga	1,502	28·555?	?	30·043?	28·633	17th	28·489	30th	·144	69·5	86·6	?	61·6	?	74·1	?	25·0	89·3	7th	58·0	22nd	31·3
		Raichur	1,309	28·709	?	29·994	28·776	17th	28·649	31st	·127	71·6	86·1	?	66·3	?	76·2	?	19·8	89·1	13th	63·1	22nd	26·0
		Hyderabad (Deccan).	1,690	28·338	−·027	30·020	28·414	16th	28·272	31st	·142	67·7	84·9	+3·3	61·7	+5·1	73·3	+4·2	23·2	87·4	3 days	58·3	23rd	29·1
		Secunderabad	1,787	28·235	−·028	30·013	28·309	16th	28·175	31st	·134	67·8	85·6	+4·0	62·5	+5·9	74·1	+5·0	23·1	88·6	12th & 13th	57·7	18th	30·9
		Hanamconda	?	29·166	?	?	29·246	17th & 17th	29·111	31st	·135	72·1	85·0	?	63·4	?	74·2	?	21·6	88·0	13th & 14th	59·2	18th	28·8
	X.—West Coast		...	...	−·026	...	...	...	...	...	...	...	87·3	+0·7	71·5	+1·8	79·4	+1·3	15·8	...	...	...	...	23·7
27	Konkan	Bombay	37	29·981	−·023	29·958	30·056	17th	29·911	3rd	·145	75·1	85·9	+1·8	72·5	+3·0	73·2	+2·4	13·4	89·5	19th	64·0	29th	25·5
		Ratnagiri	110	29·879	−·018	29·929	29·969	17th	29·822	3rd	·147	75·9	89·7	+0·4	70·5	+3·7	80·1	+2·1	19·2	94·9	2nd	63·9	28th	31·0
		Mormugao	60	29·924	?	29·919	30·006	17th	29·863	30th	·143	74·1	86·0	?	71·2	?	78·6	?	14·8	88·0	5th & 17th	67·3	11th	20·7
		Goa	199	29·791	−·016	29·930	29·877	17th	29·704	30th	·173	76·2	86·0	?	72·3	?	79·2	?	13·7	90·0	17th	69·0	17th & 31st	21·0
		Karwar	44	29·940	−·024	29·917	30·029	17th	29·875	30th	·154	70·4	88·0	+0·8	67·6	+1·2	77·8	+1·0	20·4	90·8	17th	63·5	17th	27·3
33	Malabar	Cochin	10	29·942	−·033	29·880	30·007	7th	29·866	29th	·141	76·9	90·2	?	73·5	+0·8	81·9	?	16·7	92·5	30th	69·7	16th	22·8
		Calicut	27	29·935	−·037	29·892	30·001	7th	29·875	31st	·126	76·2	87·5	0	71·1	+0·7	79·3	+0·4	16·4	89·3	14th & 21st.	67·0	17th	22·3
		Mangalore	65	29·909	−·034	29·907	29·977	17th	29·835	30th	·142	76·7	89·2	+0·7	71·0	+0·5	80·1	+0·6	18·2	92·8	12th	66·0	16th	26·8
		Trivandrum	198	29·742	?	29·872	29·815	7th	29·660	29th	·155	76·4	83·0	?	73·6	?	78·3	?	9·4	86·0	24th	70·0	21st	16·0
	XI.—South India		...	...	−·015	...	...	...	...	...	...	...	83·4	+0·7	66·9	+1·5	75·2	+1·1	16·5	...	...	...	...	24·2
57	Madras (South).	Pamban	37	29·947	?	29·911	30·003	7th	29·866	28th	·137	77·9	82·4	?	74·5	?	78·5	?	7·9	85·8	5th	72·7	26th	13·1
		Tinnevelly	168	29·826	?	29·926	29·838	5th	29·745	28th	·143	75·7	84·6	?	72·8	?	78·8	?	11·8	89·2	3 days	69·9	6th & 16th.	19·3
		Madura	447	29·544	−·006	29·934	29·594	16th	29·470	28th	·124	76·1	84·7	−1·3	71·1	+0·7	77·9	−0·3	13·6	87·4	14th & 18t	66·6	16th	20·8

* Mean of 30 days. † Mean of 28 days.

I—*continued.*

in India, Burma, etc., in December 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 31st December 1898.	Normal rainfall for period, 1st October to 31st December.	Variation from normal of period 1st October to 31st December.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·13	0·47	−0·35	...	...	...	...	IX.—Deccan.		
3	...	4	16	8	...	...	...	...	?	12·3	?	66	·456	2·5	2	0·18	+1·82	0·29	0·13	+ 0·16	5·94	8·63	− 2·69	0·15	Belgaum	Bombay Deccan.	38
1	2	2	5	19	1	...	...	1	11·0	6·8	+62	50	·387	1·9	0	0·91	−0·91	0·03	0·60	− 0·57	3·24	6·85	− 3·61	0·03	Sholapur.		
10	...	...	6	5	2	3	...	5	6·1	5·7	+ 7	65	·438	2·0	0	0·82	−0·82	0·17	0·26	− 0·09	1·55	6·37	− 4·82	0·08	Poona.		
...	...	1	13	12	1	1	2	1	4·8	?	?	77	·553	3·0	0	0·09	−0·09	0	0·43	− 0·43	10·19	5·09	+ 5·10	0	Bijapur.		
2	3	3	...	1	...	4	14	4	8·1	3·5	+131	71	·460	2·8	1	0·82	+0·18	0·14	0·37	− 0·23	0·60	3·85	− 3·25	0·10	Malegaon	Khandesh.	40
16	2	1	1	6	1	...	2	2	4·8	?	?	62	·424	2·5	1	?	?	0·16	0·48	− 0·32	0·64	4·79	− 4·15	0·13	Ahmednagar.		
...	...	2	13	10	1	1	2	2	4·6	3·1	+48	49	·343	2·0	0	0·95	−0·95	0	0·96	− 0·96	0·42	5·21	− 4·79	0	Akola	Berar.	41
..	1	3	17	7	2	1	...	...	5·8	3·1	+87	51	·362	2·1	0	1·09	−1·09	0	0·73	− 0·73	0·03	4·23	− 4·20	0	Amraoti.		
13	2	5	5	...	1	2	2	1	3·6	2·4	+50	52	·324	1·6	0	0·64	−0·64	0	0·56	− 0·56	0	2·60	− 2·60	0	Khandwa	Central Provinces, West.	42
13	...	15	3	...	...	...	...	...	2·6	2·4	+ 8	61	·337	1·7	0	1·00	−1·00	0	0·63	− 0·63	0	3·06	− 3·06	0	Hoshangabad.		
30	...	1	...	...	...	...	...	...	1·7	3·5	−51	59	·365	2·0	0	1·00	−1·00	0·08	0·64	− 0·56	0·23	4·49	− 4·26	0·08	Nagpur.		
13	2	8	4	3	1	...	...	...	1·2	1·6	−25	75	·464	1·7	0	?	?	0	0·46	− 0·46	0·17	3·82	− 3·65	0	Chanda	Central Provinces, Central.	43
...	6	11	3	3	...	4	2	2	1·5	2·5	−40	57	·321	1·5	0	0·91	−0·91	0·04	0·67	− 0·63	1·01	3·63	− 2·62	0·04	Seoni.		
3	4	3	2	11	7	...	...	1	1·8	1·8	0	70	·356	2·4	0	0·91	−0·91	0	0·38	− 0·38	0·16	2·95	− 2·79	0	Jubbulpore.		
1	...	4	7	9	6	3	1	...	3·6	2·5	+44	52	·303	1·7	2	0·73	+1·27	0·40	0·76	− 0·36	0·40	2·66	− 2·26	0·24	Saugor.		
7	6	3	2	1	...	1	4	7	3·4	3·6	− 6	63	·306	1·7	1	0·91	+0·09	0·15	0·42	− 0·27	0·20	3·09	− 2·89	0·15	Sutna	Central India.	49
20	1	4	1	1	...	1	1	2	1·8	2·6	−31	64	·389	1·7	0	1·07	−1·07	0	0·35	− 0·35	1·19	3·16	− 1·97	0	Raipur	Central Provinces, East.	44
..	12	17	1	...	...	...	...	1	1·8	1·4	+29	76	·450	1·8	0	?	?	0·06	0·34	− 0·28	0·94	3·03	− 2·09	0·06	Sambalpur.		
16	...	7	3	1	...	1	...	...	2·5	?	?	53	·401	1·3	2	?	?	0·72	?	?	0·72	?	?	0·48	Aurangabad	Hyderabad (North).	39
20	2	...	4	2	1	...	1	1	2·1	?	?	71	·546	1·6	0	?	?	0	0·40	− 0·40	1·29	4·09	− 2·80	0	Indur.		
...	...	1	5	11	3	10	1	...	7·8	?	?	76	·591	0	5	?	?	1·20	0·61	+ 0·59	3·23	5·41	− 2·18	0·40	Bidar.		
24	...	...	4	3	...	...	...	...	9·3	?	?	63	·452	0·8	0	?	?	0	0·40	− 0·40	2·96	4·10	− 1·14	0	Gulbarga	Hyderabad (South).	53
...	..	2	6	14	6	2	1	...	7·6	?	?	76	·597	1·5	0	?	?	0	0·09	− 0·09	0·72	5·67	− 4·95	0	Raichur.		
26	1	...	3	1	...	...	...	...	2·7	?	?	78	·529	1·6	0	?	?	0	0·27	− 0·27	3·53	5·11	− 1·58	0	Hyderabad (Deccan).		
4	...	3	21	3	...	...	...	...	4·3	3·3	+20	75	·505	1·7	0	?	?	0	0·27	− 0·27	1·53	5·11	− 3·58	0	Secunderabad.		
9	1	...	...	10	10	1	...	...	4·3	?	?	76	·607	2·1	0	?	?	0	?	?	8·15	?	?	0	Hanamconda.		
...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·52	0·72	−0·20	...	...	...	...	X.—West Coast.		
...	7	13	9	2	...	...	...	...	9·5	10·0	− 5	71	·638	2·0	0	0·18	−0·18	0	0·09	− 0·09	0·61	3·22	− 2·61	0	Bombay.	Konkan.	37
14	..	...	8	8	1	...	...	...	4·1	9·9	−58	66	·591	1·4	0	0·27	−0·27	0	0·08	− 0·08	2·14	4·86	− 2·72	0	Ratnagiri.		
...	...	...	12	17	1	...	...	...	7·7	?	?	78	·658	2·0	0	?	?	0·01	0	+ 0·01	6·90	8·25	− 1·35	0·01	Mormugao.		
...	...	12	18	1	...	...	...	...	?	?	?	72	·654	2·6	0	?	?	0	0·09	− 0·09	9·04	7·51	+ 1·53	0	Goa.		
1	3	12	15	...	...	...	...	...	3·4	?	?	81	·599	1·2	1	0·18	+0·82	0·18	0·09	+ 0·09	11·20	10·40	+ 0·80	0·18	Karwar.		
...	15	14	1	...	...	...	...	1	5·0	?	?	73	·680	4·3	1	3·36	−2·36	0·19	1·81	− 1·62	31·68	22·59	+ 9·09	0·14	Cochin	Malabar.	33
2	...	1	21	6	1	...	...	...	6·4	?	?	78	·702	3·6	2	2·11	−0·11	0·79	1·31	− 0·52	21·26	16·54	+ 4·72	0·39	Calicut.		
7	1	2	14	7	...	...	...	...	2·1	3·5	−67	70	·645	5·9	1	1·10	−0·10	0·36	0·48	− 0·12	11·91	11·39	+ 0·52	0·36	Mangalore.		
22	6	1	1	1	...	...	...	...	2·5	?	?	79	·729	5·6	7	?	?	3·11	2·52	+ 0·59	17·23	19·52	− 2·29	1·14	Trivandrum.		
...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·56	2·66	+ 0·90	...	..	...	...	XI.—South India.		
...	7	10	2	...	..	...	...	12	15·5	?	?	90	·860	3·8	16	7·00	+9·00	11·99	9·11	+ 2·88	43·72	25·52	+18·20	3·15	Pamban	Madras (South).	57
...	17	10	...	...	...	...	...	4	5·4	?	?	80	·712	6·4	8	6·50	+1·50	4·19	3·53	+ 0·66	19·28	19·53	− 0·25	1·28	Tinnevelly.		
...	14	10	1	...	...	...	...	6	5·8	4·9	+18	73	·668	4·5	5	4·36	+0·64	2·26	1·81	+ 0·45	22·51	14·68	+ 7·83	1·08	Madura.		

