

South Africa. Meteorological Office



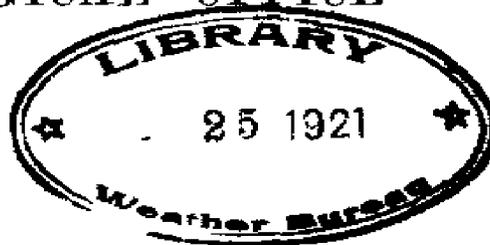
UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

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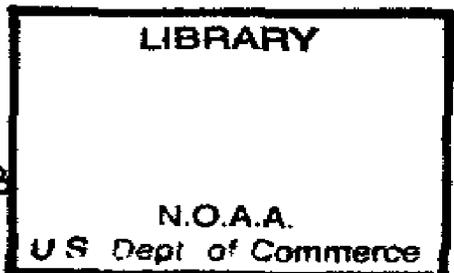
MONTHLY
WEATHER REPORT

OF THE
METEOROLOGICAL OFFICE



Vol. I. ^{II} JANUARY, 1920.—No. 1

43433



PRETORIA

THE GOVERNMENT PRINTING AND STATIONERY OFFICE

1920

National Oceanic and Atmospheric Administration

Environmental Data Rescue Program

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December 20, 2000

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

JANUARY, 1920.

No. 1.

THE month was typical of summer conditions: fine, bright and hot over the west, south-west and interior of the Cape Province, and with cloudy skies and thunderstorms over the Transvaal, Orange Free State and Natal.

During the first week pressure was low over the interior and about normal on the coast, the weather being generally fine and bright, but with some cloud and local thunderstorms over Natal, the Transvaal and the south-east of the Union. A depression appeared on the south coast and moved to the south-east on the 9th and 10th, and precipitation occurred over the south and centre of the Cape Province. The conditions then became similar to those existing at the beginning of the month, and remained so until the 16th and 17th, when a "high" moved along the south coast to the east and the Transvaal and east became generally cloudy, and experienced light rains and local thunder showers. Although on the 19th, 20th, and 21st pressure was very low over the whole of South Africa, and on the 23rd and 24th a depression passed along the south and south-east coast, the weather remained generally fine and bright, with scattered thunderstorms over the Transvaal and east; but conditions became unsettled, and general rains occurred with the passage of an anticyclone along the south, south-east and east coasts on the 26th, 29th and 30th.

Air Pressure.—The mean air pressure, as shown by the map, was almost normal, except over the east and south-east, where it was somewhat lower.

Temperature.—Some very hot days were experienced at the beginning of the month, and generally temperatures, both day and night, were higher than usual in all parts except Natal, where the days were slightly colder. The mean air temperature over the whole country was about two degrees above the normal.

Precipitation.—Over Natal, Kaffraria, the Transvaal, the east of the Orange Free State and the south coast and north-eastern and south-eastern districts of the Cape Province, rains fell at fairly regular intervals throughout the month; but over the remainder of the summer rainfall area there was little precipitation until towards the end of the month, when general rains occurred. During this period some heavy rains were reported from the centre and south of the Cape Province and Zululand. The west coast was rainless, but light drizzling rains fell over the Peninsula and the south-western districts of the Cape between the 24th and 26th. The normal rainfall was exceeded over the east of the Union generally, and also over Bechuanaland, the centre of the Cape Province and a belt extending from Harrismith to Zeerust; but over the remainder of the country the normal quantities were not reached. Hailstorms on the 19th and 23rd caused damage to crops in the Barberton and Bethal districts respectively.

Precipitation since July 1st still shows an excess over the belt extending from Komatipoort through Belfast and Nylstroom to Claremont in the north-west of the Transvaal, and to this area has now been added a great part of Natal and the north of Kaffraria; the other parts of the Union still show a deficit.

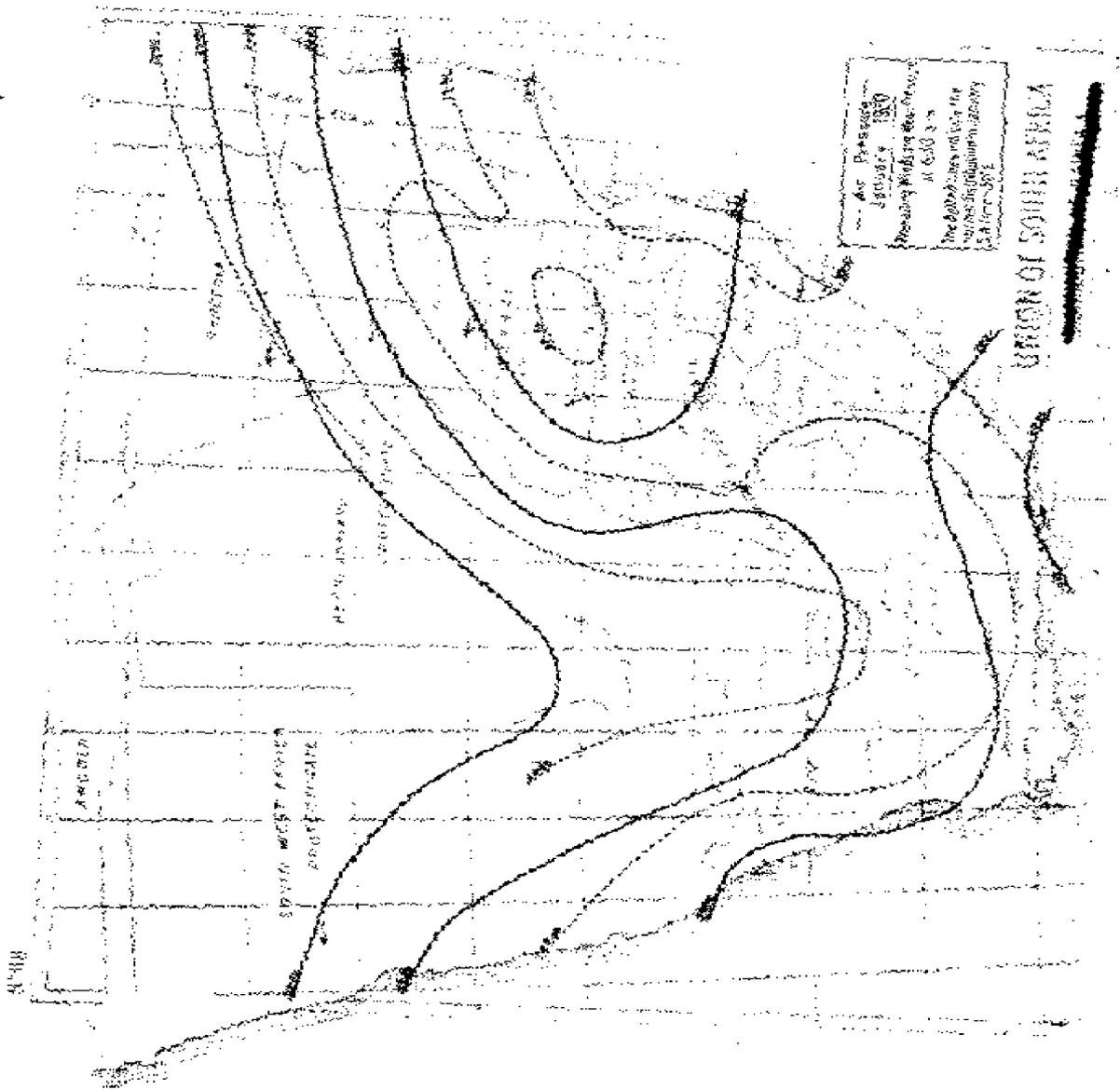
AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), JANUARY, 1920.

PLACE.	OBSERVER.	Month—Jan., 1920		Mean Monthly Temperature	Normal Monthly Temperature	Difference from Normal	Extremes.					
		Mean Max	Mean Min				Highest	Date	Lowest	Date.		
											° F.	° F.
<i>Transvaal—</i>												
Belfast.....	The Forester	74.4	51.0	62.7	63.0	- 0.3	82.0	8th	40.0	20th, 18th, 19th, 21st, and 25th.		
Barberton.....	Walter Grubb	84.1	64.2	74.2	73.2	- 1.0	91.0	19th	60.0			
✓ Johannesburg (Observatory)	The Staff	78.7	56.2	67.4	65.4	+ 2.0	90.1	5th	53.0	20th, 22nd, & 23rd		
Klerksdorp (Strathmore).....	Chas Scott	87.0	60.2	73.6	73.0	- 0.6	97.0	4th & 5th	55.0			
Komadsport.....	B. J. Fothergill	92.6	70.7	81.6	80.5	+ 1.1	101.4	11th	64.0	19th		
Nylakroom.....	G. Bakker	85.0	62.4	73.7	72.3	+ 1.4	92.0	5th	55.2	10th		
Pilgrim's Rest.....	P. A. Straton	80.8	58.6	69.7	68.0	+ 1.7	85.0	4th & 22nd	50.0	10th		
Pieterburg.....	W. Franklynne	85.2	61.0	71.8	70.7	+ 1.1	92.0	5th	54.0	10th & 19th		
Putschelstroom (Exp. Station).....	The Manager	88.5	59.1	73.8	70.2	+ 3.6	99.8	4th	52.1	20th		
Pretons (Meteorological Office)	The Staff	82.6	61.2	71.8	71.8	+ 0.0	83.9	5th	57.0	10th		
Piet Retief.....	F. Werner	79.2	60.8	67.8	66.7	+ 2.9	88.0	26th	55.5	19th		
Zeerust.....	H. Dietrich	87.5	63.0	75.2	71.4	+ 0.8	98.0	5th	57.2	21st		
<i>Swaziland—</i>												
Mbabane.....	Swaziland Police	79.6	50.8	69.4	67.4	+ 2.0	88.0	26th	54.0	19th		
<i>Orange Free State—</i>												
Blomfontein.....	E. Arndt	89.2	61.5	75.4	71.5	+ 2.9	97.0	29th	58.0	25th		
Harrismith.....	G. R. Patterson	73.6	54.0	64.8	64.8	+ 0.0	87.0	3rd	48.0	15th		
Ladysmith.....	G. W. Stokes	83.3	57.2	70.2	68.8	+ 1.4	93.0	4th	51.0	25th		
Lindley.....	J. Colclough-Oates	84.7	57.9	71.3	68.5	+ 2.8	95.0	4th	53.2	25th		
<i>Natal—</i>												
Durban (Point).....	A. J. O. Andersen	82.9	70.8	76.8	76.6	- 0.2	87.0	13th	66.4	14th		
Dundee.....	West Thurlold	81.4	57.2	69.2	72.4	- 3.2	80.0	26th	45.0	3rd & 4th		
Hiabis.....	The tracler	85.4	66.7	76.0	74.4	+ 1.6	96.0	26th	59.0	29th & 31st		
Maitland (Mental Hospital)	The Superintendent	81.4	63.8	72.4	73.8	- 0.9	95.0	1st	57.8	8th		
<i>Cape—</i>												
Alhwal North.....	A. Alcock	87.3	58.0	72.6	69.6	+ 3.0	95.0	4th	49.5	18th		
Bedford.....	T. C. Hall	83.4	59.6	71.5	69.6	+ 1.9	104.0	9th	56.0	22nd		
Capetown (Royal Observatory)	The Staff	83.1	62.4	72.8	69.3	+ 3.5	94.2	8th	55.7	10th		
Chamwilliam.....	W. J. Downes	94.0	61.9	78.0	75.6	+ 2.4	109.0	18th	54.0	12th & 13th		
East London.....	The Port Captain	78.0	65.2	71.6	70.0	+ 1.6	87.0	1st	60.0	10th		
Graaff-Reinet.....	S. E. Treadwell	90.7	63.0	76.8	73.5	+ 3.3	105.4	9th	57.3	16th		
Groot Drakenstein.....	Lionel Baker	87.9	62.4	75.2	70.2	+ 5.0	106.2	18th	52.1	12th		
Kolkead.....	H. D. Coyle	78.1	56.7	67.4	66.4	+ 1.0	90.4	26th	53.0	18th		
Kimberley.....	J. A. Fogarty	92.4	64.2	78.3	75.6	+ 2.7	101.0	4th	57.0	3rd & 14th		
Maitland (Convent).....	The Mother Superior	91.1	61.8	76.4	75.6	+ 0.8	101.0	5th	40.0	31st		
Mossel Bay.....	Lightkeeper	78.8	66.8	72.8	69.8	+ 3.0	84.0	31st	63.0	12th		
Murrayburg.....	A. Cameron	87.8	58.8	73.8	72.5	+ 0.8	97.0	4th & 18th	55.0	15th & 17th		
O'okieb.....	J. Burrows	87.0	58.6	72.8	72.5	+ 2.6	99.9	17th	49.5	14th		
Port St. Johns.....	F. J. Lloyd	83.0	66.9	75.4	71.2	+ 4.2	92.0	26th	59.0	19th		
Port Elizabeth.....	L. Daly	78.1	65.5	71.8	6.9	+ 1.9	84.0	31st	59.0	11th		
Queenstown.....	H. Holley	86.9	61.1	74.0	69.4	+ 4.6	99.0	4th	57.0	17th, 18th, & 20th		
Wynberg (Convent).....	The Mother Superior	81.4	62.7	72.0	67.2	+ 4.8	92.8	30th	57.0	11th		
<i>Basutoland—</i>												
Letibe.....	F. Hodgson	81.4	57.9	69.6	67.0	+ 2.6	92.0	5th	52.0	17th		

RAINFALL, JANUARY, 1920.

Place	Observer.	Month	Normal.	Differ- ence from Normal	Total since 1st July, 1919	Normal	Differ- ence- from Normal
		Jan. 1920.					
		Inches.	Inches.	Inches.	Inches	Inches.	Inches.
<i>Transvaal—</i>							
Barberton.....	W. Grubb	5.89	9.12	- 3.43	21.13	21.92	- 0.79
Belfast	The Forester	5.19	6.41	- 1.22	27.40	21.26	- 3.44
Bethal	H. F. Joubert	4.24	5.56	- 1.31	13.38	21.07	- 7.69
Brmelo	Mrs. Nicolson	9.86	5.56	+ 3.80	23.72	21.29	+ 2.43
Heidelberg	W. te Horst	4.23	4.73	- 0.50	14.36	17.64	- 3.28
Johannesburg (Observatory)	The Staff	5.14	5.44	- 0.30	15.32	17.13	- 1.81
Komatipoort	B. J. Fothergill	8.52	5.00	+ 3.52	18.23	14.28	+ 3.95
Middelburg	Dr. H. A. Spence	4.99	5.31	- 0.32	16.73	18.96	- 2.23
Nylstroom	G. Bakker	4.80	4.96	- 0.16	15.18	14.98	+ 0.20
Pietersburg	W. Frankleyne	3.90	4.46	- 0.47	11.82	19.98	- 2.16
Pilgrim's Rest	J. H. Sturton	9.67	8.56	+ 1.11	19.70	22.61	- 2.91
Potchefstroom	J. A. Stanning	4.18	4.07	+ 0.11	10.01	14.77	- 4.76
Pretoria (Meteorological Office)	The Staff	6.19	6.33	- 0.14	16.19	18.95	- 2.76
Rooiberg	N. R. Munro	3.49	6.47	- 2.98	11.06	16.42	- 5.38
Rustenburg	S. A. Polite	3.77	5.45	- 1.68	12.64	16.40	- 3.76
Wakkerstroom	H. Bennett	7.76	6.00	+ 1.76	19.22	21.05	- 1.83
Zeerust	H. Dietrich	5.02	4.83	+ 0.19	13.49	13.91	- 0.42
<i>Swaziland—</i>							
Mbabane	Swaziland Police	14.82	10.00	+ 4.82	32.38	31.42	- 0.96
<i>Orange Free State—</i>							
Bloemfontein	E. Arndt	2.17	2.48	- 0.31	6.21	10.11	- 3.90
Lindley	J. Collister-Oates	4.00	4.11	- 0.11	9.88	14.59	- 4.71
Kroonstad	S. R. Northfield	4.42	3.90	+ 0.52	10.33	15.27	- 4.94
Ladybrand	G. Stokes	6.61	4.61	+ 2.00	14.02	16.59	- 2.57
Harrismith	J. B. Patterson	8.13	4.82	+ 3.31	17.57	17.95	- 0.38
<i>Natal—</i>							
Durban (Point)	Capt. D. Black	9.51	4.11	+ 5.40	23.01	23.58	- 0.57
Howick	H. Ellis	12.13	5.11	+ 7.02	21.29	19.42	- 1.87
Ladysmith	The Gaoler	6.76	4.67	+ 2.09	15.36	15.91	- 0.55
Pietermaritzburg (Mental Hospital)	The Staff	13.83	3.21	+ 8.62	24.73	20.35	+ 4.38
Vryheid	The Gaoler	7.15	8.03	- 0.88	13.19	26.02	- 10.83
Wenenden	The Gaoler	13.54	5.25	+ 8.30	21.74	16.82	+ 4.92
Ulundi	The Gaoler	12.71	7.46	+ 5.25	24.69	28.30	- 3.61
<i>Cape Province—</i>							
Alwal North	A. Alcock	3.24	2.99	+ 0.25	7.35	11.01	- 3.66
Beaufort West	A. Lundström	0.66	1.14	- 0.48	2.47	4.67	- 2.20
Bedford	T. C. Hall	2.00	3.32	- 1.32	7.38	15.76	- 8.18
Britstown	F. Myburg	3.84	1.08	+ 2.76	6.57	7.42	- 0.82
Capetown (Observatory)	The Staff	0.29	0.68	- 0.39	11.00	13.57	- 2.57
Carnarvon	A. P. Malherbe	1.13	1.08	+ 0.05	—	—	—
Clanwilliam	W. J. Downes	0.00	0.19	- 0.19	—	—	—
East London	A. Downes	3.98	3.12	+ 0.86	12.92	19.15	- 6.23
Fraserburg	G. Opperman	0.68	0.74	- 0.08	2.60	3.63	- 1.03
Graaff-Reinet	S. Treadwell	1.38	1.42	- 0.04	3.00	7.27	- 4.27
Groot Drakensberg	L. Baker	0.06	1.15	- 1.09	17.01	20.96	- 3.95
Groutstown	G. Jordaan	2.71	1.82	+ 0.89	—	—	—
Hopetown	P. J. Rooyen	3.83	1.95	+ 1.88	5.61	5.86	- 0.27
Kenhardt	A. Bowker	0.06	0.58	- 0.52	—	—	—
Kimberley	J. A. Fogarty	1.96	2.43	- 0.47	—	—	—
Kovana	C. Wilding	0.31	1.96	- 1.65	—	—	—
Kokstad	H. D. Coyte	7.99	4.51	+ 3.48	16.96	16.27	+ 0.69
Kuruman	W. O. Rensburg	3.53	3.69	- 0.16	—	—	—
Mafeking (Convent)	Mother Superior	4.41	3.98	+ 0.43	—	—	—
Mossel Bay (Cape St Blaize)	W. F. Luxton	0.08	1.09	- 1.06	—	—	—
Murraysburg	A. Cameron	1.26	1.18	+ 0.08	2.83	4.88	- 2.05
O'okiep	J. Burrows	0.00	0.21	- 0.21	2.19	3.55	- 1.86
Phillipstown	J. Venter	4.38	1.77	+ 2.61	—	—	—
Frueberg	W. J. Parrott	0.00	0.54	- 0.54	—	—	—
Port Elizabeth	L. Daly	0.59	1.12	- 0.53	7.61	13.49	- 5.88
Port St. Johns	F. J. Lloyd	16.07	4.85	+ 11.22	—	—	—
Priska	J. Fourie	1.60	1.31	+ 0.29	—	—	—
Queenstown	H. Holley	3.16	3.33	- 0.17	6.68	11.94	- 5.26
Steynierville	F. Wenener	0.58	0.60	- 0.02	1.18	4.76	- 3.58
Sutherland	S. Ludwick	0.05	0.48	- 0.43	2.71	4.24	- 1.53
Swellendam	M. Stevens	0.08	2.67	- 2.40	10.61	18.78	- 8.17
Umtata	A. Dixpeck	5.22	3.48	+ 1.74	—	—	—
Umtata	B. Smith	0.00	0.73	- 0.73	5.04	7.34	- 2.30
Umtata	W. Taylor	0.17	0.86	- 0.69	—	—	—
Victoria West	G. du Toit	2.47	0.97	+ 1.50	—	—	—
Vryburg	C. Butler	6.47	4.30	+ 2.17	9.49	10.16	- 0.67
Worcester	P. Berry	0.00	0.27	- 0.27	4.66	7.04	- 2.38
Wynberg (Convent)	Mother Superior	0.04	1.51	- 1.47	21.18	27.87	- 5.88
<i>Basutoland—</i>							
Leribe	F. Hodgson	5.86	6.41	- 1.05	15.91	20.39	- 4.48





Air Pressure
 1000 hPa
 Wind Speed
 at 6.00 a.m.
 The data was collected by
 the Department of
 Meteorology, Pretoria

UNION OF SOUTH AFRICA

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MARCH WEATHER CHARACTERISTICS.

In the Transvaal the rainy season is now declining, and the precipitation is not so heavy as during the three preceding months. Wet spells, however, with soft rains lasting several days, sometimes occur. Over the remainder of the Union there is a general increase on the February rainfall, the normal rising to a maximum over the Cape northern border and on the north and central Karoo, and to a secondary maximum in the north-east and south-east of the Cape, in the Orange Free State, Zululand, and Swaziland. In Zululand about 6.0 inches; in Swaziland, 5.5 inches; in Basutoland, 5.0 inches, in Natal, 4.5 inches; over the Transvaal, Kaffraria, and in the north-east of the Cape Province, 4.0 inches; over the Orange Free State and in the south-east of the Cape, 3.5 inches; over the Cape northern border, 3.0 inches; over the north and east-central Karoo, 2.5 inches; along the south coast, 2.0 inches, over the west-central and south Karoo and the Cape Peninsula, 1.5 inches; and in the south-west of the Cape and along the east coast, less than 1.0 inch, may be expected. Thunderstorms are still of frequent occurrence.

Throughout the Union, the mean daily temperature is falling. It may be expected to reach about 73 degrees over the northern border of the Cape and the south Karoo, 72 degrees in Natal; 70 degrees over the east-central Karoo, 69 degrees along the west coast and in the south-west of the Cape; 68 degrees along the south coast and in the south-east of the Cape; 67 degrees in the Orange Free State and on the Transvaal high veld the north Karoo, and the Cape Peninsula, 66 degrees in Kaffraria, 65 degrees over the north-east of the Cape, 64 degrees in Basutoland, and 62 degrees over the west-central Karoo. Hoar-frost, with even an occasional killing frost, is apt to occur, especially during the last third of the month.

Over the summer rainfall area there is a general decreased frequency of all winds having an easterly component (that is, from north-north-east to south-south-east inclusive), and an increase of those having a westerly component. Although this statement is strictly true for Johannesburg, where the greatest increased frequency is in those from north-north-west, it requires a slight modification with regard to the Kimberley winds, where there is also a diminution of those from due west: whilst at East London the diminution in frequency extends to winds from north, north-north-west, and south-south-west, with, on the other hand, a marked increase of winds from north-east. Over the Cape Peninsula, there is, coincident with a considerable decrease of southerly winds, an increase of winds from south-east and south-south-east, as well as of most winds having a westerly component. Except at Johannesburg, where there is a slight increase in velocity, winds show a decrease in force over the country.

Coincident with the diminution of strength of wind over the Cape Peninsula, there is a tendency to the formation of low-lying fogs over the south-west, but within the summer rainfall zone the quantity of cloud should be noticeably diminishing, and over the Transvaal and the Cape northern border the number of hours of bright sunshine is about 75 per cent. of the total number possible.

G. W. COX,

Acting Chief Meteorologist.



UNION OF SOUTH AFRICA

DEPARTMENT OF IRRIGATION

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FEBRUARY, 1920.

No. 2.

EXCEPTING in the west and south-west of the Cape Province where it was fine and bright, cloudy and unsettled weather with local thunderstorms and rain, prevailed over the Union during the month of February.

At the beginning of the month, the southerly extension of a "low" from the interior, with its axis lying about N N W to S.S.E., was accompanied by easterly winds and precipitation, heavy in places, over the eastern half of the Union. On the 3rd pressure increased over the Transvaal, and, except for the eastern low veld, the weather became fine and bright over that Province and Natal, although rains still continued over the centre and south-east of the Cape, and had extended westwards. The passage of an anti-cyclone round the coast, however, gradually moved the venue of precipitation until it was located over the Transvaal on the 7th. On the 8th the high pressure was lying off the east coast, with easterly to northerly winds over the whole country, and precipitation general excepting on the west coast. These rains continued on the 9th, with a general decrease of pressure; but with the passage of a "high" round the coast from the 10th to the 12th, the weather cleared until only the southern Transvaal was affected. The influence of a southerly extension of the "interior low" then became dominant, with unsettled weather and general rainfall except in the west; but a gradual clearing in a northerly and easterly direction ensued until the Transvaal was reached. Precipitation then occurred in the south-east during the passage of an anti-cyclone round the coast from the 18th to the 20th; and rains became general over all parts except the west coast and northern Transvaal with the reappearance of the "low" from the interior. The appearance of a "high" on the south-west coast on the 23rd, with a movement to the east, was followed by fine weather over the western half of the Cape. With pressure high off the east coast on the 25th, local thunderstorms occurred over the east; and on the 26th thunderstorms and rain occurred over the south-east and centre of the Cape, Natal and the Orange Free State with the appearance of a "low" on the south-east coast. Pressure then became high over the south, with steep gradients to the north, easterly winds and unsettled weather with rain prevailing over the eastern half of the Union.

Pressure.-- The mean air pressure, as shown by the map, was slightly above the normal over the eastern half of the Transvaal, normal over Rhodesia and below normal over the remainder of the country. The main feature of the month was the southerly surging of the "low" from the interior towards the south-east coast.

Temperature.-- Over Swaziland and the eastern halves of the Cape and Transvaal, both day and night temperatures were above normal; but over the remainder of the Union the days were colder and the nights warmer. The mean air temperature for the whole Union was about half a degree above normal.

Precipitation. - The west coast was rainless except for drizzling rains in places on the 4th and 8th. Over the Peninsula and the south-western districts of the Cape light showers fell on the 8th, 9th and 22nd only; but precipitation, heavy in places, occurred at fairly regular intervals throughout the month in almost all other parts of the Union. Although over the greater part of the Transvaal, the north-west of Natal and contiguous parts of the Orange Free State, and along parts of the southern and south-western coasts of the Cape the rainfall was below the average, the deficits were generally small. Over the remainder of the Union, excesses—considerable in some parts—were recorded. The quantities for the two months of the year are generally below normal in the Transvaal (excepting over the south-western districts, and along the eastern and north-western borders) and along the south-western and southern coasts of the Cape, while over all other parts of the country they are above.

Precipitation since the 1st July 1919 still shows an excess over the belt extending from Komatipoort, through Belfast and Nylstroom to Claremont, the south of Natal, and the north of Kaffraria, and to these areas the western half of the Orange Free State and the centre and northern borders of the Cape Province must now be added.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), FEBRUARY, 1920.

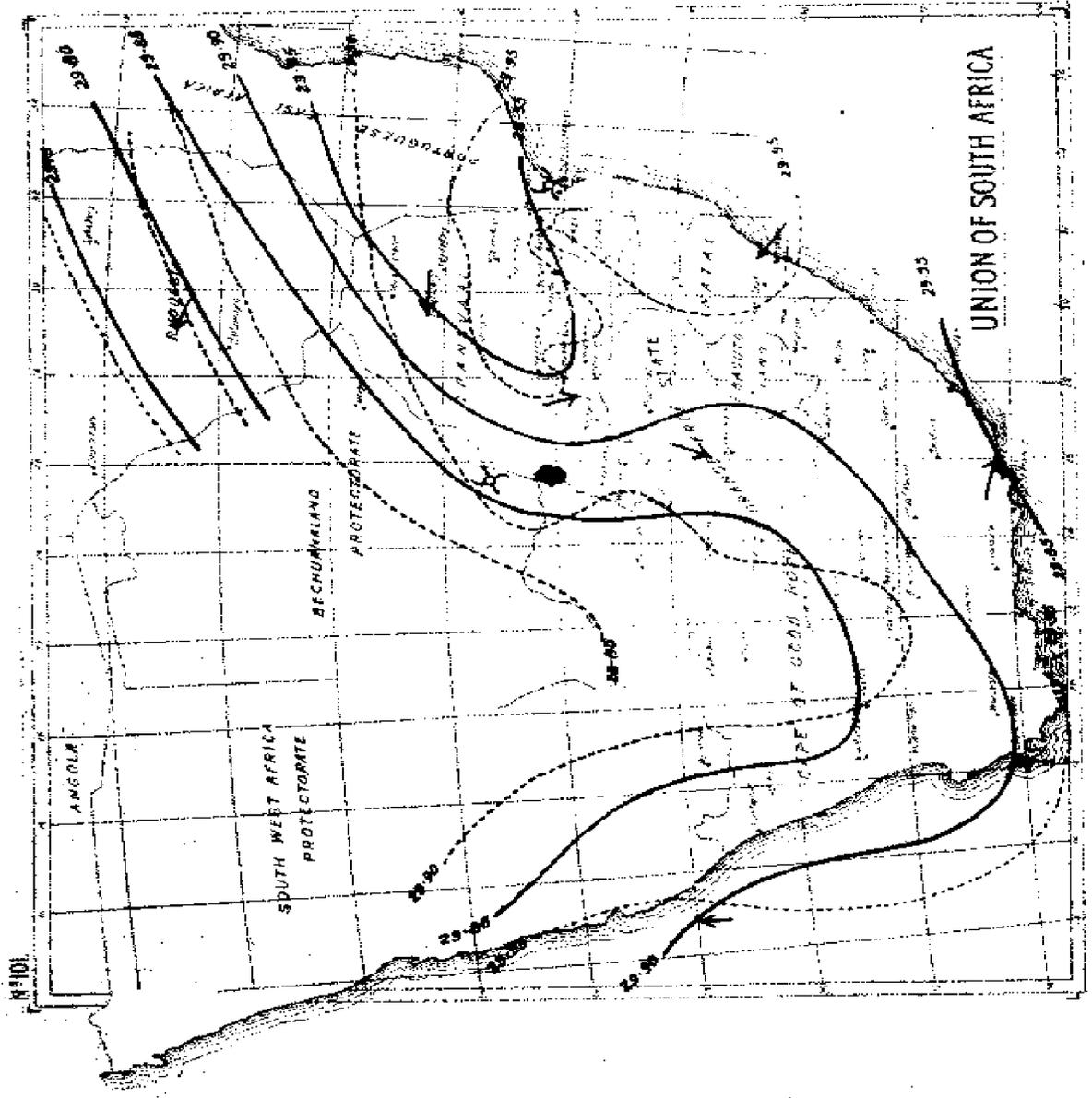
Place.	Observer	Month—Feb., 1920		Mean Monthly Temperature	Normal Monthly Temperature	Difference from Normal	Extremes		Date
		Mean	Min				Highest	Lowest	
		° F	° F				° F	° F	
<i>Transvaal—</i>									
Belfast	The Forester	74.1	53.1	63.8	62.4	+ 1.2	81.0	61.0	3rd
Barberton	W. Grubb	82.6	65.1	73.8	72.4	+ 1.4	89.0	49.9	3rd, 16th
Johannesburg (Observatory)	The Staff	77.0	56.6	66.8	64.4	+ 2.4	86.1	52.0	18th
Klerksdorp (Strathmore)	Chas Scott	81.2	60.2	70.7	72.7	- 2.0	88.0	65.0	18th
Komatipoort	B J Forthg II	91.5	70.1	80.8	79.4	+ 1.4	101.5	52.0	10th
Nylstroom	G Bakker	84.2	61.3	72.8	71.3	+ 1.5	89.5	52.5	4th
Pietersburg	W Franklynne	80.5	60.3	70.4	69.6	+ 0.8	80.0	51.0	7th, 12th
Pokelsdroom (Exp. Farm)	The Manager	83.7	70.7	74.7	80.8	+ 1.9	91.2	52.3	12th
Pretoria (Meteorological Office)	The Staff	81.3	61.7	71.7	70.8	+ 0.9	86.7	54.1	3rd, 9th
Prot Retief	J Werner	77.6	60.1	68.8	67.1	+ 1.7	86.0	54.2	3rd
Zaarust	H Dietrich	80.6	63.9	72.0	72.9	- 0.9	88.0	58.9	34th
<i>Swaziland—</i>									
Mbatane	Swaziland Police	78.2	59.9	69.0	66.8	+ 2.2	86.0	56.0	3rd, 9th, 12th, 20th & 22nd
<i>Orange Free State—</i>									
Bloemfontein	E Arndt	79.5	60.5	70.0	71.2	- 1.2	87.5	54.0	12th
Harrismith	J B Pattersen	79.7	55.4	67.6	64.6	+ 0.0	80.0	48.0	3rd
Ladybrand	Geo Stokes	78.5	57.3	67.9	68.0	- 0.1	86.0	54.0	1st
Lundley	J Collister-Oates	80.7	59.0	69.8	68.4	+ 1.4	86.0	52.2	3rd
<i>Natal—</i>									
Durban (Point)	A J. O. Andreason	81.1	70.3	75.6	76.6	- 1.0	84.5	67.5	20th & 24th
Dundee	West Thorold	80.2	59.9	70.0	69.9	+ 0.1	88.0	54.0	3rd & 8th
Martinsburg (Mental Hospital)	The Staff	79.0	63.5	71.7	73.4	- 1.7	91.2	59.0	3rd
Piabisa	The Gaoler	82.1	66.1	74.2	73.4	+ 0.8	93.0	58.0	2nd
<i>Cape—</i>									
Alwat North	A Alcock	78.6	58.1	68.4	66.2	+ 0.8	80.0	51.0	14th
Bedford	J C Hall	77.0	67.7	69.4	70.7	- 1.3	95.0	47.5	24th
Carrivon	A P Malherbe	82.1	69.7	70.9	69.4	+ 1.5	92.0	52.0	11th
Cape Town (Royal Observatory)	The Staff	80.6	61.4	71.0	69.7	+ 1.3	93.5	55.0	22nd
Claarwilliam	W J Downes	91.9	60.9	77.9	75.8	+ 2.1	106.0	70.0	11th
East London	M G Grogan	76.2	64.1	70.3	69.5	+ 0.8	84.0	59.0	29th
Graaf-Reinet	S E D. Treadwell	82.9	62.9	72.9	74.0	- 1.1	97.3	56.0	24th
Groot Drakenstein	Laugel Baker	87.7	61.9	74.8	72.6	+ 2.2	98.3	52.0	17th & 24th
Kobstad	H D Coyte	75.7	57.5	66.6	66.4	+ 0.2	86.0	53.0	12th
Kimberley	J A Fogarty	82.7	63.7	73.2	75.2	- 2.0	95.0	58.0	12th
Melking (Oxvent)	The Mother Superior	82.0	62.8	72.3	72.0	+ 0.6	87.4	57.0	24th
Mossel Bay	The Lightkeeper	75.8	65.8	70.8	69.6	+ 1.2	82.0	58.0	11th
Murraysburg	A Cameron	81.3	58.7	70.0	69.3	+ 0.7	95.0	50.0	12th
Oukou	J Burrows	86.1	60.6	73.4	72.7	+ 1.2	97.4	52.4	23rd
Port Elizabeth	J E Allen	76.9	65.2	71.0	69.8	+ 1.2	86.0	57.0	24th
Port St. Johns	B D Jorlian	79.1	68.0	73.8	72.4	+ 1.4	86.0	63.0	11th
Queenstown	H Holley	78.6	58.9	68.8	69.0	- 1.2	82.0	50.0	12th & 13th
Wynberg (Convent)	The Mother Superior	80.0	61.0	70.5	68.8	+ 1.7	90.5	54.2	34th
<i>Basutoland</i>									
Leribe	J. Hodgson	76.7	58.5	67.6	67.0	+ 0.6	82.0	55.0	12th & 17th

RAINFALL, FEBRUARY, 1920.