Table

Abstract of Observations taken at 8 A.M. at 217 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure, 8 A.M., in inches.								Temperature of Air.												
				Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity, 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
34	Madras, South Central.	Salem	940	29·086	−·012	29·985	29·154	17th	29·022	30th	·132	73·4	84·8	−1·2	66·3	+1·2	75·6	0	18·5	88·4	11th	61·9	4th & 7th.	26·5
		Coimbatore	1,348	28·643	−·016	29·959	28·710	7th	28·583	29th	·127	71·9	83·9	−0·8	66·2	−0·1	75·1	−0·5	17·7	87·9	10th	61·8	7th	26·1
35	Coorg	Mercara	3,781	26·259	−·028	?	26·354	23rd	26·193	30th	·161	61·4	75·1	+0·6	59·1	+1·5	67·1	+1·1	16·0	79·5	31st	55·7	18th	23·8
36	Mysore	Chitaldroog	2,405	27·601	?	29·965	27·669	16th	27·537	30th	·132	68·9	80·8	?	62·1	?	71·5	?	18·7	84·6	31st	58·9	3 days	25·7
		Bangalore	3,021	27·011	−·019	29·983	27·059	17th	26·959	30th	·100	65·0	77·7	+0·2	59·4	+0·8	68·6	+0·5	18·3	80·7	29th	53·4	14th	27·3
		Hassan	3,091	26·942	?	29·978	26·996	16th	26·883	30th	·113	67·4	78·8	?	56·9	?	67·9	?	21·9	81·0	10th & 31st.	51·3	19th	29·7
		Mysore	2,518	27·498	?	29·969	27·559	17th	27·445	26th & 30th.	·114	68·8	80·7	?	60·5	?	70·6	?	20·2	84·4	23rd	56·4	14th & 18th.	28·0
56	Madras, East Coast, South.	Negapatam	31	29·957	−·020	29·918	30·017	5th	29·881	28th	·136	78·3	83·6	?	74·2	?	78·9	?	9·4	89·5	12th	71·0	7th & 8th.	18·5
		Cuddalore	12	30·001	?	29·942	30·049	16th	29·936	28th	·113	75·3	83·0	?	68·8	?	75·9	?	14·2	89·3	25th	63·3	9th	26·0
		Trichinopoly	255	29·745	−·020	29·939	29·801	7th	29·677	28th	·124	74·9	84·5	0	70·5	+1·5	77·6	+0·8	14·0	83·0	5 days.	67·4	4 days	20·6
		Madras	22	30·010	−·012	29·963	30·064	5th	29·957	28th	·107	76·5	84·0	+0·4	70·8	+1·0	77·4	+0·7	13·2	85·5	13th & 16th.	67·0	3rd	18·5
55	Madras, East Coast, Central.	Nellore	71	29·964	?	29·970	30·028	17th	29·913	26th	·115	75·5	86·1	?	70·0	?	78·0	?	16·1	88·4	30th & 31st.	67·1	21st	21·3
		Masulipatam	15	30·044	+·004	29·994	30·109	17th	29·988	29th	·121	73·5	83·5	+1·0	68·9	+2·4	76·2	+1·7	14·6	86·5	12th	65·7	6th	20·8
54	Madras, Central	Cuddapah	433	29·598	−·031	29·982	29·660	16th	29·545	26th	·115	72·5	86·4	+1·6	66·2	+0·2	76·3	+0·9	20·2	89·0	28th	63·4	7th & 21st.	25·6
		Kurnool	923	29·095	−·037	29·989	29·175	16th	29·032	30th	·143	69·5	88·3	+2·9	62·0	+2·6	75·2	+2·8	26·3	91·2	11th	55·7	15th	35·5
		Bellary	1,475	28·543	−·013	29·995	28·620	16th	28·484	28th	·136	70·8	87·0	+1·7	63·3	+2·6	75·2	+2·2	23·7	90·2	29th & 30th.	60·1	4 days	30·1
52	Madras, East Coast, North.	Cocanada	26	30·032	−·001	29·993	30·103	16th	29·976	28th & 29th.	·127	73·4	82·2	+2·0	68·5	+3·2	75·4	+2·6	13·7	87·1	13th	63·5	4th	23·6
		Vizagapatam	31	30·035	−·002	30·005	30·102	16th	29·976	29th	·126	72·8	83·2	+1·6	65·1	+1·5	74·2	+1·6	18·1	85·8	12th	58·4	4th & 5th.	27·4
		Waltair	?			Not recorded.						75·7	82·1	?	69·4	?	75·8	?	12·7	85·1	12th	65·0	3rd	20·1
		Gopalpur	21	30·046	?	30·007	30·118	16th & 17th.	29·975	31st	·143	69·7	81·3	?	63·3	?	72·3	?	18·0	84·8	13th	57·1	3 days	27·7
	XII.—Hill Stations.																							
48	Baluchistan	Sharigh	?	25·886	?	?	25·970	16th & 22nd.	25·700	29th	·270	44·3	62·4	?	36·0	?	49·2	?	26·4	68·0	1st & 15th.	26·0	31st	42·0
		Pishin	?			Not recorded.						?	56·1	?	?	?	?	?	?	70·0	17th	?		?
		Quetta	5,502	24·714	−·027	?	24·832	9th	24·526	29th	·306	30·2	53·5	−3·6	26·7	−2·1	40·1	−2·9	26·8	68·7	17th	15·8	13th	52·9
		Kalat	?			Not recorded.						37·4	51·5	?	20·9	?	36·3	?	30·6	67·3	16th	7·0	12th	60·3
		Chaman	4,311	25·806	?	?	25·935	9th	25·634	29th	·301	40·3	55·7	?	33·8	?	44·8	?	21·9	69·3	16th	21·1	31st	48·2
30	Punjab	Leh	11,503	19·672	−·065	?	19·873	24th	19·349	30th	·524	14·0	31·3	−6·8	11·6	−2·0	21·5	−4·4	19·7	44·4	6th	1·5	24th	45·9
		Srinagar	5,204	24·989	?	?	25·154	23rd	24·693	30th	·461	31·6	47·8	?	28·4	?	38·1	?	19·4	59·9	1st	17·8	7th	42·1
		Astor (Kashmir)	?	22·270	?	?	22·487	23rd	21·969	30th	·518	24·5	38·9	?	20·7	?	29·8	?	18·2	52·4	7th	8·0	31st	44·4
		Minimarg	?	21·371	?	?	21·539	16th	21·064	30th	·475	17·2	42·1	?	12·8	?	27·5	?	29·3	58·9	1st	−2·0	31st	60·9
		Skardu	?			Not recorded.						25·4	39·6	?	21·2	?	30·4	?	18·4	48·5	1st & 8th.	8·2	31st	40·3
		Dras	?	20·748	?	?	20·960	24th	20·421	30th	·539	7·1	27·9	?	−0·3	?	13·8	?	28·2	46·3	7th	−26·0	24th	72·3
		Gilgit	?	25·282	?	?	25·508	23rd	24·990	30th	·518	37·2	46·7	?	33·8	?	40·3	?	12·9	54·6	1st	28·3	7th	26·3
		Chitral	?	24·806	?	?	24·900	8 days	24·600	29th	·300	34·2	52·7	?	30·6	?	41·6	?	22·1	63·1	1st	25·0	3 days	38·1
		Killa Drosh	?			Not recorded						36·3	51·8	?	34·5	?	43·2	?	17·3	61·5	1st	29·0	31st	32·5
		Para Chinar	6,000	24·520	?	?	24·624	16th	24·292	30th	·332	37·9	53·2	?	30·3	?	41·8	?	22·9	62·9	1st	16·1	30th	46·8
		Cherat	?	25·775	?	?	25·887	16th	25·577	30th	·310	45·2	53·9	?	40·1	?	47·0	?	13·8	65·3	1st	27·6	15th	37·7
		Murree	6,333	23·837	−·071	?	23·950	16th	23·619	30th	·331	41·0	49·4	−4·3	37·2	−2·8	43·3	−3·6	12·2	56·2	1st	25·0	30th	31·2
		Poo	?			Not recorded.						?	45·5	?	26·5	?	36·0	?	19·0	58·9	6th	19·5	23rd	39·4
		Simla	7,224	23·134	−·035	?	23·227	7th	22·919	30th	·308	41·1	47·9	−3·4	38·0	−2·1	43·0	−2·8	9·9	59·2	12th	24·1	31st	35·1
25	N.-W. Provinces	Chakrata	7,022	23·310	−·020	?	23·408	7th	23·157	30th	·251	41·2	53·2	−1·8	37·8	−1·8	45·5	−1·8	15·4	63·7	11th & 12th.	25·3	31st	38·4
		Mussooree	6,705	23·581	?	?	23·683	7th	23·440	30th	·243	42·0	49·3	−3·3	38·9	−1·7	44·1	−2·5	10·4	59·2	12th	30·0	31st	29·2
		Ranikhet	6,069	24·152	−·014	?	24·242	7th	24·032	31st	·210	44·6	54·0	−4·2	41·8	−0·8	47·9	−2·5	12·2	65·1	12th	32·0	30th	33·1
		Muktesar	?	22·868	?	?	22·993	7th	22·767	28th	·226	42·5	51·0	?	37·9	?	44·5	?	13·1	65·4	12th	30·4	30th & 31st.	35·0

I—*continued.*

in India, Burma, etc., in December 1898—continued.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 31st December 1898.	Normal rainfall for period, 1st October to 31st December.	Variation from normal of period, 1st October to 31st December.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
11	1	9	4	1	...	...	1	4	5·0	4·0	+25	80	·663	3·5	3	3·18	−0·18	1·76	1·39	+ 0·37	17·37	12·24	+ 5·13	0·94	Salem .	Madras, South Central.	34
...	...	5	26	...	...	...	...	...	1·2	3·0	−60	85	·668	5·6	3	2·45	−0·45	0·95	1·21	− 0·26	15·88	10·87	+ 5·01	0·47	Coimbatore.		
1	...	15	14	1	...	...	...	...	9·3	4·7	+98	88	·485	5·5	0	1·50	−1·50	0·12	0·70	− 0·58	11·91	13·64	− 1·73	0·09	Mercara .	Coorg.	35
...	...	1	16	13	...	...	...	1	9·8	?	?	73	·518	3·6	1	?	?	0·37	0·40	− 0·03	11·04	7·62	+ 3·42	0·36	Chitaldroog.	Mysore.	36
...	...	11	19	1	...	...	...	...	8·4	3·9	+116	84	·524	3·9	1	1·36	−0·36	0·45	0·55	− 0·10	9·79	11·29	− 1·50	0·40	Bangalore.		
...	...	11	16	4	...	...	...	...	3·8	?	?	77	·515	5·0	1	?	?	0·72	0·65	+ 0·07	18·08	8·26	+ 9·82	0·71	Hassan.		
...	...	13	15	3	...	...	...	...	11·3	?	?	79	·549	4·8	2	?	?	0·39	0·46	− 0·07	7·49	8·77	− 1·28	0·19	Mysore.		
...	1	19	2	...	...	...	...	9	15·6	6·8	+129	83	·800	6·3	13	11·00	+2·00	17·87	12·41	+ 5·46	57·84	38·95	+18·89	2·72	Negapatam	Madras, East Coast, South.	56
...	18	3	4	...	...	...	1	5	2·0	?	?	89	·785	3·5	8	6·90	+1·10	14·18	6·48	+ 7·70	57·58	28·87	+ 28·71	5·00	Cuddalore.		
15	11	5	...	...	...	...	...	...	4·1	5·0	−18	81	·699	5·3	10	5·64	+4·36	6·95	2·55	+ 4·40	20·23	15·41	+ 4·82	1·33	Trichinopoly.		
...	12	12	5	...	...	2	...	...	6·6	7·6	−13	83	·761	4·6	6	5·73	+0·27	10·06	5·28	+ 4·78	46·16	29·49	+16·67	4·10	Madras.		
21	...	1	...	...	...	...	4	5	4·1	?	?	87	·771	5·3	1	3·80	−2·80	0·16	3·36	− 3·20	23·84	22·84	+ 1·00	0·16	Nellore .	Madras, East Coast Central.	55
1	18	11	1	...	...	...	...	...	6·0	5·7	+5	85	·727	2·2	0	1·45	−1·45	0	1·06	− 1·06	16·52	17·46	− 0·94	0	Masulipatam.		
...	...	3	9	16	1	...	...	2	?	?	?	82	·649	3·0	1	1·50	−0·50	2·47	1·19	+ 1·28	10·54	12·19	− 1·65	2·41	Cuddapah.	Madras, Central.	54
29	...	...	1	...	...	...	1	...	?	?	?	75	·541	1·8	0	1·00	−1·00	0	0·20	− 0·20	1·03	6·38	− 5·35	0	Kurnool.		
6	...	...	1	22	2	...	...	...	4·5	3·1	+45	67	·510	4·2	0	0·45	−0·45	0	0·14	− 0·14	5·50	6·56	− 1·06	0	Bellary.		
...	18	7	...	...	...	...	1	5	9·0	?	?	73	·600	1·3	0	1·00	−1·00	0	0·76	− 0·76	21·54	18·53	+ 3·01	0	Cocanada .	Madras, East Coast, North.	52
20	...	8	...	2	1	...	...	...	?	2·1	?	80	·645	1·9	0	1·82	−1·82	0	2·49	− 2·49	21·84	19·93	+ 1·91	0	Vizagapatam.		
...	8	6	4	4	...	...	5	2	8·1	?	?	68	·610	1·9				No	rain g	auge					Waltair.		
1	16	...	...	...	...	1	...	13	9·7	6·9	+41	79	·572	0·3	0	1·18	−1·18	0	0·91	− 0·91	15·08	15·25	− 0·17	0	Gopalpur.		
																									XII.—Hill Stations.		
5	2	...	...	2	...	5	6	11	6·1	?	?	41	·118	2·4	0	?	?	0·11	1·05	− 0·94	0·11	2·20	− 2·09	0·06	Sharigh .	Baluchistan	48
					Not	record	ed.		?	?	?	?	?	?	2	?	?	0·52	1·37	− 0·85	(a) 0·52	2·18	− 1·66	0·34	Pishin.		
29	...	...	...	1	1	...	...	...	2·2	2·7	−19	78	·131	3·8	1	0·91	+0·09	0·41	0·73	− 0·32	0·44	1·07	− 0·63	0·12	Quetta.		
...	4	...	4	...	15	...	3	5	?	?	?	69*	·161*	1·9	2	?	?	0·44	0·60	− 0·16	0·44	1·02	− 0·58	0·25	Kalat.		
...	...	...	11	14	3	2	...	1	7·3	?	?	52	·128	2·3	1	?	?	0·17	1·32	− 1·15	0·17	1·89	− 1·72	0·11	Chaman.		
...	...	...	1	...	15	12	3	...	0·5	1·3	−62	55	·047	7·2	5	?	?	1·12	0·16	+ 0·96	1·15	0·49	+0·66	0·25	Leh . .	Punjab.	30
19	2	1	1	3	3	...	1	1	2·7	?	?	85	·157	6·8	8	?	?	2·63	0·84	+ 1·79	3·01	1·72	+1·29	0·80	Srinagar.		
8	...	...	...	...	4	14	5	...	1·2	?	?	57†	·087†	6·2	7	?	?	1·21	?	?	1·21	?	?	0·28	Ashtor (Kashmir).		
...	3	7	12	...	1	1	4	3	5·1	?	?	82	·082	5·9	13	?	?	7·32	?	?	7·32	?	?	1·21	Minimarg.		
29	...	...	...	...	...	...	1	1	2·2	?	?	95	·132	5·5	1	?	?	0·55	0·88	− 0·33	0·63	1·03	− 0·40	0·11	Skardu.		
31	...	...	...	...	...	...	...	...	0·4	?	?	96*	·075*	6·1	13	?	?	4·88	1·50	+ 3·38	5·64	5·14	+0·50	0·71	Dras.		
29	...	...	...	...	...	...	2	...	0·3	?	?	58	·130	7·0	1	?	?	0·25	0·07	+ 0·18	0·40	0·30	+0·10	0·25	Gilgit.		
28	2	1	..	...	...	...	...	...	0·3	?	?	77	·153	2·5	5	?	?	1·55	?	?	1·64	?	?	0·63	Chitral.		
17	4	...	8	...	2	...	...	...	?	?	?	49	·104	4·6	1	?	?	1·16	?	?	1·24	?	?	0·86	Killa Drosh.		
...	5	5	4	4	3	2	6	2	4·0	?	?	66	·148	2·7	3	?	?	0·89	?	?	0·92	?	?	0·60	Para Chinar.		
...	21	1	...	...	1	...	1	7	13·2	?	?	43	·125	3·5	1	?	?	0·97	0·72	+ 0·25	0·99	1·06	− 0·07	0·92	Cherat.		
10	4	1	2	10	4	...	...	...	7·3	6·1	+20	49	·124	2·3	3	1·55	−1·45	1·44	1·20	+ 0·24	1·47	3·93	− 2·46	0·70	Murree.		
...	...	...	1	5	4	1	...	3	?	?	?	?	?	5·3	8	?	?	1·90	1·05	+ 0·85	2·10	2·58	− 0·48	0·43	Poo.		
14	3	2	3	4	4	1	...	...	3·6	1·8	+100	46	·112	4·5	7	1·45	+5·55	3·09	0·74	+ 2·35	3·22	2·50	+ 0·72	0·97	Simla.		
16	13	...	...	...	1	...	...	1	8·0	4·2	+90	55	·135	5·0	8	?	?	4·32	0·66	+ 3·66	4·65	2·09	+ 2·56	1·65	Chakrata .	N.-W. Provinces.	25
...	4	1	9	3	2	...	3	9	?	?	?	60	·158	4·8	8	1·50	+6·50	5·02	1·06	+ 3·96	7·27	2·50	+ 4·77	1·46	Mussoorec.		
11	1	2	4	5	1	4	...	3	2·1	1·3	+62	64	·184	5·4	7	1·00	+6·00	2·51	0·53	+ 1·98	3·41	2·34	+ 1·07	1·05	Ranikhet.		
...	1	5	2	7	1	2	...	13	1·2	?	?	47	·120	5·5	6		?	2·28	?	?	3·31	?	?	0·72	Muktesar		

* Mean of 27 days. † Mean of 20 days. (a) Rainfall for December only.

Table

Abstract of Observations taken at 8 A.M. at 217 Stations

Number of District.	Meteorological Province or District.	Station.	Elevation of barcistern above sea-level in feet.	Pressure, 8 A.M., in inches. Mean actual pressure (reduced to 32°).	Variation from normal.	Mean pressure reduced to sea-level and to constant gravity 45° Lat.	Highest pressure recorded during month.	Date.	Lowest pressure recorded during month.	Date.	Total range of pressure during month.	Temperature of Air. Mean of 8 A.M.	Mean maximum.	Variation from normal.	Mean minimum.	Variation from normal.	Mean daily temperature.	Variation from normal.	Mean daily range of temperature.	Highest temperature observed during month.	Date.	Lowest temperature observed during month.	Date.	Absolute range during month.
13	Bengal	Yatung	10,480?			Not recorded.						?	43·4	?	23·7	?	33·5	?	19·7	53·1	14th	17·9	29th & 30th	35·2
		Darjeeling	7,409	22·981	−·053	?	23·046	16th	22·848	29th	·198	39·9	46·8	−2·1	36·5	−0·3	41·6	−1·2	10·3	50·8	7th	31·8	29th	19·0
		Gantok	5,660	24·554	?	?	24·616	7th	24·430	3rd	·186	46·2	56·9	?	30·5	?	43·7	?	26·4	61·7	8th & 14th.	25·8	31st	35·9
	Central India	Mount Abu	3,945	26·127	−·041	?	26·226	17th	25·998	30th	·228	58·1	65·4	−3·5	53·0	+0·5	59·2	−1·5	12·4	73·1	18th	44·6	31st	28·5
		Pachmarhi	3,528	26·533	−·046	?	26·639	16th	26·449	31st	·190	59·9	73·5	+4·3	50·2	+5·2	61·8	+4·8	23·3	79·7	12th	39·3	17th	40·4
	South India	Wellington	6,200	24·275	−·027	?	24·322	17th	24·231	28th	·091	57·2	67·2	+1·6	48·2	−0·9	57·7	+0·4	19·0	73·2	8th	39·2	14th	34·0
	XIII.—Extra India.																							
	Ceylon	Trincomalee	12	29·942	?	29·880	29·996	9th	29·843	28th	·153	77·6	82·6	?	74·5	?	78·6	?	8·1	86·0	7th	72·0	3 days	14·0
		Colombo	40	29·899	−·034	29·865	29·966	7th	29·796	28th	·176	77·3	88·4	?	72·9	?	80·7	?	15·5	92·5	19th	70·5	10th	22·0
	Persia	Meshed	3,104			Not recorded.						31·3	?	?	28·5	?	?	?	?	?	...	22·5	31st	?
		Resht	?	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Teheran(a)	?	(b) 25·144 25·430	? ?	? ?	26·480 25·680	9th 9th	25·800 25·160	26th, 26th	·680 ·520	(b) 36·3	(c) 50·6	?	(c) 32·1	?	41·4	?	18·5	56·3	1st	24·3	30th	32·0
		Isphahan	?	(a) 24·472	?	?	24·750	9th	24·150	26th	·600	30·9	50·5	?	26·1	?	38·3	?	24·4	56·1	11th	20·0	7th	36·1
		Bushire	14	30·162	+·035	30·135	30·310	29th	30·051	15th	·259	55·7	65·2	−4·5	51·6	−3·9	58·4	−4·2	13·6	73·1	15th	39·4	29th & 30th	33·7
		Jask (b).	?	30·184	?	?	30·344	11th	30·040	19th	·304	65·9	75·5	?	60·3	?	67·9	?	15·2	81·3	1st & 5th	53·8	30th	27·5
	Arabia	Muscat	20	30·133	?	30·101	30·253	11th	30·018	19th	·235	70·3	73·4	?	68·2	?	70·8	?	5·2	78·1	1st	63·5	31st	14·6
		Baghdad	220	30·050	+·039	30·263	30·290	28th	29·678	22nd	·612	42·6	61·9	−2·4	39·7	−3·5	50·8	−3·0	22·2	71·2	1st	28·5	29th	42·7
		Aden	94	29·997	−·004	30·025	30·060	1st	29·930	25th	·130	75·5	80·2	−2·4	73·1	+0·5	76·7	−1·0	7·1	82·8	25th	69·9	13th	12·9
		Perim	?	29·854	?	?	29·932	29th	29·783	8th	·149	76·8	83·5	?	74·2	?	78·9	?	9·3	84·3	11th	72·6	19th	11·7
	Afghanistan	Kabul	?			Not recorded.						28·6	65·3	?	24·5	?	44·9	?	40·8	82·2	1st	5·6	30th	76·6
	Central Asia	Kashgar	?	(d) 25·812	?	?	26·064	11th	25·568	29th	·496	18·1	38·8	?	15·6	?	27·2	?	23·2	52·6	10th	10·2	31st	42·4
	Arabian Sea Islands.	Amini Devi	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Minicoy	10	29·904	?	29·839	29·962	5th	29·853	31st	·109	81·3	81·5	?	?	?	?	?	?	86·4	16th	?	...	?
	Africa	Zanzibar	73	29·912	−·021	29·912	30·006	1st	29·842	25th	·164	82·1	86·5	?	79·8	?	83·2	?	6·7	89·0	18th	75·8	26th	13·2
		Dunga (Zanzibar).	?			Not recorded.						82·9	94·3	?	75·2	?	84·8	?	19·1	97·1	21st	71·8	8th	25·3

* Observations of 29 days.
(a) Aneroid uncorrected.
(d) ,, corrected.

NOTE.—When a query is inserted against any reading or in the variation returns for any station the
(b) Mean of 29 days.
(c) ,, 30 days.

I—*concluded.*

in India, Burma, etc., in December 1898—concluded.