PLAZA.	OBSERVER.	Month.	Normal.	Difference from Normal.	From 1st Jan. 1920.	Normal.	Difference from Normal.	From 1st July 1919.	Normal.	Difference from Normal.	
		Inches.									Inches.
<i>Traansvaal--</i>											
Barberton.....	W. Grubb.....	2.50	4.69	- 2.19	8.19	13.81	- 5.62	23.63	26.61	- 2.98	
Belfast.....	The Forester.....	1.70	8.80	- 3.01	6.98	10.21	- 3.23	26.49	26.06	+ 1.43	
Bethal.....	H. Joubert.....	1.09	4.46	- 3.37	5.33	10.01	- 4.68	14.47	25.53	- 11.06	
Claremont.....	S. A. Police.....	3.10	2.09	+ 1.10	8.43	5.99	- 2.48	19.89	13.11	+ 6.78	
Ernieb.....	Mrs. Nicols m.....	3.51	8.89	- 0.38	12.87	9.45	- 3.42	27.23	25.18	+ 2.05	
Hedderberg.....	W. A. ter Horst.....	1.27	5.06	- 3.78	5.50	9.78	- 4.25	15.63	22.69	- 7.06	
Johannesburg (Observatory).....	The Staff.....	1.67	4.19	- 2.52	6.81	16.99	- 2.82	16.99	21.32	- 4.33	
Komatipoort.....	B. J. Fothergill.....	7.82	5.11	+ 2.68	13.34	10.11	+ 6.20	28.05	19.42	+ 6.63	
Middelburg.....	Dr. H. A. Spencer.....	3.94	4.33	- 0.39	8.93	9.61	- 0.71	20.67	23.26	- 2.62	
Nydelburg.....	G. Bakker.....	4.19	4.25	- 0.06	8.90	9.21	- 0.22	19.37	19.23	+ 0.14	
Petersburg.....	W. Franklynne.....	3.11	4.03	- 0.89	7.12	8.19	- 1.06	14.96	18.01	- 3.05	
Pieter's Rest.....	P. A. Stron.....	—	7.78	—	—	16.34	—	—	30.39	—	
Pitsofatsron.....	J. R. Stennaby.....	7.98	3.83	+ 4.15	12.10	7.90	- 4.26	17.00	18.00	- 0.61	
Prebvia (Meteorological Office).....	The Staff.....	3.22	5.01	- 1.79	9.41	11.34	- 1.93	19.41	23.96	- 4.55	
Roosburg.....	N. H. Munro.....	4.53	3.38	+ 1.15	8.02	0.85	- 1.83	15.59	19.80	- 4.21	
Rustenburg.....	S. A. Police.....	2.67	4.31	- 1.64	6.41	9.76	- 3.32	15.31	20.71	- 5.40	
Wakkerstrom.....	H. Bennett.....	6.77	4.73	+ 2.04	14.53	10.73	+ 3.80	25.99	25.75	+ 0.21	
Zeerust.....	H. Dietrich.....	2.97	4.36	- 1.39	7.00	9.19	- 1.20	16.46	18.27	- 1.81	
<i>Swaziland--</i>											
Mbabane.....	Swaziland Police.....	7.43	7.83	- 0.40	22.25	17.83	+ 4.42	39.81	39.25	+ 0.56	
<i>Orange Free State--</i>											
Bloemfontein.....	E. Arndt.....	3.20	3.30	+ 4.90	10.37	5.78	+ 4.59	14.41	13.41	+ 1.00	
Hartswatla.....	J. B. Paterson.....	2.43	4.09	- 1.66	10.56	8.91	- 1.65	20.00	22.04	- 2.04	
Kroonstad.....	S. K. Northfield.....	5.85	2.80	+ 3.05	10.27	6.70	+ 3.57	16.18	18.07	- 1.89	
Ladybrand.....	G. Stokes.....	5.37	4.00	+ 1.37	11.98	8.61	+ 3.37	19.39	20.59	- 1.20	
Lindley.....	J. Collister-Oates.....	5.46	3.59	+ 1.87	9.46	7.70	+ 1.76	15.34	13.13	- 2.21	
<i>Natal--</i>											
Dundee.....	W. Thorold.....	3.97	4.70	- 0.73	13.58	10.80	+ 2.69	23.47	24.21	- 0.74	
Durban (Point).....	Capt. D. Black.....	11.07	4.91	+ 6.16	20.58	9.02	+ 11.56	34.08	23.49	+ 3.59	
Habasa.....	The Gaoler.....	—	5.12	—	—	12.58	—	—	33.42	—	
Howick.....	The Gaoler.....	11.74	3.05	+ 6.69	23.87	10.16	+ 13.71	33.03	24.47	+ 8.56	
Ladysmith.....	D. A. R. Leathern.....	3.06	4.68	- 1.62	9.82	9.35	+ 0.47	18.42	20.59	- 2.17	
Pietermaritzburg (Mental Hosp.).....	The Staff.....	11.60	5.06	+ 6.54	25.43	10.27	+ 15.16	36.33	23.41	+ 10.92	
Wythe'd.....	The Gaoler.....	5.44	4.36	+ 1.16	12.69	12.39	+ 0.30	19.73	29.38	- 9.65	
Wenen.....	The Gaoler.....	5.13	3.84	+ 1.19	15.67	9.18	+ 9.49	26.87	20.76	+ 6.11	

RAINFALL, FEBRUARY, 1920 (continued).

PLACE.	OBSERVERS.	Month. Feb., 1920.	Normal. Inches.	Difference from Normal. Inches.	From 1st Jan., 1920. Inches.	Normal. Inches.	Difference from Normal. Inches.	From 1st July, 1919. Inches.	Normal. Inches.	Difference from Normal. Inches.
Cape...										
Alfred North.....	A. Alcock.....	6-41	3-43	+ 2-98	9-85	6-42	+ 3-23	18-76	14-44	- 0-68
Beaufort West.....	A. Landsloun.....	0-68	1-26	- 0-98	1-54	2-40	- 0-66	3-35	5-93	- 2-68
Bedford.....	T. C. Hall.....	10-63	3-63	+ 7-00	12-63	6-95	+ 5-68	18-01	19-10	- 1-18
Bristown.....	F. Myburg.....	6-03	1-80	+ 4-13	9-87	2-98	+ 6-89	12-60	9-32	+ 3-28
Calvinia.....	J. Smith.....	1-15	0-43	+ 0-72	—	0-57	—	—	—	—
Cape town (Royal Observatory).....	The Staff.....	0-29	0-59	- 0-50	0-58	1-27	- 0-69	11-29	14-16	- 2-67
Carnarvon.....	A. P. Malherbe.....	2-02	1-21	+ 0-81	3-15	2-59	+ 0-86	—	—	—
East London (Filter Beds).....	W. J. Downes.....	0-26	0-29	- 0-09	0-20	0-48	- 0-28	—	—	—
Fraserburg.....	A. Downie.....	4-60	3-40	+ 1-20	6-58	6-52	+ 2-06	17-52	22-55	- 5-03
Garies.....	G. Opperman.....	0-30	0-80	- 0-50	3-51	3-45	+ 1-88	3-45	4-52	- 1-07
Graaf-Reinet.....	N. Edwards.....	6-16	0-13	+ 0-17	9-32	9-24	+ 0-08	9-59	2-88	+ 0-27
Groot-Drakenstein.....	S. Treadwell.....	0-08	1-74	- 1-66	7-54	3-16	+ 4-38	9-16	9-01	+ 0-15
Griquatown.....	L. Baker.....	5-98	0-64	+ 0-56	0-14	1-79	- 1-65	17-09	21-60	- 4-61
Hanover.....	G. Jordan.....	5-24	2-28	+ 3-70	8-19	4-10	+ 4-09	—	—	—
Hopetown.....	A. T. Cull.....	5-89	2-05	+ 3-18	—	3-73	+ 6-06	11-60	7-89	+ 3-71
Kenhardt.....	P. J. Booysens.....	4-09	1-81	+ 4-18	9-82	3-76	+ 6-06	—	—	—
Kimberley.....	A. Bowker.....	7-15	1-16	+ 2-93	4-15	1-74	+ 2-41	—	—	—
Kaysna.....	J. A. Fogarty.....	1-86	2-66	- 4-49	9-11	5-06	+ 4-02	—	—	—
Koosiad.....	C. Willing.....	4-65	2-21	+ 0-25	2-17	4-17	- 2-00	—	—	—
Kuruman.....	H. D. Coyte.....	10-50	4-19	+ 0-66	12-84	6-40	+ 4-14	21-81	20-46	+ 1-35
Matieling (Convant).....	W. van Rensburg.....	3-24	3-55	- 0-31	7-65	7-53	+ 0-12	—	—	—
Mossel Bay (Cape St. Blaize).....	Mother Superior.....	0-93	1-59	- 0-63	0-96	2-66	- 1-69	—	—	—
Murraysburg.....	W. H. Huxton.....	3-68	1-59	+ 2-09	4-94	2-77	+ 2-17	6-51	6-47	+ 0-04
Ookiep.....	A. Cameron.....	0-12	0-86	- 0-23	0-13	0-57	+ 0-44	2-32	3-91	- 1-59
Phallopown.....	J. Burrows.....	9-31	2-17	+ 7-14	13-60	3-04	+ 9-75	—	—	—
Port Elizabeth.....	J. Venier.....	0-33	0-51	- 0-18	0-33	1-05	+ 0-72	—	—	—
Port Nolloth.....	J. E. Allen.....	2-70	1-20	+ 1-50	3-29	2-32	+ 0-97	10-31	14-09	- 4-38
Port St. John.....	H. Denton.....	7-36	0-74	+ 1-62	—	1-10	+ 12-84	—	—	—
Priska.....	J. Fourie.....	6-26	1-50	+ 4-76	7-88	2-81	+ 3-05	—	—	—
Queenstown.....	H. Holley.....	2-69	3-72	- 3-09	9-97	7-05	+ 2-92	13-49	15-06	- 2-17
Steynerville.....	F. Wenener.....	1-10	1-25	- 0-44	3-22	2-13	+ 1-07	3-87	6-49	- 1-62
Swellendam.....	S. Ludwick.....	2-66	0-65	+ 1-42	1-15	1-16	- 0-01	3-81	4-92	- 1-11
Umtata.....	M. Stevens.....	4-59	2-79	- 0-13	2-74	5-26	- 2-42	13-27	21-58	- 8-31
Uniondale.....	A. Dixon.....	1-01	3-65	- 1-04	0-51	7-13	+ 2-68	6-02	8-35	- 2-33
Uppington.....	B. Smith.....	1-98	1-05	+ 0-93	0-94	1-74	- 0-24	—	—	—
Victoria West.....	W. Taylor.....	4-59	2-78	+ 2-78	2-15	1-91	+ 0-24	—	—	—
Vryburg.....	G. du Toit.....	6-36	3-68	+ 2-68	12-83	2-78	+ 4-28	15-85	13-84	+ 2-01
Worcester.....	C. Butler.....	5-69	0-37	+ 4-72	5-69	0-64	+ 4-45	9-75	7-47	+ 2-34
Wynberg (Convant).....	P. Barry.....	0-06	0-54	- 0-48	0-10	2-05	- 1-95	22-05	28-41	- 6-36
Barstownd— Laribe.....	F. Hodgson.....	4-85	5-05	- 0-20	10-31	11-46	- 1-25	30-70	25-42	+ 4-66



February, 1920, Prevailing Winds and Mean Pressure at 8.80 a.m. The dotted lines indicate the normal distribution for February.

WEATHER CHARACTERISTICS FOR THE MONTH OF APRIL.

Along the western and southern coasts, and in the south-west of the Cape Province, the rains are now increasing, but over other portions of the Union the decreasing precipitation indicates the advent of autumn and the approach of the dry season. The heaviest rainfall should occur over the Cape Peninsula, where the normal for a month is about 3.0 inches, then in order come Natal, the south coast, the south-east of the Cape and Basutoland with 2.5 inches; Kaffraria, the Cape south-western and north-eastern districts, and the Orange Free State with 2.0 inches; the Transvaal, the Cape northern borders and the northern Karroo with 1.5 inches, and the southern and central and east-central Karroo and the west coast with 1.0 inch.

The mean daily air temperature is now about 70 degrees on the Transvaal low veld; 68 degrees in Natal; 65 degrees in the Cape south-eastern districts, 64 degrees along the west coast and over the southern Karroo; 63 degrees over the Cape and south-western districts, 62 degrees over the Cape Peninsula; 61 degrees along the south coast and over the Transvaal high veld, 60 degrees in the Orange Free State, 59 degrees in Basutoland and over the Cape north-eastern districts, 58 degrees on the north and 57 degrees on the central Karroo. Light frosts may be expected.

In the Transvaal about 78 per cent., over the Cape northern borders 77 per cent., and over the south-west of the Cape 61 per cent. of the total possible hours of bright sunshine should be enjoyed.

Over the northern border of the Cape Colony north-north-westerly and over the south-east of the Cape north-easterly and south-westerly winds prevail; over the Transvaal there is a decrease in frequency and the force of the winds from south-east round by east to north-north-west, with an increase in frequency of stronger winds from other points of the compass: over the Cape Peninsula southerly winds prevail but with much diminished force.

G. W. COX,
Acting Chief Meteorologist.

THE GOVERNMENT PRINTING AND STATIONERY OFFICE
2030—17/3/20—600



UNION OF SOUTH AFRICA

DEPARTMENT OF IRRIGATION

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

MARCH, 1920.

No. 3.

COOL, cloudy and unsettled weather with alternate spells of steady general rains and patchy local thundershowers over the major portion of the summer rainfall area; a continuance of hot, droughty conditions over the west and south-west; a mean monthly temperature one degree less than usual; a protracted general cold spell towards the end of the month accompanied by some sharp frosts causing damage to crops; hailstorms light except at Richmond (Natal);—such were the leading features of the weather of this transition month of March.

Pressure.—As will be seen from the accompanying map, the mean 30-inch isobar lay well over the land and had in common with those of lower value a trend much more nearly north-east to south-west than usual; cutting the normal isobar of equal value almost at right angles in the west. Pressure was therefore higher over the south and centre, but lower than usual over eastern Rhodesia and the west of the Union. Although the equatorial "low" was in evidence most of the time it never developed any great intensity. On the other hand, areas of high, abnormal pressure moved along the south coast on the 3rd to 4th, 11th to 12th, 16th to 17th, and from the 25th to the end of the month. The last remained over the east for four days; "lows" passed on the 5th, 12th to the 14th, 19th to 21st, and 24th to 25th.

Temperature.—The mean temperature for the month was 1.1 degrees below normal, day temperatures being 1.4 degrees and night temperatures 0.9 degrees on the average lower than usual. Although at individual stations temperature was commonly from two to three degrees below the average, the month was warmer than usual over the west and south-west of the Cape Province, the north, south-centre, and eastern low veld of the Transvaal, as well as in Zululand and Swaziland. There the excess was mostly less than one degree, but rising to 2.4 degrees at Port Nolloth. This excess was mainly due to the days being warmer than usual, a state of affairs which also prevailed at coast stations in the south-east of the Colony. At a few stations, however, in the more easterly parts of the Union, portions of the south-east Cape, and Namaqualand night temperatures were also in excess. Night frosts occurred

over the southern half of the Transvaal and in the Free State during the cold spell at the end of the month causing considerable damage in places to such crops as beans, pumpkins, potatoes and late mealies.

Precipitation.—The most interesting feature in connection with the comparative distribution of rainfall is a broad belt of deficient precipitation extending across the Transvaal from north-east to south-west, with excesses to north-west and south-east. Similar areas of deficient rainfall occur over the south-east between Umtata and Bedford, and extending inland to Aliwal North; in the west-central Karroo, over the winter rainfall area in the west, and over a belt between Kenhardt and Prieska. These various areas form a more or less continuous belt enclosing the excessive rainfall area in the central and eastern sections, and separating these latter from the south coast area, which also enjoyed a surplus rainfall during the month. The deficits were small, mostly between a quarter and three-quarters of an inch, but the excesses were frequently large, from 2 to 4 inches more particularly over Natal and the Orange Free State. The alternation of "highs" and "lows" already noted affected the nature of the precipitation. Thus good general rains occurred over the Transvaal, Orange Free State, and Natal during the first and third weeks, extending during the latter period to the greater part of the Cape Province, but with only a light drizzle over the Cape Peninsula and south-west. Heavy, although at times highly localised, thunder showers occurred during the rest of the month. The most notable fall in 24 hours was that of 7.30 inches measured at Kuruman on the morning of the 3rd; this abnormal amount gave rise to floods causing considerable damage to houses and crops. Rain was reported on 26 days of the month; on 21 days over the Transvaal; 17 over Orange Free State; 18 over Natal; 11 over central Cape; 9 over south Cape; and 6 over south-west Cape.

The cumulative rainfall since the beginning of the year is generally below the normal over the southern half of the Transvaal, in Basutoland, and over the west and south-west of the Cape Province; elsewhere it is considerably in excess. The sums of precipitation since the 1st of July, 1919, at individual stations indicate a similar belt of deficient rainfall over the southern Transvaal, also along the west and south coasts to the neighbourhood of Port St. John's; inland it extends to Bedford and Basutoland in the east, to Steytlerville in the south, and Sutherland in the west. Detached areas in the north of Natal, the Free State and Gordonia are similarly affected.

A severe hailstorm occurred at Richmond (Natal) on the 15th, but such storms elsewhere were of comparatively slight intensity.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS). MARCH, 1920.

PLACE.	OBSERVER.	Month—Mar., 1920.		Normal Monthly Temperature.	Difference from Normal.	Extremes.		Date.
		Mean Max.	Mean Min.			Highest.	Lowest.	
		° F.				° F.		
<i>Trompsburg</i> Beitfort.....	The Forester.....	70.8	46.5	59.8	1.2	80.0	22.0	27th.
Porterburg.....	W. Grubb.....	80.7	61.5	70.9	+	88.5	50.0	28th.
Wolmarshburg (Observatory).....	The Stag.....	73.0	59.0	62.3	+	83.5	41.3	27th.
Wolmarshburg (Strathmore).....	Chas. Scott.....	78.8	52.5	69.5	3.9	87.0	39.0	27th.
Komatiport.....	H. J. Evans.....	88.2	65.9	77.0	-	100th & 11th.	54.0	28th & 29th.
St. Swinnow.....	G. Baker.....	79.0	55.8	68.4	1.0	90.0	39.0	27th.
Paarlansburg.....	P. A. Struon.....	74.6	51.4	64.5	0.8	84.0	41.0	28th.
Petersburg.....	W. Frankovic.....	78.2	56.9	67.0	+	86.0	45.0	29th.
Potgietersburg (Exp. Farm).....	The Manager.....	81.8	58.8	66.8	-	90.7	36.2	27th.
Pretoria (Meteorological Office).....	The Staff.....	77.8	56.8	67.8	0.8	86.1	50.0	29th.
Piet Heiter.....	J. Werner.....	74.0	55.9	65.0	0.0	82.6	43.4	28th.
Zeerust.....	H. Dietrich.....	80.9	55.9	69.8	-	90.3	41.4	27th.
<i>Swaziland</i> Mbatjane.....	Swaziland Police.....	74.3	55.4	64.6	0.2	82.0	42.0	29th.
<i>Orange Free State</i> Beyersfontein.....	E. Appelt.....	71.0	52.5	66.7	3.5	82.8	37.7	27th.
Barmsburg.....	J. B. Patterson.....	68.7	49.8	61.0	-	78.0	33.0	27th.
Ladybrand.....	Geo. Stokes.....	73.5	51.8	63.8	1.2	88.0	37.0	27th.
Lindley.....	J. Collier-Oates.....	73.5	50.7	65.3	2.2	83.0	34.2	27th.
<i>Orange</i> Durban (Point).....	A. J. D. Andriessen.....	70.5	67.2	70.0	-	85.0	51.0	27th.
Umlazi.....	West Thorold.....	76.8	51.8	68.0	2.8	83.0	44.0	29th & 30th.
Umlazi.....	The Gaoler.....	79.7	63.7	70.0	+	86.0	56.0	28th.
Martinsburg (Mental Hospital).....	The Staff.....	76.0	59.4	71.4	-	89.0	42.0	27th.
<i>Cape</i> Alford North.....	A. Alcock.....	75.2	50.3	66.1	-	82.5	35.5	27th.
Beaufort.....	T. C. Hall.....	74.7	55.4	66.8	1.8	90.5	39.0	27th.
Chrysalis.....	A. P. Malherbe.....	79.1	52.4	68.9	3.1	86.0	36.0	26th.
Cape Town (Royal Observatory).....	The Staff.....	79.5	57.4	68.0	+	96.1	49.6	25th.
Clanwilliam.....	W. J. Downes.....	93.2	54.8	73.8	+	108.0	44.0	27th.
East London.....	M. G. Grogan.....	75.0	61.7	68.7	0.1	88.0	49.0	26th.
Graaff-Reinet.....	S. E. D. Treadwell.....	80.9	58.3	69.6	0.2	93.8	41.0	27th.
Kokstad.....	H. D. Coyle.....	73.2	51.4	68.6	-	84.7	35.0	27th.
Kimberley.....	J. A. Fogarty.....	79.7	57.0	72.0	-	90.0	41.0	27th.
Mafeking (Convent).....	The Mother Superior.....	81.4	55.1	70.9	-	88.3	37.0	27th.
Mossel Bay (Cape St. Blaize).....	W. H. Laxton.....	74.5	61.8	68.2	0.4	80.0	50.0	26th.
<i>Orange</i> O'okiep.....	J. Burrows.....	85.1	59.6	70.0	+	94.5	43.0	26th.
Port Elizabeth.....	The Lightkeeper.....	76.7	60.9	69.0	-	80.0	46.0	26th.
Port St. Johns.....	B. D. Jordan.....	77.0	66.0	71.0	-	84.0	58.0	27th.
Queenstown.....	H. Holley.....	75.0	58.2	68.1	-	80.0	38.0	27th.
Wynberg (Convent).....	The Mother Superior.....	78.6	57.1	67.2	+	80.5	49.5	27th.
<i>Basutoland</i> Leribe.....	F. Hodgson.....	72.5	51.0	63.8	-	70.0	36.0	27th.

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RAINFALL, MARCH, 1920.

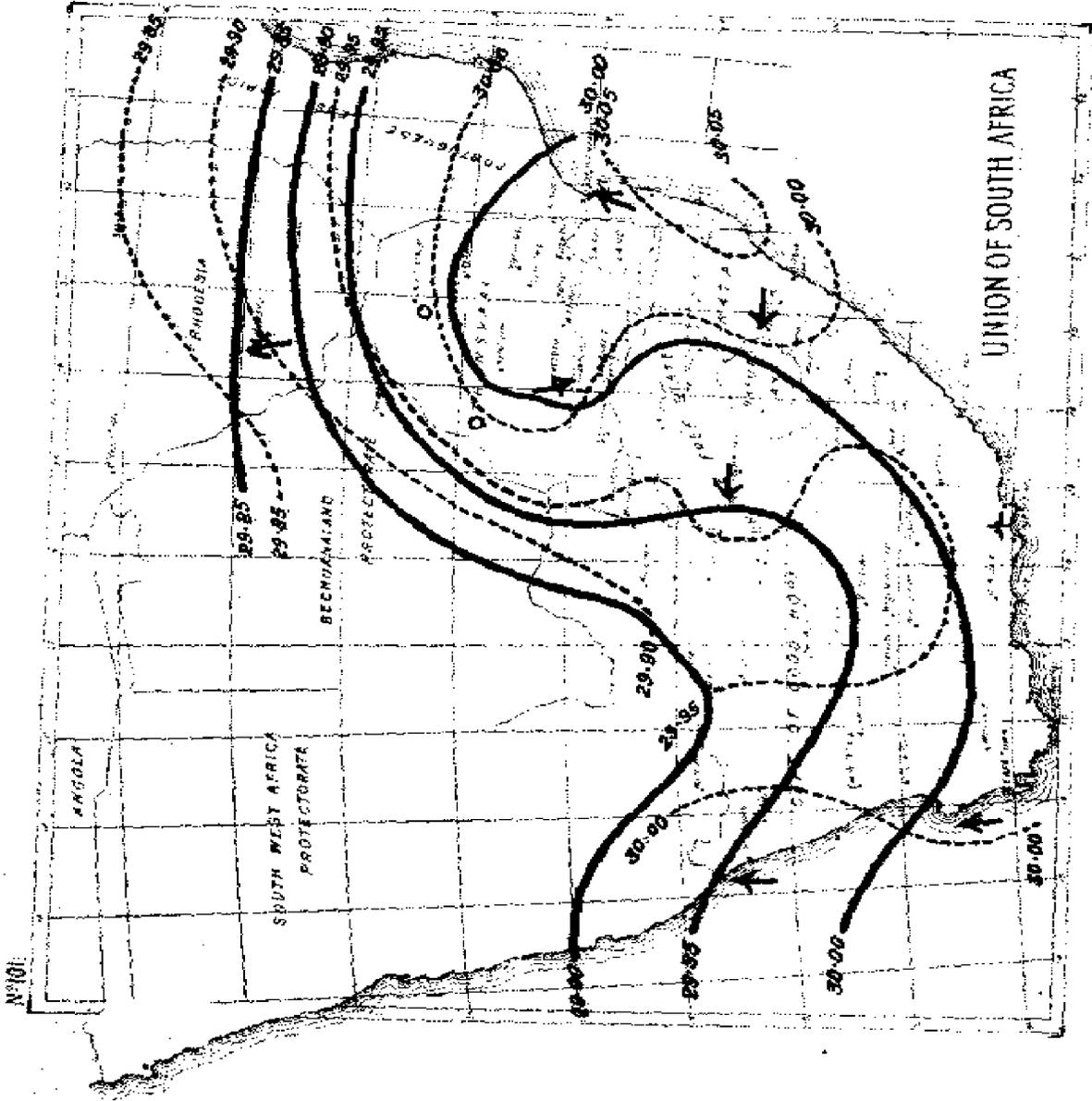
PLACE.	OBSERVER.	Month.		Normal.	Difference from Normal.	From 1st Jan., 1920.		Normal.	Difference from Normal.	From 1st July, 1919.		Normal.	Difference from Normal.
		Inches.	Mar., 1920.			Inches.	Inches.			Inches.	Inches.		
<i>Transvaal—</i>													
Barberton.....	W. Grubb.....	3.80	3.73	3.73	+ 0.07	11.99	17.54	17.54	- 5.55	27.43	30.34	30.34	- 2.91
Belfast.....	The Forester.....	3.42	4.45	4.45	- 1.03	10.80	14.06	14.06	- 3.26	30.41	29.51	29.51	+ 0.90
Bethal.....	H. F. Joubert.....	2.34	2.90	2.90	- 0.56	6.67	12.01	12.01	- 5.34	16.81	28.43	28.43	+ 11.62
Claremont.....	S.A. Police.....	3.25	2.66	2.66	+ 0.59	11.08	8.61	8.61	+ 3.07	23.14	15.77	15.77	+ 7.37
Evansville.....	Mrs. S. M. Nicholson.....	5.35	3.63	3.63	+ 1.72	18.22	13.08	13.08	+ 5.14	32.58	28.81	28.81	+ 3.77
Haerensburg.....	S.A. Police.....	3.03	5.61	5.61	- 2.58	7.76	17.16	17.16	- 9.43	30.83	30.83	30.83	- 7.93
Heidelberg.....	W. A. ter Horst.....	2.26	3.13	3.13	- 0.87	11.21	13.07	13.07	- 1.86	21.98	25.82	25.82	- 3.84
Johannesburg (Observatory).....	The Staff.....	4.40	3.44	3.44	+ 0.96	10.47	11.10	11.10	- 0.63	17.77	19.22	19.22	- 1.45
Klerksdorp (Strathmore).....	C. Scott.....	1.68	3.05	3.05	- 1.37	20.88	14.22	14.22	+ 6.66	30.59	23.50	23.50	+ 7.09
Komatipoort.....	H. J. Evans.....	4.54	4.08	4.08	+ 0.46	11.59	13.02	13.02	- 1.43	23.33	26.67	26.67	- 3.34
Middelburg.....	Dr. H. A. Spencer.....	2.66	3.38	3.38	- 0.72	13.44	12.23	12.23	+ 1.21	23.92	22.25	22.25	+ 1.67
Nyaboom.....	G. Bakker.....	4.45	3.02	3.02	+ 1.43	12.92	10.67	10.67	+ 2.25	30.75	30.19	30.19	+ 0.56
Pietersburg.....	W. Franklynne.....	5.79	2.18	2.18	+ 3.61	24.06	22.68	22.68	+ 1.38	34.09	30.03	30.03	+ 4.06
Pilgrims Rest.....	J. A. Sturton.....	4.49	6.21	6.21	- 1.75	14.19	10.11	10.11	+ 3.78	20.92	21.11	21.11	- 1.09
Polokwane.....	J. R. Skinning.....	2.80	3.51	3.51	- 0.73	12.31	14.97	14.97	- 2.66	22.31	27.59	27.59	- 5.28
Pretoria (Meteorological Office).....	The Staff.....	3.71	3.63	3.63	+ 0.10	11.73	12.39	12.39	- 0.66	19.30	22.34	22.34	- 3.04
Rooiberg.....	N. H. Munni.....	2.78	2.34	2.34	+ 0.44	9.22	13.39	13.39	- 4.17	18.09	34.84	34.84	- 6.75
Rustenburg.....	S.A. Police.....	6.09	3.63	3.63	+ 2.46	20.62	14.37	14.37	+ 6.25	32.08	29.42	29.42	+ 2.66
Walkerstrom.....	H. Bennett.....	11.38	19.08	19.08	- 7.70	10.25	41.46	41.46	- 31.21	18.72	68.55	68.55	- 49.83
Woodbush.....	The Forester.....	2.26	3.33	3.33	- 1.07	31.18	24.23	24.23	+ 6.95	48.74	45.65	45.65	+ 3.09
Zeerust.....	H. Dietrich.....	6.98	6.40	6.40	+ 0.58	16.36	8.52	8.52	+ 7.84	20.40	18.15	18.15	+ 2.25
<i>Swaziland—</i>													
Mbabane.....	Swaziland Police.....	5.99	3.74	3.74	+ 2.25	16.14	12.17	12.17	+ 3.97	25.58	26.30	26.30	- 0.72
<i>Orange Free State—</i>													
Bloemfontein.....	E. Arndt.....	6.31	2.05	2.05	+ 4.26	17.45	11.67	11.67	+ 5.78	24.80	23.85	23.85	+ 0.95
Harrismith.....	J. B. Patterson.....	5.47	3.06	3.06	+ 2.41	13.61	10.66	10.66	+ 2.95	19.49	21.14	21.14	- 1.65
Kromstad.....	S. R. Northfield.....	4.15	2.90	2.90	+ 1.25	23.95	14.58	14.58	+ 9.37	33.14	27.90	27.90	+ 5.24
Ladybrand.....	J. Collister-Ortes.....	9.67	3.60	3.60	+ 6.07	26.51	14.87	14.87	+ 11.64	40.01	34.84	34.84	+ 5.17
Lindley.....	W. Thorrold.....	5.93	6.85	6.85	- 0.92	27.87	16.91	16.91	+ 10.96	39.65	37.75	37.75	+ 1.90
<i>Natal—</i>													
Dundee.....	A. J. O. Andriessen.....	9.34	4.33	4.33	+ 5.01	31.95	14.35	14.35	+ 17.60	41.11	28.60	28.60	+ 12.51
Durban (Point).....	The Gaoler.....	8.07	4.19	4.19	+ 3.88	15.09	13.45	13.45	+ 1.64	23.69	24.69	24.69	- 1.00
Hlabisa.....	D. A. R. Leuthern.....	5.27	4.10	4.10	+ 1.17	32.36	15.08	15.08	+ 17.28	43.25	30.22	30.22	+ 13.03
Howick.....	The Staff.....	6.63	4.81	4.81	+ 1.82	18.39	16.06	16.06	+ 2.33	25.93	33.07	33.07	- 7.14
Ladysmith.....	The Gaoler.....	6.20	2.80	2.80	+ 3.40	25.12	12.04	12.04	+ 13.08	33.32	23.62	23.62	+ 9.70
Maritzburg (Mental Hospital).....	The Gaoler.....	0.45	2.80	2.80	- 2.35								
Vryheid.....	The Gaoler.....												
Weston.....	The Gaoler.....												

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RAINFALL, MARCH, 1920 (continued).

PLACE.	OBSERVER.	Month.		Normal.	Difference from Normal.	From 1st Jan., 1920.	Normal.	Difference from Normal.	From 1st July, 1919.	Normal.	Difference from Normal.
		Inches.	Mar., 1920.								
<i>Cape</i>											
Alval North.....	A. Alcock.....	2.65		9.64	+ 2.66	12.30	9.64	+ 2.66	16.41	17.66	- 1.25
Bedford.....	T. C. Hall.....	3.33		10.79	+ 5.17	15.96	10.79	+ 5.17	21.44	23.03	- 1.59
Britstown.....	The Gaoler.....	2.71		5.03	+ 7.55	12.58	5.03	+ 7.55	16.31	11.37	+ 3.94
Calvinia.....	The Gaoler.....	0.16		1.23	+ 0.62	1.85	1.23	+ 0.62	4.93	4.68	+ 0.25
Capetown (Royal Observatory).....	The Staff.....	0.16		2.22	- 0.79	0.74	2.22	- 0.79	11.45	15.11	- 3.66
Cararvon.....	A. P. Malherbe.....	1.72		3.81	+ 1.06	4.87	3.81	+ 1.06	7.34	6.06	+ 1.28
Clanwilliam.....	W. J. Downes.....	0.00		0.75	- 0.27	0.29	0.75	- 0.27	4.59	5.11	- 0.52
Fraserburg.....	The Gaoler.....	1.04		2.68	+ 0.59	5.16	2.68	+ 0.59	7.09	4.74	+ 2.35
Garies.....	The Gaoler.....	0.04		0.13	- 0.09	0.36	0.13	- 0.09	2.68	2.99	- 0.36
Graaf-Reinet.....	S. Treadwell.....	3.17		1.04	+ 1.04	10.71	1.04	+ 1.04	12.35	11.14	+ 1.19
Hopetown.....	The Gaoler.....	3.86		2.64	+ 1.22	18.68	2.64	+ 1.22	15.46	10.58	+ 4.88
Kenhardt.....	The Gaoler.....	0.92		1.08	- 0.16	5.07	2.82	+ 2.25	5.62	4.83	+ 1.29
Kimberley.....	J. A. Fogarty.....	4.86		2.83	+ 2.47	14.41	7.92	+ 6.40			
Krystna.....	The Gaoler.....	4.65		2.49	+ 2.16	6.82	6.66	+ 0.16	17.71	22.15	- 4.44
Kokstad.....	H. D. Coyte.....	5.15		3.45	+ 1.70	17.99	12.15	+ 5.84	26.96	23.91	+ 3.05
Marling (Convent).....	The Mother Superior.....	3.98		3.23	+ 0.75	11.68	10.76	+ 0.87	19.15	19.08	+ 0.07
Mossel Bay (Cape St. Blaize).....	W. H. Lutton.....	1.86		1.43	+ 0.43	2.82	1.00	+ 1.24			
O'okiep.....	J. Burrows.....	0.02		0.43	- 0.41	0.15	1.00	- 0.85	2.34	4.34	- 2.00
Phillipstown.....	The Gaoler.....	5.93		2.47	+ 3.16	19.82	6.41	+ 12.91	20.66	11.11	+ 9.55
Piquetberg.....	The Gaoler.....	0.54		0.55	- 0.01	0.87	1.60	- 0.73	12.10	13.00	- 0.90
Port Elizabeth.....	The Lightkeeper.....	1.72		1.67	+ 0.05	5.01	3.99	+ 1.02	12.03	16.36	- 4.33
Port St. Johns.....	B. D. Jordan.....	10.42		5.16	+ 5.26	33.85	15.75	+ 18.10			
Priska.....	The Gaoler.....	1.85		2.06	- 0.21	4.84	4.87	+ 4.84	10.86	7.36	+ 3.50
Queenstown.....	H. Hooley.....	2.69		2.78	- 0.09	12.68	9.83	+ 2.83	16.18	18.44	- 2.26
Steytierville.....	The Gaoler.....	1.85		1.56	+ 0.21	4.57	3.71	+ 0.86	6.22	7.05	- 1.83
Sutherland.....	The Gaoler.....	0.00		0.91	- 0.91	1.16	2.07	- 0.92	3.81	5.83	- 2.02
Swellendam.....	The Gaoler.....	2.18		2.93	- 0.75	4.92	8.29	- 3.37	15.45	24.50	- 9.05
Umtata.....	A. Birspeck.....	3.13		3.25	- 0.12	12.94	10.38	+ 2.56	17.38	21.46	- 4.08
Umtatdale.....	The Gaoler.....	2.90		1.39	+ 1.51	3.88	3.13	+ 0.75	8.22	9.74	- 0.82
Uppington.....	The Gaoler.....	2.44		1.68	+ 0.81	4.59	3.54	+ 1.05	5.22	5.54	- 0.32
Worcester.....	The Gaoler.....	0.13		0.51	- 0.38	5.22	1.10	+ 4.07	9.88	7.92	+ 1.96
Wynberg (Convent).....	The Mother Superior.....	0.18		1.50	- 1.32	0.28	3.55	- 3.27	22.23	29.91	- 7.68
<i>Basutoland—</i>											
Lenbe.....	F. Hodgson.....	5.53		4.75	+ 0.78	15.74	10.21	- 0.47	26.29	30.19	- 3.90





March, 1920. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m. The dotted lines indicate the normal distribution for March.

MAY WEATHER CHARACTERISTICS.

Over the Cape Peninsula precipitation is now increasing rapidly, the average over this area being about 5 inches. Rainfall is now at its maximum : about 1.5 inches along the west coast, whilst along the south coast there is a slight increase over the preceding month.

In all parts of the Union the rainfall seldom exceeds an inch, with the exception of those areas previously mentioned, together with Swaziland and Zululand ; so that, generally speaking, the month of May may be described as sunny and dry.

The mean daily temperatures are still decreasing rapidly, particularly over the Karroo, the Orange Free State and Basutoland. Over the high veld and the Karroo radiation frosts occur, and killing frosts may be expected. The highest mean temperatures now occur over Natal where the average is 61 degrees, the southern coastal districts following with 60 degrees ; the western, south-western and south-eastern districts with 59 degrees ; the south-west of the Cape Province and the southern and east-central Karroo with 58 degrees ; Kaffraria and the Cape northern border with 57 degrees ; the Transvaal with 54 degrees ; the west-central Karroo with 53 degrees ; Basutoland, the northern Karroo, and the north-east of the Cape with 52 degrees ; and the Orange Free State with 51 degrees.

In the south-east of the Cape Province there is a decrease of winds from all directions having an easterly component, and of S. and S.W. winds, but an increase of northerly and all winds having westerly components, particularly of those from N.W., although those from W.S.W. have a slight excess over the other directions. Over the Cape Peninsula north-westerly and southerly are about equally frequent, while over the northern border there is a marked increase of winds from S. and E.N.E., together with a decrease of all winds from N round by W. to W.S.W., as well as of S.E. winds. The winds from S. are slightly in excess of those from E.N.E. ; these constitute the principal directions during the month. On the high veld, on the other hand, the only directions showing an increased frequency are those between N. and W.N.W., and from S., all others showing a diminution in frequency ; N.N.W. is the prevalent direction.

C. STEWART,
Chief Meteorologist

THE GOVERNMENT PRINTING AND STATIONERY OFFICE
2733-154/20-600



UNION OF SOUTH AFRICA

DEPARTMENT OF IRRIGATION

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

APRIL, 1920.

No. 4.

UNDER anti-cyclonic conditions the month has been exceptionally hot and droughty over the Cape Province, and generally fine and bright over the remainder of the Union.

Pressure.—As will be seen from the map, pressure was higher over all parts excepting the west coast; and as the result of this intensification of the anti-cyclone over the land, intrusions of the Equatorial “low” and the impinging of cyclones on the south coast were prevented. At the beginning of the month pressure was fairly uniform and about normal; but on the 10th a “low” appeared in the south-west. From the 11th to 14th, 18th to 21st, 24th to 26th “highs” curved round the coast from the south-west to the east, where they remained and gradually weakened, excepting in the last case, where the intensity increased until the 29th.

Temperatures.—Temperatures were above the normal, excepting in the north and west of the Transvaal and in Natal. In almost all parts of the Cape Province both the days and nights were abnormally warm, especially in the west, where berg winds were experienced. At O’okiep the mean maximum temperature was 6·7 degrees F above the normal, and the mean minimum 7·7 degrees F. above; whilst at Clanwilliam the respective figures were 9·6 degrees F. and 3·3 degrees F. Ground frosts occurred in the Transvaal and Orange Free State during the latter part of the month.

Precipitation.—Excepting within a few detached areas in the Transvaal, precipitation was deficient over the whole Union, and in parts of the winter rainfall area, where this represented a delay in the commencement of the rainy season, the shortage was severely felt. A few showers fell on the west coast on the 10th, and light drizzling rains were experienced over the Peninsula

and the south-west of the Cape on the 10th, 19th, and 30th. On the Karroo and over the northern borders and the north-east of the Cape local showers occurred; but many parts were quite rainless. Light showers fell in the Orange Free State at the beginning, in the Transvaal during the first half and along the south coast of the Cape during the second and third weeks of the month. Over Natal rains, heavy in places, occurred at fairly regular intervals throughout the month. A few hailstorms were reported from the Transvaal and Natal, but no material damage appears to have resulted.

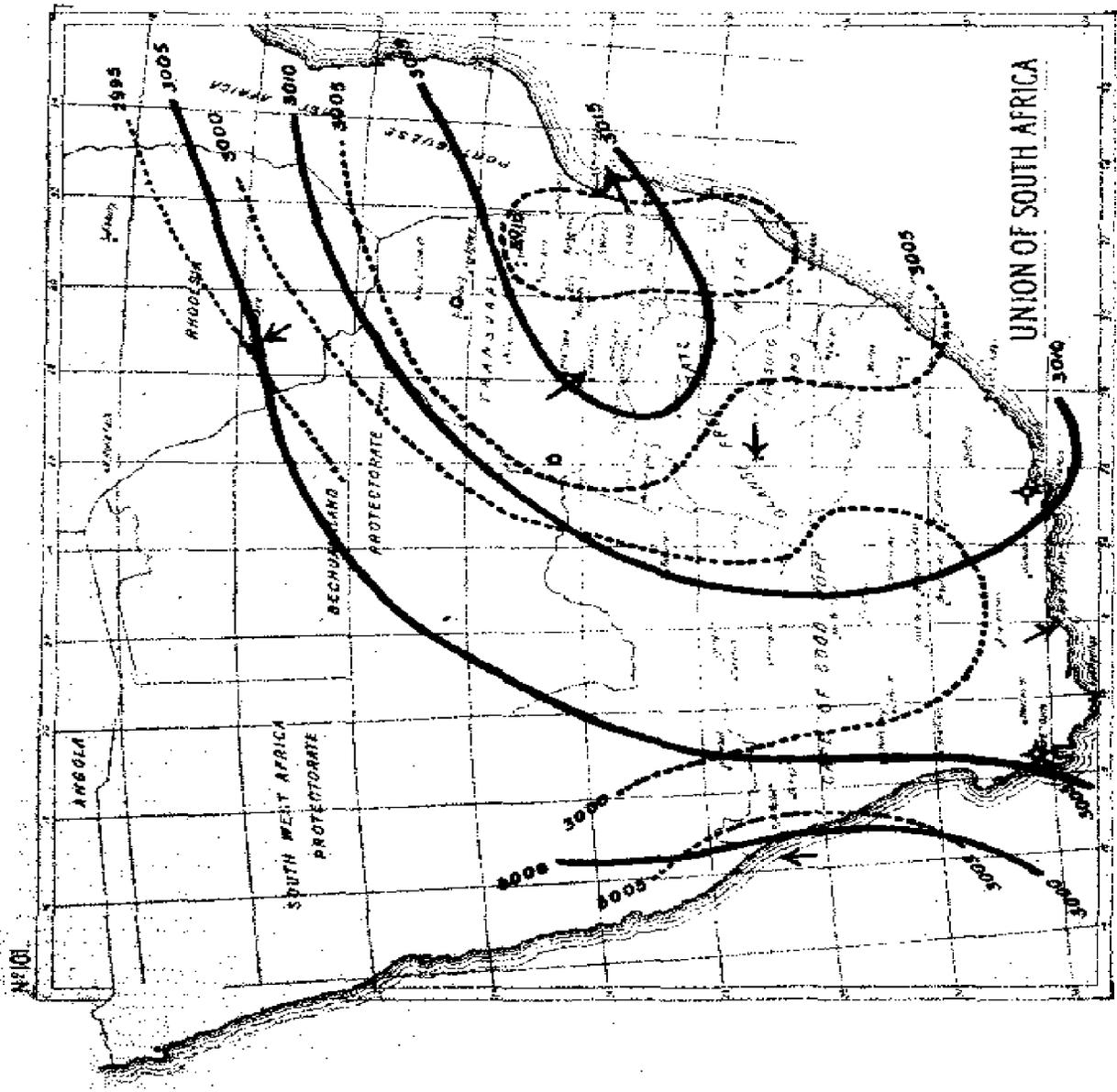
The cumulative rainfall since the beginning of the year still shows a deficit over the southern half of the Transvaal, the west and south-west of the Cape *Province and along the south coast*, and an excess elsewhere. Since the 1st of July, 1919, the quantities recorded show an excess in Natal, over the western half of the Orange Free State, the centre of the Cape and a few small isolated areas; over the remainder of the Union there is a deficiency.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), APRIL, 1920.

PLACE.	OBSERVER	Month—April, 1920.		Normal Monthly Temperature.	Difference from Normal.	Highest	Extremes.		Date
		Mean Max	Mean Min				Lowest	Date.	
		° F.	° F.				° F.	° F.	
<i>Transvaal</i>									
Barton...	W. Grubb.	78.8	50.0	67.4	0.4	90.0	49.0	15th & 16th.	
Johannesburg (Observatory)...	The Staff	72.0	50.3	61.2	2.4	76.5	43.8	29th	
Kleinfontein (Strathmore)...	Chas. Scott	78.8	46.4	62.6	0.5	85.0	38.0	30th.	
Komatipoort...	H. J. Evans	86.0	58.0	72.3	0.7	85.0	48.0	29th.	
Kyburg...	G. Bakker	77.4	47.2	62.3	2.1	80.0	39.5	29th.	
Plumtree...	P. A. Stritton	72.7	40.6	59.6	2.0	81.5	37.5	16th.	
Pretoria...	W. Franklyn	75.7	45.4	61.0	2.9	80.0	40.0	30th.	
Potchefstroom (Exp. Farm)...	The Manager	81.5	47.0	64.2	3.7	86.6	39.0	27th & 28th.	
Pretoria (Meteorological Office)	The Staff	76.8	49.8	63.6	0.7	81.2	42.4	16th.	
Piet Retz...	J. Werner	73.3	49.9	61.6	0.9	83.0	40.3	15th.	
Zeerust...	H. Dietrich	78.1	48.9	63.5	0.2	84.7	41.0	30th	
<i>Swaziland</i>									
Mbabane...	Swaziland Police								
<i>Orange Free State</i>									
Bloemfontein...	E. Arndt	75.3	47.9	61.3	1.4	79.2	40.0	27th.	
Hartswater...	J. B. Patterson	68.9	44.4	56.0	0.6	75.0	38.0	29th	
Ladybrand...	Geo. Stokes	73.8	48.2	60.0	0.8	79.0	41.0	28th	
Lindley...	J. Collister-Oates	75.1	42.8	59.0	0.2	84.0	33.8	27th.	
<i>Natal</i>									
Durban...	Capt D. Black	78.2	63.4	70.8	1.0	84.5	37.0	15th & 16th.	
Dundee...	West Thorrold	75.5	48.2	61.8	2.1	84.0	37.0	15th & 16th.	
Blakba...	The Gentle	79.9	60.3	70.0	0.4	80.0	57.0	14th, 15th, 16th, 21st, 22nd, 23rd, 24th & 25th.	
<i>Maritzburg (Mental Hospital)</i>									
<i>Cape Province</i>									
Alwal North...	The Staff.	76.7	56.3	66.0	1.8	86.0	46.8	15th	
Beaufort...	A. Alcock	76.6	44.6	60.6	1.6	81.5	35.6	27th	
Carnarvon...	T. C. Hall	79.3	53.3	64.9	1.7	86.5	39.0	18th	
Cape Town (Royal Observatory)	A. P. Malherbe	77.3	48.9	64.1	3.9	86.1	48.0	25th	
Cranwilliam...	The Staff.	92.0	56.6	67.0	0.4	101.0	44.0	25th	
East London...	W. J. Downes	76.2	54.4	73.6	1.8	80.0	43.2	13th	
Grav. Reinet...	M. G. Grogan	82.6	59.7	68.0	5.9	90.8	37.0	27th	
Kokstad...	S. E. D. Tresseltwell	72.5	45.4	59.0	4.4	78.4	49.0	29th	
Kimberley...	H. D. Coyle	81.0	54.1	67.6	4.0	86.0	43.0	29th	
Maitland (Convent)	J. A. Fogarty	70.2	49.4	64.3	0.8	86.5	43.0	29th.	
Mosel Bay (Cape St. Blaize)...	The Mother Superior	73.4	61.3	67.4	3.0	84.0	37.0	27th & 28th.	
Murraysburg...	The Lightkeeper	77.6	49.0	63.3	3.1	84.0	35.0	29th	
	A. Cameron								
<i>O'keop.</i>									
Port Elizabeth...	J. Burrows	83.5	62.4	73.0	7.2	89.7	51.4	5th	
Port St. Johns (Cape Harzeel)...	The Lightkeeper	74.4	50.8	67.1	1.6	87.0	48.0	25th.	
Queenstown...	The Lightkeeper	76.6	64.2	71.5	3.1	81.0	38.0	13th	
Wynberg (Convent)...	H. Holley	73.4	47.0	61.8	0.1	80.0	36.0	27th & 29th	
<i>Beaufort West</i>	The Mother Superior	78.4	58.6	67.5	4.7	81.5	52.0	25th & 26th	
Leith...	F. Hodgson	72.1	45.2	58.6	1.9	76.0	40.0	27th.	

RAINFALL, APRIL, 1920.

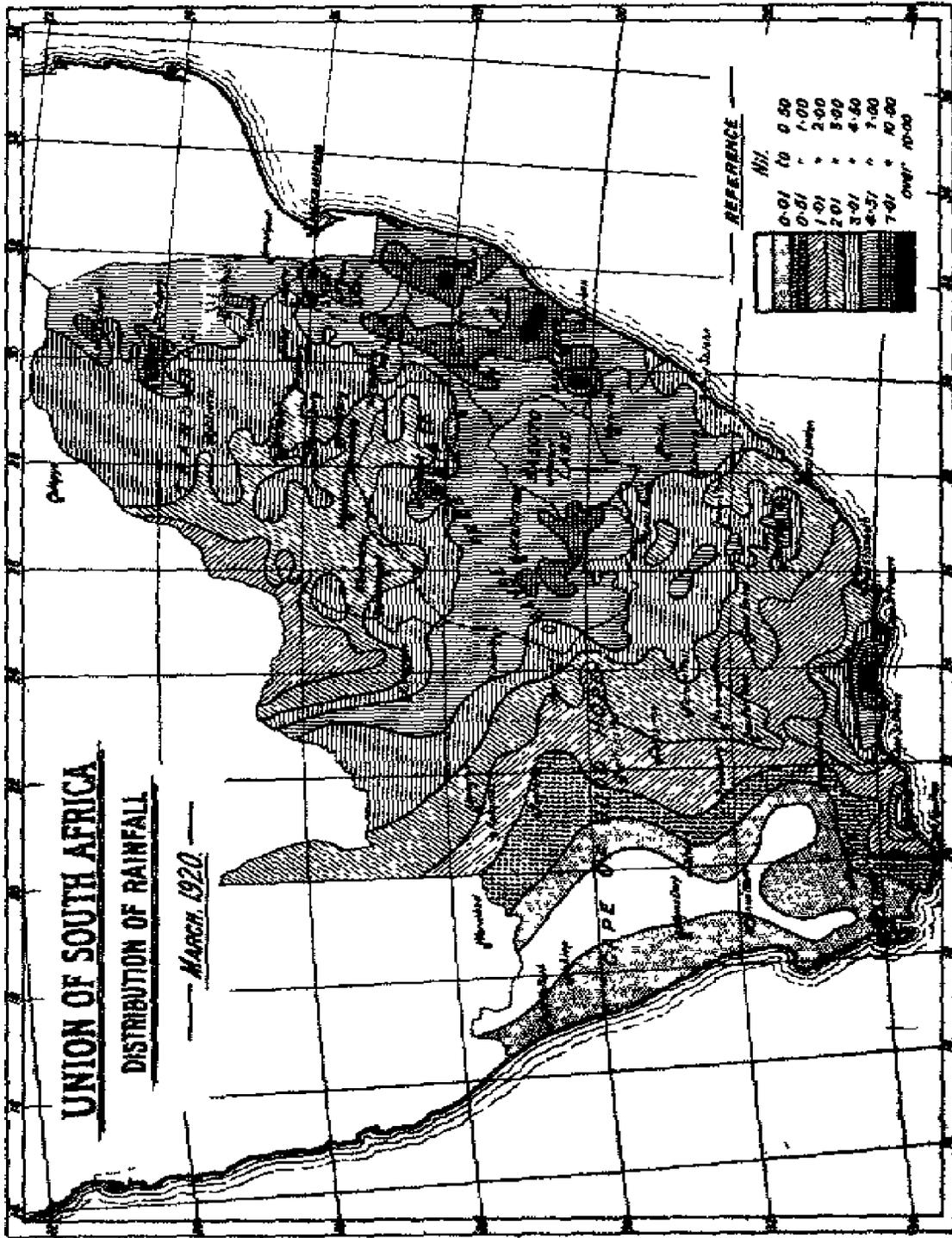
PLACE.	OBSERVER.	Month.	Normal.	Difference	From 1st Jan., 1920.	Normal.	Difference	From 1st July, 1919.	Normal.	Difference
		April, 1920.		Inches.			Inches.			Inches.
Transvaal—										
Barberton.....	W. Grubb.....	0.62	2.24	- 1.62	12.61	19.78	- 7.17	28.05	32.58	- 4.53
Bellville.....	The Forester.....	—	1.84	—	—	16.50	—	—	31.35	—
Bethal.....	H. F. Joubert.....	1.17	1.33	- 0.06	7.84	34.14	- 0.30	17.98	29.60	- 11.08
Claremont.....	S. A. Polles.....	—	1.80	—	—	10.41	—	—	17.57	—
Ernieo.....	Mrs. S. M. Nicolson.....	—	1.38	—	—	14.46	—	—	30.19	—
Heenertsburg.....	S. A. Polles.....	2.08	1.48	+ 0.60	—	24.25	—	—	37.02	—
Johannesburg (Observatory).....	W. A. ter Horst.....	0.11	1.32	- 1.21	7.87	14.23	- 0.30	18.00	27.14	- 9.14
Klerksdorp (Strathmore).....	The Staff.....	0.84	1.23	- 0.39	12.05	12.33	- 0.28	22.23	25.90	- 3.76
Komatiapoort.....	C. Scott.....	1.63	1.87	- 0.24	12.10	12.97	- 0.87	19.40	21.09	- 1.69
Middelburg.....	H. J. Prans.....	0.59	1.73	- 1.14	21.47	15.95	+ 5.52	31.18	25.23	+ 5.95
Nylstroom.....	Dr. H. A. Spencer.....	0.69	1.46	- 0.77	12.28	14.48	- 2.20	21.02	28.13	- 7.11
Pieterburg.....	G. Bakker.....	1.79	1.32	+ 0.47	15.23	19.56	- 4.33	25.61	23.67	+ 2.04
Piet Retief.....	W. Franklynne.....	0.00	1.27	- 1.27	12.92	11.94	+ 0.98	20.75	21.46	- 0.71
Pietermaritzburg.....	J. Werner.....	0.28	2.92	- 2.64	15.98	21.01	- 5.03	26.51	36.65	- 10.11
Pretoria (Meteorological Office).....	J. A. Straton.....	0.10	1.79	- 1.69	25.39	24.65	+ 0.74	35.12	39.00	- 3.88
Rooiberg.....	J. R. Steuning.....	0.60	1.29	- 0.69	14.29	12.20	+ 2.09	20.12	22.90	- 2.78
Rustenburg.....	The Staff.....	0.38	0.85	- 0.47	12.91	16.46	- 3.55	22.91	29.11	- 6.20
Wakkerstroom.....	N. H. Manro.....	0.87	0.85	+ 0.02	12.31	13.24	- 0.93	19.88	23.19	- 3.31
Woodbush No. 1.....	S. A. Polles.....	0.20	0.91	- 0.71	10.09	14.30	- 4.21	18.96	25.25	- 6.29
Zeerust.....	J. Richards.....	1.60	1.76	- 0.16	20.82	16.43	+ 4.39	32.28	31.18	+ 1.10
	The Forester.....	—	3.31	—	—	41.77	—	—	69.86	—
	H. Dietrich.....	—	1.38	—	11.94	13.90	- 0.96	20.41	22.98	- 2.57
Swaziland—										
Mbabane.....	Swaziland Police.....	—	2.84	—	—	27.07	—	—	48.49	—
Orange Free State—										
Bloumfontein.....	E. Arnult.....	0.21	2.00	- 1.85	16.57	19.58	- 3.01	20.61	18.21	+ 2.40
Barrismith.....	F. R. Patterson.....	0.27	1.76	- 1.49	16.41	13.92	+ 2.49	25.85	27.06	- 1.21
Kroonstad.....	S. R. Northfield.....	0.52	1.14	- 0.62	17.10	9.89	+ 7.21	23.01	21.26	+ 1.75
Ladybrand.....	G. Strakes.....	0.43	2.18	- 1.75	17.88	13.85	+ 4.03	25.29	26.83	- 0.54
Lindley.....	J. Oulster Oates.....	0.14	1.91	- 1.77	13.75	12.57	+ 1.18	19.63	23.05	- 3.42
Natal—										
Dundee.....	West, Thorrold.....	0.45	2.33	- 1.85	23.73	16.91	+ 6.82	33.62	30.23	+ 3.39
Durban (Point).....	Capt. D. Black.....	1.29	3.00	- 2.70	27.71	18.77	+ 8.94	41.21	38.24	+ 2.97
Ellabisa.....	The Gaoler.....	2.56	3.00	- 0.43	30.42	20.90	+ 9.52	42.41	40.84	+ 1.57
Howick.....	The Gaoler.....	1.67	2.08	- 0.41	33.62	16.43	+ 17.19	42.79	30.74	+ 12.04
Jadysmith.....	D. A. R. Leathern.....	0.30	1.68	- 1.24	15.48	15.09	+ 0.40	24.08	26.32	- 2.24
Karlsburg (Mental Hospital).....	The Staff.....	1.49	2.07	- 0.58	33.85	17.15	+ 16.70	44.75	32.29	+ 12.46
Vryheid.....	The Gaoler.....	0.55	2.81	- 2.26	19.44	18.89	+ 0.55	26.43	35.88	- 9.45
Worcester.....	The Gaoler.....	—	1.96	—	—	19.80	—	—	25.48	—



April, 1920. Prevailing Winds and Mean Atmospheric Pressure at 6.30 a.m.
 The dotted lines indicate the normal distribution for April.

RAINFALL, APRIL, 1920 (continued).

PLACE.	OBSERVER.	Month.	Normal.	Difference	From 1st Jan., 1920.	Normal.	Difference	From 1st July, 1919.	Normal.	Difference	From Normal.
		Inches.		Inches.			Inches.			Inches.	
Cape Province—											
Alival North.....	A. Alcock.....	0.28	1.77	- 1.49	12.58	11.41	+ 1.17	16.69	19.43	- 2.74	
Bedford.....	T. C. Hall.....	1.05	2.41	- 1.36	17.01	18.20	+ 1.19	22.49	25.44	- 2.95	
Britstown.....	The Gaoler.....	0.19	1.71	- 1.52	12.77	6.74	+ 6.03	15.50	10.11	+ 5.39	
Calvinia.....	The Gaoler.....	0.18	0.98	- 0.80	2.03	2.21	- 0.18	5.11	5.66	- 0.55	
Cape town (Royal Observatory).....	The Staff.....	0.76	1.93	- 1.17	1.50	4.21	- 2.71	18.87	17.10	+ 1.77	
Carnarvon.....	A. P. Malherbe.....	0.05	0.92	- 0.87	4.92	4.73	+ 0.19	6.11	6.98	- 0.87	
Clanwilliam.....	W. J. Downes.....	0.08	0.72	- 0.64	0.28	1.47	- 1.19	5.10	5.83	- 0.73	
East London.....	A. Downes.....	1.19	2.85	- 1.66	12.25	12.88	- 0.63	7.52	5.60	+ 1.92	
Fraserburg.....	The Gaoler.....	0.43	0.36	- 0.43	5.58	3.54	+ 2.04	2.72	3.64	- 0.92	
Garies.....	The Gaoler.....	0.09	0.52	- 0.43	0.45	0.80	- 0.44	13.05	12.25	+ 0.80	
Grassf. Balmat.....	S. E. D. Treadwell.....	0.72	1.68	- 0.96	11.43	6.87	+ 4.56	11.69	11.47	+ 0.22	
Hanover.....	The Gaoler.....	0.40	1.60	- 1.10	7.55	7.55	- 0.00	15.40	11.47	+ 3.93	
Hopetown.....	The Gaoler.....	0.60	1.14	- 0.54	18.68	7.54	+ 11.14	15.40	11.47	+ 3.93	
Kimberley.....	J. A. Fogarty.....	0.22	1.66	- 1.44	14.63	9.48	+ 5.15	15.21	15.21	- 0.00	
Knyena.....	The Gaoler.....	0.60	2.19	- 1.59	7.42	8.85	- 1.43	18.31	24.34	- 6.03	
Kolstad.....	H. D. Coyte.....	2.83	1.58	+ 1.25	20.82	18.73	+ 2.09	29.79	25.49	+ 4.30	
Matieling (Convent).....	The Mother Superior.....	1.54	1.92	- 0.38	13.17	12.48	+ 0.69	20.69	21.00	- 0.31	
Mossel Bay (Cape St. Blaize).....	W. H. Luxton.....	0.18	1.74	- 1.56	3.00	5.82	- 2.82	14.40	14.40	- 0.00	
Murraysburg.....	A. Cameron.....	0.32	1.06	- 0.74	0.21	5.86	- 5.65	2.40	9.58	- 7.18	
O'okiep.....	J. Burrows.....	0.06	0.67	- 0.61	0.21	1.67	- 1.46	2.40	9.01	- 6.61	
Philippstown.....	The Gaoler.....	0.23	1.30	- 1.07	19.58	7.71	+ 11.87	20.92	12.41	+ 8.51	
Piquetberg.....	The Gaoler.....	0.48	1.72	- 1.24	1.35	3.32	- 1.97	12.53	14.72	- 2.19	
Port Elizabeth.....	The Lightkeeper.....	0.40	1.95	- 1.55	5.61	5.94	- 0.33	12.63	18.31	- 5.68	
Port St. Johns.....	B. D. Jordan.....	2.29	3.86	- 1.57	30.14	19.64	+ 10.50	43.93	43.93	- 0.00	
Queenstown.....	H. Holley.....	1.01	1.60	- 0.59	13.67	11.43	+ 2.24	17.19	30.04	- 12.85	
Seyderville.....	The Gaoler.....	0.65	0.80	- 0.15	6.22	4.51	+ 1.71	5.87	8.37	- 2.50	
Sutherland.....	The Gaoler.....	0.25	1.02	- 0.77	1.40	3.09	- 1.69	4.06	6.95	- 2.89	
Swellendam.....	The Gaoler.....	0.64	2.79	- 2.15	5.58	11.08	- 5.50	16.09	27.29	- 11.20	
Umtata.....	A. Dixpeck.....	0.75	1.93	- 1.18	13.69	12.31	+ 1.38	18.13	23.39	- 5.26	
Umlondale.....	The Gaoler.....	0.35	1.23	- 0.88	4.23	4.36	- 0.13	9.27	11.67	- 2.40	
Uplington.....	The Gaoler.....	0.35	0.84	- 0.49	4.94	4.38	+ 0.56	5.57	6.33	- 0.76	
Yryburg.....	C. Butler.....	0.18	1.51	- 1.33	5.49	12.90	- 7.41	10.15	18.76	- 8.61	
Worcester.....	The Gaoler.....	0.27	1.14	- 0.87	1.34	2.29	- 0.95	23.29	9.06	+ 14.23	
Wynberg (Convent).....	The Mother Superior.....	1.06	3.26	- 2.20	17.26	6.83	+ 10.43	27.81	83.19	- 55.38	
Basutoland—											
Letaba.....	F. Hodgson.....	1.52	2.44	- 0.92	17.26	18.05	- 0.79	27.81	82.63	- 54.82	



JUNE WEATHER CHARACTERISTICS.

June is a dry, sunny month, and over no part of the Union, except the western, southern, and south-eastern coasts, and in the extreme south-west of the Cape Province, does the rainfall exceed 1 inch. On the high veld and Karroo it is not infrequently quite rainless.

The rainfall in the Cape Peninsula is, however, still increasing, approximating 6 inches, whilst over the adjoining south-western districts the monthly maximum of 3.5 inches is reached. Along the west coast there is a slight decrease, but both there and along the south coast the variation from the May rainfall is inconsiderable. Thunderstorms are now at their minimum.

The mean air temperatures continue to decrease rapidly, the days—except on the northern Karroo and in the Transvaal—being the coldest of the year. The Transvaal low veld is now the warmest part of the Union, with a mean temperature of about 59.5 degrees, and Basutoland the coldest with 45.5 degrees. Between these are Natal and the south coast with a normal of 57 degrees, the Cape Peninsula with 56 degrees, the south-eastern districts of the Cape with 55 degrees, the west coast with 54 degrees, Kaffraria with 53 degrees, the north-eastern districts and the east-central Karroo with 53.5 degrees, the southern Karroo with 51.5 degrees, the northern borders with 51 degrees, the west-central Karroo with 50 degrees, the Transvaal high veld with 49.4 degrees, and the Orange Free State, northern Karroo and Cape north-eastern districts with 46 degrees. Sharp night frosts are a characteristic of the high veld during this month, and killing frosts may be experienced.

The prevailing winds over the Cape Peninsula are from N.W. and S., both directions, however, showing a decrease in frequency compared with the preceding month. Over the northern borders of the Cape the prevalent direction has changed to S.S.E. from S. during May, thus causing a considerable increase in the number of S.S.E. winds, and a corresponding diminution in those from S. Over this area, moreover, there is a lower percentage of winds from those points of the compass from W.N.W. round by N. to E.N.E., as well as S. and S.W., but an increased percentage of winds from all other directions. Notwithstanding a considerable diminution in the frequency of north-westerly (W.N.W.—N.N.W.) winds and a slight increase in all other directions (except S.W. and S.S.W.), the prevailing wind over the high veld continues to blow from a north-north-westerly direction. Over the Cape south-eastern districts the prevalent direction is W.N.W., as a consequence of a falling-off in frequency of north-easterly and south-easterly winds, together with an actual increase of those from north-westerly directions.

C. STEWART,
Chief Meteorologist.

THE GOVERNMENT PRINTING AND STATIONERY OFFICE
3507—14/5/20—600



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

MAY, 1920.

No. 5.

A MEAN atmospheric pressure lower than usual over the greater part of the country; a monthly temperature on the whole half a degree above normal, owing mainly to the nights being warmer than the average; some severe frosts, particularly during the last few days of the month, affecting mainly the eastern half of the Union; a rainfall of greater depth than usual over the major portion of the Transvaal, parts of the central Karroo, the south-west (including the Cape Peninsula), with some snow in the east of the Cape Colony towards the end of the month; such were the leading characteristics of the weather of May last.

Pressure.—The most noteworthy feature of pressure distribution over the Union was (see map) the shrinkage of the area enclosed by the 30.15 ins. isobar, resulting in the isobars of 30.10 and 30.05 ins. occupying practically the same positions as the 30.15 and 30.10 ins. isobar on the normal map. Anticyclonic conditions were therefore less intense than usual during the month.

A low pressure area affected the south coast on the 1st and 2nd, extending over the south-east on the 3rd, bringing steady soaking rains to the west, south, and south-east parts of the country, extending inland to the edges of the northern Karroo. An extension southwards of the equatorial tongue of low pressure occurred on the 6th and 7th, and produced some rain over the south and south-east. Scattered showers occurred over the Transvaal, the north of the Orange Free State and Natal during the prevalence of an anticyclone over the north-east, apparently associated with a low pressure area on the west coast, which caused showers on the 15th to 17th, along the south coast and south-east; the rain continued over the south-east on the 18th. On the 19th the "low" caused rain to fall over the south-west, which extended to Namaqualand on the 20th. A secondary depression appeared on the 21st over the south-west, causing rain; while on the 23rd a depression had pushed well on to the land, causing rains on the west and south coastal areas, which were similarly but more widely affected on the 24th. Gradients had increased considerably, particularly over the south-west on the morning of the 25th causing strong northerly to north-westerly winds along the coast. The rear of this

depression brought showers along the south coast and soaking rains over the south-west and west coast areas, extending to northern Karroo and the north-east and south-east of the Colony. Pressure continued to increase on the 27th and 28th, with showers along the south coast, the eastern Transvaal, and Zululand, extending northwards as far as Lourenco Marques. Showers on the 29th and 30th over the Transvaal, the north of the Orange Free State, and over Natal were associated with a surge southward of the equatorial "low," which retreated northward in consequence of the advance of an anticyclone towards the north-east, which covered the whole Union by the 31st.

Temperature. Although the mean temperature was on the whole about half a degree warmer than usual, this was not universally true. Thus, a large area over the east of the Cape extending from Bedford to Maritzburg and thence to Alwal North was colder than the normal mostly by about one degree. Similarly, the northern half and the western portions of the Transvaal had a temperature lower than the average, as also had a wedge-shaped area extending south-eastwards from Nylostroom to Embabane. Over Namaqualand the monthly temperature was lower than usual by about two and a half degrees. Both days and nights were colder than the average over the western Transvaal, the wedge-shaped area and that portion of the eastern Cape, indicated above, as well as Namaqualand. In Natal, the north of the Transvaal, as well as at Alwal North, Bedford and Piet Retief, however, only the day temperatures were sub-normal. The nights were mostly warmer by one to four degrees, the only exceptions being at Lindley in the Orange Free State and East London, where the deficits amount to 2.2 degrees and 0.2 degrees respectively, in addition to those stations in the areas already noted. The mean warmest station was Komati Poort, with a temperature of 69.9 degrees; and the coldest, Leribe in Basutoland, with 50.8 degrees, a difference of 19.1 degrees. The warmest period was most commonly from the 3rd to 9th, and the coldest during the last four days (27th to 31st). The extreme temperature readings were 97 degrees at Komati Poort on the 3rd and 11 degrees at Mafeking on the 28th. Frosts were commonly reported as of considerable intensity during the last week of the month, particularly in the east and north, causing considerable damage to growing crops in Natal and to water pipes at Mafeking.