Wind Direction. Number of Winds from: Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Wind Velocity: Mean velocity in miles per hour.	Normal.	Percentage variation.	Hygrometry, 8 A.M.: Mean humidity.	Mean vapour tension.	Mean cloud amount.	Rainfall: Number of rainy days.	Normal number of rainy days.	Variation.	Rainfall of month.	Normal rainfall of month.	Variation from normal.	Total rainfall from 1st October to 31st December 1898.	Normal rainfall for period, 1st October to 31st December.	Variation from normal of period, 1st October to 31st December.	Heaviest rainfall during month.	Station.	Meteorological Province or District.	Number of District.
Not recorded.									?	?	?	?	?	?	0	?	?	0·08	0·06	+ 0·02	1·42	2·89	−1·47	0·05	Yatung	Bengal.	
6	...	2	13	5	1	3	1	...	3·5	1·9	+84	88	·221	3·8	2	0·62	+1·38	0·55	0·22	+ 0·33	8·08	6·25	−3·17	0·23	Darjeeling.		
27	...	4	...	...	...	...	...	...	1·8	?	?	85	·268	4·5	5	?	?	1·44	0·54	+ 0·90	7·26	8·86	−1·60	0·65	Gantok.		
9	3	5	...	1	1	8	1	3	5·6	3·6	+56	49	·237	3·2	2	0·18	+1·82	1·73	0·10	+1·63	1·73	1·08	+0·65	1·00	Mount Abu	Central India.	
26	1	...	...	1	...	2	1	...	3·8	2·6	+46	68	355	2·2	0	0·91	−0·91	0	0·52	−0·52	0·18	3·86	−3·68	0	Pachmarhi.		
21	1	4	2	2	...	...	...	...	3·5	2·5	+40	73	·346	3·7	6	6·78	−0·78	2·63	4·16	−1·53	23·55	24·71	−1·16	0·61	Wellington	South India.	
																									XIII.—Extra India.		
4	7	10	...	3	2	3	1	1	3·3	?	?	87	·828	4·1	20	?	?	24·05	15·13	+8·92	49·52	41·32	+8·20	6·48	Trincomalee	Ceylon.	
2	7	15	5	2	...	...	...	—	7·6	7·9	−4	86	·813	5·1	9	?	?	3·77	6·70	−2·93	40·49	33·46	+7·03	0·72	Colombo.		
Not recorded.									?	?	?	79	·141	3·1	1	?	?	0·24	0·38	−0·14	1·19	1·68	−0·49	0·19	Meshed	Persia.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Resht.		
16	12	2	...	...	1	...	...	...	2·7	?	?	(b) 56	(b) ·118	(c) 3·1	2	?	?	0·57	1·31	−0·74	1·37	2·52	−1·15	0·36	Teheran(a).		
17	...	1	...	1	1	5	6	...	2·1	?	?	71	·124	3·0	1	?	?	0·12	0·45	−0·33	0·40	1·91	−1·51	0·12	Isphahan.		
4	8	8	9	...	2	...	...	...	6·2	6·6	−6	70	·317	1·5	4	?	?	1·90	3·71	−1·81	4·55	5·97	−1·42	0·96	Bushire.		
...	7	17	2	...	...	...	...	3	10·8	?	?	62	·398	1·6	0	?	?	0·02	0·43	−0·41	0·18	1·13	−0·95	0·02	Jask(b).		
3	2	...	1	...	2	12	7	4	5·8	?	?	59	·439	2·4	0	?	?	0·10	0·44	−0·34	0·65	1·42	−0·77	0·06	Muscat	Arabia.	
13	5	...	...	2	2	...	1	8	2·1	?	?	75	·208	2·2	2	?	?	1·13	1·95	−0·82	1·83	3·02	−1·19	0·95	Baghdad.		
1	1	11	10	6	1	1	...	...	(c) 11·7	12·4	−6	71	·622	6·8	1	?	?	0·22	0·49	−0,27	0·22	0·72	−0·50	0·14	Aden.		
...	1	...	25	4	...	...	1	...	18·5	?	?	73	·668	6·7	0	?	?	0	0·10	−0·10	0·13	0·25	−0·12	0	Perim.		
9	...	...	7	1	2	3	8	1	?	?	?	?	?	2·3	0	?	?	0	0·43	−0·43	0·15	1·37	−1·22	0	Kabul	Afghanistan.	
29	...	2	...	...	...	...	...	...	0·2	?	?	?	?	2·7	0	?	?	0	0·27	−0·27	0	0·38	−0·38	0	Kashgar	Central Asia.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Amini Devi.	Arabian Sea Islands.	
...	5	13	4	3	...	1	3	2	5·0	?	?	79	·838	4·2	10	?	?	14·34	?	?	33·32	?	?	7·38	Minicoy.		
...	14	16	1	...	...	...	...	...	6·8	?	?	78	·849	6·9	1	?	?	0·46	5·20	−4·74	9·14	16·79	−7·65	0·25	Zanzibar	Africa.	
...	16	14	...	...	...	...	...	1	9·6	?	?	74	·829	6·2	2	?	?	0·44	?	?	6·85	?	?	0·22	Dunga (Zanzibar).		

data for that station are not utilized in calculating the provincial variations.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Burma Coast and Bay Islands.	Port Blair	...	29·928	29·827	·101	29·874	0	29·865	87·4	76·9‖	10·5	90·5	72·6‖	17·9	83·8	84·9	81·2‖	+1·4	72·5	76·7	76·9	75·4
	Rangoon	...	·891	·859	·132	·923	−·020	·901	87·9	64·9	23·0	90·7	61·6	29·1	79·3	84·9	74·7	−0·7	62·9	70·4	70·9	68·1
	Diamond Island	...	·891	·878	·113	·830	−·015	·906	83·4	74·0	9·4	86·5	72·2	14·6	80·5	81·0	77·7	+0·9	69·2	73·5	71·7	71·5
	Cocos Island	111	·889**	·791	·098	·835	−·026	·879**	83·1	75·6**	7·5	85·0	73·6	11·4	81·0**	79·9	78·1**	+1·3	68·6**	73·1**	72·5	71·4
	Akyab	...	30·032	·910	·123	·970	−·023	·933	81·8	62·2	19·6	83·9	54·8	29·1	73·2	77·9	71·5	−0·7	60·1	68·1	71·1	66·4
Assam.	Silchar	...	29·981	·840	·141	·907	−·028	·965	80·4	54·4	26·0	83·6	46·5	37·1	68·7	78·0	66·2	+0·4	53·2	63·9	65·3	60·8
	Sibsagar	...	·756	·618	·138	·685	−·048	·968	71·4	53·5	17·9	76·3	46·4	29·9	61·6	69·3	61·1	+2·3	?	60·7	63·8	?
	Dhubri	...	·968	·822	·146	·888	−·037	·962	75·0	54·8	20·2	79·1	46·8	32·3	66·0	74·0	64·3	+0·1	54·1	61·8	63·9	59·9
Bengal and Orissa.	Chittagong	...	·973†	·851	·122	·908	−·031	·947†	78·6	55·8	22·8	81·6	50·1	31·5	71·3†	76·1	67·0	−0·4	55·0	65·0†	65·9	62·0
	Narayanganj	...	30·044	·929	·115	·982	−·025	·957	77·5	57·0	20·5	80·9	51·5	29·4	71·1	75·5	67·5	0	55·5	63·7	64·1	61·1
	Calcutta (Alipore)	...	·065	·938	·127	·992	−·032	·959	77·5	56·7	20·8	81·6	51·4	30·2	70·2	76·5	66·5	+1·2	55·7	61·9	63·9	60·5
	Saugor Island	...	·042	·922	·120	·974	−·045	·944	79·1	60·0	19·1	82·8	54·5	28·3	73·5	76·0	68·4	+1·9	58·4	65·8	65·9	63·4
	Burdwan	...	29·992	·859	·133	·016	−·031	·965	80·3	57·7	22·6	85·1	52·1	33·0	72·4	77·2	68·2	+1·4	55·1	62·7	64·0	60·6
	Berhampore	...	30·013	·893	·120	·943	−·032	·960	76·7	56·7	20·0	81·6	49·1	32·5	70·0	76·1	66·5	+0·6	54·3	61·7	63·5	59·8
	False Point	...	·058	·940	·118	·997	−·041	·960	80·6	59·6	21·0	83·4	53·0	30·4	76·3	77·4	68·9	+2·3	59·2	69·0	69·7	66·0
	Cuttack	...	·004	·866	·138	·932	−·036	·956	84·5	62·4	22·1	89·2	55·3	33·9	75·3	82·0	72·5	+3·1	61·0	65·3	66·7	64·5
Gangetic Plain and Chota Nagpur.	Hazaribagh	...	28·015	27·911	·104	27·952	−·047	·960	74·3	52·1	22·2	79·7	46·9	32·8	67·2	71·7	62·2	+1·7	47·4	55·2	57·4	53·3
	Patna	...	29·899	29·781	·118	29·834	−·049	·976	74·5	53·4	21·1	78·0	46·4	31·6	67·5	73·2	63·5	+1·0	50·5	59·6	61·2	57·1
	Darbhanga	...	·905†	·797†	·108	·845	−·047	·971†	74·7	54·5	20·2	78·2	48·5	29·7	67·9	72·6	61·0	+0·4	53·2	61·6	62·5	59·1
	Allahabad	...	·762	·663	·119	·711	−·042	·984	77·4	50·3	27·1	81·9	42·6	39·3	68·1	75·3	62·2	+1·5	48·2	57·5	60·0	55·2
	Lucknow	...	·695†	·597**	·108	·640	−·050	·978†	75·9	49·2**	26·7	82·6	42·6	40·0	67·5†	71·8†	61·2†	+1·6	47·3†	57·2‡	60·4¶	55·0
Upper Sub-Himalayas.	Dehra Dun	...	27·765	27·696	·089	27·730	−·046	30·001	66·7	46·9	19·8	77·5	42·1	35·4	59·2	62·1	54·7	−1·4	44·5	52·3	53·9	50·2
	Roorkee	...	29·159	29·063	·096	29·098	−·041	29·994	70·4	45·1	25·3	77·6	36·9	40·7	59·0	66·8	56·0	−0·5	43·4	53·2	56·2	50·9
	Meerut	...	·315	·218	·097	·258	−·047	·996	71·0	47·6	23·4	78·7	41·1	37·6	59·8	68·0	58·0	+0·8	45·3	51·3	55·0	50·5
	Lahore	...	·366	·274	·092	·308	−·047	30·015	69·1	43·4	25·7	76·1	37·2	38·3	57·7	68·0	54·6	+1·4	40·4	50·0	54·6	48·4
	Ludhiana	...	·251	·155	·096	·191	−·036	·012	69·2	45·4	23·8	77·1	37·6	39·5	59·3	66·9	55·5	+0·9	42·4	50·2	53·0	48·5
Indus Valley and N.-W. Rajputana.	Peshawar	...	28·982	28·884	·098	28·921	−·047	·071	66·9	39·0	27·9	73·2	29·9	43·3	56·6	62·3	50·5	−0·4	35·4	47·2	50·3	44·3
	Mooltan	...	29·682	29·581	·101	29·620	−·032	·031	73·1	44·5	28·6	82·3	37·5	44·8	60·3	70·1	56·8	+0·3	40·7	50·2	50·0	49·0
	Jacobabad	...	·925	·805	·120	·853	−·042	·006	76·5	42·1	34·4	86·4	34·0	52·4	64·1	73·3	57·2	−0·7	37·9	52·4	57·8	49·3
	Kurrachee	...	30·093	·976	·117	30·029	−·023	·011	80·5	54·4	26·1	86·3	46·2	40·1	72·5	77·0	66·2	−0·8	46·5	57·3	61·0	54·9
E. Rajputana, C. India and Gujarat.	Jeypore	...	28·537	28·533	·104	28·573	−·038	·006	75·0	50·9	24·1	83·5	41·0	42·5	67·1	72·3	61·0	+1·0	45·5	54·9	57·0	52·5
	Ajmere	...	·440	·337	·103	·383	−·056	·002	74·3	49·7	24·6	82·5	38·4	44·1	65·4	73·0	61·1	+1·9	45·9	55·5	59·9	53·8
	Oodeypore	...	·125	·012	·113	·069	?	29·992	75·9	51·9**	24·0	83·1	41·6	41·5	68·1	73·4	63·1**	?	47·8	55·1	56·8	53·2
	Deesa	...	29·598	29·485	·113	29·533	−·023	·963	82·4	56·1	26·3	91·3	47·7	43·6	74·4	80·2	68·5	+0·3	49·7	60·0	61·7	57·1
	Agra	...	·522	·410	·112	·454	−·054	·991	75·4	52·6	22·8	84·0	45·9	38·1	65·1	72·4	63·2	+2·2	46·2	55·9	59·4	54·5
	Belgaum	...	27·460	27·345	·115	27·399	−·023	·864	82·7	60·1	22·6	85·3	57·3	28·0	75·7	81·4	71·2	+1·8	57·1	63·5	63·0	61·2
Deccan.	Sholapur	...	28·434	28·302	·132	28·367	−·028	·899	87·9	62·9**	25·0	90·2	56·8	33·5	78·7	86·2	74·6**	+3·9	55·7	64·3	65·2	61·7
	Poona	...	·179	·053	·126	·117	−·029	·894	87·3	58·6	28·7	90·4	48·0	42·4	77·6	84·7	72·6	+3·8	56·0	63·2	64·5	61·2
	Akola	...	29·114	·973	·141	29·033	−·042	·924	88·5	59·9	28·6	93·3	46·6	46·7	78·9	86·9	73·2	+6·9	53·3	63·8	66·5	61·2
	Buldana	2,132	27·897	27·783	·114	27·833	−·031	·907	83·4	61·5	21·9	88·1	55·3	32·8	76·8	81·0	71·2	+3·8	53·6	60·9	62·1	58·9

* Corrected. † Mean of 29 days. Mean of 28 days.