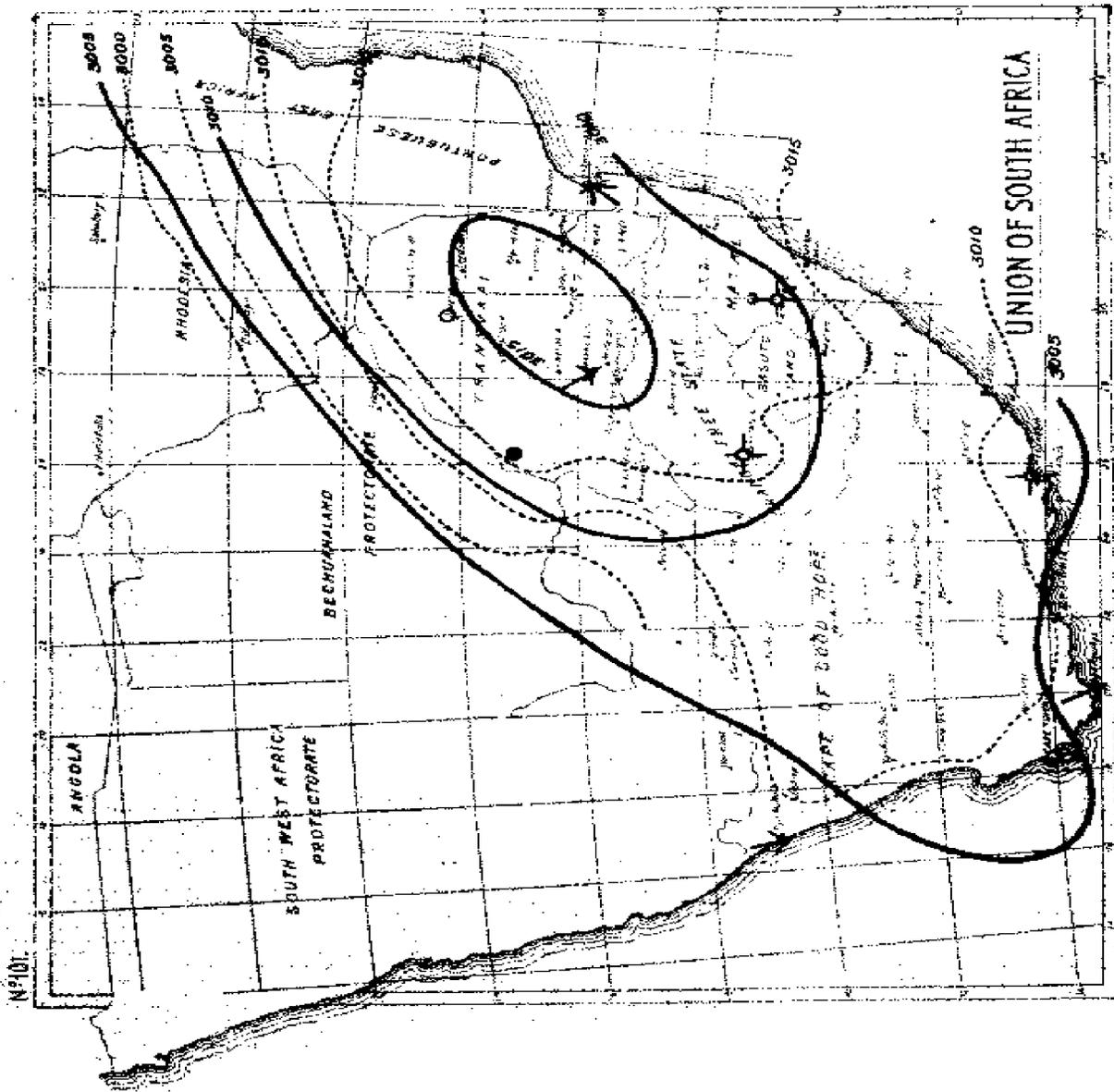
Precipitation. The most satisfactory feature of the precipitation of May was the excess in rainfall over the Cape Peninsula and south-west, breaking the prolonged drought there. A narrow belt of country embracing the central Karroo and the southern edge of the northern Karroo were also favoured by a rainfall slightly greater than usual. A small excess was experienced over a limited area in the neighbourhood of Knysna, at Kenhardt, and over a large roughly triangular area in the Transvaal extending from Piet Retief to Pietersburg, thence to Rustenburg, and back to Piet Retief. With these exceptions, the rainfall was generally deficient in amount. The cumulative rainfall since the 1st of July is mostly below the average except over the central portions of the Karroo and the Orange Free State, and eastward of a line drawn from Kokstad in Kaffraria, to Belfast in the Transvaal, as well as the neighbourhood of Nylostroom and Komati Poort. On the other hand, the cumulative amounts since the beginning of the year are above the average except the western half of the Karroo, the west, south and south-east coasts as far as East London, including the Cape Peninsula. To these are to be added Basutoland, the northern portion of Natal and the southern half of the Transvaal (except in the south-east). Snow was reported as occurring on the mountains and higher ground on the southern Karroo, the north-east of the Cape and Kaffraria, during the last week of the month. Some small hail was also noted during the same period.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS) IN THERMOMETER PLACES DURING 1920.

PLACE.	OBSERVER.	Month—May, 1920.		Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.			Highest.	Date.	Lowest.	Date.
<i>Transvaal—</i>									
Belfast.....	The Forester.....	85.2	33.0	51.3	2.2	72.0	6th & 10th.	25.0	27th & 31st.
Betherton.....	W. Grubb.....	77.0	54.2	63.3	1.4	80.0	3rd & 5th.	45.0	30th.
Johannesburg (Observatory).....	The Staff.....	65.8	46.4	54.5	1.6	77.0	6th.	41.0	27th.
Kieskloof (Stratfordmore).....	Chas. Scott.....	72.1	39.0	50.4	0.8	80.0	7th.	19.0	28th.
Kromdriepoort.....	H. J. Evans.....	84.6	55.2	68.1	1.8	97.0	3rd.	45.0	30th.
Kyburg.....	G. Bakker.....	73.1	41.0	58.6	0.6	81.0	10th & 12th.	32.5	31st.
Pietermaritzburg.....	J. A. Straton.....	72.1	43.0	56.4	1.2	78.5	7th & 28th.	33.5	31st.
Pretoria.....	W. Frankelne.....	72.1	43.6	58.1	0.1	85.0	6th.	36.0	13th.
Potchefstroom (Exp. Farm).....	The Manager.....	75.4	41.6	54.8	4.2	80.8	4th & 6th.	21.0	28th.
Pretoria (Meteorological Office).....	The Staff.....	72.7	43.6	56.7	1.5	80.7	5th.	35.3	31st.
Piet Retief.....	J. Werner.....	69.0	46.2	56.9	1.1	77.6	8th.	32.8	31st.
Roosburg.....	H. Dietrich.....	72.1	38.7	56.5	1.4	80.6	6th.	26.0	28th.
<i>Swaziland—</i>									
Mbabane.....	Swaziland Police.....	60.7	47.2	59.0	1.2	79.0	9th & 20th.	38.0	31st.
<i>Orange Free State—</i>									
Bloemfontein.....	E. Arndt.....	65.8	40.5	53.2	0.2	76.9	6th.	23.0	27th.
Franschooiberg.....	The Forester.....	68.2	39.0	49.1	2.0	72.0	5th.	26.0	29th.
Ladysmith.....	The Forester.....	66.2	37.9	51.0	1.0	76.0	10th.	27.0	27th & 28th.
Lindley.....	J. Collier-Gates.....	68.5	34.5	51.4	0.1	77.8	6th.	15.5	31st.
<i>Natal—</i>									
Durban.....	Capt. D. Haek.....	75.6	60.0	67.8	0.0	84.0	2nd.	51.2	20th.
Dundee.....	West Thorold.....	71.5	48.4	55.9	1.1	80.0	7th & 8th.	29.0	30th.
Hiabisa.....	The Gaoler.....	76.3	58.3	66.4	0.9	84.0	9th.	51.0	27th, 20th, & 30th.
Maribaburg (Mental Hospital).....	The Superintendent.....	72.9	49.2	61.9	0.9	82.6	11th.	35.8	28th.
<i>Cape—</i>									
Alhwal North.....	A. Aleek.....	65.0	37.5	51.8	0.1	77.0	6th.	23.5	25th.
Beaufort.....	T. G. Hall.....	68.0	47.6	58.7	0.9	81.5	19th.	33.0	26th.
Carnarvon.....	A. P. Malherbe.....	—	—	—	—	—	—	—	—
Capetown (Royal Observatory).....	The Staff.....	67.2	32.0	58.9	0.7	82.9	14th.	41.2	25th.
Stamwille.....	W. J. Howes.....	—	—	—	—	—	—	—	—
East London.....	M. G. Grogan.....	72.2	39.8	62.4	0.6	82.0	3rd.	40.0	25th.
Frankfort.....	S. E. D. Treadwell.....	72.4	48.9	58.5	2.1	86.6	17th.	32.6	27th.
Groot Brakenstein.....	Lionel Baker.....	60.4	38.9	58.7	1.4	77.0	8th.	35.2	20th.
Kimberley.....	H. D. Coyle.....	71.5	44.7	56.8	2.3	84.0	6th.	28.6	28th.
Kimberley.....	J. A. Jorgarty.....	74.9	40.7	58.0	1.1	83.2	6th.	11.0	28th.
Maitland.....	The Mother Superior.....	60.0	36.0	61.2	1.3	82.0	21st.	45.0	26th.
Mossel Bay (Cape St. Blaize).....	The Lightkeeper.....	65.5	38.9	50.6	1.6	78.0	7th.	21.0	27th & 29th.
Murraysburg.....	A. Cameron.....	68.5	46.4	61.0	2.0	83.5	17th.	33.2	27th.
O'okop.....	J. Barrows.....	71.0	44.5	63.0	0.8	91.0	21st.	41.0	24th.
Port Elizabeth.....	J. E. Allen.....	75.1	60.0	64.6	3.0	80.0	17th.	30.0	25th.
Port St. Johns (Cape Hermes).....	The Lightkeeper.....	66.7	40.5	55.2	1.0	78.0	17th & 18th.	25.0	28th, 20th & 30th.
Queenstown.....	H. Holley.....	67.6	51.4	59.6	0.1	80.9	14th.	40.0	27th.
Wynberg (Convent).....	The Mother Superior.....	67.6	51.4	59.6	0.1	80.9	14th.	40.0	27th.
<i>Rustenburg—</i>									
Letibe.....	F. Redson.....	64.0	37.6	49.0	1.2	73.0	7th.	23.0	27th & 31st.

RAINFALL, MAY, 1920 (continued).

PLAQUE.	OBSERVER.	Month. May 1920.	Normal. Inches.	Difference from Normal. Inches.	From 1st Jan., 1920. Inches.	Normal. Inches.	Difference from Normal. Inches.	From 1st July, 1919. Inches.	Normal. Inches.	Difference from Normal. Inches.
<i>Cape</i>										
Allwal North.....	A. Alcock.....	0.93	1.08	- 0.15	18.61	12.49	+ 1.02	17.62	20.51	- 2.89
Beaufort West.....	The Gaoler.....	1.01	0.75	+ 0.26	—	5.57	—	—	9.10	—
Bedford.....	T. C. Hall.....	1.14	1.58	- 0.44	18.15	14.78	+ 3.37	23.63	27.02	- 3.39
Britstown.....	The Gaoler.....	0.19	0.75	+ 0.56	12.96	7.49	+ 5.47	16.66	16.86	+ 4.83
<i>Adriatic</i>	The Gaoler.....	0.91	1.08	- 0.17	2.84	3.29	+ 0.45	3.92	4.74	- 0.82
Cape Town (Royal Observatory).	The Staff.....	3.43	3.99	- 0.56	4.93	8.20	- 3.27	19.30	21.49	- 1.79
Caraarvon.....	A. P. Matherbe.....	0.00	0.68	+ 0.68	4.92	5.41	- 0.49	6.11	7.66	- 1.55
Claywilliam (Public School).....	The Principal.....	1.46	1.38	+ 0.08	1.74	2.85	- 1.11	7.21	7.21	—
East London.....	A. Downie.....	0.50	2.42	- 1.92	12.75	15.25	- 2.50	—	31.84	- 0.56
Frazerburg.....	The Gaoler.....	0.66	0.64	+ 0.02	5.58	4.18	+ 1.40	7.52	6.24	+ 1.28
Garies.....	The Gaoler.....	0.66	0.72	- 0.06	1.14	1.61	- 0.47	3.41	1.80	+ 0.95
Graaf-Reinet.....	S. F. D. Treadwell.....	0.92	1.40	- 0.48	12.05	7.47	+ 4.58	13.67	13.55	+ 0.32
Griquatown.....	The Gaoler.....	0.82	0.63	+ 0.19	—	9.65	—	—	12.62	—
Hanover.....	The Gaoler.....	0.30	1.00	- 0.70	—	8.55	+ 6.00	—	12.69	—
Hope Town.....	The Gaoler.....	0.77	0.91	- 0.14	14.45	8.45	+ 6.00	16.23	12.98	+ 3.25
Kenhardt.....	The Gaoler.....	0.50	0.40	+ 0.10	—	3.86	—	—	5.37	—
Kimberley.....	J. A. Fogarty.....	0.63	0.73	- 0.10	14.06	10.21	+ 4.45	—	15.94	—
Kanyana.....	The Gaoler.....	0.10	2.32	+ 2.22	9.92	11.17	- 1.25	20.81	26.66	- 5.85
Kokstad.....	H. D. Coyle.....	0.68	1.15	- 0.47	21.01	14.88	+ 6.13	29.98	26.64	+ 3.34
Kuruman.....	The Gaoler.....	0.06	0.68	+ 0.62	—	11.02	—	—	16.13	—
Matieling (Convent).....	Mother Superior.....	0.06	0.46	+ 0.40	12.23	13.14	- 0.91	20.75	21.46	- 0.71
Mossel Bay (Cape St. Blaize).....	W. H. Luxton.....	1.10	1.04	+ 0.06	4.10	7.46	- 3.36	—	16.04	—
Murraysburg.....	A. Cameron.....	0.21	1.02	- 0.81	—	6.98	+ 1.56	—	10.58	—
O'okiep.....	J. Burrows.....	0.98	1.08	- 0.10	1.19	3.75	+ 11.13	9.38	6.09	- 2.71
Panlisprown.....	The Gaoler.....	0.21	0.65	+ 0.44	19.79	8.66	- 11.13	21.13	13.96	+ 7.17
Piquetberg.....	The Gaoler.....	3.17	2.91	+ 0.26	5.52	8.33	- 0.81	16.75	17.73	- 0.98
Port Elizabeth.....	J. E. Allen.....	0.71	2.35	- 1.64	6.32	8.14	- 1.82	13.31	20.56	- 7.25
Port Nolloth.....	H. Dutton.....	0.27	0.33	+ 0.06	—	9.84	—	—	1.95	—
Port St. Johns.....	B. D. Jorlison.....	0.26	2.97	- 2.71	36.40	22.61	+ 13.79	—	16.90	—
Prieska.....	The Gaoler.....	0.38	0.66	+ 0.28	—	6.93	—	—	9.44	—
Queenstown.....	H. Holley.....	0.53	0.76	- 0.23	14.20	12.10	+ 2.01	17.72	20.80	- 3.08
Steytlerville.....	The Gaoler.....	0.71	0.58	+ 0.13	5.93	5.00	+ 0.81	6.58	8.91	- 2.33
Sutherland.....	The Gaoler.....	1.30	1.25	+ 0.05	2.70	4.34	- 1.64	3.36	8.20	- 4.84
Swellendam.....	The Gaoler.....	0.60	3.19	- 0.57	8.18	14.27	+ 6.08	18.71	30.48	- 11.77
Umtata.....	A. Dixpeck.....	0.80	1.31	- 0.51	13.69	13.62	+ 0.07	18.13	24.70	- 6.57
Umsodale.....	The Gaoler.....	1.35	1.36	- 0.01	5.56	3.72	+ 0.74	10.62	12.45	- 1.83
Uplington.....	The Gaoler.....	0.31	0.54	+ 0.23	5.25	4.92	+ 0.33	5.88	6.92	- 1.04
Victoria West.....	The Gaoler.....	0.00	0.91	- 0.91	—	6.56	—	—	9.69	—
Vryburg.....	C. Butler.....	0.02	0.66	+ 0.64	6.84	13.56	- 2.84	11.50	19.42	- 0.78
Worcester.....	The Gaoler.....	1.85	1.71	+ 0.36	9.95	4.60	- 2.77	31.90	10.77	+ 7.13
Wynberg (Convent).....	Mother Superior.....	8.00	5.80	+ 2.72	—	12.72	—	—	39.08	—
<i>Basutoland</i>										
Leathie.....	E. Hodgson.....	0.37	1.36	- 0.99	17.63	19.68	- 2.95	28.13	33.96	- 5.78



May, 1920. Prevailing Winds and Mean Atmospheric Pressure at 8.00 a.m.
 The dotted lines indicate the normal distribution for May.

JULY WEATHER CHARACTERISTICS.

Over the Cape Peninsula the rainfall is at its maximum during the month of July, when about 6·5 inches usually fall. In the adjoining south-western districts and along the west coast, the amount of precipitation varies but little from that of the preceding month, but along the south coast there may be quite an appreciable diminution, and probably 1·5 inches will not be exceeded. Over almost all other parts of the Union the minimum for the year should be reached; the month may, indeed, be quite rainless, with sunny warm days and cold cloudless nights.

With the sun on its return journey, the day temperature should slightly increase, except in the south-west of the Cape, where the rainfall exercises an influence. The nights are, however, colder, and the results is a general decrease in the mean air temperature as compared with June. The normal mean temperature is about 59 degrees over the Transvaal low veld; 57 degrees along the south coast; 56 degrees in the south-eastern districts; 55 degrees over the Cape Peninsula; 53 degrees along the west coast, in Kaffraria, over the east-central Karroo and the south-west of the Cape, and in Natal; 51 degrees over the southern Karroo; 50 degrees over the west-central Karroo and the Cape northern borders; 49 degrees over the Transvaal high veld; 47 degrees over the Cape north-eastern districts; 46 degrees in the Orange Free State and Basutoland, and 45 degrees on the northern Karroo. Frosts are frequent.

Over the Cape Peninsula there is an increased frequency of winds from those points of the compass lying between north and west-north-west, north-west being still the prevalent direction; but a decrease in all other directions except south-west.

The south-east of the Cape Province shows an increase of north-easterly, north-westerly, and south-westerly breezes, but a decrease in those from other directions. The principal wind over this part of the country has shifted to north-west from west-north-west during the preceding month. In the north of the Cape the frequency table shows an increase of winds from points lying between W.N.W. and E.N.E., also of southerly and south-westerly winds, with a decrease of south-easterly breezes; the prevalent wind now blows from E.N.E. Although there is an increased frequency of easterly breezes over the Transvaal, affecting all points between N. and S.E., together with a decrease in those from all other directions, the prevalent direction remains the same as during June, viz., N.N.W., over this part of the high veld.

C. STEWART,

Chief Meteorologist.

THE GOVERNMENT PRINTING AND STATIONERY OFFICE
4223—19/6/20—600



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

JUNE, 1920.

No. 6.

A RAINFALL in excess of the average over the west, south-west, and south; light showers or absolute drought over the major portion of the summer rainfall area; occasional light showers of snow, sleet, and hail over parts of Natal, Orange Free State, and the Cape Province; a mean monthly temperature about one and a half degrees less than usual; with practically nightly frosts of unusual severity, and occasional dry, cold winds, causing considerable damage to growing crops, trees, etc; in other words, persistent anticyclonic conditions over the interior and cyclonic areas affecting the west and south, were the leading features of the weather of June last.

Pressure.—The accompanying map of mean pressure distribution shows that the area enclosed by the 3,20 in. isobar was much larger than usual; consequently, pressure generally was about one-tenth of an inch lower than the normal. A depression which appeared on the west coast on the morning of the 2nd had moved southwards on the 3rd, covered about one-half of the Union on the 4th and 5th, moving off towards the north-east and had disappeared by the 6th. Anticyclonic conditions then prevailed till the 11th, when another "low" appeared in the south-west, and, moving to the north-east, covering more than half of the country on the 12th; it then moved eastwards, affecting the east and south coasts, till the 15th, on the 17th another depression skirted the south coast, whilst a fourth depression appeared on the 22nd on the south coast, moving to the north-east and affecting the east coast on the 23rd; the northern edge of a depression appeared off Cape Agulhas on the 29th, but had disappeared next day. An anticyclone of considerable intensity covered the country thereafter till the end of the month.

Temperature.—The mean temperature for the month was 1.5 degrees less than usual. This deficit was common to the greater part of the country, and varied from a few tenths of a degree to 4.6 degrees at Lindley in the Orange Free State. The exceptions occurred mostly at stations on the coast belt, although a similar excess occurred at Graaff-Reinet, Harrismith, Habisa, and Barberton, the greatest excess being 1.9 degrees at Clewwilliam. The day temperatures were on the average 0.8 degrees lower than normal, the deficiency varying from 0.2 degree at Beaufort (O.F.S.) to 4.6 degrees at Bedford, in the Cape Province. The mean maxima, however, were generally above normal over the east and south of the Transvaal, in Swaziland, at Kimberley, and at coast

stations, except in the extreme south-west and at Durban. These excesses were mostly slight, but exceeded 3 degrees at Barberton, Port Elizabeth, and Clanwilliam. The night temperatures were lower than usual by 2.1 degrees. The deficits were largest over a narrow belt extending from Mafeking and the western Transvaal in a S.S.E. direction through the centre of the Orange Free State to Basutoland; the deficiencies were almost equally great over the high veld of the Transvaal and at Komatipoort, being largest, however (7.5 degrees), at Lindley, in the Orange Free State. The deficiencies decreased generally towards the coast, being still large, however, at Port Elizabeth and East London. On the other hand, the mean minimum temperature was higher than usual over Zululand, the central portion of Natal, south-east of the Orange Free State, at Port St. Johns, Mossel Bay, and Clanwilliam. The extreme readings for the month were mostly between 70 degrees and 80 degrees, but rising to 94 degrees at Komatipoort on the 18th. The warmest periods were 9th to 12th, and 17th to 23rd, but most widely on the 11th to 12th and 18th. With few exceptions the extreme minima fell below freezing point (32 degrees F.), the lowest being 10.5 degrees at Lindley, and the next 11 degrees at Belfast, both on the 25th. The coldest periods were from the 1st to the 2nd, 6th to 8th, 13th to 14th, and 24th to 27th, the lowest temperatures being most commonly registered on the 25th. The unusually low temperatures so common during June caused considerable damage to growing crops, hedges, young ornamental trees, and even well-established citrus trees, most damage being caused, perhaps, by the occurrence on several days of cold, dry, southerly winds having a temperature several degrees below freezing-point.

Precipitation. As far as precipitation is concerned, a line drawn from some distance east of Ookiep south-east to the neighbourhood of Cape St. Francis will separate the area of deficient rainfall from that enjoying a surplus for the month. South-west of this line the month's precipitation was in excess of the normal, whilst stations to the north-east suffered either from a deficiency or a total absence of rain during the month. Absolute drought prevailed over the Transvaal (except in the Lydenburg District), Bechuanaland, Swaziland, the north-east of Natal, and the northern half of the Orange Free State. Rain fell over the Cape Peninsula and south-west from 1st to 25th, being heaviest on the 22nd; over the west coast during the first week, and from the 14th to 25th; light showers along the south coast and over the southern Karroo from the 4th to 23rd; and light local rain with occasional showers of snow over the rest of the Cape Province; absolute drought prevailed over the Transvaal, except for local showers on the 19th in the Lydenburg District; rain of a similar character with a little snow, occurred during the first fortnight over the southern portion of the Orange Free State; and over Natal during the latter half of the month, with some slight hailstorms.

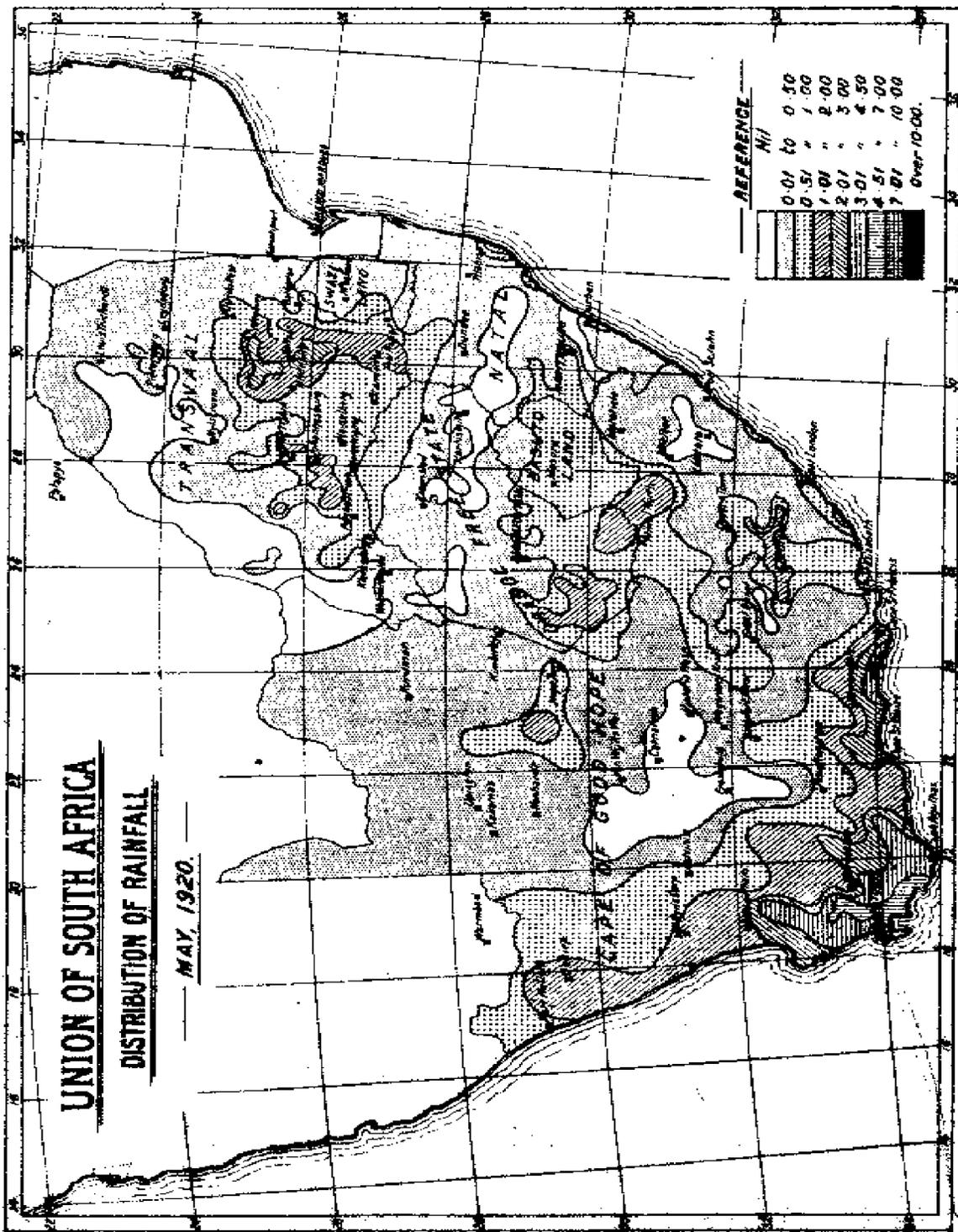
The cumulative rainfall from 1st July, 1919, continues in excess over a wedge-shaped tract of country extending from Garies in the west, inland to Kroonstad in the Orange Free State, thence south-east to the vicinity of Worcester; also over a narrow belt extending from Komatipoort, through Swaziland, the north-east portion and southern half of Natal, to Kokstad and the coast; also over a narrow belt in the northern half of the Transvaal from Claremont, south-east through Nylstroom to Belfast on the high veld; elsewhere it is below normal. The accumulated depth of precipitation since the beginning of the present year is above the average, except in Namaqualand, along the south and south-east coasts between Cape Agulhas and Port St. Johns; a broad stretch of country in the central and southerly parts, as well as the extreme south-west and south-east of the Transvaal; also between Basutoland and Ladismith.

RAINFALL, JUNE, 1920.

PLACE.	OBSERVER.	Month.	Difference	From	Difference	From	Difference	From	Normal.	Inches.	Difference	From
		June, 1920.	from	1st Jan.,	from	1st July,	from					
		Inches.	Normal.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
<i>Transvaal</i> —												
Barberton.....	W. Grubb.....	0.00	0.13	13.30	20.94	7.84	28.54	33.74	5.20			
Bolfort.....	The Forester.....	0.00	0.11	14.04	17.15	3.11	33.55	32.00	1.55			
Bethal.....	H. F. Louber.....	0.00	0.04	8.74	14.87	6.13	18.28	30.39	12.11			
Charcoal.....	S. A. Pollock.....	0.00	0.01	21.73	10.97	0.76	23.19	18.13	5.06			
Eravelo.....	Mrs. S. M. Nicolson.....	0.00	0.05	19.62	14.98	4.63	33.98	30.72	3.26			
Haerensburg.....	S. A. Pollock.....	0.00	0.34		26.69			10.36				
Heidelberg.....	W. A. ter Horst.....	0.00	0.04	8.46	14.82	6.21	18.74	27.73	8.99			
Johannesburg (Observatory).....	The Staff.....	0.00	0.06	13.72	15.90	1.28	23.90	26.09	2.19			
Klerksdorp (Strathmore).....	C. Scott.....	0.00	0.12	12.53	13.77	1.24	19.83	21.89	2.06			
Komatipoort.....	H. J. Evans.....	0.00	0.16	21.81	16.99	4.85	31.55	26.27	5.28			
Middelburg.....	Dr. H. A. Spencer.....	0.00	0.09	13.41	15.99	1.68	25.15	28.74	3.59			
Nylstroom.....	G. Bakker.....	0.00	0.19	15.54	13.97	1.57	25.92	23.99	1.93			
Pietersburg.....	P. S. Roos.....	0.00	0.01	13.16	12.17	0.99	20.96	21.69	0.73			
Piet Retief.....	J. Werner.....	0.00	0.13	17.10	21.57	4.47	27.66	37.21	9.55			
Pilgrims Rest.....	J. A. Sifton.....	0.00	0.31	25.83	26.43	0.50	35.96	40.45	4.49			
Potchefstroom.....	J. R. Stenning.....	0.00	0.07	14.92	12.99	1.93	20.75	23.69	2.94			
Protea (Metropolitan Office).....	The Staff.....	0.00	0.06	13.90	17.03	3.13	23.90	29.68	5.78			
Rooiberg.....	N. H. Munn.....	0.00	0.03	12.42	13.94	1.52	19.90	23.89	3.99			
Rustenburg.....	S. A. Pollock.....	0.00	0.11	11.89	14.91	3.02	20.76	25.86	5.10			
Wakkerstroom.....	J. Richards.....	0.00	0.14	22.04	17.03	4.96	33.70	32.13	1.57			
Woodbush No. 1.....	The Forester.....	0.02	0.39		46.94			71.69				
Zeehof.....	H. Bierlich.....	0.00	0.07	11.97	14.97	3.00	20.44	21.65	1.21			
<i>Swaziland</i> —												
Mbabane.....	Swaziland Police.....	0.00	0.37	33.65	28.76	4.89	51.21	50.18	1.03			
<i>Orange Free State</i> —												
Bethanie.....	J. J. Wardhaugh.....	0.14	0.44	12.18	11.98	0.22	16.37	18.46	2.09			
Bosmanfontein.....	E. Arndt.....	0.07	0.14	17.03	11.70	5.34	21.07	19.22	1.85			
Harriesville.....	J. B. Patterson.....	0.00	0.19	16.41	15.98	0.43	25.85	28.19	2.34			
Kroonstad.....	S. B. Northcott.....	0.00	0.29	17.39	10.68	6.71	23.50	22.05	1.45			
Leschenburg.....	G. Stokes.....	0.10	0.33	18.82	15.38	3.46	26.23	27.31	1.11			
Lindley.....	J. Collister-Oates.....	0.00	0.17	13.95	12.85	1.10	19.83	23.34	3.51			
<i>Yatal</i> —												
Dundee.....	W. Thorneild.....	0.00	0.18	24.48	17.35	7.13	31.97	31.27	0.70			
Durban (Police).....	Capt. D. Black.....	0.87	1.12	24.27	22.29	1.98	42.77	41.76	1.01			
Elizabethe.....	The Gaoler.....	0.51	0.72	31.09	22.39	8.70	33.07	19.23	14.84			
Howick.....	The Gaoler.....	0.20	0.30	34.30	17.73	16.57	43.40	32.04	11.36			
Ladysmith.....	D. A. R. Leathern.....	0.60	0.22	15.48	16.07	0.59	24.08	27.31	3.23			
Pietermaritzburg (Mental Hospital).....	The Staff.....	0.18	0.32	34.48	18.66	15.82	45.78	33.80	11.98			
Yvich.....	The Gaoler.....	0.60	0.20	29.19	19.90	9.29	27.33	34.80	7.47			
Worcester.....	The Gaoler.....	0.60	0.25	23.60	14.79	8.81	33.89	26.31	7.58			

RAINFALL, JUNE, 1920 (continued).

PLACE.	OBSERVATION.	Month. June, 1920.	Normal.	Difference from Normal.	From 1st Jan., 1920.	Normal.	Difference from Normal.	From 1st July, 1919.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
<i>Carve.</i>										
Alwal North.....	A. Alcock.....	0.17	0.63	- 0.46	13.68	13.12	- 0.56	17.79	21.14	- 3.35
Beaufort West.....	The Gaoler.....	0.95	0.30	- 0.50	18.69	5.93	- 12.76	—	9.46	—
Redford.....	T. C. Hall.....	0.54	0.45	- 0.11	13.46	15.73	+ 2.27	23.17	27.07	- 3.90
Bristown.....	The Gaoler.....	0.49	0.49	- 0.00	13.46	7.48	- 5.98	15.79	11.35	+ 4.44
Gravina.....	The Gaoler.....	2.85	1.00	- 1.85	5.40	4.20	- 1.20	8.77	7.74	+ 1.03
Gaerstown (Royal Observatory)	The Staff.....	3.47	4.45	+ 1.02	10.40	12.45	+ 2.05	24.77	25.54	- 0.77
Clansville.....	W. J. Downs.....	2.97	1.38	- 1.59	4.71	4.23	- 0.48	9.62	8.33	+ 1.29
East London.....	A. Loyde.....	0.15	1.54	- 1.39	12.00	16.79	+ 4.79	—	33.38	—
Fraserburg.....	The Gaoler.....	0.00	0.40	- 0.40	5.58	4.38	- 1.20	7.52	6.04	+ 1.48
Garies.....	The Gaoler.....	2.51	0.81	- 1.70	3.95	2.45	- 1.50	5.92	5.20	+ 0.72
Grassveld.....	S. E. D. Treatwell.....	0.37	0.57	- 0.20	12.42	8.04	- 4.38	14.04	13.92	+ 0.12
Gravetown.....	The Gaoler.....	0.00	0.46	- 0.46	—	0.51	—	—	13.98	—
Hanover.....	The Gaoler.....	0.39	0.53	- 0.14	13.46	9.08	- 4.38	16.33	13.22	+ 3.11
Heidelberg.....	The Gaoler.....	0.01	0.40	- 0.39	—	8.85	—	—	12.78	—
Kentland.....	The Gaoler.....	0.04	0.27	- 0.23	—	4.13	—	—	5.64	—
Kimberley.....	J. A. Fogarty.....	0.00	0.32	- 0.32	14.56	10.63	- 3.93	16.26	16.26	—
Kayana.....	The Gaoler.....	2.10	2.13	+ 0.03	10.32	13.30	+ 2.98	23.21	23.79	- 0.58
Koestad.....	H. D. Coetz.....	0.23	0.50	- 0.27	21.24	15.48	- 5.76	30.21	27.14	+ 3.07
Karman.....	The Gaoler.....	0.00	0.30	- 0.30	—	11.32	—	—	16.13	—
Madling (Convent).....	The Mother Superior.....	0.00	0.05	- 0.05	13.23	13.19	- 0.04	20.75	21.51	- 0.76
Mossel Bay (Cape St. Blaize).....	W. H. Lantgen.....	1.20	1.29	+ 0.09	5.30	3.75	- 1.55	—	17.33	—
Murraysburg.....	A. Cameron.....	0.28	0.16	- 0.12	—	7.34	—	—	11.01	—
Oxkop.....	J. Murray.....	2.05	1.02	- 1.03	3.21	3.77	+ 0.56	5.43	7.11	- 1.68
Phidestown.....	The Gaoler.....	0.21	0.38	- 0.17	20.00	9.24	- 10.76	21.34	13.94	+ 7.40
Phynatberg.....	The Gaoler.....	5.03	3.01	- 2.02	10.55	9.24	- 1.31	21.73	20.54	+ 1.19
Port Elizabeth.....	J. E. Allen.....	1.50	1.67	+ 0.17	7.82	9.86	+ 2.04	14.84	22.23	- 7.39
Port Nolloth.....	H. Beaton.....	1.02	0.25	- 0.77	—	1.10	—	—	2.21	—
Port St. Johns.....	B. U. Jordan.....	0.60	1.79	- 1.19	37.20	24.40	- 12.80	—	48.69	—
Prieska.....	The Gaoler.....	0.09	0.28	- 0.19	—	7.23	—	—	9.72	—
Queenstown.....	H. Holley.....	0.11	0.31	- 0.20	11.65	12.80	+ 1.15	18.13	21.11	- 2.98
Steyderville.....	The Gaoler.....	0.32	0.31	- 0.01	6.25	5.40	- 0.85	6.00	9.26	- 3.26
Sutherland.....	The Gaoler.....	2.67	1.02	- 1.65	5.37	3.30	- 2.07	8.03	9.22	- 1.19
Swallowdam.....	The Gaoler.....	4.25	2.06	- 2.19	12.43	10.43	- 2.00	22.06	32.64	- 10.58
Uitenhage.....	A. Byrnes.....	0.00	1.01	- 1.01	13.60	11.66	- 1.94	18.13	25.51	- 7.38
Unfordale.....	The Gaoler.....	1.17	1.15	- 0.02	6.75	6.87	+ 0.12	11.79	13.58	- 1.79
Uppington.....	The Gaoler.....	0.02	0.11	- 0.09	3.27	3.03	- 0.24	5.90	7.03	- 1.13
Victoria West.....	The Gaoler.....	0.04	0.45	- 0.41	—	13.83	—	—	10.40	—
Vryburg.....	C. Inglis.....	0.00	0.27	- 0.27	—	5.00	—	—	10.60	—
Worcester.....	The Gaoler.....	3.74	1.90	- 1.84	10.58	3.90	- 6.68	13.24	12.67	+ 0.57
Wynberg (Convent).....	The Mother Superior.....	11.93	8.04	- 3.89	24.98	20.76	- 4.22	16.83	47.42	- 30.59
<i>Beaufort West.</i>										
Leith.....	F. Hedgeson.....	0.00	0.53	- 0.53	17.00	20.51	- 3.51	28.24	34.40	- 6.16





June, 1920. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.

The dotted lines indicate the normal distribution for June.

AUGUST WEATHER CHARACTERISTICS.

Along the west coast and over the Cape Peninsula the rainfall during the month of August is decreasing, but in the south-western districts the precipitation usually exceeds that of the previous month. The general tendency over the remainder of the Union is towards an increase, although the month may be quite rainless inland. The normal rainfall is about 6.0 inches over the Cape Peninsula; 3.0 inches in the Cape south-western districts; 2.0 inches along the south coast; 1.5 inches in the south-east of the Cape, along the west coast and in Zululand; 1.0 inch in Natal, Basutoland, in the Cape north-eastern districts, and Kaffraria; and less than 1.0 inch in other parts of the Union.

The mean temperature of the air is now increasing rapidly inland, where sunny days and cloudless skies preponderate, and slowly along the coastal districts. A mean of about 64 degrees should be reached on the Transvaal low veld; while the normal in Natal is 61 degrees; in the south-east of the Cape and along the south coast, 58 degrees; over the east central Karroo, 56 degrees; in the Cape Peninsula, on the southern Karroo, and over the northern borders, 55 degrees; in the Transvaal and over the Cape south-western districts and along the west coast, 54 degrees; on the west-central Karroo, 53 degrees; in the Cape north-eastern districts and Basutoland, 51 degrees; and in the Orange Free State and on the northern Karroo, 50 degrees. Frosts are still of frequent occurrence.

Compared with July, there is a marked increase of frequency over the Transvaal, of northerly and north-westerly winds, but a decrease in all other directions; N.N.W. is still the prevailing wind. In the south-east of the Cape Province, on the other hand, there is a decrease in frequency of north-westerly winds; but an increase of all others, particularly those from north-east, which constitutes the prevalent direction. In the north of the Cape Province the principal wind is still from E.N.E.; over this area there is a decrease in frequency of southerly, south-westerly, and north-westerly winds, but an increase of breezes from directions between north and south-east. Over the Cape Peninsula north-westerly are still the dominant winds, notwithstanding a falling-off in their frequency and an increase in those from south.

With a general increase in the wind force and velocity, and continued dry weather over the interior, dust storms are apt to be of frequent occurrence at this period.

C. STEWART,

Chief Meteorologist

THE GOVERNMENT PRINTING AND STATIONERY OFFICE
M35-237/20-600



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

JULY, 1920.

No. 7.

PRACTICALLY continuous anticyclonic weather, with bright, sunny days, occasional severe night frosts, frequent haze or mist in mornings; a mean monthly temperature in excess of the average; drought or deficient rainfall north of 32 degrees S. latitude, and an excess of rainfall in the west and south of the Cape Province—these were the most noteworthy features of the weather during July last.

Pressure—The accompanying pressure map shows the general trend of the isobars varied but little from the normal, pressure, however, is seen to have been higher than usual in the east and south, but slightly less than usual in the west and south-west.

Anticyclonic conditions persisted over the Union throughout the month, the core of the anticyclone being situated mostly over the north-east, but shifting on several occasions to the south-east and south, and even to the south-west. There was a marked absence of low pressure areas over the Union throughout the month, as only on two occasions did these penetrate actually on to the land, viz., on the 2nd, when one appeared on the south coast, and on the 15th, when a disturbance affected the south-west and moved to the south on the 16th. The greater portion of the month's rainfall was therefore not directly associated with the appearance of low pressure areas over the land, but apparently occurred in connection with slight variations in pressure along the coastal fringe of the anticyclone. A noteworthy rain occurred on Monday, the 26th, when it continued steadily most of the day and night over the Cape Peninsula, whilst heavy rain was also reported from the central, western, and southern portions of the Cape.

Temperature.—The mean temperature for the month was 54.0 degrees, or 0.7 degrees higher than usual. This excess was commonly from 0.6 degrees to 1.0 degrees, but increased to more than two degrees in the east and south-west, of the Transvaal, and Namaqualand. The largest excesses were experienced at Port St. Johns, Graaff-Reinet, and Clanwilliam, where it amounted to about 4.0 degrees. This excess in temperature, although common to the greater part of the country, was not general. Thus, the monthly temperature was below the normal by less than one degree at stations in the north and west of the Transvaal, the high veld there, in Swaziland, the centre of the Orange Free State, and over the south-east of the Cape Province between Queenstown and East London, also at Wynberg, in the Cape Peninsula. In Natal the deficiency was greater than elsewhere, ranging from 1.0 degree at

Durban to 2.2 degrees at Dundee. The high mean temperature was mainly due to the nights being 1.1 degrees, on an average, higher than usual, although the mean day temperatures were also slightly warmer than usual, viz., by 0.3 degrees. The mean minimum temperatures at individual stations varied considerably, excesses of less than one degree being most common, but rising to 2-3 degrees in the south and east of the Transvaal and Zululand and the west of the Cape Province, but increasing to 4.4 degrees at Harrismith, 6.0 degrees at Port St. Johns, and 6.1 degrees at Graaff-Reinet. A deficiency in the night temperatures was met with on the south-west and south-east of the Transvaal, the centre of the Orange Free State, and south-east of the Cape Province, being greatest (2.4 degrees) at Belfast in the Transvaal. Although the mean maxima was only slightly in excess of the average at individual stations, the days were commonly from 2 to 3 degrees warmer than usual, and as much as 5.3 degrees at Clanwilliam. The unusual warmth during the day at most of the inland stations was, however, counterbalanced by a large deficiency in the mean maximum temperatures over Natal and the east of the Orange Free State, where it ranged from 3.0 to 5.6 degrees, whilst smaller deficits, and usually less than one degree, were common to the north and west of the Transvaal, the central portion of the Orange Free State, parts of the Transkei, and the south-east of the Cape Province, also at Mossel Bay and Wynberg. Taken as a whole, the most noteworthy features of the temperature distribution during the month were the unusually cool days in Natal and the east of the Orange Free State, and the deficits in both day and night temperatures in the south-east of the Cape Province, the centre of the Orange Free State, and at Wynberg in the Cape Peninsula. A consideration of the dates of occurrence of the extreme temperatures show that the period from the 12th to the 26th was the warmest portion of the month, more particularly the 20th to 22nd and the 16th; whilst the lowest readings were distributed over the periods 3rd to 8th, 10th to 14th, 18th to 20th, and 27th, 28th to 30th and 31st, but most widely on the 18th. The extreme maximum for the month was 95.0 degrees at Komatipoort on the 17th, followed closely by 92.0 degrees at Hlabisa on the 16th, whilst the lowest reading registered was 18.5 degrees on the 6th at Lindley, in the Orange Free State, the next being 19.0 degrees at Belfast on the 4th. There was an extreme range of temperature of 76.5 during July. The mean warmest station was Komatipoort, with a temperature of 65.2, followed closely by Port St. Johns with 65.1, whilst the mean coldest was Belfast, with 44.4 degrees, showing a difference of 20.8 degrees between the coolest and warmest stations.

Precipitation.—The rainfall of July last was typical of the season, quantities exceeding 1 inch being confined to the west, south-west, and south of the Cape Province. The only exception to this was a total of 2.73 inches recorded at Durban. Compared with the average, precipitation was in excess to the south of a line drawn from East London to Calvinia, except at the coast stations of Mossel Bay, Knysna, and Port Elizabeth. The month's rainfall was greater than usual, also, at Nylstroom (Transvaal) and Durban (Natal). Elsewhere the quantities recorded were small, mostly from half an inch to an inch, and even these amounts were below the average. Heavy rains occurred over the Cape Peninsula on the 2nd, 3rd, 5th, and towards the end of the month; heavy showers over the west coast during the first to the third, and fourth weeks; steady rains along the south coast during the first and last weeks; showers over the southern, the west, and east-central Karroo, with light drizzling rains over the south-east and parts of Kaffraria on the 3rd, and during the last week of the month. A few isolated stations in the Orange Free State experienced some slight showers, mostly on the 12th, as also in the Transvaal, whilst rain occurred in Natal on the 4th to 7th, 8th to 22nd,

(Continued on page 7.)

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), JULY, 1920.

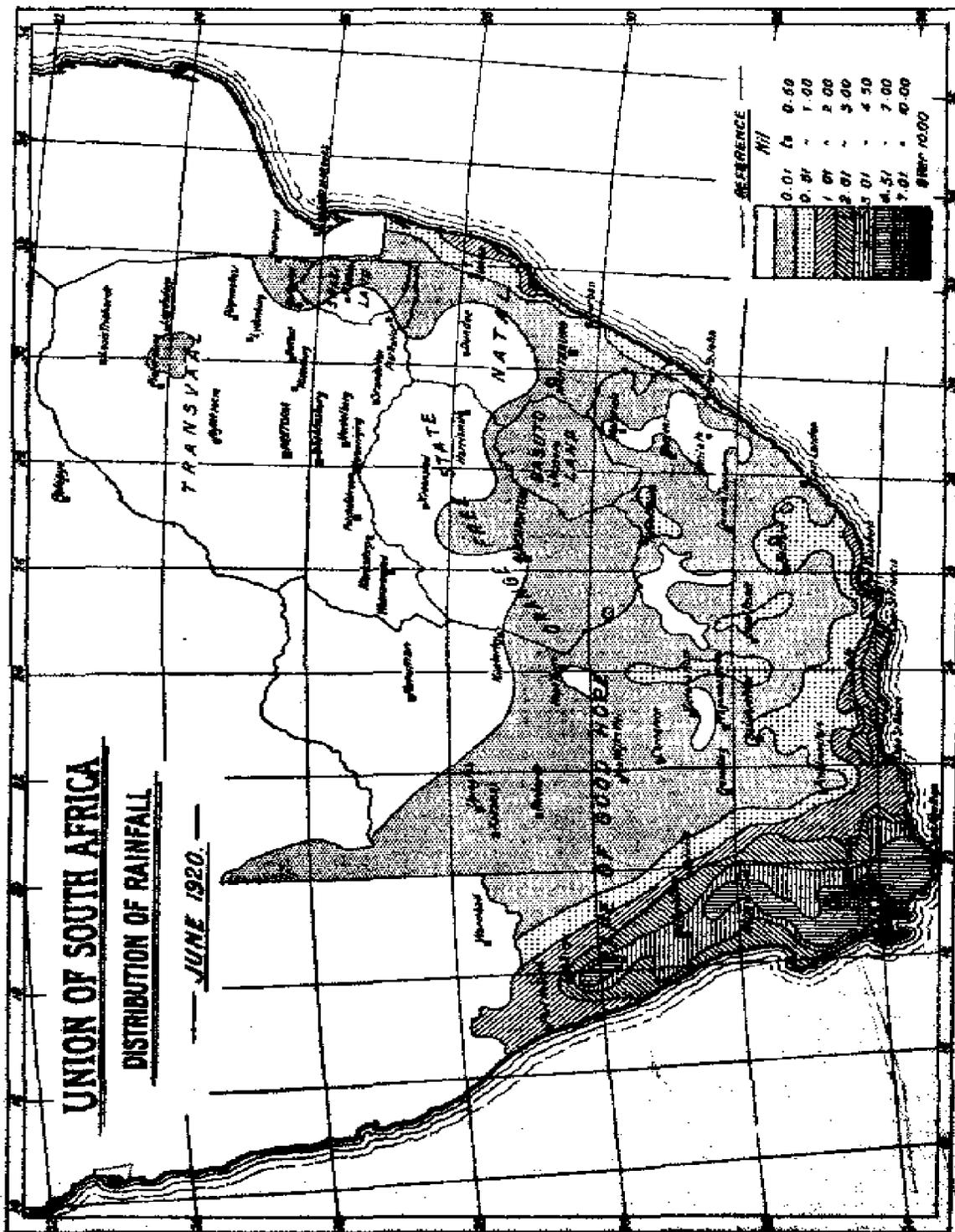
Place.	Observers.	Month—July, 1920.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			Date.
		Mean Max.	Mean Min.				Highest.	Lowest.	Date.	
Fraserburg— Sutcliffe.....	The Forester.....	61.9	26.9	44.4	44.8	- 0.4	68.0	19.0	4th, 19th, 19th, & 14th.	
Fraserburg— Sutcliffe.....	W. Grubb.....	71.0	49.7	61.6	59.4	- 2.4	86.6	46.0	17th, 17th, 14th, & 14th.	
Johnannesburg (Observatory) Kontzberg (Switzerland).....	The Staff.....	62.1	42.1	52.1	50.2	- 1.9	70.8	35.8	21st, 7th, 12th, & 18th.	
Johnannesburg— Kontzberg.....	Chas. Scott.....	68.6	30.6	49.6	50.2	- 0.6	70.0	23.0	15th, 14th, 14th, 14th, 14th, & 14th.	
Konakopoor.....	H. J. Evans.....	80.9	49.4	65.2	62.9	- 2.3	96.0	41.0	17th, 14th, 14th, 14th, 14th, & 14th.	
Lydenburg.....	G. Bakker.....	70.6	46.3	58.4	52.6	- 5.8	79.0	30.0	18th, 18th, 14th, & 15th.	
Lydenburg.....	J. A. Struven.....	68.5	37.0	52.8	51.8	- 1.0	79.5	28.0	18th, 14th, & 15th.	
Lydenburg.....	P. S. Roos.....	66.9	36.7	51.8	52.6	- 0.8	74.0	31.0	16th & 21st, 15th, 14th, 13th, & 28th.	
Lydenburg (Exp. Farm).....	The Manager.....	70.1	39.1	51.6	49.0	- 2.6	76.8	27.0	15th, 14th, 13th, & 28th.	
Pretoria (Meteorological Office) Pretoria— Kontzberg.....	The Staff.....	68.2	38.5	53.4	51.7	- 1.7	75.3	31.9	21st, 21st, 21st, 21st, 21st, & 21st.	
Pretoria— Kontzberg.....	J. Warner.....	67.6	39.2	53.1	53.1	- 0.3	77.9	30.0	21st, 21st, 21st, 21st, 21st, & 21st.	
Pretoria— Kontzberg.....	H. Dietrich.....	67.3	38.1	50.2	50.4	- 0.2	71.0	28.9	16th, 16th, 16th, 16th, 16th, & 16th.	
Swaziland— Mbabane.....	Swaziland Police.....	66.5	43.0	54.8	55.5	- 0.7	80.0	36.0	16th, 7th, 10th, & 14th.	
Orange Free State— Bloemfontein.....	E. Arndt.....	63.9	32.8	48.4	47.6	- 0.8	71.2	23.0	20th, 21st & 21st, 21st, 21st, 21st, & 21st.	
Bloemfontein.....	The Forester.....	58.9	35.2	47.0	46.4	- 0.6	66.0	25.0	21st, 21st, 21st, 21st, 21st, & 21st.	
Lydenburg.....	The Forester.....	62.6	32.2	47.4	46.8	- 0.6	71.0	26.0	21st, 21st, 21st, 21st, 21st, & 21st.	
Lydenburg.....	J. Collister-Coles.....	64.6	27.8	46.2	47.0	- 0.8	72.0	18.5	21st, 21st, 21st, 21st, 21st, & 21st.	
Lydenburg.....	J. J. Wardhaugh.....	64.4	32.3	48.6	47.0	- 1.6	71.2	24.8	21st, 21st, 21st, 21st, 21st, & 21st.	
Durban (Pret.).....	Capt. D. Black.....	72.3	55.0	63.6	64.6	- 1.0	82.2	49.2	3rd, 29th & 31st, 24th, 13th, 4th, 5th, 8th, & 30th.	
Durban.....	West Thorold.....	68.3	35.4	52.4	54.3	- 2.2	79.0	28.0	16th, 16th, 16th, 16th, 16th, & 16th.	
Mbabane.....	The Gasler.....	76.4	51.8	64.9	68.9	- 1.0	92.0	52.0	16th, 16th, 16th, 16th, 16th, & 16th.	
Maitzberg (Mental Hospital), City.....	The Staff.....	71.1	43.5	57.5	58.6	- 1.3	84.0	30.2	16th & 20th, 16th, 16th, 16th, 16th, & 16th.	
Alfred North.....	A. Akwek.....	64.5	30.0	47.2	46.4	- 0.8	71.0	21.0	21st, 21st, 21st, 21st, 21st, & 21st.	
Beaufort.....	T. C. Hall.....	66.9	42.2	54.4	54.5	- 0.1	76.0	30.0	22nd, 22nd, 22nd, 22nd, 22nd, & 22nd.	
Capetown.....	A. P. Malherbe.....	63.2	32.1	47.6	47.0	- 0.6	70.0	21.0	22nd & 23rd, 22nd, 22nd, 22nd, 22nd, & 22nd.	
Capetown (Royal Observatory) Chauvillan.....	The Staff.....	62.8	48.7	55.8	54.8	- 1.0	77.2	38.5	22nd, 22nd, 22nd, 22nd, 22nd, & 22nd.	
Chauvillan.....	W. J. Downes.....	73.3	43.2	58.5	54.2	- 4.3	86.0	36.0	30th, 30th, 30th, 30th, 30th, & 30th.	
East London.....	M. G. Crogan.....	69.4	48.8	59.1	60.0	- 0.9	77.0	41.0	20th & 23rd, 20th, 20th, 20th, 20th, & 20th.	
East London.....	S. E. D. Treadwell.....	69.9	44.5	57.2	53.1	- 4.1	79.8	35.2	23rd, 23rd, 23rd, 23rd, 23rd, & 23rd.	
East London.....	H. D. Coyte.....	64.9	33.4	49.2	48.9	- 0.3	76.0	26.0	10th & 22nd, 10th, 10th, 10th, 10th, & 10th.	
East London.....	The Mother Superior.....	70.0	38.0	53.6	53.6	- 0.0	77.0	31.0	21st, 21st, 21st, 21st, 21st, & 21st.	
East London.....	The Lightkeeper.....	65.6	31.8	49.8	47.9	- 1.9	80.0	46.0	13th & 14th, 13th, 13th, 13th, 13th, & 13th.	
East London.....	J. Burrows.....	64.7	45.9	55.3	58.2	- 2.9	76.1	36.9	22nd, 22nd, 22nd, 22nd, 22nd, & 22nd.	
East London.....	The Lightkeeper.....	69.7	50.4	60.0	58.8	- 1.2	86.0	49.0	13th, 13th, 13th, 13th, 13th, & 13th.	
East London.....	The Lightkeeper.....	73.7	56.5	65.1	61.5	- 3.6	84.0	49.0	2nd & 20th, 2nd, 2nd, 2nd, 2nd, & 2nd.	
East London.....	H. Holley.....	65.3	38.5	50.9	51.4	- 0.5	78.0	34.0	20th, 20th, 20th, 20th, 20th, & 20th.	
East London.....	The Mother Superior.....	68.8	47.1	53.4	53.0	- 0.4	77.2	49.5	12th & 13th, 12th, 12th, 12th, 12th, & 12th.	

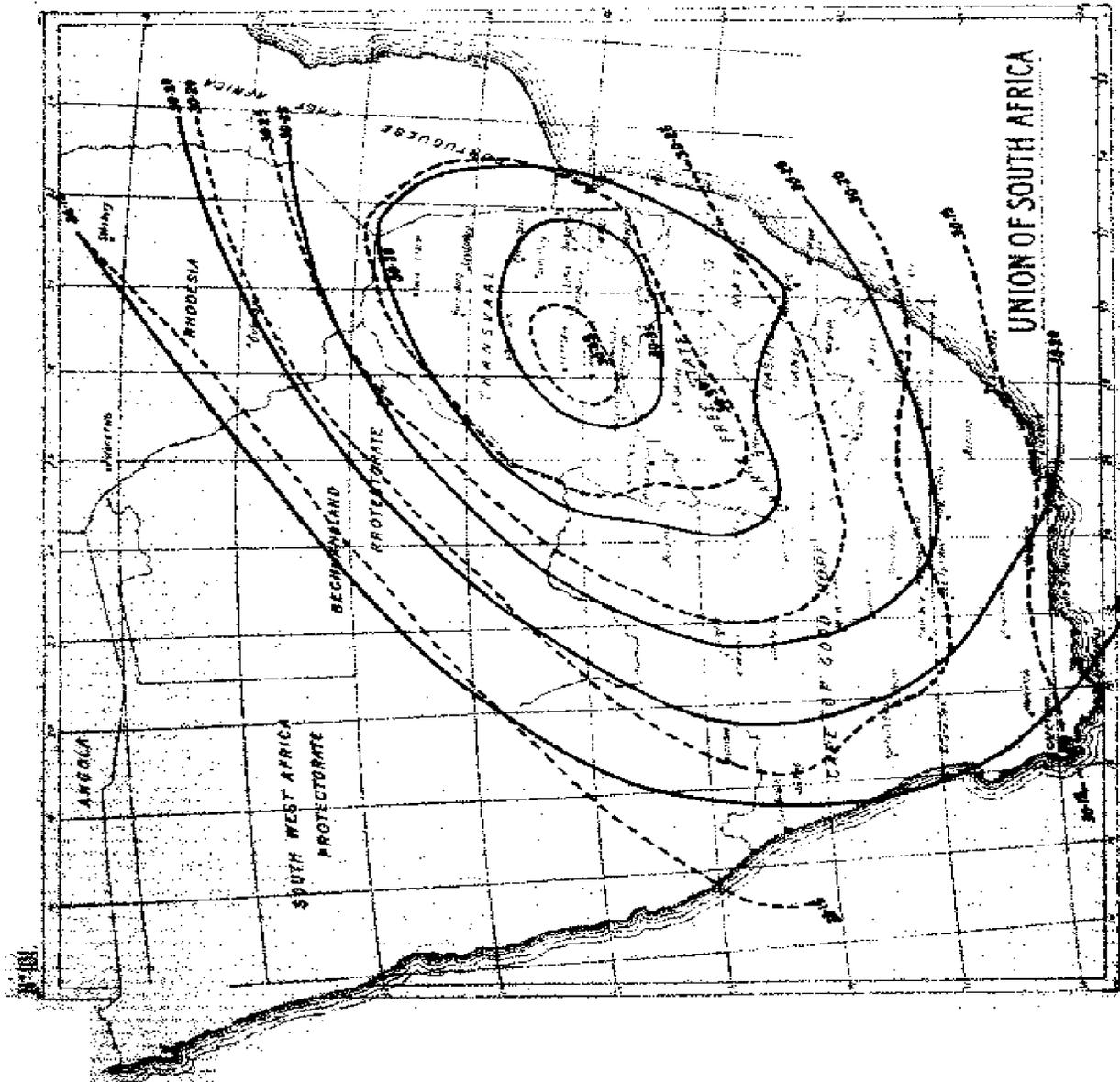
RAINFALL, JULY, 1920.

PLACE	OBSERVER	July, 1920.	Normal.	Difference from Normal.	From 1st Jan., 1920.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
<i>Transvaal</i>							
Barberton	W. Grubb	0.00	0.64	- 0.64	18.10	21.58	- 3.48
Beitast.	The Forester	0.08	0.28	- 0.22	14.10	17.43	- 3.33
Bethal	H. F. Joubert	0.17	0.18	- 0.01	8.31	15.05	- 6.74
Claremont	S.A. Police	0.00	0.05	- 0.05	11.73	11.02	+ 0.71
Eyselo	Mrs. S. M. Naaisou	0.00	0.21	- 0.21	19.82	15.20	+ 4.62
Hammertsburg	S.A. Police	—	0.78	—	—	27.47	—
Heldelberg	W. A. ter Horst	0.10	0.34	- 0.24	8.71	15.16	- 6.45
Johannesburg	The Staff	0.04	0.34	- 0.30	13.76	15.84	- 1.58
(Observatory)							
Klerkadorp (Scrathmore)	C. Scott.	0.00	0.21	- 0.21	12.53	13.98	- 1.45
Komatipoort	H. J. Evans	0.16	0.36	- 0.20	22.00	17.85	+ 4.65
Middelburg.	Dr. H. A. Spencer	0.02	0.05	- 0.03	18.43	15.14	+ 1.71
Nylstroom.	G. Bakker	0.35	0.21	+ 0.14	15.80	14.18	+ 1.71
Pietersburg	P. S. Koox	0.03	0.20	- 0.20	13.10	12.40	+ 0.70
Piet Retief	J. Werner	0.00	0.56	- 0.56	17.10	22.14	- 5.08
Pilgrims Rest	J. A. Stirling	0.14	0.44	- 0.30	26.07	26.87	- 0.80
Potchefstroom (Experimental Farm)	The Manager	0.00	0.18	- 0.18	14.92	13.17	+ 1.75
Pretoria (Meteorological Office)	The Staff	0.00	0.27	- 0.27	13.90	17.33	- 3.43
Rooiberg.	N. H. Munro	0.18	0.30	- 0.21	12.60	14.33	- 1.73
Rustenburg	S.A. Police	0.00	0.51	- 0.51	11.89	15.42	- 3.53
Wakkerstroom	The Gaoler	—	0.40	—	—	17.48	—
Woodbush No. 1	The Forester	0.42	1.12	- 0.70	—	48.02	—
Zeerust.	H. Dietrich	0.00	0.27	- 0.27	11.97	15.24	- 3.27
<i>Swaziland</i>							
Mbabane.	Swaziland Police	0.15	0.71	- 0.56	33.80	29.47	+ 4.33
<i>Orange Free State</i>							
Bloemfontein	E. Arndt	0.00	0.56	- 0.56	17.08	12.15	+ 4.88
Harrismith	L. C. Moirney	0.00	0.18	- 0.18	16.41	15.24	+ 1.17
Kroonstad	S. R. Northfield	0.00	0.37	- 0.37	17.50	11.05	+ 6.54
Ladybrand	The Forester	0.00	0.44	- 0.44	18.82	15.80	+ 3.02
Lindley	J. Collister-Oates	0.00	0.36	- 0.36	18.95	14.22	+ 4.73
Bethulle	J. J. Wardhaugh	0.02	0.38	- 0.36	12.20	12.34	- 0.14
<i>Natal</i>							
Dundee	W. Thorold	0.00	0.17	- 0.17	24.18	18.12	+ 6.06
Durban (Point)	Capt. D. Black	2.72	0.76	+ 1.97	32.60	23.05	+ 9.55
Hlabisa.	The Gaoler	0.57	0.62	- 0.05	31.85	23.01	+ 8.85
Howick.	The Gaoler	—	0.16	—	—	17.89	—
Pietermaritzburg (Mental Hospit.)	The Staff	0.01	0.14	- 0.13	34.89	18.80	+ 16.09
Vryheid	The Gaoler	0.00	0.29	- 0.29	20.19	20.19	± 0.00
Worcester	The Gaoler	—	0.10	—	—	14.82	—
Ladysmith	D. A. R. Leathern	0.00	0.09	- 0.09	15.48	16.16	- 0.68
<i>Cape</i>							
Allwal North	A. Alcock	0.02	0.42	- 0.40	18.70	13.54	+ 5.16
Beaufort West	The Gaoler	0.31	0.24	+ 0.07	—	8.17	—
Bedford	F. O. Hall	0.84	0.82	+ 0.02	10.53	16.55	- 6.02
Britstown	The Gaoler	0.05	0.21	- 0.16	13.11	6.19	+ 6.92
Calvinia	The Gaoler	1.83	0.83	+ 1.00	7.82	6.12	+ 1.70
Capetown (Royal Observatory)	The Staff	5.18	8.55	+ 1.33	13.58	15.20	- 1.62
Ceres	A. Heitlie	7.25	5.74	+ 1.51	30.97	24.26	+ 6.71
Carnarvon	A. P. Malherbe	0.08	0.19	- 0.15	—	5.96	—
Charwilliam	W. J. Downes	2.37	1.25	+ 2.02	7.08	5.46	+ 1.62
East London	A. Downie	1.48	1.09	+ 0.39	14.83	17.88	- 3.05
Fraserburg	The Gaoler	0.63	0.26	+ 0.37	6.21	4.94	+ 1.27
Gatfel	The Gaoler	0.41	0.81	- 0.40	4.26	3.23	+ 1.03
Graaf Reinet	S. R. D. Treadwell	0.30	0.44	- 0.14	13.21	8.88	+ 4.33
Gqeostown	The Gaoler	0.00	0.17	- 0.17	—	9.38	—
Harover	The Gaoler	0.04	0.37	- 0.33	—	9.38	—
Hope Town	The Gaoler	0.00	0.25	- 0.25	14.40	9.10	+ 5.30
Kanabrd.	The Gaoler	0.08	0.14	- 0.11	—	4.22	—
Kimberley	J. A. Fogarty	0.00	0.25	- 0.25	14.80	10.78	+ 4.02

RAINFALL, JULY, 1920 (continued).

PLACE.	OBSERVER.	July, 1920.	Normal.	Difference from Normal.	From 1st Jan., 1920.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Knyasa.....	The Gaoler.....	2.06	2.22	- 0.16	14.38	15.52	- 1.14
Kokstad.....	H. D. Coyle.....	0.03	0.20	- 0.17	21.27	15.58	+ 5.69
Kuruman.....	The Gaoler.....	0.00	0.39	- 0.39	—	11.71	—
Maifeking (Convent)	Mother Superior..	0.00	0.37	- 0.37	13.23	13.56	- 0.33
Mossel Bay.....	W. H. Luxton.....	1.09	1.18	- 0.09	6.30	9.93	- 3.64
Murraysburg.....	A. Cameron.....	0.11	0.29	- 0.12	—	7.63	—
O'okiep.....	J. Burrows.....	0.44	0.84	- 0.40	8.68	4.61	+ 0.93
Phillipsdown.....	The Gaoler.....	0.00	0.22	- 0.22	20.00	9.46	+ 10.54
Piquetberg.....	The Gaoler.....	3.44	2.70	+ 0.74	13.99	12.04	+ 1.95
Port Elizabeth.....	J. E. Allen.....	0.22	1.66	- 1.44	8.05	11.72	- 3.67
Port St. Johna.....	B. D. Jordon.....	0.33	0.93	- 0.60	37.53	25.23	+ 12.30
Prieska.....	The Gaoler.....	0.00	0.17	- 0.17	—	7.40	—
Queenstown.....	H. Holley.....	0.18	0.53	- 0.35	14.70	13.83	+ 1.46
Steylerville.....	The Gaoler.....	0.35	0.16	+ 0.19	6.60	5.56	+ 1.04
Sutherland.....	The Gaoler.....	1.85	0.82	+ 1.03	7.22	6.18	+ 1.04
Swellendam.....	The Gaoler.....	2.87	2.08	+ 0.79	15.30	18.51	- 3.21
Umtata.....	A. Dixpeck.....	0.08	0.53	- 0.45	13.77	15.19	- 1.42
Unifondals.....	The Gaoler.....	1.75	0.95	+ 0.80	8.50	7.62	+ 0.68
Upton.....	The Gaoler.....	0.00	0.10	- 0.10	5.27	5.13	+ 0.14
Victoria West.....	The Gaoler.....	0.04	0.25	- 0.21	—	7.26	—
Vryburg.....	C. Butler.....	0.00	0.15	- 0.15	—	13.98	—
Worcester.....	The Gaoler.....	2.01	1.75	+ 0.26	12.50	7.66	+ 4.84
Wynberg (Convent)	Mother Superior..	10.24	7.21	+ 3.03	35.12	27.97	+ 7.15





July, 1920. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
 The dotted lines indicate the normal distribution for July.

and 31st. Absolute drought prevailed throughout the month over the greater portion of the northern Karroo, northern Border, north-east, Kaffraria, and Bechuanaland. The cumulative rainfall since the beginning of the present year is mostly considerably below normal in the greater portion of the Transvaal, the north and south of the Orange Free State, the south and south-east coast, and part of the Transkei and Natal. On the other hand, the rainfall is considerably in excess of the usual amount over by far the greater part of the Cape Province, Natal, Orange Free State, and east and south-east of the Transvaal and Swaziland, and in a less degree over the north of the Transvaal. Despite the dryness of the month and the cold winds of the early part of the month, stock—and more particularly sheep—are reported in fair condition in the Orange Free State and Natal, a marked improvement being apparent since the setting-in of the milder weather about the middle of the month. In the Rustenburg Division of the Transvaal, cattle are stated to be in a low condition.

Some severe local frosts occurred during the month causing considerable damage, e.g. to kale and green fodder at Nottingham Road (Natal)

SEPTEMBER WEATHER CHARACTERISTICS.

With the advent of September there is generally a diminution in the rainfall along the western coast of the Union and an increase over the eastern districts. In the northern part of the Cape Province the minimum monthly rainfall is reached, whilst the Transvaal and Orange Free State may anticipate the commencement of the rainy season. The heaviest rains are usually experienced over the Cape Peninsula, the normal there being approximately 3.5 inches. The south-eastern and coastal districts and the eastern Transvaal receive about 2 inches, whilst the rainfall over the western Transvaal, Orange Free State, and the remainder of the Cape Province will probably not exceed an inch. Occasional, although infrequent, thunderstorms may occur.

There will be a general rise in temperatures, the normals ranging from about 66 degrees in Natal and the eastern Transvaal, through 60 degrees on the Transvaal high veld, and 58 degrees in the Orange Free State to 55 degrees in Basutoland and on the northern Karroo. Frosts may nevertheless, reasonably be expected, although their frequency and intensity will be rapidly diminishing.

The prevailing winds during the month are light southerly over the Cape Peninsula, with frequent calms; south-westerly over the south-eastern districts; south-south-easterly over the northern borders of the Cape Province, although south-westerly breezes are almost equally frequent; north-north-westerly and northerly over the high veld of the Transvaal. Compared with last month, there is a decrease of north-westerly and northerly winds over the Cape Peninsula, with an increase of all directions between west and south-south-east, but more particularly of south winds; in the south-east littoral there is a falling-off of breezes from those directions between west and north-north-east, but an increase in all others, especially of those from south-west. The most marked contrast is found between the winds at Johannesburg and those at Kimberley. At the former place, there is an increase of winds from all points between south-east round by east to north-north-west, particularly of those from north, but a decrease of all others, more especially of those from south, south-south-west, and north-west. At Kimberley the reverse obtains, viz., a diminution in frequency of the winds between north-north-west and east-south-east, chiefly of those from north-east, and an increase of all others, principally between west-south-west and south-south-west. The wind force increases generally, except over the south-west of the Cape Province.

C. STEWART,
Chief Meteorologist.

THE GOVERNMENT PRINTING AND STATIONERY OFFICE
5721-17/8/20-600



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I

AUGUST, 1920.

No. 8.

A MEAN pressure lower than usual in the west, but slightly above normal in the north-east and south; temperature about one degree warmer than usual; precipitation in excess of the average over the west and centre, some light frosts at the beginning and middle, with hot, drying winds towards the end of the month.—these were the most notable features of the weather of August last

Pressure.—The accompanying pressure chart shows that atmospheric pressure was lower than usual over the west, and but slightly higher over the north-east and south, being almost normal over this section of the country. Anticyclonic conditions prevailed generally throughout the month, approximating at times to the summer type of distribution. Pressure was most commonly highest over the north-east, but occasionally the area of maximum pressure lay over the west and south. Anticyclonic conditions prevailed over the whole country during the first eight days of the month, but on the 9th a low-pressure area appeared over the south-west, moving off along the south coast on the 10th. On the 13th, a second "low" lay over the south coast, pushed well on to the land on the 14th, and moved eastwards on the 15th; on the 17th and 21st, depressions made an appearance on the west coast, but continued only for one day. The fifth low pressure of the month lay over the south coast on the morning of the 26th, but moved off towards the east in the course of the 27th. A depression of considerable intensity appeared over the south-west on the 29th, affecting the greater portion of the Union; it moved to the south-east during the 30th, leaving the country once more under anticyclonic conditions on the 31st. With this were associated the hot, dry winds commonly reported as occurring towards the end of the month.