II.

at 83 Stations in India, Burma, etc., for December 1898.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from										Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·750‖	·823	·816	·796	−·031	81‖	71	68	73	−6	5·1	5·4	5·3	+0·6	...	13	29	4	10	...	...	1	5	N 42° E	N 58° E	64	66	139	181	...	...	Port Blair	Burma Coast and Bay Islands.
·550	·626	·571	·582	−·069	89	63	48	67	−5	1·4	2·5	2·0	−0·9	...	5	17	16	11	6	2	3	2	N 84° E	N 41° E	48	63	50	117	...	...	Rangoon	
·650	·735	·653	·679	−·004	77	70	62	70	−3	4·1	5·2	4·7	+1·3	4	17	11	13	3	...	1	4	9	N 22° E	N 58° E	50	48	211*	212	...	...	Diamond Island	
·609**	·712**	·703	·675	−·005	69**	67**	69	68	−3	2·7	2·6	2·7	−0·8	...	23	30	5	...	...	...	...	3	N 27° E	N 34° E	85	85	?	?	0·26	0·26	Cocos Island	
·495	·622	·673	·587	+·009	89	76	70	78	+3	0·8	0·9	0·9	−1·4	...	6	14	11	1	...	1	13	16	N 7° W	N 8° W	42	41	51	57	...	...	Akyab	
·395	·534	·459	·463	−·006	92	76	48	72	−3	2·6	2·5	2·6	−0·4	35	...	1	5	2	1	6	9	3	S 65° W	S 56° E	14	29	40*	38	...	...	Silchar	Assam.
?	·526	·523	?	?	?	95	73	?	?	3·7	4·0	3·9	+0·2	31	6	22	...	...	...	3	...	...	N 35° E	N 63° E	39	57	34*	38	...	...	Sibsagar	
·414	·501	·462	·459	−·003	95	78	55	76	−1	1·0	0·9	1·0	−0·2	11	...	12	22	...	3	10	4	...	S 85° E	N 60° E	32	49	69*	116	...	...	Dhubri	
·426	·537†	·502	·488	−·034	95	70†	55	73	−3	0·7	0·5	0·6	−1·6	2	6	18	2	4	...	2	4	22	N 6° W	N 24° W	50	53	89*	66	...	...	Chittagong	Bengal and Orissa.
·425	·494	·449	·456	−·017	90	64	50	68	−2	0·9	1·7	1·3	−0·3	...	8	10	9	3	1	7	9	15	N 20° W	N 36° W	31	44	54	51	...	...	Narayanganj	
·435	·446	·429	·437	+·005	94	60	47	67	−3	0·9	1·1	1·0	−0·7	...	28	10	...	2	2	...	5	15	N 10° W	N 23° W	69	62	50	61	...	...	Calcutta (Alipore).	
·473	·539	·507	·506	+·010	91	65	56	71	−2	1·0	1·6	1·3	−1·0	...	21	11	...	2	3	6	1	18	N 15° W	N 3° E	55	59	171	169	...	...	Saugor Island	
·403	·447	·423	·418	+·016	84	56	45	62	0	0·8	1·6	1·2	−0·7	49	5	1	1	1	...	...	3	2	N 17° W	N 20° W	11	65	6*	40	...	...	Burdwan	
·394	·442	·421	·419	−·008	85	60	46	64	−7	0·5	1·3	0·9	−0·9	34	13	1	...	1	...	3	7	3	N 37° W	N 27° W	26	61	23*	37	...	...	Berhampore	
·505	·615	·628	·583	+·087	98	67	66	77	+3	2·5	2·3	2·4	−0·1	...	19	12	10	7	4	2	3	5	N 37° W	N 32° E	42	58	77*	151	...	...	False Point	
·525	·515	·458	·499	+·052	92	58	42	64	0	0·8	2·1	1·5	−0·3	19	6	17	6	...	2	4	3	5	N 27° E	N 21° E	31	33	30	30	...	...	Cuttack	
·272	·293	·300	·288	+·014	69	44	38	50	−2	2·0	2·2	2·1	0	4	10	2	...	...	4	2	12	28	N 51° W	N 44° W	66	56	166	119	...	...	Hazaribagh	Gangetic Plain and Chota Nagpur.
·333	·408	·383	·375	0	80	60	47	62	−3	1·0	0·6	0·8	−0·9	11	...	2	4	1	2	2	33	7	N 87° W	N 82° W	53	51	58	44	...	...	Patna	
·392	·468	·435	·432	+·010	92	68	54	71	−2	0·4	0·7	0·6	−0·3	5	1	2	4	5	4	9	21	11	S 82° W	S 81° W	43	53	53	49	...	...	Darbhanga	
·315	·337	·319	·324	−·016	85	49	36	57	−9	1·6**	2·0**	1·8	+0·3	2	9	7	6	1	1	1	16	19	N 37° W	N 47° W	50	25	112*	60	...	...	Allahabad	
·303‡	·340§	·374¶	·339	+·033	85‡	50§	48¶	61	+2	2·6	2·2	2·4	+0·6	36	2	6	3	1	1	...	7	4	N 14° W	N 51° W	13	41	28*	41	...	...	Lucknow	
·266	·310	·316	·297	+·021	83	62	58	68	+5	4·9	6·0	5·5	+2·9	15	5	2	5	10	1	1	12	6	N 62° W	S 75° W	6	17	25†	31	...	...	Dehra Dun	
·262	·330	·313	·302	+·013	86	66	49	67	+3	4·0	4·5	4·3	+2·1	34	4	2	1	8	3	2	2	6	S 45° E	N 67° W	2	15	50	32	...	...	Roorkee	Upper Sub-Himalayas.
·278	·266	·264	·269	−·015	83	51	40	58	−4	3·8	4·0	3·9	+2·1	20	...	...	6	2	...	8	18	8	S 86° W	N 61° W	35	44	44*	37	...	...	Meerut	
·217	·262	·253	·244	−·030	76	54	38	56	−2	3·1	3·8	3·5	+1·1	37	2	2	5	2	...	2	5	7	N 33° W	N 35° W	11	20	26	33	...	...	Lahore	
·235	·247	·221	·234	−·043	77	49	35	54	−8	4·5	5·0	4·8	+1·6	19	1	4	1	3	...	1	2	31	N 39° W	N 43° W	47	27	47*	27	...	...	Ludhiana	
·166	·211	·219	·199	−·028	70	47	40	52	−8	3·3	3·1	3·2	−0·3	33	2	2	4	3	5	7	2	4	S 22° W	S 4° E	10	8	41*	61	...	...	Peshawar	Indus Valley and N.-W. Rajputana.
·207	·231	·263	·234	−·033	70	45	37	51	−5	2·3	1·7	2·0	0	49	1	7	...	4	...	...	...	1	N 62° E	N 5° E	13	8	21*	27	...	...	Mooltan	
·176	·239	·276	·230	−·007	65	40	34	46	−1	2·5	2·1	2·3	+0·1	25	9	2	5	1	...	1	9	13	N 38° W	N 15° W	31	18	56*	39	...	...	Jacobabad	
·223	·277	·330	·277	−·091	50	34	35	40	−13	1·7	0·7	1·2	−0·6	3	3	14	12	2	5	13	8	2	S 74° E	N 41° E	79	23	158*	217	...	...	Kurrachee	
·250	·285	·279	·271	0	67	44	36	49	0	3·5	3·9	3·7	+1·6	2	5	9	10	3	3	7	10	13	N 29° W	N 19° W	19	24	73	71	...	...	Jeypore	
·272	·321	·360	·318	+·035	74**	52	46	57	+4	3·1	3·3	3·2	+1·6	10	2	12	1	5	12	3	9	8	S 66° W	S 84° E	6	9	54	38	...	...	Ajmere	E. Rajputana, C. India and Gujrat.
·291**	·279	·264	·278	?	73	41	33	49	?	2·6	2·6	2·6	?	15	4	8	14	8	2	3	5	3	N 83° E	?	26	?	67	?	...	...	Oodeypore	
·282	·332	·310	·308	+·054	61	40	31	44	+8	2·4	2·7	2·6	+0·9	...	6	19	19	5	2	1	4	6	N 69° E	N 44° E	47	50	150	194	...	...	Deesa	
·284	·328	·338	·317	+·028	70	53	43	55	+1	2·3	3·3	2·8	+1·4	...	...	11	...	8	...	14	...	29	N 53° W	N 56° W	24	36	80*	66	...	...	Agra	
·431	·436	·348	·405	+·033	83	49	33	55	+5	2·4	2·8	2·6	0	?	?	?	?	?	?	?	?	?		N 88° E	?	67	?	299	...	...	Belgaum	Deccan.
·364*	·427	·363	·389	+·017	62**	43	29	45	−3	1·6	3·7	2·7	−0·2	2	...	9	7	37	5	...	1	1	S 58° E	S 83° E	72	66	203*	182	...	...	Sholapur	
·427	·407	·358	·396	+·072	85	42	30	52	+9	2·0	2·8	2·4	−0·1	3	3	4	17	20	2	7	1	5	S 64° E	N 85° E	44	54	166*	133	...	...	Poona	
·329	·396	·381	·369	+·038	62	39	29	44	−7	2·0	3·6	2·8	+1·1	2	11	6	9	18	4	3	1	8	N 83° E	N 61° E	28	57	106*	80	...	...	Akola	
·320	·342	·327	·330	+·006	58	37	30	41	−6	1·0	2·4	1·7	−0·7	4	12	5	5	10	12	3	4	7	S 81° E	N 82° E	7	43	143*	132	*Nil*	*Nil*	Buldana	