Temperature during the month was, on the mean, 1.2 degrees higher than usual, owing principally to the nights being about two degrees warmer than usual. This excess was common to the greater portion of the country, being generally slightly under one degree in the Transvaal, a little over one degree in the Orange Free State, but more variable in the Cape Province, where it varied from 0.1 degrees at Mafeking and Aliwal North to four degrees at Clanwilliam and Fort St. Johns. The excess in temperature over the Cape Province was, however, as a rule much greater at inland stations than at coast stations. The most noteworthy exceptional area was Natal, where the station temperatures varied from half a degree lower than usual to normal. The greatest deficit was 1.2 degrees at Pietersburg, in the northern Transvaal, although

deficits of a few tenths of a degree occurred also at Queenstown and Carnarvon, in the Cape Province. The excess in night temperatures was usually about one degree over the Transvaal, two to three degrees in the Orange Free State and Natal, but exhibited much greater variation in the Cape Province—from a few tenths of a degree to as much as 6·4 degrees at O'okiep—but commonly from three to four degrees in the midland areas. At a few stations, however, the minimum temperatures were below the average, as at Komati Poort and Mbabane, East London, Port Elizabeth, Queenstown, and Carnarvon, the deficits ranging from 0·3 degrees at the first to 1·4 degrees at the last-mentioned station. Day temperatures were somewhat lower than usual along a belt through the centre of the Transvaal from Zeerust to Komatipoort, also in the more northerly, south-easterly and south-westerly portions there; all over Natal, the south-eastern border of the Orange Free State; at Aliwal North and Bedford, in the Cape Province. The maximum temperatures over these areas were mostly under one degree short of the average, although the deficit in Natal varied from 1·8 degrees to 3·4 degrees, while the deficiency at Pietersburg, in the northern Transvaal, was also over three degrees. Elsewhere the mean maxima were above the normal mostly by less than one degree, but by two to three degrees in the Transkei, the central Karroo, and the west coast area, where the surplus rose to 6·6 degrees at Clanwilliam. The mean warmest days were experienced at Komatipoort, and the mean coolest nights at Belfast. These were also the stations with respectively the highest (68·0 degrees) and the lowest (49·6 degrees) mean temperatures for the month, showing a difference of 18·4 degrees. The warmest portion of the month occurred between the 24th and 31st, particularly on the 29th, when the highest readings were most numerous reported, although the extreme of 105·0 degrees occurred at Komatipoort on the 27th. The coolest periods were from the 2nd to 12th and 15th to 18th, the minima for the month being most widely reported as occurring on the 16th and 17th. The lowest temperature recorded was 18·3 degrees at Lindley (O.F.S.) on the 16th. There was thus a range of 86·7 degrees between the extremes for the month.

Precipitation.—The totals for the month were above the average over that area lying west of a line drawn from Danger Point to Bloemfontein, and thence north-west to the neighbourhood of Kuruman. The excesses were mostly small, exceeding one inch only in two instances, viz., Ceres, with a surplus of 4·76 inches, and Wynberg, with an excess of 1·62 inches. Even over this area a few stations had a total slightly less than usual, e.g. Hopetown, Carnarvon, O'okiep, and the Royal Observatory, where there was a deficiency of 0·24 inches. With few exceptions, the stations over the rest of the country reported only small and deficient rainfall or experienced absolute drought throughout the month. The exceptional areas were the neighbourhood of Steytlerville, with 0·50 inches, Durban (Natal) with 0·51 inches, and Haenertsburg and Woodbush, in the northern Transvaal, with 0·04 inches and 0·24 inches respectively in excess of the normal. It may be gathered from what has been already stated that, except over the west, south-west, and south of the Cape Province, where heavy rain occurred at times, precipitation took place mostly in the form of irregular scattered showers on a few days of the month. The continued absence of rain over the summer rainfall area is beginning to prove detrimental in those areas where grain crops are cultivated, and farmers in the south-east of the Cape Province are in some instances already short of water for stock. Showers were most widely distributed over the Transvaal, Orange Free State, and Natal and northern border of the Cape Province, between the 20th and 22nd; over the Karroo between the 25th and 27th; light, drizzling rain throughout the month along the south coast, and heavier rains over the Cape Peninsula and south-west during the second and fourth weeks, with

[CONTINUED ON PAGE 7.]

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), AUGUST, 1920.

PLACE.	OBSERVER.	Month—Aug., 1920.			Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.											
		° F.	Mean Max.	Mean Min.				° F.	Date.	Lowest.	Date.								
												° F.	° F.	° F.					
<i>Tyrol</i>																			
Bellert.....	The Forester.....	65.0	33.4	49.5	49.5	0.1	+	80th.....	22.0	30th & 5th.	91.0	27th.....	45.0	8th.....					
Barbaron.....	W. Grubb.....	77.1	52.3	63.4	63.4	1.3	+	27th.....	76.5	27th.....	76.5	27th.....	35.0	6th.....					
Johannesburg (Observatory).....	The Staff.....	66.3	44.9	55.6	55.6	1.0	+	27th.....	85.0	16th.....	106.0	27th.....	43.0	7th.....					
Klerksdorp (Strathmore).....	Chas. Scott.....	73.5	38.9	56.2	56.2	0.7	+	31st.....	81.5	31st.....	81.5	31st.....	29.0	7th.....					
Koedoesfontein.....	H. J. Evans.....	83.9	52.2	68.0	68.0	0.6	+	31st.....	84.5	30th.....	84.5	30th.....	33.0	9th.....					
Nyctroon.....	G. Bakker.....	76.7	41.6	58.6	58.6	0.5	+	31st.....	83.4	31st.....	83.4	31st.....	30.6	2nd & 16th.					
Plarinas Rest.....	J. A. Strickon.....	71.4	41.5	56.4	56.4	1.2	-	31st.....	85.7	31st.....	85.7	31st.....	34.0	16th.....					
Pretoria (Exp. Farm).....	W. Franklynne.....	71.3	41.6	57.4	57.4	0.5	+	31st.....	85.7	31st.....	85.7	31st.....	29.7	10th.....					
Pretoria (Meteorological Office).....	The Manager.....	74.3	41.2	57.8	57.8	0.4	+	31st.....	85.7	31st.....	85.7	31st.....	34.0	16th.....					
Reet Reet.....	The Staff.....	72.2	41.1	58.3	58.3	1.6	+	31st.....	85.7	31st.....	85.7	31st.....	29.7	10th.....					
Zeerust.....	J. Werner.....	70.8	43.4	57.1	57.1	0.2	+	31st.....	85.7	31st.....	85.7	31st.....	29.7	10th.....					
	H. Dietrich.....	73.7	40.6	57.2	57.2	0.6	+	31st.....	85.7	31st.....	85.7	31st.....	29.7	10th.....					
<i>Swaziland</i>																			
Misibane.....	Swaziland Police.....	60.9	47.3	58.6	58.6	0.2	+	30th.....	88.0	8th.....									
<i>Orange Free State</i>																			
Bloemfontein.....	E. Arndt.....	67.5	30.1	53.3	53.3	1.4	+	29th.....	79.2	16th.....	24.5	29th.....	30.0	30th.....					
Barrismith.....	The Forester.....	68.5	39.1	50.8	50.8	1.8	+	29th.....	78.0	30th.....	24.5	29th.....	29.0	16th.....					
Ladybrand.....	The Forester.....	66.4	38.3	52.4	52.4	1.2	+	29th.....	76.0	29th.....	24.5	29th.....	16.3	16th.....					
Imley.....	J. Collister-Dates.....	69.1	36.3	53.7	53.7	1.7	+	29th.....	81.8	28th.....	25.0	28th.....	25.0	12th & 17th.					
Bedulle.....	J. J. Wuxhaugh.....	67.8	36.3	52.0	52.0	0.0	±	29th.....	75.0	25th & 29th.....									
<i>Natal</i>																			
Durban.....	Capt. D. Black.....	73.7	58.4	65.6	65.6	0.4	-	30th.....	86.0	4th.....	50.0	30th.....	30.0	16th.....					
Dundee.....	West Thorold.....	72.2	41.6	56.9	56.9	0.0	±	29th.....	88.0	12th.....	50.0	30th.....	41.0	3rd.....					
Rhabsis.....	The Gaoler.....	74.5	55.4	65.0	65.0	0.6	-	29th.....	83.2										
Martinsburg (Mental Hospital).....	The Superintendent.....	74.9	50.0	62.4	62.4	0.0	±	29th.....											
<i>Cape</i>																			
Alford North.....	A. Alcock.....	66.9	35.4	51.0	51.0	0.1	+	29th.....	77.0	17th.....	24.0	29th.....	29.0	17th.....					
Bedford.....	T. C. Hall.....	70.1	43.4	57.2	57.2	0.2	+	25th.....	81.5	16th.....	25.0	25th.....	39.4	11th.....					
Carnarvon.....	A. P. Malherbe.....	68.1	35.6	50.8	50.8	0.4	+	7th.....	90.6	35.0	32.0	29th.....	36.0	16th.....					
Cape Town (Royal Observatory).....	The Staff.....	69.8	49.7	56.8	56.8	1.2	+	24th.....	83.0	42.0	32.0	29th.....	36.0	16th.....					
Clanwilliam.....	W. J. Downes.....	76.9	44.0	60.9	60.9	5.1	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
East London.....	M. G. Grogan.....	71.2	51.8	61.5	61.5	0.0	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Grand-Reinet.....	S. E. D. Treadwell.....	73.0	40.4	56.7	56.7	4.3	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Koosastad.....	H. D. Coyte.....	68.1	39.0	53.6	53.6	3.8	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Kimberley.....	J. A. Fogarty.....	71.9	43.6	57.8	57.8	2.3	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Maidling (Convent).....	The Mother Superior.....	76.6	44.1	59.8	59.8	0.1	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Mossel Bay (Cape St. Blaize).....	The Lightkeeper.....	66.0	52.2	59.4	59.4	1.1	+	24th.....	78.0	47.0	47.0	18th.....	21.0	17th.....					
Murrayburg.....	A. Cameron.....	65.1	35.8	50.4	50.4	2.0	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
O'okieo.....	J. Burrows.....	67.5	48.7	58.1	58.1	4.3	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Port Elizabeth.....	The Lightkeeper.....	69.0	50.6	59.8	59.8	0.5	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Port St. Johns (Cape Hermes).....	The Lightkeeper.....	74.6	58.5	66.6	66.6	5.0	+	24th.....	84.5	29th.....	29.0	29th.....	36.0	16th.....					
Queenstown.....	H. Holey.....	66.6	36.0	53.3	53.3	0.1	-	25th.....	79.0	17th.....	53.0	17th.....	53.0	17th.....					
Wynberg (Convent).....	The Mother Superior.....	65.8	48.9	56.4	56.4	0.8	+	22nd.....	81.2	12th.....	41.2	22nd.....	41.2	12th.....					

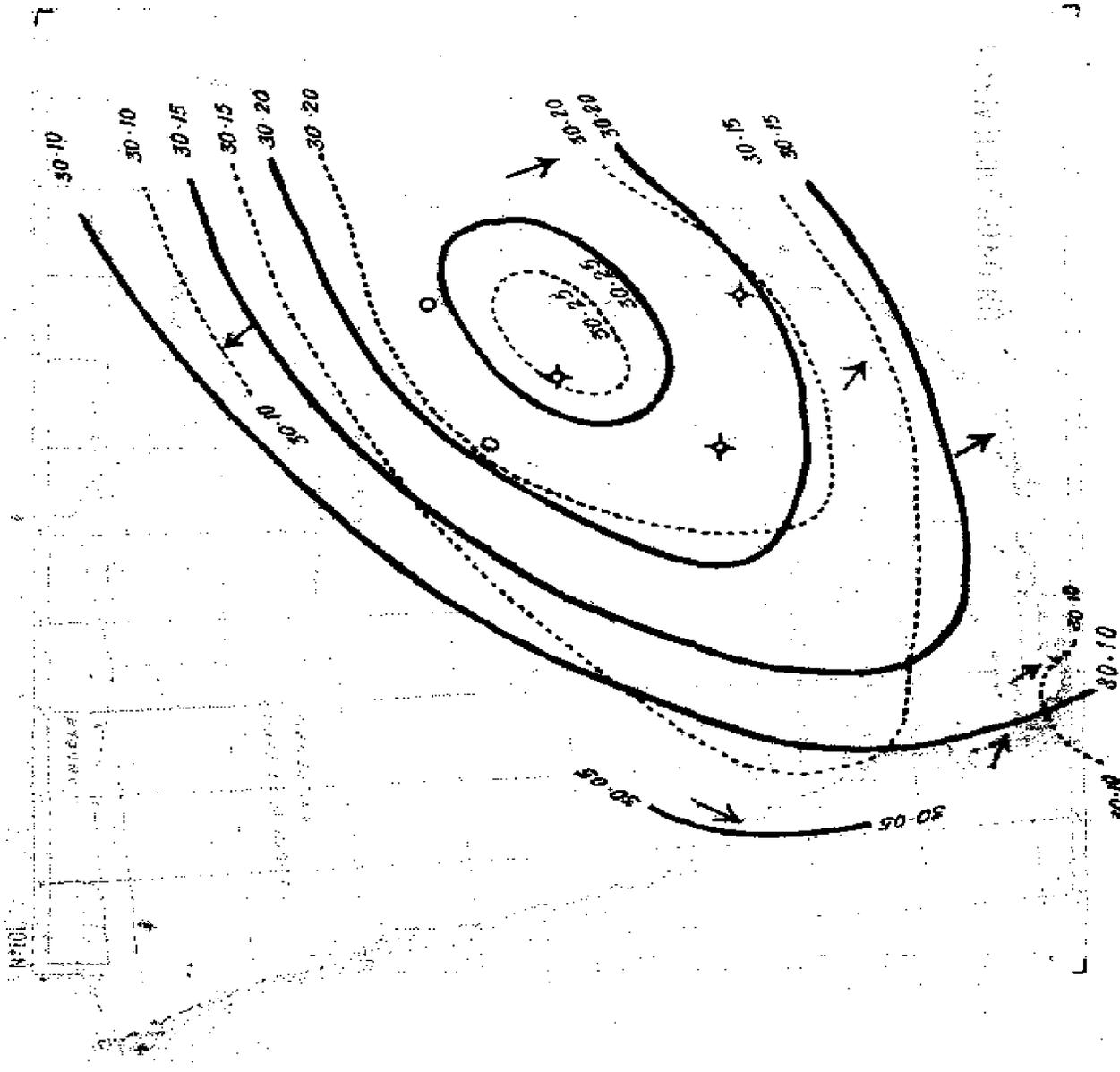
RAINFALL, AUGUST, 1920.

PLACE	OBSERVER	Month,		Normal	Difference from Normal,		From 1st Jan., 1920.	Normal.	Difference from Normal,		From 1st July, 1920.	Normal.	Difference from Normal.		
		Aug.,	1920		Inches,	Inches,			Inches,	Inches,			Inches,	Inches,	
<i>Transvaal</i> —															
Barberton.....	W. Grubb.	Inches,	0 05	Inches,	0 21	Inches,	13 15	Inches,	21 70	Inches,	0 05	Inches,	0 85	Inches,	0 80
Bethan.....	The Forester.		0 26		0 28		14 32		17 71		0 04		0 56		0 48
Botha.....	H. F. Joubert.		0 00		0 48		8 81		15 53		0 17		0 66		0 49
Charmont.....	S. A. Polze.		—		0 30		11 32		11 32		—		0 35		—
Ernesto.....	Mrs. S. M. Nicholson.		0 12		0 37		19 74		25 57		—		0 58		—
Haerterburg.....	S. A. Polze.		0 24		0 20		—		27 07		0 40		0 98		0 58
Heidelberg.....	W. A. ter Horst.		0 60		0 34		8 71		15 50		0 19		0 68		0 58
Johannesburg (Observatory).....	The Staff.		0 05		0 27		13 81		15 01		0 09		0 61		0 52
Klerksdorp (Stratburg).....	C. Swart.		0 16		0 18		12 69		14 16		0 16		0 39		0 23
Konakopook.....	H. J. Evans.		0 11		0 21		22 11		17 56		0 27		0 57		0 30
Middelburg.....	Dr. H. A. Spencer.		0 14		0 34		13 57		15 48		0 10		0 39		0 23
Nydenom.....	G. Bakker.		0 06		0 24		15 99		14 42		0 35		0 45		0 10
Pietermaritzburg.....	W. Franklynne.		0 00		0 15		13 16		12 01		0 55		0 44		0 44
Piet Metel.....	J. Werner.		0 04		0 31		17 14		22 44		0 24		0 87		0 83
Pietersburg Rest.....	J. A. Newton.		0 00		0 42		26 19		27 29		0 10		0 86		0 60
Pretoriusburg (Exp. Farm).....	The Manager.		0 00		0 21		11 92		13 38		0 00		0 39		0 39
Pretoria (Meteorological Office).....	The Staff.		0 05		0 54		13 05		17 07		0 05		0 61		0 58
Rooiberg.....	N. H. Manro.		0 00		0 33		12 60		14 86		0 18		0 92		0 74
Rustenburg.....	S. A. Polze.		0 00		0 21		11 89		16 63		0 00		0 72		0 72
Wakkerstrom.....	The Gaoler.		—		0 07		—		18 15		—		1 07		—
Woodbush.....	The Forester.		0 00		0 75		—		48 77		1 41		1 87		0 46
Zaerui.....	R. Dietrich.		0 00		0 17		11 97		15 41		—		0 44		0 44
<i>Swaziland</i> —															
Mbabane.....	Swaziland Police.		0 49		0 04		34 29		30 11		0 04		1 35		0 71
<i>Orange Free State</i> —															
Bloemfontein.....	E. Arndt.		0 45		0 21		17 68		12 36		0 65		0 77		0 12
Bethulle.....	J. J. Wardhaugh.		0 35		0 46		12 55		12 80		0 37		0 84		0 47
Marikwaith.....	L. Melbary.		0 06		0 05		16 47		15 89		0 06		0 83		0 77
Kroonstad.....	S. B. Northfield.		0 38		1 00		17 97		12 05		0 38		1 27		0 00
Ladybrand.....	The Forester.		0 27		0 41		19 09		16 21		0 37		0 85		0 58
Umdree.....	J. Collister-Dante.		0 05		0 38		14 00		14 60		0 05		0 74		0 69
<i>Natal</i> —															
Dundee.....	W. Timrold.		0 28		0 71		24 41		18 83		0 25		0 88		0 05
Durban (Point).....	Capt. D. Black.		1 72		1 21		33 72		24 26		4 45		1 97		2 48
Hiobias.....	The Gaoler.		0 51		1 09		32 17		21 19		1 08		1 71		0 63
Howick.....	The Gaoler.		0 20		0 84		34 50		18 73		0 20		1 00		0 80
Lesemitha.....	D. A. R. Leather.		0 24		0 50		15 72		16 90		0 24		0 83		0 59
Phenacanthong (Mental Hosp.).....	The Staff.		0 28		0 64		35 17		10 74		0 29		1 08		0 79
Vryheid.....	The Gaoler.		0 00		0 73		20 19		20 02		0 00		1 02		1 02
Wesmar.....	The Gaoler.		0 60		0 71		—		15 80		—		0 81		—

RAINFALL, AUGUST, 1920 (continued).

Place.	Observer.	Month. Aug., 1920.	Normal. Inches.	Difference from Normal. Inches.	From 1st Jan., 1920. Inches.	Normal. Inches.	Difference from Normal. Inches.	From 1st July, 1920. Inches.	Normal. Inches.	Difference from Normal. Inches.
Cape Town (Royal Observatory).	The Staff.	10.63	5.87	+ 4.76	41.00	30.13	+ 11.47	17.88	11.01	+ 6.27
Cape Town (Royal Observatory).	A. Heald.	0.80	0.31	- 0.01	—	6.27	—	0.33	0.50	- 0.17
Cape Town (Royal Observatory).	A. P. Malherbe.	1.17	1.16	+ 0.02	9.16	6.03	+ 2.52	4.44	2.40	+ 2.04
Cape Town (Royal Observatory).	W. J. Dwyne.	0.14	2.06	- 1.05	14.52	19.97	- 5.45	1.62	3.18	- 1.56
East London.	A. Doreale.	0.43	0.38	+ 0.10	6.64	5.17	+ 1.47	1.06	0.59	+ 0.47
Fraserburg.	The Gaoler.	1.32	0.79	+ 0.53	5.58	4.05	+ 1.53	1.03	0.33	+ 0.70
Fraserburg.	The Gaoler.	0.00	0.63	- 0.63	13.31	9.06	+ 4.25	0.89	1.02	- 0.13
Fraserburg.	S. E. D. Freshwell.	0.40	0.40	- 0.15	12.29	9.83	+ 2.46	0.40	0.49	- 0.09
Fraserburg.	The Gaoler.	0.00	0.33	- 0.33	12.42	9.78	+ 2.64	0.01	0.70	- 0.69
Fraserburg.	The Gaoler.	0.14	0.24	- 0.10	14.00	9.34	+ 4.66	0.14	0.49	- 0.35
Fraserburg.	The Gaoler.	0.80	0.12	+ 0.68	6.44	1.39	+ 5.05	0.83	0.26	+ 0.57
Fraserburg.	J. A. Fogarty.	1.25	0.18	+ 1.07	15.91	10.90	+ 4.96	1.25	0.43	+ 0.82
Fraserburg.	The Gaoler.	1.05	2.67	- 1.72	16.33	18.19	- 1.86	4.01	4.89	- 0.88
Fraserburg.	The Gaoler.	0.05	0.64	- 0.59	21.32	16.22	+ 5.10	0.08	0.84	- 0.76
Fraserburg.	H. D. Coyle.	0.78	0.09	+ 0.69	—	11.80	—	0.73	0.48	+ 0.25
Fraserburg.	Karnaud.	0.40	0.15	- 0.15	13.23	13.71	- 0.48	0.00	0.52	- 0.52
Fraserburg.	The Gaoler.	1.43	1.51	- 0.08	7.92	11.44	- 3.62	2.52	2.69	- 0.17
Fraserburg.	The Mother Superior.	0.21	0.40	- 0.19	—	8.03	—	0.02	0.69	- 0.67
Fraserburg.	W. H. Luxton.	0.04	1.01	- 0.97	4.02	5.62	- 1.60	1.38	1.85	- 0.47
Fraserburg.	A. Cameron.	0.14	0.29	- 0.15	20.14	9.75	+ 10.39	0.14	0.51	- 0.37
Fraserburg.	J. Burrows.	3.50	2.05	+ 1.45	17.49	14.99	+ 2.50	6.94	5.65	+ 1.29
Fraserburg.	The Gaoler.	0.52	2.18	- 1.66	8.57	13.00	- 4.43	0.75	4.04	- 3.29
Fraserburg.	J. E. Allen.	0.39	1.91	- 1.52	37.92	27.24	+ 10.68	0.72	3.84	- 3.12
Fraserburg.	B. D. Jordan.	0.17	0.17	- 0.00	10.35	7.57	+ 2.78	0.17	0.34	- 0.17
Fraserburg.	The Gaoler.	0.07	0.61	- 0.54	14.86	13.94	+ 0.92	0.25	0.84	- 0.69
Fraserburg.	H. Holley.	0.08	0.48	- 0.40	7.56	6.04	+ 1.54	1.33	0.84	+ 0.49
Fraserburg.	The Gaoler.	1.36	0.86	+ 0.50	8.58	7.04	+ 1.54	3.21	1.62	+ 1.59
Fraserburg.	The Gaoler.	0.10	2.47	- 2.37	10.46	20.99	- 10.53	4.06	4.55	- 0.52
Fraserburg.	The Gaoler.	0.10	0.77	- 0.67	13.87	15.96	- 2.09	0.18	1.30	- 1.12
Fraserburg.	A. Dixpeck.	1.34	1.36	- 0.02	9.84	9.18	+ 0.66	3.09	2.31	+ 0.78
Fraserburg.	The Gaoler.	0.15	0.07	+ 0.08	5.42	5.20	+ 0.22	0.17	0.17	- 0.02
Fraserburg.	The Gaoler.	0.51	0.27	+ 0.24	10.86	7.53	+ 3.43	0.55	0.52	+ 0.03
Fraserburg.	C. Butler.	0.60	0.26	+ 0.34	—	14.24	—	0.00	0.41	- 0.41
Fraserburg.	The Gaoler.	2.16	1.59	+ 0.56	14.74	9.24	+ 5.50	4.16	3.34	+ 0.82
Fraserburg.	The Gaoler.	9.17	7.55	+ 1.62	44.59	35.52	+ 8.97	19.41	14.76	+ 4.65





August, 1920. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
 The dotted lines indicate the normal distribution for August.

light showers over the west coast area during the last week. The cumulative rainfall since the beginning of July is above the average over the greater part of the winter rainfall area, parts of the west of the northern Karroo, the northern Border, and southern Karroo; also at Komatipoort and Durban (Natal). The excesses are mostly over half an inch in amount, but reaching 6.27 inches at Ceres in the south-west of the Cape Province. Elsewhere there has been a shortage mostly under an inch, but amounting to 3.29 inches at Port Elizabeth. When, however, the totals since the beginning of the calendar year (1st January) are considered, it is found that the greater portion of the Cape, Natal, the Orange Free State, and a few stations in the east and north of the Transvaal have had quantities in excess of the average, mostly by amounts exceeding four inches. Over the greater portion of the Transvaal, on the other hand, as well as the west of Natal, the south-east of the Orange Free State, parts of the north-east and south-east of the Cape, the south coast, and the Namaqualand Plateau, the total for the eight months is in defect of the average by amounts varying from 0.16 inches at Aliwal North (Cape) to 8.64 inches at Barberton, in the Transvaal. The shortage has been most serious over the Transvaal and south and south-east of the Cape. No reports of hail were received for this month.

OCTOBER WEATHER CHARACTERISTICS.

The month of October marks the firm establishment of the inland rainy season, and a general increase in the intensity of precipitation throughout the Union. In the south-west of the Cape Province and over the Peninsula, however, the tendency is in the opposite direction, while over the southern and western coastal districts there should be but little change from the preceding month. The heaviest rainfall should now be experienced in Zululand, Swaziland, and Natal, where the normals are about 3.5 inches. The Cape Peninsula receives an average of about 3 inches; Basutoland, the Transvaal eastern border, and the south-eastern coastal districts 2.5 inches; the south coast and south-west of the Cape Province 2.0 inches, the Transvaal high veld, Orange Free State, and east-central Karroo, 1.5 inches; and the remainder of the Union less than 1 inch. A mean monthly air temperature of 68 degrees occurs in Natal, and 67 degrees in the eastern Transvaal and the northern borders of the Cape Province. The normal in Kaffraria is about 61 degrees, in the Cape coastal districts 62 degrees, on the Peninsula 60 degrees, and in the south-west 61 degrees. On the high veld the mean temperature should range from 63 degrees in the Transvaal and Orange Free State to 60 degrees in Basutoland and on the northern Karroo. Frosts are unusual. Of the total possible number of hours of bright sunshine, about 80 per cent. should be enjoyed over the northern borders of the Cape Province, 58 per cent. in the south-eastern districts, 61 per cent. on the Peninsula, and 65 per cent. in the Transvaal. During this month the winds over the east and interior of the country attain their maximum velocity, whilst over the south-west they are also increasing in force. Compared with the previous month, there is a general decrease in frequency at all stations of those winds blowing between north and north-west, and a general increase of southerly and south-south-westerly breezes, and of north-easterly winds in addition over the summer rainfall area. The prevailing wind directions are south-south-west at Kimberley, north at Johannesburg, north-east at East London, and southerly at Capetown.

During October destructive hailstorms are of frequent occurrence, affecting wide areas.

C. STEWART,
Chief Meteorologist.

THE GOVERNMENT PRINTING AND STATIONERY OFFICE
6502-16/9/20-600



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

SEPTEMBER, 1920.

No. 9.

A MEAN barometric pressure lower than usual; a mean temperature less than one degree in excess of the normal, with some severe frosts towards the middle of the month; a rainfall in excess of the average over the greater portion of the Transvaal, east of the Orange Free State, west of Natal and central and south-western portions of the Cape Province, but a serious deficit over the south east and south of the Cape Province; strong, hot winds of almost daily occurrence, and some destructive hailstorms towards the end of the month; such were the outstanding features of the weather of September last.

Pressure.—The map showing the mean distribution of pressure throughout the month shows that whilst the relative distribution of the isobars was fairly normal, the absolute value of the isobars was generally about 0.05 inch lower than usual. The run of the isobars is typical of this month, which forms part of the transition period between winter and summer conditions. Although pressure is decreasing over the interior, the high pressure area was present practically throughout the month. The most notable feature of pressure distribution was a succession of "lows," which occurred on sixteen days of the month: viz., on the 1st, 3rd, 6th, and 18th, over the south-east; on the 8th and 9th on the west, moving to south and east; on 11th to 16th over the south-west, moving eastwards; on 22nd to 24th in the west, moving to south and east, and on the 28th over the south coast. Of these the most intense was that from the 22nd to the 24th, when the barometer fell to 29.55 inches on the south coast. This depression was accompanied by strong (and, in some areas, hot) northerly winds in its front, as at Great Fish Point; whilst at Cape Agulhas a westerly gale blew from 10.15 a.m. on the 23rd to 7.40 p.m. on the 24th, reducing the visibility seawards to about half a mile owing to the volume of sand in the air. On the 12th, a storm of wind and rain swept over the Cape Peninsula, with loud peals of thunder and vivid lightning in the evening.

Temperature.—The mean temperature for the month of all stations was above the average by 0.7 degree, due to the days being half a degree and the nights 0.8 degree warmer than the average. This excess in temperature was, however, not general over the country, a broad belt of sub-normal temperature covering the south-west of the Transvaal, the greater part of the Orange Free State, and parts of the north-east and south-east of the Cape Province, divided the country into two areas of excessive temperature, whilst small patches of

deficient temperature occurred over the south and east of Natal, over Namaqualand, and the south of the Cape Peninsula. There the deficits were mostly between 0.5 degree and 1.0 degree, but amounting to 2.6 degrees at O'okiep. The excess of temperature was greatest in the east and west of the Transvaal, extending to Bechuanaland, where it was mostly more than two degrees, but rising to 3.7 degrees at Mafeking. The mean maximum temperature was above the average at most stations, particularly in the Transvaal, Swaziland, and at Clanwilliam, where it was commonly two to three degrees in excess of normal. The most notable exceptional areas were almost coincident with those in which the mean monthly temperature was below the average, the largest deficit being 4.0 degrees at Durban (Natal), and the next 3.5 degrees at O'okiep. These areas were, however, more extensive than in the former case, including the whole of Natal, the coastal area of the Transkei, and the Cape Peninsula. The mean minima were below the average by much smaller amounts, mostly less than a degree, at stations in the central and south-western parts of the Transvaal, including Vryburg, in Bechuanaland, the central and southern parts of the Orange Free State, thence southwards through the eastern portion of the Cape Province to the sea between East London and Port Elizabeth; also in the inland portion of the Transkei and in Namaqualand. The deficits lay between one and two degrees at Bloemfontein, Bedford, East London, and O'okiep. Elsewhere the night temperatures were in excess of the normal mostly by quantities exceeding one degree and rising to between two and four degrees over the greater portion of the Transvaal, particularly the west-central parts; also at Mafeking, the north of Natal, and Port St. Johns. The mean warmest station was Komatipoort, with a temperature of 74.0 degrees, and the coolest Murraysburg, in the Cape Province, with 54.5 degrees—a difference of 19.5 degrees. The warmest days of the month were 11th, 20th to 25th (particularly the 23rd and 24th, when the low-pressure area already noted was well over the land), and the 27th to 29th. The coldest spells were from the 2nd to 6th, 14th to 18th, 21st to 23rd, and 25th. The extreme minima for the month were most widely noted on the 5th and 15th, when shade temperatures below freezing-point were reported as occurring at a large number of inland stations. The highest mean maximum was 87.9 degrees at Komatipoort, and the lowest mean minimum 38.3 degrees at Murraysburg, a mean difference of 49.6 degrees between the stations with the warmest days and the coldest nights. The extremes for the month were 101.5 degrees on the 24th at Komatipoort and 27.0 degrees at Murraysburg (Cape Province) on the 5th and at Belfast on the 15th, an extreme range of 74.5 degrees. Severe late frosts were experienced at a number of places during the month, adversely affecting the veld in the Frankfort Division (Orange Free State), and killing fruit at Zwartkopjes (Witwatersrand) and Lichtenburg.

Precipitation.—Except for some light scattered showers over the major portion of the country between the 6th and 8th and about the 12th, precipitation during the month was mainly confined to the Cape Peninsula, the south west, and west and south coastal areas. Nevertheless, rainfall in excess of the average was in these areas limited to the Cape Peninsula, and the more southerly part of the west coast area. Between the 27th and 30th good rains fell at most stations in the Transvaal, the Orange Free State, Natal, and parts of the northern Karroo, north-east of the Cape Province. These rains were of considerable value to agriculturists, enabling ploughing to be started, and bringing on the veld, which had practically ceased to have any pastoral value over large areas. In consequence of these welcome rains, the month's precipitation was in excess of the average over about two-thirds of the Transvaal, the eastern half of the Orange Free State, parts of the northern Karroo, of

[CONTINUED ON PAGE 7.]

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), SEPTEMBER, 1920.