§ Mean of 27 days. ‖ Mean of 24 days. ¶ Mean of 25 days. ** Mean of 30 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 83 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.
Deccan—*concluded.*	Khandwa	...	28·998	28·868	·130	28·926	−·034	29·933	86·9	57·8	29·1	92·2	44·6	47·6	76·6	85·7	71·5	+6·1	51·7	61·6	64·9	59·4
	Hoshangabad	...	29·053	·925	·128	·982	−·034	·966	81·9	57·1	24·8	88·3	46·3	42·0	71·7	80·0	68·5	+3·2	51·5	59·5	63·2	58·1
	Nagpur	...	·031	·892	·139	·955	−·029	·947	85·4	58·7	26·7	89·8	51·4	38·4	73·8	83·2	70·9	+4·1	53·2	61·2	65·1	59·8
	Do. (Sanitary Commr.'s Office)	...	·041	·908	·133	·968	P	·948	86·8	57·4	29·4	91·6	50·4	41·2	75·7	84·9	71·6	P	53·4	69·0	66·6	63·0
	Jubbulpore	...	28·716	·595	·121	·649	−·042	·956	80·2	51·5	28·7	88·1	41·4	46·7	69·4	78·6	64·9	+4·2	49·3	58·5	61·9	56·6
	Saugor	...	·255	·141	·114	·191	−·040	·976	78·9	56·4	22·5	87·3	47·9	39·4	71·3	76·9	66·6	+3·2	48·9	56·6	59·3	53·9
	Sutna	...	29·015	·902	·113	·949	−·040	·975	77·2	51·5	25·7	85·9	42·0	43·9	69·7	75·8	63·0	+3·3	47·6	56·8	59·2	54·5
	Raipur	...	·086	·956	·130	29·014	−·033	·937	83·5	58·6	24·9	88·6	52·1	36·5	73·6	81·6	70·0	+4·2	53·0	62·0	64·1	59·7
	Hyderabad (Deccan).	...	28·346	·227	·119	28·283	−·040	·923	85·1	61·6	23·5	87·8	58·5	29·3	77·6	81·4	72·4	+3·5	59·1	67·4	66·2	64·2
West Coast.	Bombay	...	29·988	29·875	·113	29·925	−·025	·902	85·6	72·4	13·2	89·3	64·0	25·3	78·8	82·2	77·6	+1·6	65·2	70·6	73·4	69·7
	Ratnagiri	...	·883	·772	·111	·820	−·025	·868	89·4	70·4	19·0	94·8	63·9	30·9	84·6	84·5	78·1	+1·5	66·1	71·3	73·8	70·4
	Karwar	...	·945	·821	·124	·876	−·029	·851	88·1	67·6	20·5	90·8	63·6	27·2	78·7	85·5	76·6	+0·8	65·5	70·8	73·4	69·9
	Cochin	...	·943	·854	·089	·892	−·025	·829	90·3	73·7	16·6	92·5	69·5	23·0	84·1	86·2	80·4	+1·2	70·2‡	73·6	75·0	72·9
South India.	Salem	...	·087	28·966	·121	·026	−·014	·908	85·1	66·3	18·8	88·2	61·8	26·4	79·0	81·4	74·6	+0·4	65·3	70·8	71·7	69·3
	Mercara	...	26·268	26·179	·089	26·223	−·024	P	75·3	59·1	16·2	79·4	55·7	23·7	66·1	72·7	66·6	+1·1	57·2	59·8	61·4	59·5
	Chitaldroog	...	27·606	27·495	·111	27·550	−·032	·881	81·3	62·1	19·2	84·7	58·8	25·9	74·4	79·5	71·3	+1·0	58·8	64·6	64·5	62·6
	Bangalore	...	·019	26·015	·104	26·966	−·016	·896	76·1	59·4	18·7	80·6	53·5	27·1	71·4	75·4	68·1	+0·7	58·5	63·5	64·7	62·2
	Hassan	...	26·946	·843	·103	·894	−·025	·874	79·2	56·9	22·3	82·6	51·3	31·3	73·4	77·6	67·7	+0·5	56·2	62·8	63·3	60·8
	Mysore	...	27·498	27·384	·114	27·441	−·023	·879	81·1	60·4	20·7	84·5	56·3	28·2	74·5	79·1	70·2	−0·2	59·1	65·2	65·2	63·2
	Trichinopoly	...	29·753	29·635	·118	29·693	−·012	·883	84·6	70·5	14·1	88·0	67·2	20·8	78·5	81·6	76·6	+0·3	68·8	71·5	72·6	71·0
	Madras	...	30·020	·915	·105	·965	−·012	·918	84·0	70·6	13·4	85·6	67·1	18·5	80·7	80·8	76·7	+0·7	P	73·9	73·9	72·9
	Bellary	...	28·552	28·422	·130	28·486	−·021	·905	87·2	63·3	23·9	90·2	59·9	30·3	78·8	84·4	74·2	+1·9	60·7	65·2	66·2	64·1
	Cocanada	...	30·042	29·931	·111	29·980	−·029	·942	82·3	68·5	13·8	87·1	63·3	23·8	79·5	80·4	74·9	+2·1	66·2	70·8	70·8	69·3
	Vizagapatam	...	·042	·925	·117	·977	−·020	·946	83·3	65·1	18·2	85·9	58·4	27·5	80·6	80·4	75·2	+1·2	64·6	70·9	71·6	69·1
Hill Station, Baluchistan.	Quetta	...	24·736	24·647	·089	24·680	−·034	P	52·8	27·0	25·8	68·8	15·6	53·2	43·4	48·4	38·8	−3·4	24·0	35·6	38·5	32·7
Hill Stations, Punjab.	Leh	...	19·697	19·616	·081	19·653	−·052	P	30·7	11·6	19·1	44·4	−1·5	45·9	21·0	26·6	20·3	−3·3	9·4	15·9	21·6	15·6
	Srinagar	...	25·016	24·928	·088	24·960	−·071	P	47·3	28·6	18·7	58·7	18·3	40·4	37·1	44·5	37·2	0	27·0	34·4	41·1	34·2
	Murree	...	23·866	23·821	·045	23·832	−·068	P	48·8	37·4	11·4	54·0	24·8	29·2	43·8	44·3	41·7	−2·6	31·4	36·2	37·1	34·9
	Kailang	10,087	20·939	20·866	·073	20·905	P	P	40·9	19·2	21·7	53·2	0·5	52·7	29·4	31·0	25·5	+0·9	17·8	23·8	24·9	22·2
	Simla (Ridge)	...	23·164	23·100	·064	23·120	−·034	P	47·4	37·8	9·6	59·2	24·1	35·1	44·4	43·6	41·4	−3·7	32·1	36·1	37·3	35·2
Hill Stations, N.-W.P.	Chakrata	...	·343	·277	·066	·298	−·037	P	52·5	37·7	14·8	63·9	25·5	38·4	45·4	46·2	43·2	−2·3	32·8	38·3	39·3	36·8
	Ranikhet	...	24·183	24·104	·079	24·129	−·020	P	53·6	41·8	11·8	65·0	31·8	33·2	48·6	49·4	46·3	−3·0	37·8	42·6	43·6	41·3
	Muktesar	...	22·900	22·829	·071	22·865	?	?	50·4	37·9	12·5	65·5	30·4	35·1	45·5	45·6	43·0	P	32·0	37·6	38·7	36·1
Hill Station, Nepal.	Katmandu	4,388	25·718	25·623	·095	25·669	−·041	P	65·8	39·4	26·4	72·3	31·6	40·7	51·6	60·3	51·2	−2·3	38·3	47·8	52·2	46·1
Hill Station, Bengal.	Darjeeling	...	23·012	22·919	·093	22·964	−·054	P	46·4	36·5†	9·9	50·8	31·8	19·0	43·7	44·2	40·9†	−1·0	35·9?	41·5	42·3	39·9
Hill Stations, Central India.	Mount Abu	...	26·149	26·079	·070	26·106	−·044	P	64·9	53·0	11·9	73·1	44·5	28·6	62·3	62·1	58·2	−1·4	45·3	50·3	50·4	48·7
	Pachmarhi	...	·578	·486	·092	·525	−·025	P	73·4	50·2	23·2	79·7	39·1	40·6	68·0	71·0	61·3	+4·0	47·1	56·5	58·8	64·1
	Chikalda	3,642	·458	·362	·096	·403	−·027	P	75·6	58·4	17·2	80·2	51·2	29·0	69·8	73·8	66·6	+3·4	52·0	58·6	60·6	57·0

* Corrected. † Mean of 28 days. ‡ Mean of 30 days.

II—*continued.*

in India, Burma, etc., for December 1898—continued.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from											Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·319	·367	·363	·350	+·031	62	40	29	44	− 6	1·2	2·6	1·9	+0·1	7	2	13	5	13	5	7	2	8	S 78° E	N 62° E	18	42	88	62	...	...	Khandwa	Deccan—*concluded.*
·318	·364	·377	·353	+·014	67	47	36	50	− 5	1·6	1·8	1·7	+0·1	25	...	32	1	...	1	1	2	...	N 45° E	N 64° E	47	59	61	62	...	...	Hoshangabad	
·343	·389	·400	·377	+·028	68	46	35	50	− 2	1·9	2·7	2·3	0	45	1	5	4	2	1	3	1	...	E	N 57° E	9	54	41	83	...	...	Nagpur	
·364	·417	·428	·403	?	76	46	36	53	?	1·3	2·3	1·8	?	7	7	26	12	4	...	3	3	...	N 54° E	?	55	?	22*	?	...	...	Do. (Sanitary Commr.'s Office)	
·321	·363	·351	·348	+·041	85	50	35	57	− 2	1·7	2·2	2·0	+0·2	3	16	7	2	5	9	4	7	9	N 26° W	N 24° E	21	17	44	39	...	...	Jubbulpore	
·259	·284	·294	·279	+·007	56	37	31	41	− 6	1·3	2·4	1·9	+0·6	1	11	10	7	9	5	5	6	8	N 30° E	N 48° E	16	34	97*	60	...	...	Saugor	
·289	·308	·306	·301	+·039	74	42	34	50	0	0·9	1·2	1·1	−0·4	...	11	9	6	1	1	2	9	23	N 24° W	N 24° W	55	46	72*	85	...	...	Sutna	
·234	·408	·370	·371	+·030	67	49	34	50	− 3	1·3	2·3	1·8	0	39	1	10	4	2	...	3	2	1	N 55° E	N 33° E	14	47	24*	64	...	...	Raipur	
·472	·543	·456	·490	+·052	86	57	43	62	0	2·1	3·6	2·9	+0·5	23	...	...	11	27	1	...	...	...	S 56° E	S 72° E	58	65	64*	81	...	...	Hyderabad (Deccan).	
·536	·645	·711	·631	+·016	66	65	64	65	− 4	1·7	1·3	1·5	−0·3	...	8	15	10	2	...	...	8	19	N 1° E	N 16° E	50	58	230	236	...	...	Bombay	West Coast.
·593	·593	·693	·626	+·080	79	50	58	62	+ 6	1·4	2·1	1·8	+0·7	1	5	1	7	7	1	10	13	17	N 76° W	N 6° E	32	30	202*	206	...	...	Ratnagiri	
·602	·652	·660	·638	+·035	89	67	54	70	+ 3	0·8	1·4	1·1	−0·3	2	2	15	4	...	...	...	2	37	N 19° W	N 6° W	63	54	81	66	...	...	Karwar	
·694‡	·690	·718	·701	−·026	83‡	59	57	66	− 7	3·3	4·7	4·0	+0·9	...	19	8	...	1	1	2	18	13	N 36° W	N 79° W	61	16	123	101	...	...	Cochin	
·616	·639	·649	·635	+·046	95	65	61	74	+ 3	4·5	6·0	5·3	+1·0	4	2	29	25	1	...	...	...	1	N 64° E	N 77° E	82	50	123	92	...	...	Salem	South India.
·449	·445	·417	·437	−·018	89	69	52	70	− 4	3·9	4·5	4·2	−0·7	7	...	6	48	1	...	...	...	...	N 86° E	N 73° E	85	77	206*	147	...	...	Mercara	
·459	·490	·417	·455	+·036	82	58	41	60	+ 4	3·3	4·1	3·7	+0·6	...	...	10	33	19	...	...	...	...	S 83° E	N 83° E	87	82	203*	199	...	...	Chitaldroog	
·484	·496	·490	·490	+·035	95	65	56	72	+ 4	3·5	3·3	3·4	−0·5	...	...	10	45	7	...	...	...	..	N 88° E	N 70° E	92	84	201*	116	...	...	Bangalore	
·448	·450	·418	·439	−·013	96	55	44	65	0	4·6	4·6	4·6	+0·6	...	...	20	34	8	..	...	...	...	N 81° E	N 76° E	87	82	90*	95	...	...	Hassan	
·488	·510	·452	·483	+·029	92	59	46	66	+ 4	4·7	5·0	4·9	+1·1	...	...	14	35	13	...	...	...	...	N 89° E	N 80° E	87	84	273*	261	...	...	Mysore	
·683	·680	·681	·681	+·021	92	70	65	76	+ 3	4·8	6·0	5·4	−0·5	13	13	36	...	...	...	...	...	...	N 33° E	N 36° E	74	67	97	114	...	...	Trichinopoly	
?	·747	·744	·761	+·057	?	71	71	83	+ 4	5·5	4·8	5·2	−0·2	...	12	38	10	1	1	...	...	...	N 45° E	N 25° E	85	79	158	178	..	...	Madras	
·503	·453	419	·458	−·009	86	46	35	56	− 2	4·6	5·8	5·2	+1·5	1	...	1	26	32	2	...	...	...	S 64° E	S 86° E	89	69	113*	76	...	...	Bellary	
·621	·641	·629	·630	+·050	88	63	61	71	+ 1	1·2	1·0	1·1	−1·0	...	...	21	23	14	2	1	...	1	N 87° E	N 69° E	76	82	207*	241	...	...	Cocanada	
·608	·632	·662	·633	+·111	97	60	63	74	+11	2·2	2·5	2·4	−0·1	6	3	39	4	8	2	...	...	...	N 58° E	N 64° E	71	51	?	49	...	...	Vizagapatam	
·105	·132	·133	·123	−·028	73	48	42	54	− 3	3·1	3·6	3·4	+0·5	37	5	...	...	3	2	...	8	7	N 61° W	N 61° W	19	29	40*	59	...	...	Quetta	Hill Station, Baluchistan.
·052	·054	·083	·063	−·017	68	46	55	56	− 7	6·6	6·8	6·7	+1·1	...	...	...	2	...	32	24	4	...	S 21° W	S 14° W	85	38	12	28	...	...	Leh	Hill Stations, Punjab.
·133	·170	·226	·176	+·001	85	77	76	79	− 1	5·7	6·0	5·9	+0·6	24	5	2	2	6	5	3	7	8	N 84° W	S 84° E	11	6	51*	66	...	...	Srinagar	
·119	·138	·149	·135	−·002	55	50	53	53	+·4	2·3	3·0	2·7	−1·9	21	4	1	1	12	22	1	...	...	S 20° E	S 56° E	45	39	180*	175	...	...	Murree	
·093	·088	·088	·090	0	84	56	55	65	0	6·2	6·7	6·5	+1·0	...	5	1	...	12	9	6	12	17	S 78° W	S 47° W	32	48	36	21	3·57	1·00	Kailang	
·127	·130	·161	·140	+·003	59	47	59	55	+10	4·9	7·2	6·1	+2·2	20	4	5	4	2	22	5	...	...	S 15° E	S 11° W	32	14	85	98	...	...	Simla (Ridge).	
·140	·161	·173	·158	+·007	66	56	58	60	+ 9	4·4	5·4	4·9	+1·8	22	18	1	...	2	19	...	...	...	S 51° E	S 64° W	5	15	187	106	...	...	Chakrata	Hill Station, N.-W. P.
·188	·217	·226	·210	+·009	73	64	65	67	+ 9	5·1	6·8	6·0	+3·4	22	4	10	3	1	3	6	11	2	N 52° W	S 51° W	11	23	59*	37	...	...	Ranikhet	
·124	·148	·166	·146	?	57	51	57	55	?	5·8	6·4	6·1	?	...	1	7	4	17	1	8	1	22	N 24° W	?	5	?	29*	?	...	...	Muktesar	
·223	·292	·301	·272	+·005	91	76	58	75	+ 2	2·1	3·2	2·7	−0·1	1	1	...	3	7	1	...	47	2	S 85° W	N 67° W	66	47	23	22	0·59	0·51	Katmandu	Hill Station, Nepal.
·203§	·243	·254	·233	+·032	92§	84	87	88	+12	4·4‖	5·8¶	5·1	+0·8	4	6	10	9	5	...	5	13	10	N 18° W	N 55° W	23	3	70	72	...	...	Darjeeling	Hill Station, Bengal.
·220	·233	·239	·231	+·016	54	42	43	46	+ 4	2·9	3·4	3·2	+1·5	5	9	9	2	3	5	18	5	6	S 88° W	N 13° E	19	13	130*	93	...	...	Mount Abu	Hill Stations, Central India.
·297	·329	·361	·329	+·054	79	48	47	58	+ 3	1·6	2·5	2·1	0	27	5	4	1	3	1	8	7	6	N 72° W	N 31° E	18	21	68*	64	...	...	Pachmarhi	
318	·370	·386	·358	+·055	64	50	46	53	+ 2	1·3	2·7	2·0	−0·4	40	3	...	...	...	7	9	2	1	S 43 W	S 74° W	21	8	120*	117	*Nil*	*Nil*	Chikalda	