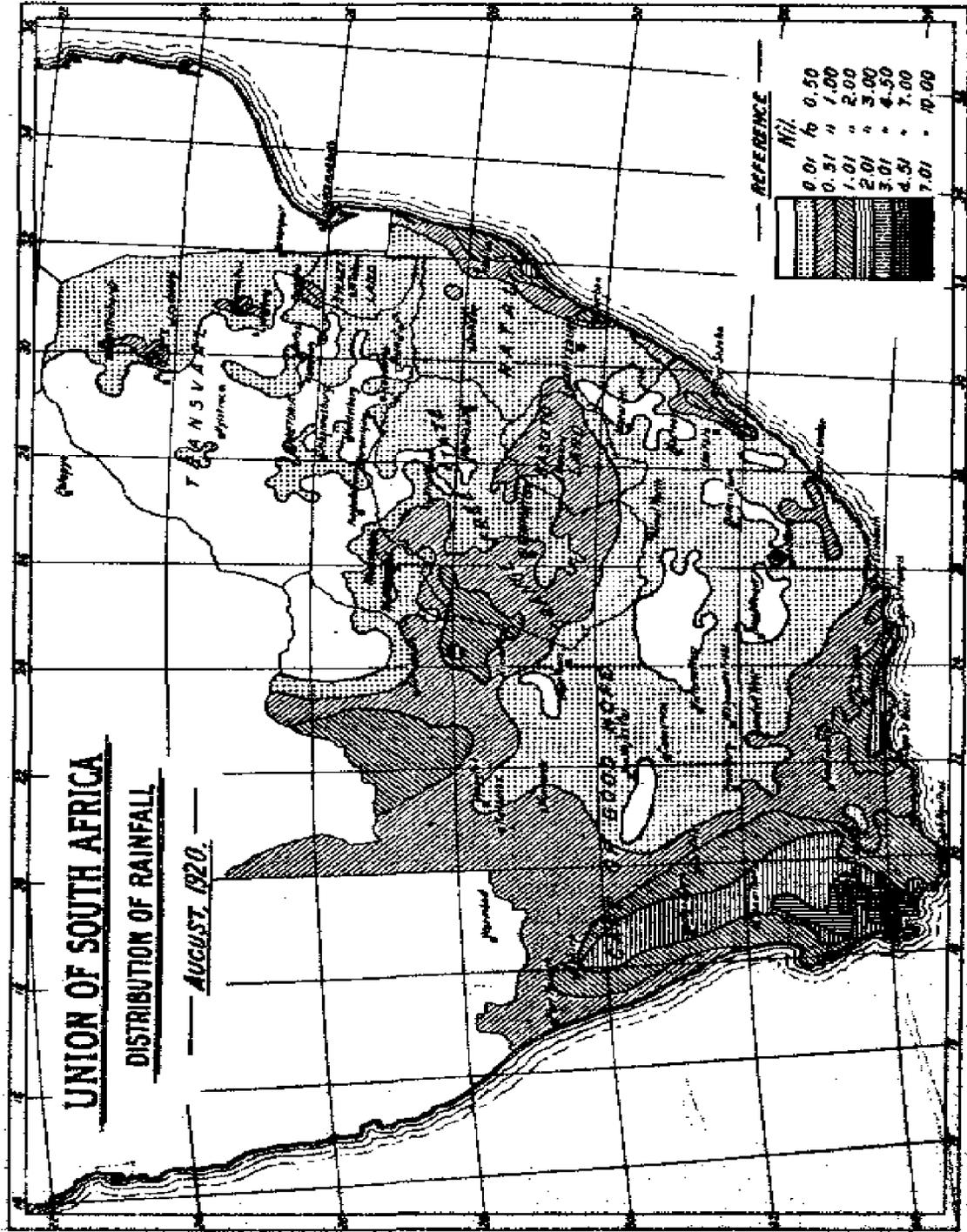
PLACE	OBSERVER.	Month—Sept., 1920.			Normal Monthly Temperature.	Difference from Normal.	Extremes.		
		Mean.		Highest.			Lowest.	Date.	
		Max.	Min.						
<i>Transvaal—</i>									
Belcast.	The Forester.	73.0	39.7	89.4	+ 1.3	82.0	27.0	24th.	15th.
Barberton.	W. Grubb.	80.4	57.4	95.0	+ 2.3	95.0	50.0	24th.	6th & 18th.
Johannesburg (Observatory).	The Staff.	72.6	48.3	89.1	+ 1.3	89.0	38.8	24th.	14th.
Kerkdorf (Strathmore).	Chas. Scott.	80.4	45.3	90.0	+ 0.6	90.0	32.0	11th.	15th & 17th.
Konakpoort.	B. J. Fothergill.	87.9	60.1	91.5	+ 1.3	91.5	50.0	24th.	5th.
Kyaboom.	O. Bakker.	83.8	47.7	90.0	+ 1.3	90.0	37.0	26th.	15th.
Pilgrims Rest.	J. A. Stilton.	78.8	46.5	88.5	+ 2.1	88.5	40.0	1st.	21st.
Pretzsburg.	W. Frankleyne.	79.5	49.2	89.5	+ 1.6	89.5	44.0	21st.	6th & 18th.
Pretzstroum (Exp. Farm).	The Manager.	80.1	46.1	87.6	+ 2.0	87.6	30.2	24th.	15th.
Pretoria (Meteorological Office).	The Staff.	78.7	31.3	87.2	+ 1.6	87.2	42.5	21st.	15th.
Piet Retief.	J. Werner.	74.3	49.3	89.0	+ 0.9	89.0	40.0	24th.	5th.
Zeerust.	H. Dietrich.	80.1	51.0	90.2	+ 2.2	90.2	32.0	24th.	15th.
<i>Swaziland—</i>									
Mbabane.	Swaziland Police.	75.1	51.0	92.0	+ 1.8	92.0	42.0	24th.	23rd.
<i>Orange Free State—</i>									
Riesmfontein.	E. Arndt.	72.2	48.4	83.9	- 1.3	83.9	30.9	23rd.	15th.
Harrismith.	The Forester.	69.3	55.8	79.0	+ 1.2	79.0	29.0	23rd.	25th.
Ladysmith.	The Forester.	70.6	43.1	78.0	+ 1.6	78.0	33.0	11th.	14th & 15th.
Lindley.	J. Collister-Oates.	75.4	42.2	84.0	+ 0.2	84.0	27.8	23rd.	15th.
Retulula.	J. J. Wardhaugh.	71.7	42.4	84.0	- 1.2	84.0	28.9	23rd.	5th.
<i>Natal—</i>									
Durban.	Capt. D. Black.	72.5	59.8	83.6	- 1.4	83.6	54.2	23rd.	2th.
Dundee.	West Thorold.	77.6	48.5	90.0	+ 0.2	90.0	39.0	23rd & 24th.	5th, 15th, & 16th.
Hiabisa.	The Gaoler.	77.8	57.3	86.7	+ 0.9	86.7	53.0	24th.	4th.
Maritzburg (Mental Hospital).	The Superintendent.	77.2	52.1	85.2	- 0.6	85.2	44.0	24th.	5th.
<i>Cape—</i>									
Allway North.	A. Alcock.	71.2	40.5	83.0	- 0.9	83.0	27.5	23rd.	5th.
Bedford.	T. C. Hall.	71.9	43.7	88.0	+ 1.1	88.0	33.0	23rd.	5th.
Carnarvon.	A. P. Midherbe.	70.6	39.6	83.0	+ 0.9	83.0	30.0	28th.	2nd & 15th.
Capetown (Royal Observatory).	The Staff.	64.2	51.0	81.0	+ 0.6	81.0	39.7	27th.	3rd.
Clanwilliam.	W. J. Downes.	77.8	45.2	97.0	+ 1.9	97.0	36.0	22nd.	4th & 6th.
East London.	M. G. Grogan.	71.6	53.4	78.0	- 0.7	78.0	48.0	20th & 25th.	4th, 22nd, & 25th.
Graaff-Reinet.	S. E. D. Treadwell.	70.8	45.9	92.0	+ 1.3	92.0	25.0	23rd & 28th.	15th.
Kolered.	H. D. Coyle.	71.0	52.8	86.4	- 0.1	86.4	31.8	23rd.	5th.
Mafeking (Convent).	The Mother Superior.	81.7	51.1	89.5	+ 3.7	89.5	36.0	21st.	15th.
Rosel Bay (Cape St. Blaize).	The Lightkeeper.	66.0	59.4	78.0	+ 1.0	78.0	47.0	23rd.	4th.
Murraysburg.	A. Cameron.	70.7	38.3	85.0	+ 0.9	85.0	27.0	23rd & 29th.	5th.
O. Orpen.	J. Burrows.	67.1	45.3	88.5	- 2.0	88.5	37.5	22nd.	14th.
Port Elizabeth.	The Lightkeeper.	65.9	52.0	83.0	- 0.7	83.0	45.0	28th.	4th.
Port St. Johns (Cape Hermes).	The Lightkeeper.	72.0	58.4	86.0	+ 1.2	86.0	53.0	11th.	5th, 15th, & 25th.
Queenstown.	H. Holley.	70.4	48.2	86.0	- 1.4	86.0	30.0	23rd.	5th.
Vryburg.	Chas. Butler.	80.6	44.0	89.0	- 0.3	89.0	29.0	11th.	15th.
Wynberg (Convent).	The Mother Superior.	68.3	49.9	81.5	- 0.1	81.5	44.0	27th.	4th.

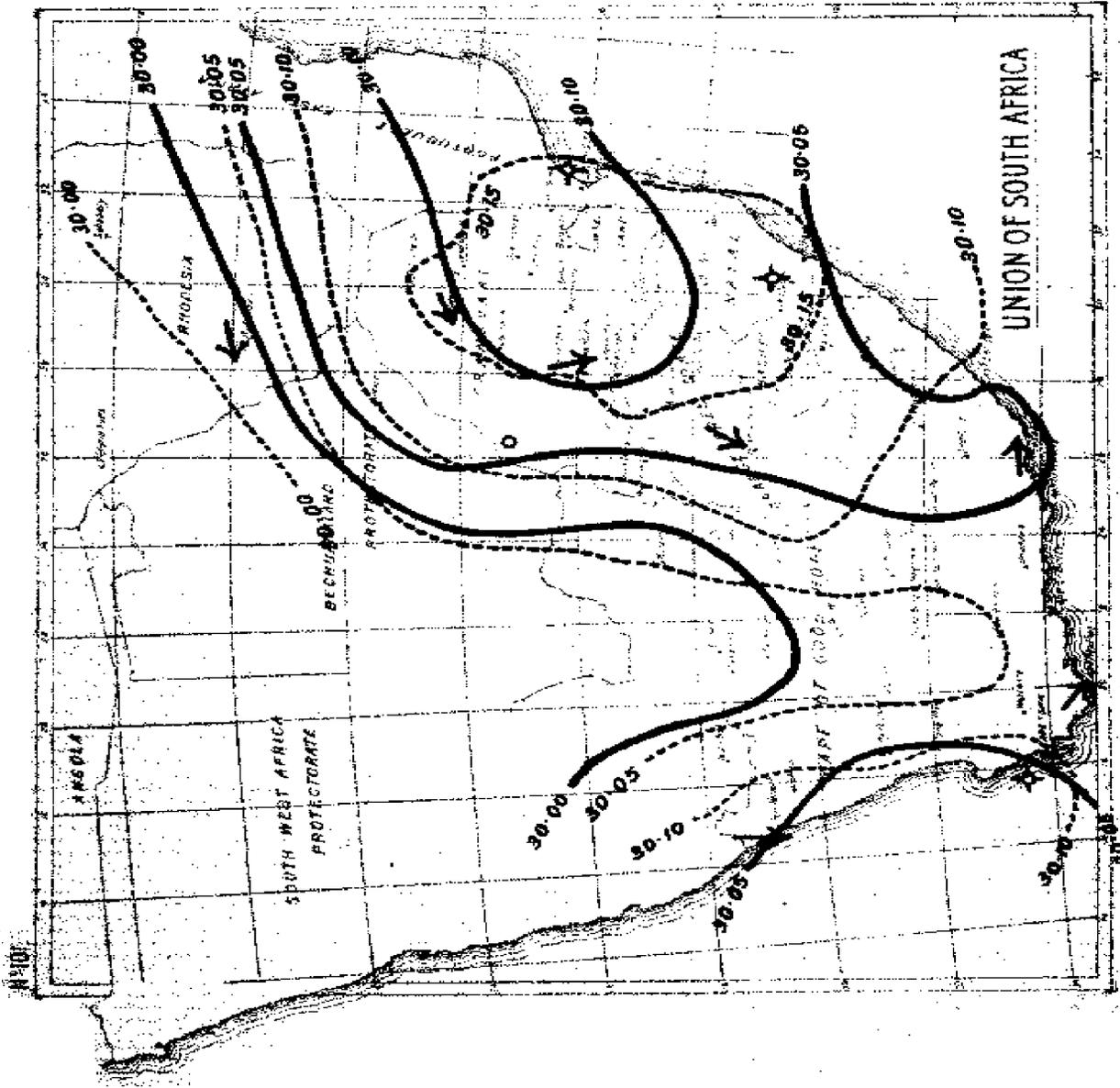
RAINFALL, SEPTEMBER, 1920.

PLACE.	OBSERVER.	Month.	Normal.	Difference from Normal.	From 1st Jan., 1920.	Normal.	Difference from Normal.	From 1st July, 1920.	Normal.	Difference from Normal.	
		Sept. 1920									
Prussia—											
Barthelme.....	W. Grubb.....	Inches, 0.62	Inches, 0.40	Inches, - 0.28	Inches, 13.77	Inches, 22.00	Inches, - 5.92	Inches, 0.67	Inches, 1.75	Inches, - 1.08	
Bekast.....	The Forester.....	0.13	0.06	- 0.78	14.30	18.67	- 4.37	0.26	1.32	- 1.26	
Bethal.....	H. F. Joabert.....	3.09	0.56	+ 2.54	11.40	16.08	- 4.68	3.26	1.21	+ 2.06	
Charesont.....	S. A. Polke.....	—	0.05	—	—	11.37	—	—	0.40	—	
Ernslo.....	Mrs. S. M. Nicholson.....	3.37	0.74	+ 2.63	23.11	16.31	+ 6.80	0.49	0.32	+ 0.17	
Hoserteburg.....	S. A. Polke.....	—	0.97	—	—	28.64	—	—	1.03	—	
Johannisburg (Oberavatory).....	W. A. ter Horst.....	1.40	0.84	+ 0.56	10.11	16.34	- 6.33	1.50	1.52	- 0.02	
Koersdorp (Strathmore).....	The Staff.....	1.85	0.80	+ 1.05	15.66	16.41	- 0.75	1.94	1.41	+ 0.73	
Koersdorp.....	C. Scott.....	1.15	0.49	+ 0.66	13.94	14.65	- 0.81	1.31	0.88	+ 0.43	
Korshippoor.....	B. J. Fothergill.....	0.27	0.46	+ 0.21	22.78	18.02	+ 4.76	0.94	1.03	- 0.09	
Middelburg.....	Dr. H. A. Spencer.....	0.09	0.52	- 0.23	13.86	13.00	+ 2.14	0.45	1.01	- 0.46	
Nykaroom.....	G. Bakker.....	0.04	0.57	- 0.53	15.93	14.00	+ 0.91	0.39	1.02	- 0.63	
Petersburg.....	W. Franklyn.....	0.00	0.30	- 0.30	17.16	12.91	+ 0.23	0.00	0.74	- 0.74	
Piet Bedia.....	J. Werner.....	1.60	0.86	+ 0.74	18.74	23.30	- 4.56	1.64	1.73	- 0.09	
Pilgrims Rest.....	J. A. Sifton.....	0.90	1.02	- 0.72	20.49	28.31	- 1.82	0.56	1.88	- 1.32	
Potchesdroom (Exp. Farm).....	The Manager.....	0.50	0.65	- 0.06	15.31	14.03	+ 1.49	0.59	1.04	- 0.45	
Pretria (Meteorological Office).....	The Staff.....	1.22	0.38	+ 0.84	15.17	18.05	- 2.88	1.27	0.90	+ 0.28	
Roelberg.....	N. H. Munro.....	0.26	0.21	+ 0.02	12.86	15.10	- 2.24	0.44	1.16	- 0.72	
Rosburgh.....	S. A. Polke.....	1.23	0.50	- 0.68	13.12	16.18	- 3.06	1.23	1.27	- 0.04	
Woodbush.....	The Forester.....	1.27	1.62	- 0.35	51.24	50.38	+ 0.85	2.68	3.49	- 0.81	
Zwartsl.....	H. Dietrich.....	1.73	0.30	+ 1.40	13.73	15.71	- 1.98	1.76	0.74	+ 1.02	
Swaziland—											
Mobane.....	Swallowland Police.....	3.73	1.64	+ 2.14	38.07	31.75	+ 6.32	4.42	2.19	+ 1.43	
Orange Free State—											
Bloubaan.....	E. Arndt.....	0.56	0.03	- 0.12	18.24	13.04	+ 5.20	1.21	1.45	- 0.24	
Bontelle.....	J. J. Wardhaugh.....	1.14	0.73	+ 0.41	13.69	13.53	+ 0.16	1.51	1.57	- 0.06	
Stromdorp.....	J. B. Patterson.....	2.83	0.83	+ 2.00	10.80	16.72	- 2.68	2.80	1.06	+ 1.23	
Stromdorp.....	B. E. Northfield.....	1.68	0.88	+ 0.80	14.05	12.03	+ 6.72	2.06	2.26	- 0.19	
Stromdorp.....	The Forester.....	1.93	1.64	+ 0.29	21.02	17.65	+ 3.17	2.20	2.20	- 0.29	
Stromdorp.....	E. Collister-Gates.....	1.43	0.99	+ 0.59	15.43	15.49	- 0.01	1.53	1.68	- 0.10	
Transvaal—											
Dundee.....	W. Theorold.....	1.27	1.21	+ 0.06	25.68	20.04	+ 5.64	1.30	2.00	- 0.59	
Dundee.....	Capt. D. Black.....	2.53	2.56	- 0.03	36.25	28.82	+ 7.43	6.98	4.53	+ 2.45	
Dundee.....	The Gaoler.....	1.97	2.49	- 0.45	34.14	26.52	+ 7.62	3.05	4.13	- 1.08	
Dundee.....	The Gaoler.....	1.42	1.74	- 0.28	35.92	20.47	+ 15.45	1.62	2.74	- 1.12	
Dundee.....	D. A. K. Leckheim.....	2.87	0.81	+ 1.56	18.09	17.71	+ 0.38	2.61	1.64	+ 0.97	
Dundee.....	The Staff.....	1.46	1.80	- 0.35	36.62	21.54	+ 5.03	1.74	2.28	- 1.14	
Dundee.....	The Gaoler.....	1.54	1.41	- 0.10	21.73	22.80	- 1.07	1.54	2.46	- 0.92	
Dundee.....	The Gaoler.....	1.09	0.98	+ 0.11	—	16.58	—	—	1.79	—	

RAINFALL, SEPTEMBER, 1920 (continued)

Station	Observation	Month Sept. 1920	Normal	Difference from Normal	From 1st Jan., 1920	Normal	Difference from Normal	From 1st July, 1920	Normal	Difference from Normal
Cape		Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
Alford North	A. Alford	1.92	0.89	+ 0.43	15.43	15.16	+ 0.27	1.75	2.04	- 0.29
Beaufort West	The Gaoler	0.02	0.71	- 0.59	6.80	7.20	- 0.40	0.34	1.27	- 0.88
Bedford	T. C. Hall	0.64	1.95	- 1.31	20.85	10.57	+ 0.78	1.00	3.94	- 2.18
Bristown	The Gaoler	0.71	0.02	+ 0.08	14.01	8.99	+ 5.02	0.95	1.01	- 0.06
Calvinia	The Gaoler	1.64	0.62	+ 0.42	10.17	6.60	+ 3.57	4.48	2.31	+ 2.17
Cape Town (Royal Observatory)	The Seal	3.65	2.28	+ 1.39	22.42	21.89	+ 0.53	12.02	9.24	+ 2.78
Caris	A. Heald	5.64	4.16	+ 1.48	17.24	34.29	+ 12.05	23.52	15.87	+ 7.65
Cape Town	A. P. Matherbe	0.89	0.27	+ 0.62	—	6.54	—	1.22	0.77	+ 0.45
Clearwilliam	W. J. Downes	0.96	0.78	+ 0.18	10.11	7.41	+ 2.70	5.40	8.18	+ 2.22
East London	A. Downes	0.72	3.23	- 3.05	15.24	28.20	- 7.96	2.34	6.41	- 4.07
Fraserburg	The Gaoler	0.06	0.33	- 0.27	6.70	6.60	+ 0.10	1.12	0.92	+ 0.20
Garcet	The Gaoler	0.42	0.18	+ 0.06	6.00	4.53	+ 1.47	2.35	2.08	+ 0.27
Grass-Bainet	S. R. D. Treadwell	0.07	1.11	- 1.04	13.38	10.17	+ 3.21	0.96	2.13	- 1.17
Griquatown	The Gaoler	0.00	0.37	- 0.37	12.29	10.20	+ 2.09	0.40	0.86	- 0.46
Hawover	The Gaoler	0.26	0.02	+ 0.24	18.28	10.40	+ 2.88	0.90	1.32	- 0.42
Heopover	The Gaoler	0.22	0.44	- 0.22	14.82	9.78	+ 5.04	0.36	0.03	+ 0.57
Kenhardt	The Gaoler	0.15	0.20	- 0.05	6.59	4.59	+ 2.00	0.98	0.46	+ 0.52
Kimberley	J. A. Fogarty	0.41	0.37	+ 0.16	16.32	11.53	+ 4.79	1.66	1.60	+ 0.06
Knyena	The Gaoler	0.80	2.98	- 2.18	17.19	21.17	- 3.98	4.87	7.87	- 3.00
Krabsed	H. D. Coyte	2.01	1.36	+ 0.41	23.58	17.58	+ 6.00	2.09	2.20	- 0.11
Kragsman	The Gaoler	0.07	6.20	- 0.41	12.40	12.40	—	0.82	0.98	- 0.16
Mafeking (Convent)	The Mother Superior	2.19	0.50	+ 1.68	15.36	14.21	+ 1.15	2.13	1.02	+ 1.11
Mossel Bay (Cape St Blaize)	The Lightkeeper	0.85	1.74	- 0.89	8.17	13.18	- 5.01	2.87	4.43	- 1.56
Murkayabug	A. Cameron	0.00	0.03	- 0.03	—	8.66	—	0.62	1.38	- 0.70
Ooklo	J. Burrows	0.71	0.64	+ 0.07	5.39	6.26	- 0.98	2.09	2.40	- 0.40
Phillipstown	The Gaoler	0.73	6.61	- 0.06	26.87	10.40	+ 10.47	0.67	1.16	- 0.20
Piquethong	The Gaoler	2.53	2.26	+ 0.27	20.02	17.25	+ 2.77	9.47	7.91	+ 1.56
Port Elizabeth	J. E. Allen	0.45	2.32	- 2.87	9.02	16.32	- 7.30	1.20	6.38	- 5.18
Port St. Johns (Cape Hermes)	The Lightkeeper	2.22	4.26	- 2.04	40.14	31.50	+ 8.64	2.94	7.10	- 4.16
Prasanna	The Gaoler	0.12	0.35	- 0.13	10.47	7.82	+ 2.65	0.29	0.59	+ 0.80
Queenstown	H. Holley	1.23	0.97	+ 0.26	16.08	14.91	+ 1.18	1.48	2.11	- 0.63
Steynburgville	The Gaoler	0.60	0.72	- 0.12	7.58	6.76	+ 0.82	1.88	1.36	+ 0.52
Sundarburg	The Gaoler	0.60	0.68	- 0.08	9.18	7.72	+ 1.46	3.81	2.38	+ 1.45
Swellendam	The Gaoler	0.30	2.84	- 2.54	17.26	28.82	- 6.56	4.53	7.89	- 2.56
Umsaka	A. Dispect	1.94	1.80	+ 0.14	15.81	17.76	- 0.72	3.12	3.10	- 0.08
Uitenhage	The Gaoler	0.60	1.28	- 0.68	9.54	10.66	- 0.72	3.69	3.59	+ 0.10
Ujigastan	The Gaoler	0.01	0.17	- 0.16	5.43	5.37	+ 0.06	0.34	0.34	- 0.00
Victoria West	The Gaoler	1.80	0.54	+ 0.76	12.26	8.07	+ 4.19	1.85	1.06	+ 0.79
Vryburg	C. Butler	0.07	0.36	- 0.29	—	14.60	—	0.07	0.77	+ 0.70
Worcester	The Gaoler	0.81	1.31	- 0.50	15.55	10.55	+ 5.00	4.97	4.65	+ 0.32
Wynberg (Convent)	The Mother Superior	8.00	4.88	+ 2.88	15.25	40.40	- 10.85	26.37	19.64	+ 6.73





September, 1920. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
 The dotted lines indicate the normal distribution for September.

the north-east of the Cape Province, and the Transkei. A serious shortage, however, was experienced over the southern and central Karroo, west and north-west of the northern Karroo, the south coast and south-east of the Cape, particularly between Port St. Johns and Knysna. There were also smaller deficits over the north and east of the Transvaal and the southern half of Natal. Unfortunately, the drought conditions were aggravated by strong, hot, drying northerly winds, which caused any small quantities of rain that may have fallen to be of no benefit whatever to agriculture. The worst reports come from Estcourt (Natal) and the neighbourhood of Bathurst (S.E. Cape Province), where cattle are stated to be dying for want of grazing and water; whilst the drought is reported as having been severe in the Marico District of the Transvaal, where the Mimosa and small Thorn trees are stated to be the only trees that had produced any foliage. The greater part of the country appears to have benefited considerably, however, and there seems every prospect of abundance of fruit. The rains of the 27th were accompanied by a severe hail-storm over part of Pretoria District. The storm seems to have moved from a general west south-west direction, causing great damage to fruit and stripping trees of their leaves, in addition to breaking much glass. The stones varied considerably in size, from half an inch to an inch and a half in diameter. The shape of the stones varied considerably, some being smooth, others with icy spikes; whilst a peculiar form was noted in which the outside was of a mulberry appearance, or like the typical old-fashioned golf ball, in vertical section these seemed to be built up of a series of cones (or possibly hexagons) tapering off towards the centre, and with a hemispherical outer surface. In the Ladysmith District of Natal, the Klip River rose between two and three feet in consequence of good rains on the 30th. The cumulative rainfall since 1st January is in excess of the normal over the greater part of the Cape Province, Orange Free State, and Natal, also over more limited areas in the Transvaal, particularly the north and north-east, south-east and south-west. The largest area affected by a shortage is the coastal, extending from Umtata in the Transkei to Swellendam, where the deficits are mostly between six and eight inches, whilst in the Transvaal there is a falling-off in amounts varying from less than an inch to 6.23 inches at Heidelberg. Considering the seasonal rainfall from 1st July, an excessive rainfall is much more limited in distribution, the largest area being bounded roughly by a line from the Cape Peninsula north-east to Victoria West, then north-north-west to Kenhardt. Elsewhere the areas are much more limited in extent, and consist principally of the patches in the centre, south-west and west and south-east of the Transvaal, neighbourhood of Harrismith (O.F.S.), Kimberley, Mbabane (Swaziland), and Durban and Ladysmith in Natal. The largest excess is 7.65 inches at Ceres (Cape Province), but elsewhere the surplus amounts are comparatively small, mostly less than one inch, but increasing at some stations to one and two inches. The greatest deficits are again found round the south and south-east coasts, where they vary between two and four inches, rising to 5.16 inches at Port Elizabeth.

OBSERVERS' NOTES FOR SEPTEMBER, 1920.

TRANSVAAL.

Nylstroom.—Very dry. Rain very necessary.—G. Bakker.

Pietersburg.—Hot and dry. Dust storms very frequent; that of the 30th caused a lot of damage; sheds uprooted and flung broadcast; in one case a small shed was carried bodily 150 yards.—W. Frankleyne.

Zwartkopjes Pumping Station (Witwatersrand).—Sharp frosts occurred on the nights of the 15th and 17th, causing some considerable damage to fruit trees.—E. Taylor.

- Lichtenburg*—Frosts in exposed places stripped trees of fruit.—J. T. Allman.
- Rustenburg*.—Very dry month; cattle in low condition; crops suffering from drought, but revived somewhat from rain at end of month.—Sergt. H. J. Streatfield.
- Mooigenoec (Marico)*.—The drought has been excessive, and only Mimosa and small Thorn trees have given leaves; other trees are bare, and the grazing is finished.—(A) Edgar.
- Tafelberg (Piet Retief)*.—Grass is improving very quickly, and stock are getting nearly enough.—J. A. B. Engelbrecht.
- Blundsfontein (Putschestroom)*.—Farmers have made a start ploughing.—P. Davidtz.
- Koedoespoort (Pretoria)*.—27th: Heavy hailstorm; much damage to fruit.—T. W. Puxlev.
- Silverton (Pretoria)*.—27th: Sharp hailstorm, lasting ten minutes, doing some mischief to fruit trees, etc.—T. Brook.
- Garstfontein (Pretoria)*—27th: Hailstones, small size; damage negligible.—A. B. Rattray.
- Pretoria (Town)*—27th: Hail, causing extensive damage to fruit trees and some to property; windows broken, stones ranging from half an inch to one and a half inches in diameter.
- Lynnwood (Pretoria)*—27th: Heavy hailstorm; some damage to wheat.—F. Struben.
- Wetterredyn (Standerton)*.—A very anxious time for farmers up to the 27th, owing to drought.—D. Lanc.

SWAZILAND.

- McCredy Tins*.—Grass growing well; cattle picking up; sheep locally have done pretty well, but sheep farmers who have trekked in have lost heavily, chiefly owing to scarcity of grass in other parts of Swaziland.—J. W. Reilley.
- Mbabane*.—Good grazing for sheep; sheep farmers now trekking back to the Transvaal; grazing for cattle very poor, a fair number of cattle having died from starvation.—C. W. Brownell.

ORANGE FREE STATE.

- Rugby (Bethlehem)*.—Stock generally have improved during the month, and agriculturists are now busy getting in their crops. White frosts were experienced until quite late in the month. Fruit crop promised to be good.—A. C. G. Baker.
- Hoffontein (Kroonstad)*.—Three degrees of frost on the 15th.—G. W. Muller.
- Bellalale (Frankfort)*.—Severe frosts kept the grass back. On the whole, stock are in fair condition, and with the last inch of rain the grass will be quite enough to keep stock going.—D. McCallman.
- Heilbron*.—Stock of all descriptions, although in poor condition, are much stronger than they were last year this time. No stock diseases have been reported or met with during this month. Fruit promises to be plentiful, if nothing unforeseen happens. Trees are well laden and healthy.—P. J. Naude.

NATAL.

Hlabisa—Welcome rains towards the end of the month; crops will be late, owing to want of rain latter part of August and beginning of September. Strong winds.—L. A. Double.

Cape St. Lucia.—Strong winds have been the leading feature of the month. The light rains have had good effect on the veld, and stock are in good condition.—J. Murphy

Ladysmith.—Light showers during early part of month, followed by strong, hot winds, which dried things up considerably; stock in poor condition; good rains reported from district on 30th September. Klip River up between two and three feet.—D. A. R. Leathern.

Estcourt—Country very dry during month; grazing very poor, and cattle dying of poverty in places.—A. A. McLean

CAPE.

Graaff-Reinet.—Drought continues.—S. E. D. Treadwell.

Mafeking (The Convent)—Very hot and dusty first half of month; cool during third week; nice rains during fourth week.—Mother Superior.

Queenstown.—Strong north-west winds during month; several hoar frosts.—H. Holley.

Cape Agulhas—Westerly gale blowing from 10.15 a.m. on the 23rd till 7.40 p.m. on the 24th; unable to see more than half a mile to seaward for sand blowing all day of the 23rd.—G. W. Ratchffe.

Cape Town (Gardens).—The weather is said to have been unusually wet for September. On the 12th, a storm of wind and rain swept over the Peninsula, while in the evening heavy peals of thunder and vivid flashes of lightning were experienced.—A. Russel Fraser.

Darling (Malmesbury).—Very good late rains, favourable to stock and crops.—P. H. Drake.

Great Fish Point (Bathurst).—The month has been remarkable for the amount of strong winds, both from east and west, which have occurred almost daily, invariably rising about noon and ceasing at midnight. The surrounding country is suffering terribly from drought. Cattle are beginning to die for want of grazing. 23rd: Very hot northerly wind from 4.20 p.m. till 5.15 p.m.; from 5.15 p.m. wind changed to south-west, increasing from strong to moderate gale until 7 p.m., then dropping to a light breeze.—H. W. Mantle.

NOVEMBER WEATHER CHARACTERISTICS.

With the exception of the western and south-western coastal districts, where the rainfall is decreasing, there is a general increase in the amount of precipitation throughout the Union.

The heaviest rainfall should now be experienced in the eastern Transvaal and Swaziland, with normals of 5.0 inches; in Zululand precipitation averages 4.5 inches; in Natal 4.0 inches; in Kaffraria 3.5 inches; in the south-east and Basutoland 3.0 inches; in the western Transvaal and north-east of the Cape Province and along the south coast 2.5 inches; in the Orange Free State 2.0 inches; over the northern and east-central Karroo and the Cape Peninsula 1.5 inches, and slightly more than one inch in the remainder of the Cape Province, except the western and south-western coastal districts, where the

normal is less than one inch. Severe thunder and hail storms may occur, more especially inland, in fact, the number of hail days is now at its maximum over the Transvaal, whilst the curve is still rising elsewhere.

The highest daily temperature is now experienced over the northern borders of the Cape Province, where the normal is 72 degrees. In Natal and the eastern Transvaal a mean temperature of 71 degrees may be anticipated, and on the west-central Karroo, 69 degrees, on the southern Karroo, 68 degrees; on the east-central Karroo and in the Orange Free State, 67 degrees; in the Peninsula, 62 degrees, and over the remainder of the Union 65 degrees should be reached. Frosts are unlikely.

Wind shows a decrease in the mean velocity compared with October, except over the south-west, where there is a slight increase in force. The prevalent directions are north-north-west over the Transvaal, south-south-west over the northern border, north-east over the south-east of the Cape Province, and south over the Cape Peninsula. In comparison with the preceding month, there is a falling-off at Kimberley of all winds from east round by south to south-west, but an increase in those from all other directions, especially north-north-east. At Johannesburg there is an increase in frequency of winds between west-north-west and north-north-west, but a decrease in all others, more particularly northerly and south-south-westerly. At East London there is a greater frequency of winds from those points between north-east and south, as well as from north-north-east, but a diminution of those from all other directions. At Capetown the main increase is in those from points between south-south-east and south-south-west and from north-west, but a decrease of those from west and west-north-west.

Of the total possible number of hours of bright sunshine, about 84 per cent. should be enjoyed over the northern border, and about 50 per cent. over the south-east of the Cape Province; about 68 per cent. over the Peninsula, and 67 per cent. over the Transvaal.

C. STEWART,
Chief Meteorologist.

Pretoria.



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

OCTOBER, 1920.

No. 10.

PRESSURE almost normal in distribution, mean temperature about half a degree lower than usual, some severe frosts, particularly at the beginning of the month; an excess of rain fall over the Transvaal, Natal, parts of the Orange Free State, and isolated portions of the Cape Province, where there was mostly a deficiency in amount; some snow in parts of the Cape; a comparative absence of destructive hailstorms, strong winds during part of the month. These were the principal features of the weather of October last.

Pressure.—The isobaric map shows that the mean pressure distribution was almost normal, being, however, slightly lower than usual over the east and centre, but higher than normal by a similar small amount in the west and south. Anticyclonic conditions prevailed over a greater or less portion of the country during the major portion of the month, although the equatorial tongue of "low" pressure made itself manifest on frequent occasions. "Lows" were present on the coast on fifteen days, viz. 2nd to 12th, 16th to 19th, and 21st over the south-east, the last moving to the east on the 22nd. The most notable depression was that which showed itself over the south-west on the 5th and extended eastwards on the 6th and 7th, the exceptionally low isobar of 29.41 inches lay along the south-east coast on the morning of the 6th, whilst unusually low pressures were experienced over the Transvaal on the afternoon of the same day. This depression was accompanied by strong northerly to north-westerly winds with heavy rain, some snow over the central portions of the Cape; and rough seas along the coast. These northerly winds were succeeded by cold, fresh southerly winds on the 7th and 8th, when the minimum temperatures for the month were widely recorded. A spell of warm, bright weather accompanied anticyclonic pressures, which mainly affected the greater part of the country from 8th to 21st, although occasional showers fell along the coast. On the 24th a "low" lay over the west, and moved eastwards, bringing rain along the coast and over the interior during the last few days of the month.

Temperature.—The mean temperature of all Stations was 64.2 degrees or 0.4 degree less than usual, the mean day temperature (76.9 degrees) being 0.5 degree and the mean night temperature (51.6 degrees) being 0.2 degree lower than the respective normals. The monthly temperature was commonly

from 1-2 degrees lower than usual over the Transvaal, Bechuanaland, Natal, the northern Karroo, the south-west of the Cape, and portions of the Eastern Province. Temperatures in excess, however, prevailed along the west and south coastal belt eastwards to Port St. Johns, the central Karroo, in the Transkei; the whole of the Orange Free State (except the extreme eastern portion), Zululand; the extreme north and over a narrow belt in the south and east of the Transvaal. The excesses were mostly under one degree, but rising to over $1\frac{1}{2}$ degree at Kimberley and Port St. Johns. The deficits in the Transvaal varied between 0.5 degree in the east to 2 degrees in the south-west; in Natal from 2-4 degrees; in the east of the Orange Free State about $2\frac{1}{2}$ degrees and in the Cape Province from a few tenths in the south-east and south-west to more than 2 degrees in the northern Karroo, and more than a degree over the northern border. The mean maxima were below the average by 2 to 6 degrees in Natal and east of the Orange Free State; by slightly less than 2 degrees over the north and west of the Transvaal; and by 2-3 degrees in the central portion of the Cape Province, but decreasing to a few tenths in the south-west and part of the south-east. Over the more southerly parts of the Transvaal, the greater part of the Orange Free State and the Cape, however, there was an excess in day temperatures, this excess was mostly less than 1 degree in the Transvaal, but increased to a degree and a half in the Orange Free State and from 1-3 degrees over the greater part of the Cape Province. The minimum of night temperatures were mostly from a few tenths to slightly over 1 degree lower than usual in Swaziland and the west, south-west, and east of the Transvaal, the Orange Free State, and south-east and south-west of the Cape, but increasing to 2.5 degrees in the central portions of the latter Province. The nights were on the other hand warmer than usual in Zululand, the centre and east of the Transvaal, the west and south coastal areas of the Cape Province and of the Transkei by amounts ranging from a few tenths to more than 2 degrees. The highest temperatures of the month were recorded mostly during the period 14th to 21st, but also on 8th, 11th, 12th, 25th, and 31st; the warm spells were most widely experienced on 20th, 21st, and 25th. The extreme minima were registered almost entirely during the first 11 days of the month, although a cold snap occurred also towards the end of the month. The mean warmest station was Komatipoort with a temperature of 74.4 degrees, and the coolest Belfast with 57.4 degrees, a difference of 17 degrees. The extreme readings during the month were 112.5 degrees at Komatipoort (on the 18th, and 28 degrees at Belfast on the 8th. Frosts were of frequent occurrence during the early part of the month, and a severe frost on the 30th practically destroyed all standing crops at Lusburn (Division Barkly East).