§ Mean of 26 days. ‖ Mean of 24 days. ¶ Mean of 22 days.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 83 Stations

Meteorological Province.	Station.	Elevation of bar-cistern above sea-level in feet.	Pressure. Mean of 10 hours.	Pressure. Mean of 16 hours.	Pressure. Mean daily range.	Pressure. Mean daily pressure.	Pressure. Variation from normal.	Pressure. Mean reduced to S. L. and for gravity, 45° Lat.	Temperature of Air. Mean maximum.	Temperature of Air. Mean minimum.	Temperature of Air. Mean daily range.	Temperature of Air. Highest maximum.	Temperature of Air. Lowest minimum.	Temperature of Air. Absolute range.	Temperature of Air. Mean 10 hours.	Temperature of Air. Mean 16 hours.	Temperature of Air. Mean daily.	Temperature of Air. Variation from normal.	Temperature, Wet-bulb. Mean minimum.	Temperature, Wet-bulb. Mean 10 hours.	Temperature, Wet-bulb. Mean 16 hours.	Temperature, Wet-bulb. Mean daily.
Hill Station, South India.	Wellington	...	24·233	24·215	·068	24·249	−·018	?	67·3	48·2	19·1	73·2	38·6	24·6	63·7	62·8	56·6	+0·7	46·3	54·6	56·8	52·6
Extra India.	Aden	...	29·998	29·899	·099	29·952	+·001	29·978	80·1	73·2	6·9	82·7	69·9	12·8	77·8	78·7†	76·5†	−0·3	67·4	69·7	69·3	68·8
	Perim	...	·855	·759	·096	·810	+·011	?	83·3	74·2	9·1	84·7	72·6	12·1	79·9	80·4	78·0	−0·5	70·3	71·3	71·2	70·9
	Minicoy	...	Not received.																			
	Zanzibar	...	·905	·785	·120	·845	−·032	·844	86·8	79·8	7·0	89·0	75·8	13·2	83·4	86·3	83·2	+0·9	75·4	77·2	76·7	76·4
	Port Victoria (Seychelles)	15	·950	·864	·086	·907	−·029	·846	82·5	75·4	7·1	84·7	72·9	11·8	81·5	81·5	78·7	−0·3	71·7	75·4	75·1	74·1
	Mauritius	181	?	?	?	·791	−·038	·918	?	?	?	91·4	63·6	27·8	?	?	78·6	+0·3	?	?	?	?

† Mean of 20 days.

II—*concluded.*

in India, Burma, etc., for December 1898—concluded.

Vapour Tension.					Humidity.					Cloud.				Wind Direction. Number of Winds from										Wind Steadiness.		Wind Velocity.		Rainfall.		Station.	Meteorological Province.
From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean wind direction.	Normal mean wind direction of month.	Average percentage.	Normal percentage.	Mean velocity in miles per diem.	Normal.	Total rainfall for the month.	Heaviest rainfall during the month.		
																									%	%						
·302	·337	·403	·317	−·005	86	59	71	72	−5	4·0	4·9	4·5	−0·9	1	8	8	10	32	3	...	...	...	S 73° E	S 41° E	66	61	58	55	...	...	Wellington	HILL STATION SOUTH INDIA.
·595	·619	·590†	·601	−·033	73	65	60†	66	−3	5·7	2·8	4·3	+0·9	...	...	10	27	17	8	...	...	...	S 75° E	S 87° E	77	71	291†	313	...	...	Aden	
·693	·653	·643	·663	+·032	82	64	62	69	+5	5·4	2·7	4·1	+2·5	...	1	...	37	14	7	...	3	...	S 70° E	S 60° E	74	83	444	458	...	...	Perim	EXTRA INDIA
																								?		?		?	...	...	Minicoy	
·822	·852	·790	·821	−·036	80	74	63	72	−6	6·9	3·1	5·0	−1·1	...	22	25	11	1	1	...	...	2	N 36° E	N 35° E	79	62	168*	152	...	...	Zanzibar	
·732	·803	·786	·774	−·037	83	75	73	77	−4	6·2	6·6	6·4	−0·4	7	4	2	...	5	5	2	5	32	S 53° W	N 44° W	48	61	166	156	12·80	3·05	Port Victoria (Seychelles).	
?	?	?	·690	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	250	262	5·70	2·36	Mauritius	

G. I. C. P. O.—No. 98 Meteo.—29-4-99.—385.

* Corrected.

LITHO. BY J. N. MUNDLE.

Explanation.

The lines of the above Chart represent isobars or lines of equal barometric pressure, and the numbers attached indicate the barometric pressure in inches and are drawn for differences of pressure of ·05 inch. The isobars in the Bay of Bengal are filled in by means of the shore observations, and by comparison with the ordinary or normal distribution of pressure as given in the Charts of the Bay of Bengal prepared by Mr. Dallas, 1st Assistant Meteorological Reporter to the Government of India, and published by the Meteorological Department. Hence they have not the same validity as the isobars in the land area of India itself, but it is probable they deviate very little from the actual.

The mean 8 a.m. wind directions of the month are shewn by means of arrows flying with the wind, and are calculated by means of Lambert's formula applied to the winds as given in Table I of the 8 a.m. observations. The mean wind directions for the hill stations are indicated by broken arrows to distinguish them from the wind arrows for the plain stations. The mean velocity of the winds during the month is shewn by the following notation:—

Velocity of	0 to 2 miles per hour	...	one feather added to the wind arrow
,, ,,	2 to 5 ,, ,, ,,	...	two feathers ,, ,, ,, ,,
,, ,,	5 to 10 ,, ,, ,,	...	three ,, ,, ,, ,, ,,
,, ,,	10 to 20 ,, ,, ,,	...	four ,, ,, ,, ,, ,,
	over 20 ,, ,, ,,	...	five ,, ,, ,, ,, ,,

LITHO. BY J.N. MUNDLE.

Explanation.

The Chart shows the variation of the mean 8 a.m. pressure of the month from the normal by means of lines drawn for equal amounts of variation (of two hundredths of an inch or ·020″). The numbers are given in thousandths of an inch, 20 representing ·020″ or two hundredths of an inch, &c. Continuous lines indicate that the pressure was in excess by amounts indicated by the numbers attached to the lines, and broken or dotted lines that it was in defect by amounts indicated by the numbers attached to the lines. Two parallel lines near to each other, one continuous and the other broken or dotted, represent the line of no variation, the dotted line facing the area of deficient pressure or negative variations.

CHART SHEWING THE VARIATION OF THE MEAN MAXIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.

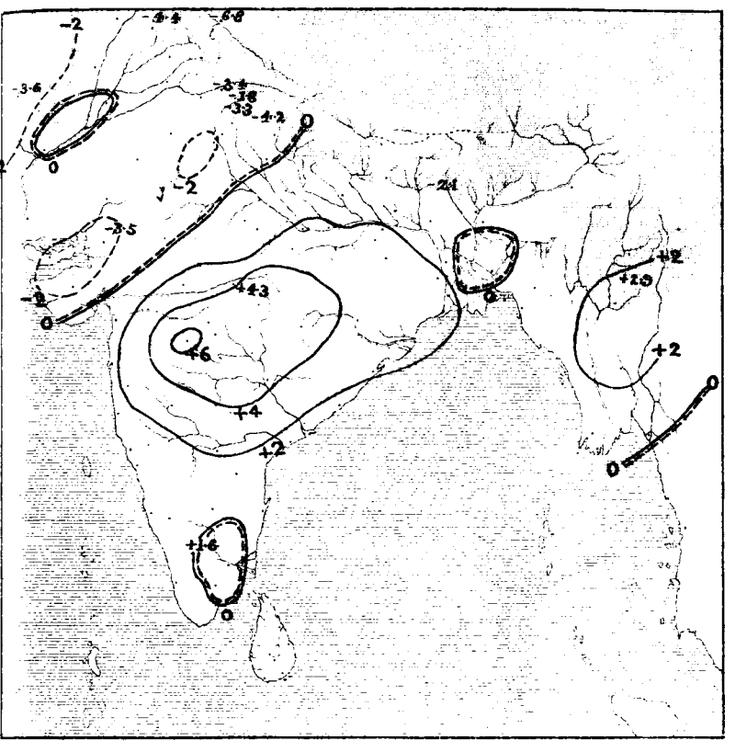
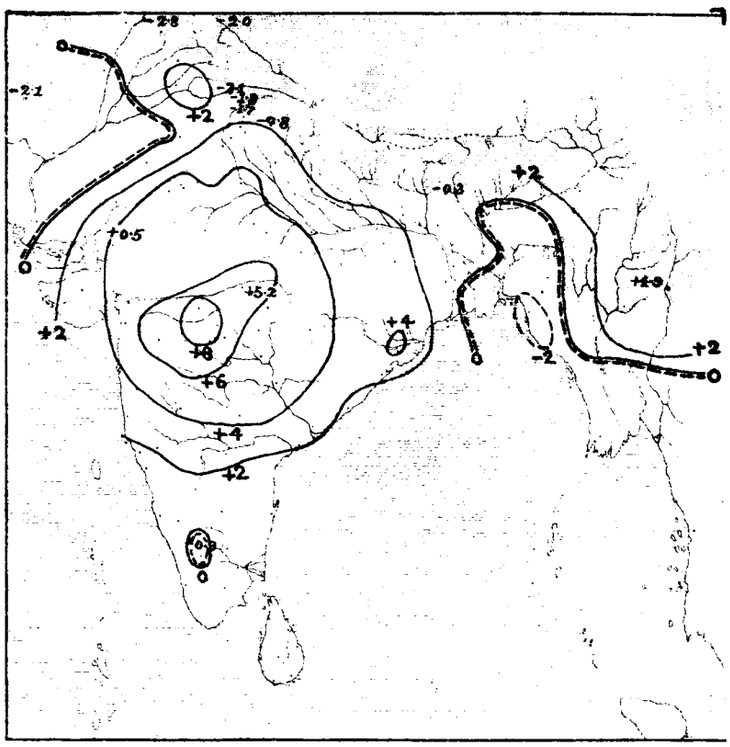


CHART SHEWING THE VARIATION OF THE MEAN MINIMUM TEMPERATURE OF THE MONTH FROM THE NORMAL.



Explanation.

Continuous lines indicate that the mean maximum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

Continuous lines indicate that the mean minimum of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

CHART SHEWING THE VARIATION OF THE MEAN DAILY TEMPERATURE OF THE MONTH FROM THE NORMAL.

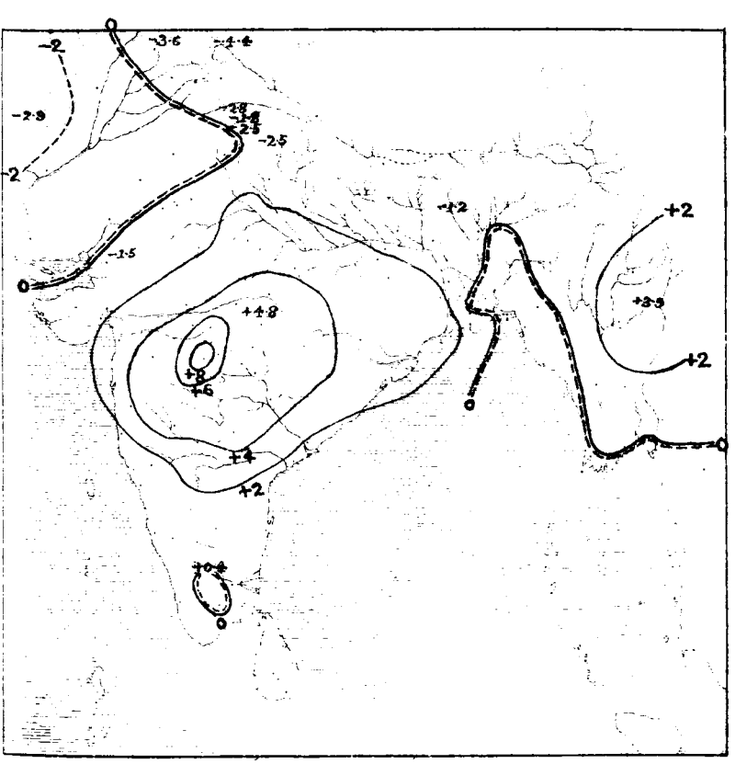
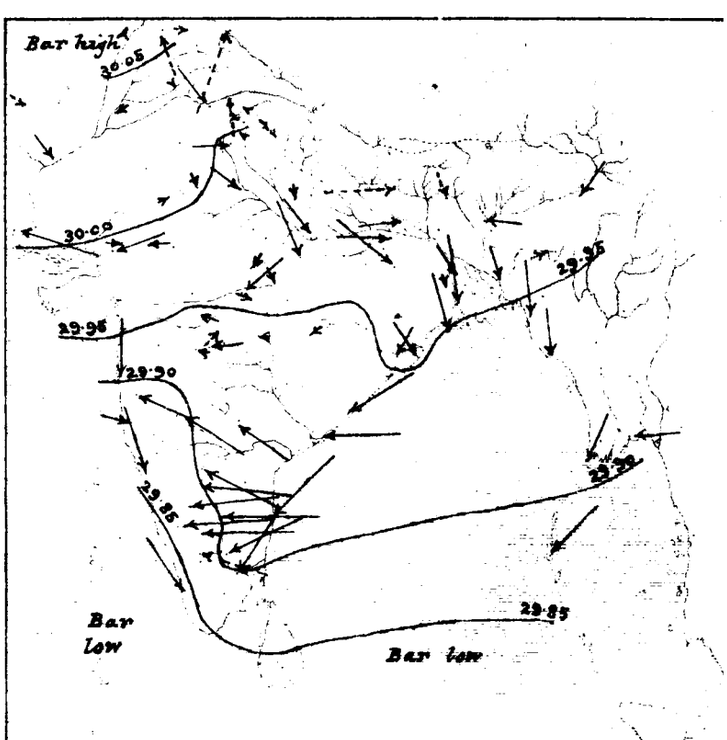


CHART SHEWING THE MEAN DISTRIBUTION OF PRESSURE AND THE RESULTANT WIND DIRECTIONS IN THE MONTH OF DECEMBER 1898.



LITHO BY J.N.MUNSLE

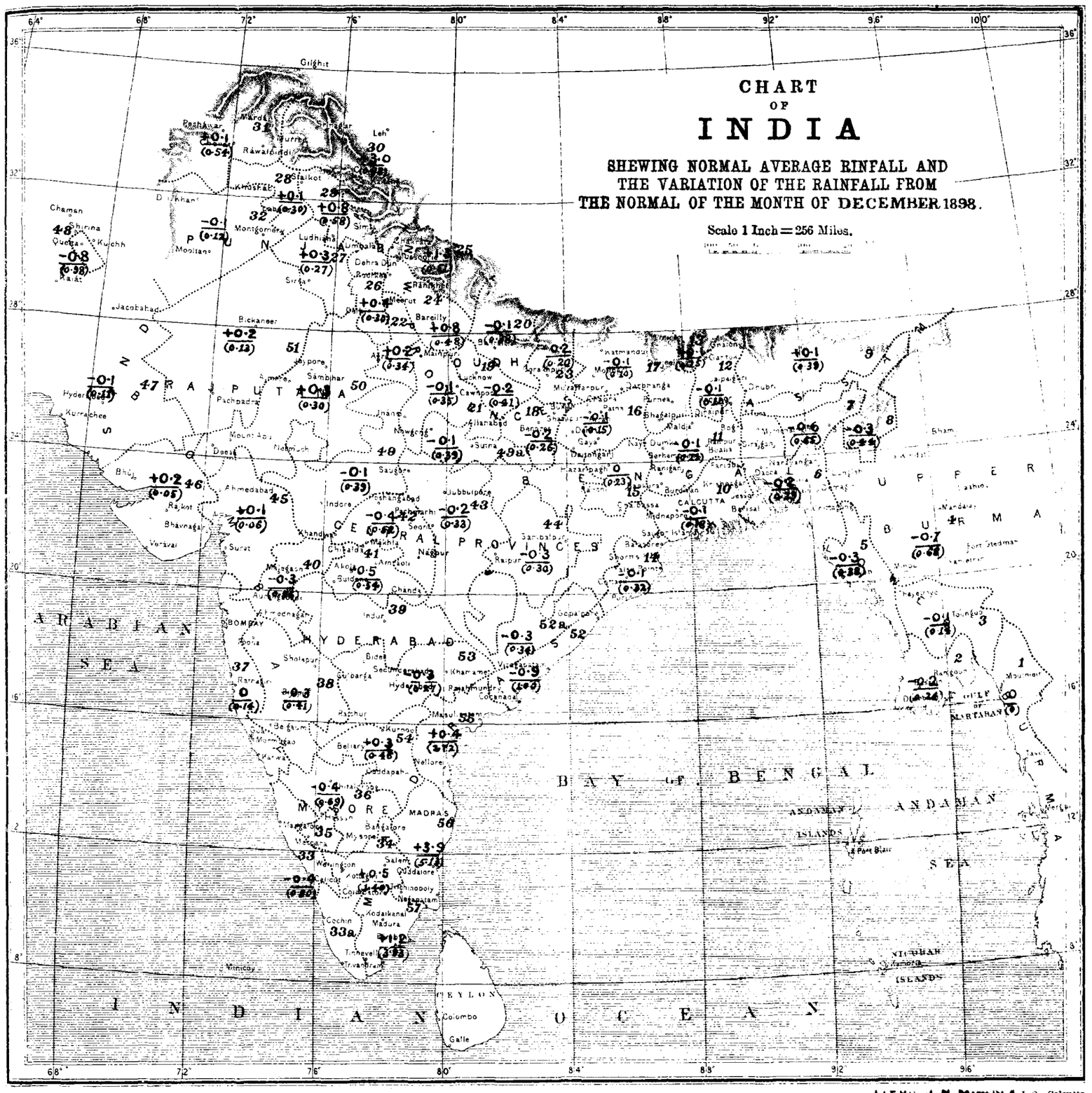
Explanation.

Continuous lines indicate that the mean daily temperature of month was in excess by amounts indicated by the attached numbers. Broken or dotted lines that it was in defect by the amounts indicated by the attached numbers. Double lines are the lines of no variation, the broken line facing the area of deficient temperature.

The Chart is prepared in the same manner as the Monthly Charts which have hitherto appeared in the Annual Report, the only alteration made being that pressures are reduced to constant gravity (45°). The isobars are given for each twentieth of an inch. The arrows show the directions of the resultants of the wind recorded at 10 and 16 hours, and by their lengths the percentage of the observations expressing the numerical value of the resultant; a length of $\frac{1}{8}$th of an inch being equal to 100 per cent.

Explanation.

The Chart shows the distribution of the rainfall of the month by means of isohyetic lines or lines of equal amounts of rain. The data used in the preparation of this Chart are the rainfall returns of all the observatories in India (182 in number), except those at the Hill Stations over 3,500 feet in Elevation. The double line or line of no rainfall separates areas in which the rainfall exceeded a tenth of an inch from those it was actually or practically *nil* (*i.e.* less than a tenth of an inch). The dotted line faces the area of no rainfall.



Reg. No. 243. Wr., I.—June 98.—52,50.

LITHO J. N. MUKHERJEE, I. O., Calcutta

Explanation.

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 57 areas, over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or − sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess, and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The normal average rainfall is also given below in smaller figures enclosed within brackets so that the percentage variation can be at once estimated. The name of the district can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting red figures.

1. Tenasserim	17. North Bihar	33. Malabar	48. Baluchistan Hills
2. Lower Burma, Deltaic	18. North Western Provinces, East	33a Travancore	49. Central India, East
3. Central do.	19. South Oudh	34. Madras, South Central	49a Do. do.
4. Upper do.	20. North do.	35. Coorg	50. Rajputana East, Central India West
5. Arakan	21. North Western Provinces, Central	36. Mysore	51. West Rajputana
6. East Bengal	22. Do. do., West	37. Konkan	52. East Coast, North
7. Assam, Surma	23. Do. do., East Submontane	38. Bombay Deccan	52(a). Do. do. (a)
8. Do., Hills	24. Do. do., West do.	39. Hyderabad, North	53. Hyderabad, South
9. Do., Brahmaputra	25. Do. do., Hills	40. Khandesh	54. Madras, Central
10. Deltaic Bengal	26. South East Punjab	41. Berar	55. East Coast, Central
11. Central do.	27. South do.	42. Central Provinces, West	56. East Coast, South
12. North do.	28. Central do.	43. Do., Central	57. Madras, South
13. Bengal Hills	29. Punjab, Submontane	44. Do., East	
14. Orissa	30. Do., Hills	45. Gujarat	
15. Chota Nagpur	31. North Punjab	46. Kathiawar	
16. South Bihar	32. West do.	47. Sind	