Precipitation during the month was abundant and (with few exceptions) in excess of the normal at stations to the north and east of a line drawn from the neighbourhood of Kokstad in the Transkei to the south and west of Bloemfontein, thence northward to the west of Mafeking. The excess was generally between $2\frac{1}{2}$ and $3\frac{1}{2}$ inches over the Transvaal, but varying from 0.22 inch at Louis Trichardt to 3.82 inches at Belfast; 4.26 inches at Mbabane in Swaziland; mostly about $1\frac{1}{2}$ inch in the Orange Free State, but rising to $2\frac{1}{2}$ inches at Hartismith; and commonly from $1\frac{1}{2}$ inch to 2 inches in Natal. The only exceptional stations in this area were Kroonstad (Orange Free State) and Vryheid (Natal), where there were small deficits of 0.28 and 0.07 inch respectively. By far the greater portion of the Cape Province suffered from a shortage of rainfall, amounting to absolute drought at some stations, e.g. Hanover, Philipstown, and Garies. The deficiency was mostly less than an inch, but increased to considerably more than this amount along the south

(Continued on Page 3)

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), OCTOBER, 1920.

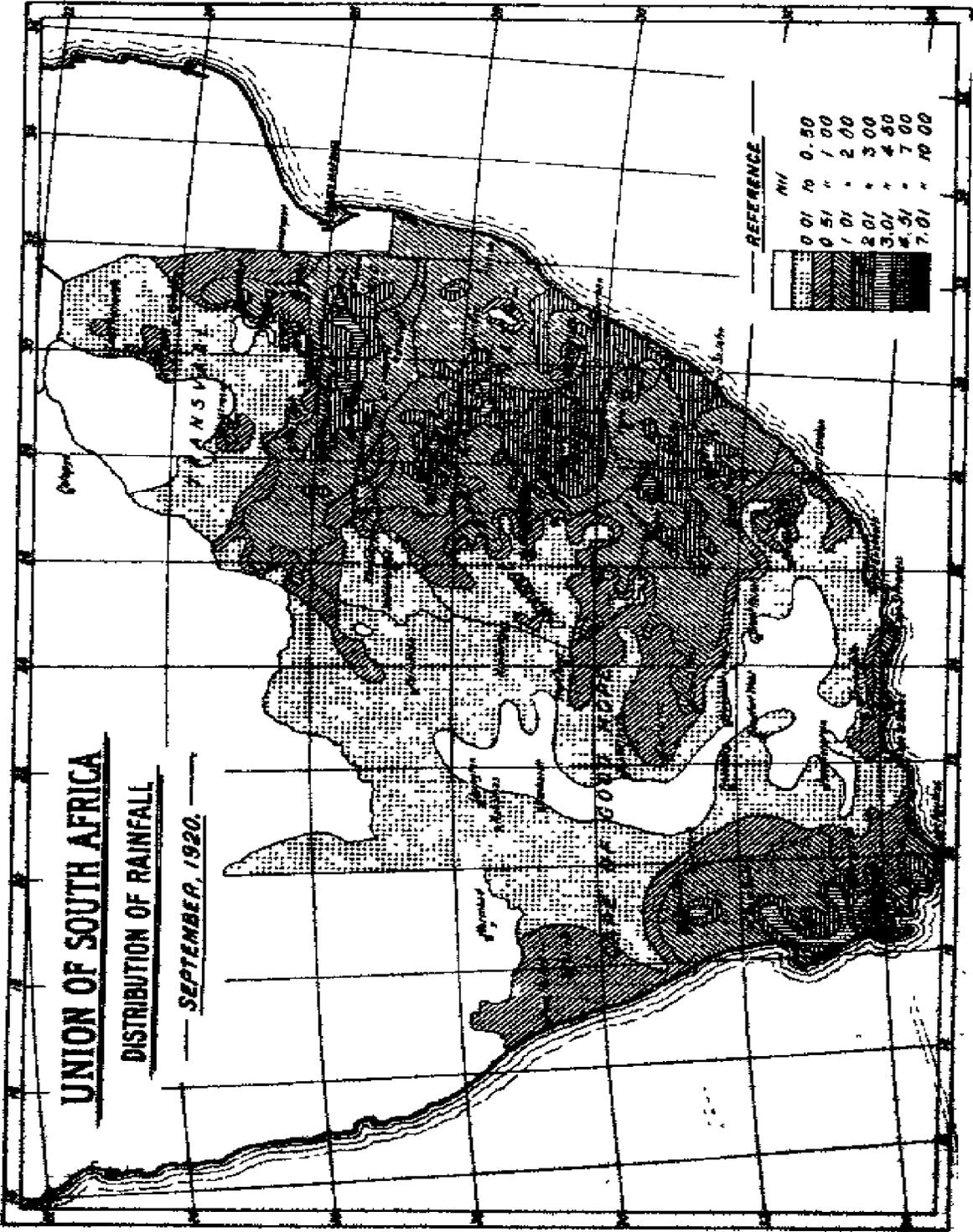
PLACE.	OBSERVER.	Month—Oct., 1920		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		° F.	° F.				Highest	Date.	Lowest	Date.
Trompsburg—										
Bekker.....	The Forster.....	71.6	43.1	57.4	58.0	+ 0.7	88.0	19th	36.0	8th.
Barberson.....	Walker Grubb.....	79.3	39.1	69.4	68.9	- 0.5	108.5	18th	56.0	8th.
Johannesburg (Observatory).....	The Staff.....	72.8	51.2	62.0	61.4	+ 0.6	89.1	20th	32.1	7th.
Klerksdorp (Strathmore).....	Chas. Scott.....	81.2	50.8	66.0	68.0	- 2.0	95.0	24th.	37.0	7th and 8th.
Komatiapoort.....	B. J. Bothergill.....	86.6	62.2	74.4	76.0	- 1.6	112.5	18th	49.0	10th.
Louis Trichardt.....	The Town Clerk.....	78.0	57.6	67.8	67.2	+ 0.6	99.0	19th.	60.0	8th and 10th.
Nylstroom.....	G. Bekker.....	82.6	53.6	68.1	69.2	- 1.1	99.5	19th	38.0	8th
Edwards Beat.....	J. A. Sturten.....	76.7	50.6	63.6	64.1	+ 0.5	96.5	18th	36.0	11th.
Pietersburg.....	W. Franklynne.....	78.2	53.9	66.0	66.0	- 0.0	95.0	17th, 18th and 20th	41.0	8th.
Potchefstroom (Exp. Farm).....	The Manager.....	81.7	48.6	65.2	64.8	+ 0.4	96.5	24th	32.0	31st.
Pratonia (Meteorological Office).....	The Staff.....	78.2	51.3	64.2	67.6	- 3.4	94.1	20th	41.1	7th.
Pret. Relief.....	J. Werner.....	73.1	51.6	62.4	63.9	- 1.5	93.3	19th	39.9	16th
Zeerust.....	H. Dietrich.....	81.9	53.8	67.8	69.0	- 1.2	99.1	20th	39.0	7th.
Swaziland—										
Mbabane.....	Swaziland Police.....	73.9	52.6	63.2	63.3	- 0.1	96.0	18th	40.0	10th
Orange Free State—										
Bloemfontein.....	E. Arndt.....	78.0	48.9	63.4	63.3	+ 0.1	93.0	20th	34.5	7th.
Harrismith.....	The Forester.....	68.6	45.4	57.0	59.7	- 2.7	87.0	21st	32.0	7th.
Lindley.....	J. Collier-Dates.....	76.4	46.8	61.6	61.6	- 0.0	92.2	20th	30.3	8th.
Ladybrand.....	The Forester.....	75.2	48.4	61.6	61.0	+ 0.6	90.9	20th	32.0	7th.
Bethulle.....	J. J. Wardhaugh.....	79.8	47.4	63.6	62.8	+ 0.8	93.1	21st.	33.0	7th.
Natal—										
Durban (Point).....	Capt. D. Clark.....	74.3	46.6	60.8	69.7	- 8.9	82.0	25th	54.8	5th.
Dundee.....	West Thorold.....	75.2	50.4	62.8	66.8	- 4.0	95.0	19th and 21st	39.0	10th.
Hlabisa.....	The Doctor.....	76.3	59.4	67.8	67.5	+ 0.3	91.0	21st.	52.0	9th.
Martinsburg (Mental Hospital).....	The Staff.....	74.5	54.7	64.6	67.4	- 2.8	95.4	12th	47.2	7th.
Cape—										
Allwal North.....	A. Alcock.....	77.7	45.6	61.6	61.0	+ 0.6	92.5	21st	81.0	8th
Bedford.....	T. C. Hall.....	74.8	46.6	60.7	61.6	- 0.9	92.9	21st	34.0	9th
Carnarvon.....	A. P. Malherbe.....	77.2	44.1	60.6	62.9	- 2.3	90.0	14th and 15th	80.0	7th.
Capetown (Royal Observatory).....	The Staff.....	68.4	52.2	60.3	60.7	- 0.4	81.1	31st.	42.6	4th.
Clanwilliam.....	W. J. Downes.....	82.7	47.8	65.2	64.6	+ 0.6	102.0	31st.	38.0	3rd.
Great Bletch.....	S. E. D. Trearwell.....	80.9	49.0	65.0	63.7	+ 1.3	96.3	21st.	88.0	7th.
Great Drakenstein.....	Lionel Baker.....	71.6	49.1	60.4	61.1	- 0.7	95.9	31st.	41.0	1st and 5th.
Kokstad.....	H. D. Coyle.....	72.9	45.3	59.1	58.0	+ 1.1	93.2	21st.	33.0	8th
Kimberley.....	J. Acton.....	86.0	53.8	69.9	68.2	+ 1.7	94.8	20th	37.0	7th.
Maitling (Convent).....	The Mother Superior.....	83.4	63.9	73.6	69.8	+ 3.8	82.0	8th	45.0	7th.
Mossel Bay (Cape St Blaize).....	The Lightkeeper.....	69.7	54.9	62.3	61.4	+ 0.9	89.0	15th and 21st	30.0	9th
Murraysburg.....	A. Cameron.....	75.6	43.5	59.6	61.8	- 2.2	92.1	14th	33.4	7th.
Ookiep.....	J. Burrows.....	74.7	49.1	61.9	61.6	+ 0.3	85.0	21st.	46.0	7th.
Port Elizabeth.....	The Lightkeeper.....	69.7	51.3	62.0	62.0	+ 0.0	85.0	17th	52.0	6th.
Port St. Johns (Cape Hermes).....	The Lightkeeper.....	74.5	50.0	61.0	65.4	+ 4.4	94.0	21st.	34.0	8th.
Queenstown.....	H. Holley.....	77.4	46.6	62.0	62.2	- 0.2	101.0	20th	33.0	7th.
Vryburg.....	Chas. Butler.....	80.2	50.3	68.2	69.6	- 1.4	82.5	31st.	43.5	7th.
Wynberg (Convent).....	The Mother Superior.....	70.9	51.6	61.2	59.8	+ 1.4	82.5	31st.	43.5	7th.

RAINFALL, OCTOBER, 1920.

PLACE.	OBSERVER	Month.	Normal	Difference from Normal	From 1st Jan., 1920.	Normal.	Difference from Normal.	From 1st July, 1920.	Normal.	Difference from Normal.	
		Inches. (Oct. 1920.)									Inches.
Transvaal—											
Barberton.....	W. Grubb ..	6.57	2.80	+ 3.77	20.34	25.49	- 5.15	7.24	25.49	+ 2.69	
Bethel.....	The Forester	7.02	3.20	+ 3.82	21.32	21.87	- 0.55	7.28	21.87	+ 2.66	
Bethel.....	H. F. Joubert	4.55	3.44	+ 1.11	15.95	19.52	- 3.57	7.81	19.52	+ 3.16	
Bethel.....	Mrs. S. M. Nielson	7.72	4.04	+ 3.68	30.85	29.34	+ 10.40	11.21	29.34	+ 5.86	
Bethel.....	S. A. Polles	5.72	3.07	+ 2.65	—	31.71	—	—	31.71	—	
Heidelberg.....	W. A. ter Horst.	5.83	2.57	+ 3.26	15.46	18.91	- 3.45	6.85	18.91	+ 2.76	
Heidelberg (Observatory).....	The Staff.....	5.03	2.50	+ 2.53	20.60	18.91	+ 1.78	0.97	18.91	+ 3.06	
Kaapstad (Strathmore).....	Chas. Scott ..	2.98	1.77	+ 1.21	16.82	16.42	+ 0.40	4.29	16.42	+ 1.64	
Konakopod.....	B. J. Fothergill	4.78	1.91	+ 2.87	27.57	19.93	+ 7.63	5.72	19.93	+ 2.78	
Lordsburg.....	The Town Clerk	2.80	2.64	+ 0.22	25.09	23.32	+ 2.81	3.55	23.32	+ 0.47	
Middelburg.....	Dr. Spencer ..	5.38	2.76	+ 2.62	39.24	18.76	+ 0.48	5.83	18.76	+ 2.16	
Nylsvlei.....	G. Bakker ..	3.79	2.14	+ 1.65	21.72	17.13	+ 1.59	6.18	17.13	+ 3.02	
Phenaburg.....	W. Frankleyne	4.86	1.94	+ 2.92	18.04	14.85	- 0.88	4.88	14.85	+ 3.20	
Phenaburg.....	J. Wenner ..	6.65	2.97	+ 3.68	25.39	26.27	- 0.88	5.29	26.27	+ 3.59	
Pharos Rest.....	J. A. Stron ..	5.14	2.20	+ 2.94	31.63	30.51	+ 1.12	5.70	30.51	+ 1.62	
Potchefstroom.....	The Manser ..	2.85	2.29	+ 0.60	18.46	16.32	+ 2.14	3.54	16.32	+ 3.33	
Pretoria (Meteorological Office).....	The Staff ..	5.00	2.77	+ 2.23	20.17	20.82	- 0.65	6.27	20.82	+ 2.51	
Rooiberg.....	N. H. Munro ..	5.43	1.63	+ 3.78	18.39	10.75	+ 1.54	3.87	10.75	+ 3.06	
Rustenburg.....	S. A. Polles ..	3.84	2.62	+ 1.22	16.06	18.70	- 1.74	5.07	18.70	+ 1.28	
Woodbrugh.....	The Forester	8.13	4.63	+ 3.50	59.37	53.02	+ 4.35	10.81	53.02	+ 2.69	
Zeerust.....	H. Dietrich ..	2.84	1.75	+ 1.09	16.53	17.46	- 0.93	4.57	17.46	+ 2.08	
Zeerust.....	S. A. Polles ..	4.23	1.31	+ 2.94	—	12.68	—	—	12.68	—	
Swaziland—											
Mbatane	Swaziland Police	8.65	1.37	+ 4.20	48.72	36.14	+ 10.58	13.07	36.14	+ 5.09	
Orange Free State—											
Almfontein.....	E. Arnitt ..	3.38	1.70	+ 1.68	21.02	14.74	+ 6.28	4.53	14.74	+ 1.44	
Bethel.....	J. J. Wardhaugh	0.31	1.24	- 0.93	14.00	14.77	- 0.77	1.82	14.77	+ 0.99	
Brakpan.....	J. B. Patterson	3.97	3.39	+ 0.58	25.27	20.11	+ 5.16	3.05	20.11	+ 3.81	
Kroonstad.....	S. R. Northfield	2.06	2.29	- 0.23	21.71	15.22	+ 6.49	4.12	15.22	+ 0.42	
Ladybrand.....	The Forester	3.92	2.58	+ 1.34	24.94	20.43	+ 4.51	6.12	20.43	+ 1.05	
Landley.....	J. Collister-Gates	3.05	2.27	+ 0.78	19.16	17.79	+ 1.40	5.21	17.79	+ 1.31	
Natal—											
Dundee.....	West Thorold ..	4.64	3.13	+ 1.51	30.32	23.17	+ 7.15	6.14	23.17	+ 0.92	
Durban.....	Capt. D. Black ..	7.05	5.15	+ 1.90	43.30	31.97	+ 11.33	10.13	31.97	+ 4.35	
Durban.....	The Gaoler ..	7.08	5.06	+ 2.02	41.22	31.56	+ 9.64	10.13	31.56	+ 0.94	
Durban.....	The Gaoler ..	4.34	3.04	+ 1.30	40.25	23.51	+ 10.74	5.95	23.51	+ 0.17	
Durban.....	D. A. R. Leddihern	3.01	2.60	+ 0.41	21.10	20.37	+ 0.73	3.62	20.37	+ 1.32	
Durban.....	The Staff.....	5.53	3.14	+ 2.39	42.15	24.68	+ 17.47	7.27	24.68	+ 1.25	
Durban.....	The Gaoler.....	4.16	4.23	- 0.07	25.91	26.35	- 0.40	5.70	26.35	+ 0.99	
Durban.....	The Gaoler.....	3.06	2.37	+ 0.69	—	18.05	—	—	18.05	—	

RAINFALL, OCTOBER, 1920 (continued).

PLACD.	OBSERVER.	Month. Oct., 1920.	Normal Inches.	Difference from Normal	From 1st Jan., 1920.	Normal Inches.	Difference from Normal.	From 1st July, 1920.	Normal. Inches.	Difference from Normal.	Inches.
Cape—											
Allard North.	A. Alcock.	0.41	1.51	- 1.10	15.84	16.67	- 0.83	2.19	8.55	-	8.55
Bombay West.	The Gaoler.	0.67	0.64	+ 0.03	7.47	7.84	- 0.37	1.06	1.91	-	1.91
Bedford.	T. C. Hall.	1.62	2.69	- 1.07	21.87	22.16	- 0.29	3.18	6.48	-	6.48
Boston.	The Gaoler.	0.16	0.64	+ 0.48	14.17	9.63	+ 4.54	1.11	1.50	-	1.50
Calcutta.	The Gaoler.	0.90	0.62	+ 0.28	10.77	7.12	+ 3.65	5.08	2.88	-	2.88
Capetown (Royal Observatory).	The Staff.	2.12	1.72	+ 0.40	24.54	28.61	+ 0.93	13.74	10.96	-	10.96
Ceres.	A. H. Attle.	2.14	3.73	- 1.59	49.98	38.02	+ 11.36	25.66	19.60	-	19.60
Casuaron.	A. P. Malherbe.	0.23	0.48	- 0.25	6.69	7.02	- 0.33	1.45	1.25	-	1.25
Charwilliam.	W. J. Downes.	0.83	0.61	+ 0.22	10.94	9.02	+ 6.23	3.79	3.79	-	3.79
East London.	A. Dowale.	0.73	3.73	- 3.00	15.97	26.38	- 10.96	8.07	10.14	-	10.14
Frederburg.	The Gaoler.	0.16	0.35	- 0.19	6.86	6.86	+ 1.01	1.28	1.27	-	1.27
Garies.	The Gaoler.	0.00	0.32	- 0.32	6.00	4.85	+ 1.15	2.36	2.40	-	2.40
Grass Belmont.	S. E. B. Treadwell.	1.05	1.16	- 0.11	14.48	11.33	+ 3.10	2.01	3.29	-	3.29
Groguatzen.	The Gaoler.	1.74	0.78	+ 1.01	14.08	10.98	+ 3.10	2.14	1.42	-	1.42
Hannover.	The Gaoler.	0.90	0.74	- 0.14	13.28	11.14	+ 2.14	0.90	2.06	-	2.06
Hope Town.	The Gaoler.	0.11	0.77	- 0.66	14.93	10.55	+ 4.38	0.47	1.70	-	1.70
Kenhardt.	The Gaoler.	0.00	0.88	- 0.88	6.69	4.97	+ 1.62	0.98	0.84	-	0.84
Kimberley.	J. Acton.	0.37	1.12	- 0.75	16.69	11.66	+ 5.04	2.03	2.12	-	2.12
Kayana.	The Gaoler.	2.11	2.85	- 0.74	19.30	24.02	- 4.72	6.98	10.72	-	10.72
Kockstad.	H. D. Coetz.	2.63	2.03	+ 0.60	25.36	19.81	+ 5.55	4.12	4.23	-	4.23
Kuruman (Abolis).	A. T. Stowell.	1.66	0.45	+ 1.21	17.56	12.78	+ 4.78	1.87	1.43	-	1.43
Maifaking (Convict).	The Mother Superior.	3.80	1.54	+ 2.26	8.67	15.75	- 7.08	4.33	2.58	-	2.58
Mossel Bay (Cape St. Blaize).	The Lightkeeper.	0.50	1.67	- 1.17	8.67	14.85	- 6.18	3.87	6.10	-	6.10
Murraysburg.	A. Cameron.	0.57	0.67	- 0.10	6.54	9.33	- 2.79	1.19	1.99	-	1.99
Ovolsip.	J. Burrows.	1.21	0.45	+ 0.76	6.54	6.71	- 0.17	3.80	2.94	-	2.94
Philpottown.	The Gaoler.	0.00	0.86	- 0.86	20.87	11.26	+ 9.61	0.87	2.01	-	2.01
Piquetberg.	The Gaoler.	3.58	1.78	- 1.80	21.40	19.03	+ 2.37	11.05	9.69	-	9.69
Port Elizabeth.	J. E. Allen.	3.02	2.50	- 0.52	11.04	18.88	- 7.84	3.22	8.62	-	8.62
Port St. Johns (Cape Hermes).	The Lightkeeper.	3.79	6.13	- 2.34	48.93	87.63	+ 6.30	6.73	13.23	-	13.23
Prieska.	The Gaoler.	0.90	0.48	- 0.42	10.77	8.30	+ 2.47	0.59	1.07	-	1.07
Queenstown.	H. Holley.	0.62	1.61	- 0.99	16.61	16.52	+ 0.09	2.00	3.16	-	3.16
Steyderville.	The Gaoler.	4.97	0.80	+ 4.17	9.55	7.56	+ 1.99	2.30	2.16	-	2.16
Sutherland.	The Gaoler.	0.61	0.62	- 0.01	9.79	8.34	+ 1.45	4.42	2.98	-	2.98
Swellendam.	The Gaoler.	1.03	3.18	- 2.15	18.29	27.09	- 8.80	5.86	10.67	-	10.67
Umtata.	A. Dierpeck.	1.05	2.47	- 1.42	16.86	20.23	- 3.37	8.17	5.57	-	5.57
Uniondale.	The Gaoler.	0.65	1.19	- 0.54	10.49	11.75	- 1.26	3.74	4.78	-	4.78
Upington.	The Gaoler.	0.05	0.56	- 0.51	5.48	5.03	+ 0.45	0.21	0.90	-	0.90
Victoria West.	The Gaoler.	1.40	0.90	+ 0.50	13.66	8.67	+ 4.99	3.25	1.66	-	1.66
Vryburg.	O. Butler.	0.28	0.96	- 0.68	15.56	15.56	-	0.35	1.73	-	1.73
Worcester.	The Gaoler.	0.52	1.17	- 0.65	16.07	11.72	+ 4.35	5.49	5.82	-	5.82
Wynberg (Convent).	Mother Superior.	8.63	8.66	- 0.03	54.78	48.95	+ 5.83	29.80	23.19	-	23.19



and east and south coastal areas, being 3 inches at East London, 2.34 inches at Port St. Johns and 2.15 inches at Swellendam in defect of the average. A few areas of limited extent in the northern border, the west-central Karroo, the south and west of the northern Karroo, the Namaqualand Plateau, the neighbourhood of Clanwilliam and part of the Cape Peninsula had a rainfall slightly in excess of the average, ranging from 0.03 inch at Beaufort West to 1.01 inches at Griquatown. Rainfall during the month was mainly confined to the first and last weeks, being most widely distributed from 1st to 4th and 22nd to 29th. As a result of these rains, in conjunction with what fell towards the end of September, the ploughing season has started well over the Transvaal, greater part of the Orange Free State, and Natal, whilst the grass of the veld is in excellent condition and the grain crops in the south-west of the Cape give indications of being exceptionally good. On the other hand the greater portion of the Cape is still badly in need of rain, particularly in the south and south-east; the fruit and grain crops in parts of the south-west are suffering from an over-abundant supply of moisture, although generally there seems every indication of an abundant fruit crop over the interior. In the Vrede district of the Orange Free State many lambs were lost owing to continuous wet and cold. A severe frost on the 30th at Lisburn (Barkly East) killed nearly all standing crops. Hail appears to have been of infrequent occurrence for the time of year and mostly light; although a considerable amount of damage is reported as having been caused by such storms on the 22nd at Tafelberg (Piet Retief) and on the 27th at Bultfontein, in the Hoopstad District of the Orange Free State. Showers of snow occurred in the Districts of Cathcart, Murraysburg, and Praserburg on the 6th. Lightning was unusually vivid on occasions during the month, the most noteworthy being an occurrence of the rare globular or ball lightning at Ermelo on the night of the 22nd. The cumulative rainfall since the beginning of the year is most seriously below normal in the south and south-east of the Cape and part of the Transkei, the deficits amounting to 10.96 inches at East London and 8.71 inches at Swellendam. The shortage is also large in the eastern half of a Y-shaped area extending from Barberton westwards to Zeerust and south-west from Belfast to Heidelberg. The deficiencies are large, over 3 inches at Heidelberg and Bethal, increasing to 5.15 inches at Barberton, but decreasing to mostly less than 1 inch over the centre and west. Small deficits are also found in the south-east of the Transvaal, north of Natal, the south of the Orange Free State, north-east of the Cape, parts of the west-central and northern Karroo, Namaqualand, and Gordonia. Elsewhere there is an excess of total precipitation amounting commonly to more than 6 inches, particularly in Natal; but rising to 11.36 inches at Ceres, 9.62 inches at Philips-town, and 17.47 inches at Maritzburg (Natal). The seasonal rainfall since the 1st July is mostly in excess of the normal by 2.3 inches over the Transvaal, by about an inch in Natal, but reaching 4.35 inches at Durban. Excesses are also to be found on the south and west of the northern Karroo, parts of the south-west and Cape Peninsula, of the east-central Karroo, northern border, Namaqualand, and Gordonia. Elsewhere there is a shortage, which is also greatest in the south and south-east of the Cape, where it is mostly from 3-4 inches, but rising to 6.50 inches at Port St. Johns and 7.07 inches at East London.

OBSERVERS' NOTES FOR OCTOBER, 1920.

TRANSVAAL.

Middelburg.—The early part of the month, with the exception of one good fall of rain (0.98 inch on the 3rd), was dry and hot. For a week the maximum temperature was 90 degrees or over, one day reaching the highest recorded for October in seventeen years, viz., 96 degrees on the 20th. Then the temperature began to fall and the man in the street said "Now the rain will come." It was here that night! In useful quarter-inch falls the ground was thoroughly wetted for three days, a pause to let it soak in and then the deluge, nearly 3½ inches in 48 hours during the 27th and 28th. The farmer now wears a happy, confident smile: the heavens have given him the heaviest rainfall recorded for October in 18 years.—Dr. H. A. Spencer.

Mosdene (Waterberg).—Very good rains have fallen and the season for ploughing and planting has opened favourably.—Ernest E. Galpin.

Krugersdorp.—Rain fell on the 1st in showers, followed by steady rains. North-easterly winds prevailed with overcast skies, when temperature dropped to almost freezing point (32.5 degrees on the 7th), followed by a cold snap. Frost in vleislands. Gale on 9th, with damage to fruit crops. The temperature rose gradually until the maximum reached 88.2 degrees on the 20th, when the sky became overcast and a rainfall of 0.08 inch occurred. Good soaking rains fell towards the end of the month. During this month 5.04 inches of rain on 9 days.—G. S. Garnett.

Ermelo.—The night of the 22nd to 23rd was stormy and wild. The wind, which had been blowing a gale, suddenly stopped at 3.5 a.m., and my room suddenly became light as day. I rushed to the window and pulled the curtains aside to see if the power station was in flames, and I saw what petrified me: a ball of fire dancing along, moving from west to east. My dog howled pitifully. A roar as of thunder—and crash—the house was struck by a cyclone. Limp and beyond hope I stood watching the blackness, which was frequently relieved by flashes of lightning from the power station. As the wind increased in force the flashes of lightning began to play from all the electric-light poles in view of my windows—about seven poles. The tempest became less, and by 4 a.m. calmness was once more restored. When the day broke, five large trees lay rooted out of the ground in my garden, one cypress was smashed off about twelve feet from the ground. Great damage was evident everywhere—trees lay across the streets—telephone wires were broken.—Mrs. S. M. Nicolson.

Tafelberg (Piet Retief).—22nd, hailstorm did a lot of damage.—J. A. B. Engelbrecht.

Modderfontein (Heidelberg).—One case of anthrax. Cattle picking up. Meales being planted. Tefl oats fairly good.—S. C. Obree.

Waaikraal No. 206 (Rustenburg).—Farmers beginning to reap wheat.—W. Behrens.

Greystones (Standerton).—3rd, very heavy storms and some hail; 2.31 inches fell in about one hour at 3.30 in the afternoon. 5th to 11th, very cold weather; frost nearly every night; some damage to potato crop, etc.—W. Garnett.

Klipplaatdrift (Standerton).—Ploughing going ahead fast.—J. Swemmer.

Melrose (Witwatersrand).—26th, hailstorm, but not much damage done in Melrose.—C. J. Bayne.

Kleinbegin (Zoutspanberg).—Ploughing in full swing.—A. Bircheno.

Barberton.—Cool weather followed by a hot spell about the middle of the month. On the 18th occurred the highest temperature (103.5 degrees) hitherto registered by me.—W. Grubb.

Pietersburg.—Abnormal heat; dust storms frequent and violent. Drought now completely broken. River full and veld coming on well.—W. Frankleyne.

SWAZILAND.

Mbabane.—Good soaking rains. Veld now in splendid condition; good grazing.—C. M. Brownell.

NATAL.

Rongpoort—Fine growing month: have never seen grass grow quicker.—J. H. Bartholomew

Hlabisa.—Nice steady rains during the month. Country and veld looking well.—L. Double.

Cape St. Lucia.—An unusual fall of rain for this time of year. Natives in this location are now busy ploughing. Stock are in good condition.—J. Murphy.

Nottingham Road.—Some very heavy rains and little hail. Veld is beautiful; best grass for many years at this time. Stock of all kind healthy. Cut-worm is bad.—Miss E. Smythe.

Dundee.—An unusually hot spell from 15th to 21st, with hot, drying winds, otherwise a very pleasant month. Ploughing proceeding.—West Thorold.

Durban (Point).—During gale on 6th, velocity of wind averaged 55 miles from 7 p.m. to 9 p.m., from 8.50 p.m. to 9 p.m. 66 miles average.—Capt. David Black.

ORANGE FREE STATE.

Rugby (Bethlehem).—The rains which fell at the beginning of the month and on 24th were so heavy that on both occasions all ploughing was put a stop to for three or four days. Farmers would welcome a spell of hot sunshine now to bring on the mealies, which are suffering from sodden ground. Cattle and sheep are rapidly improving in condition.—A. C. Glyn Baker.

Heilbron.—Cattle are growing and stock in fair condition. Ploughing in full swing.—P. A. Naude.

Bultfontein (Hoopstad).—27th, heavy hailstorm, much damage.—A. J. Hofmeyer.

Prospect (Vrede).—A good many lambs were lost owing to continuous wet and cold. A good deal of ploughing has been done. Stock improving in condition.—T. Pitcairn.

CAPE.

Murraysburg—About the beginning of month we had cold, changeable weather and snow in some parts of the district.—A. Cameron.

Groot Drakenstein—Most fruit crops very backward and irregular; grain suffering from too much wet.—Lionel Baker.

Graaff-Reinet.—Drought slightly relieved by rain on 6th, 0.21 inch, and 24th, 0.80 inch.—S. E. D. Treadwell.

Willowmore.—Rain is still needed very badly.—Mrs. B. M. Hemens.

Somerset East.—Drought continued to 24th, when steady rains set in from east-south-east, lasting intermittently until the evening of the 27th.—Clifford Harris.

Dunbrody (Uitenhage).—Very dry: frequent cold nights; vegetation very slow—often burnt by sun and wind.—E. Gisler.

Darling (Malmesbury).—A most favourable month—promise of very fine crops.—P. E. Drake.

Rietfontein (Aliwal North).—Very dry month, with great variation in temperature and strong winds.—A. J. Smith.

Kerefontein (Piquetberg).—The best, spring-like October we have had for very many years.—M. Melck.

Fraserburg.—Hail and snow at 3 p.m., and steady showers afterwards.—The Gaoler.

Good Hope (Philipstown).—Up to the end of this month the weather was promising. The veld is beginning to get dry and rain is urgently needed. Fruit trees are exceptionally healthy this year.—B. Potgieter.

Rockfort (Cathcart).—On the 6th, light showers with snow from the west.—J. King, J.P.

Lisburn (Barkly East).—On the 30th we had a severe frost, killing nearly all the standing crops. The lambing was a great success, as we had good rains in September. Crops in general are far below normal.—O. A. S. Vorster, J.P.

DECEMBER WEATHER CHARACTERISTICS.

The south of the Cape Province now joins the western and south-western districts in a diminishing rainfall, but with these exceptions there is a tendency to an increase throughout the Union. Swaziland, with about 6.5 inches, is now the area of heaviest precipitation; then follow Zululand with 5.5 inches; the Transvaal, Basutoland, and Natal with 5 inches; Kaffraria with 4.5 inches; the south-east of the Cape with 3.5 inches; the Orange Free State and north-east of the Cape with 3 inches; the northern border of the Cape and the northern and east-central Karoo with 2 inches; the Peninsula with 1 inch; and the remainder of the Union with less than an inch. The period of minimum rainfall is now reached on the southern Karoo. Thunderstorms, accompanied by hail are now of frequent occurrence, especially on the high veld, where they are responsible for most of the precipitation.

The highest mean daily temperature is still experienced over the northern borders of the Cape Province, where the normal now reaches 77 degrees. A mean temperature of 74 degrees may be anticipated in Natal; and in the Orange Free State, 71 degrees; over the eastern Transvaal, the east-central Karoo, and the south-east of the Cape, 70 degrees; over the Transvaal high veld, along the western and south-western coastal districts, and over the northern and central Karoo, 69 degrees; over the southern Karoo and along the south coast, 67 degrees; and on the Peninsula, 66 degrees.

Over the Cape Peninsula the winds attain their maximum mean velocity during December, but elsewhere there is a continued decrease in force. Over the Transvaal, north-north-west continues to be the prevailing direction, notwithstanding a slightly diminished frequency of both north-north-westerly and northerly winds as also of those from south and south-south-east. The breezes from the other points of the eastern half of the compass, and of those from south-south-west and south-west, show a slight increase in the frequency of their occurrence, whilst westerly winds are about the same as during November. At Kimberley, north-north-west winds are also most numerous during this month, showing a large increase over those from the same direction during November. A similar, although smaller increase is found in connection with the winds from the eastern half of the compass—an increase mainly at the expense of those from points between south and west-south-west. At East London, on the other hand, the prevalent direction is still north-east, although there is a falling-off in frequency (mostly slight) of all directions from east round by north to south-west. The only winds showing an increase in frequency are those from south-south-westerly and south-easterly directions.

In the Transvaal the hours of bright sunshine should be about 60 per cent. of the total number possible, and in the Cape about 78 per cent. over the northern border, 74 per cent. over the south-east, and 70 per cent. over the south-west.

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Pretoria.



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

NOVEMBER, 1920.

No. 11.

A MEAN monthly pressure lower than usual over the west and centre, almost normal over the north-east; temperature considerably higher than the average; a precipitation deficient in amount over the greater part of the Union, but in excess of the normal over the north and east of the Transvaal, parts of Natal, and of the south and west of the Cape Province; frequent thunderstorms, with unusually vivid lightning; a number of destructive hailstorms;—constituted the dominant features of the weather of November.

Pressure.—The mean isobars for November, as may be seen from the accompanying map, were somewhat lower than usual over the west, centre, and south of the Cape and over the Free State, whilst over Rhodesia, the Transvaal, and Natal, they deviated but little from the normal. The departures from the average trend of the isobars were mainly due to the persistence of the equatorial tongue of low pressure which was present on twenty-two days of the month. Low pressure areas were present on seventeen days, and moved along the coast as follows: 1st, over west; 6th, 7th, and 9th, over south-east; 13th, on south, moving to east on 14th; 16th, over west, moving to south on 17th; 18th–19th, over south-east; 21st, over south; 23rd, over south-west, moving to south-east on 24th–25th, and east on 26th; on 28th, over west, moving to south on 29th. High pressure areas were present on sixteen days, viz.: on 1st, over east and south; on 2nd, on south coast, moving to east on 4th; on 10th, over west, moving to south on 12th; on 20th to 23rd, over south-east; on 26th, over west, moving eastwards until 29th; on 30th, over south-west.

Temperature.—The mean monthly temperature was 69.7 degrees, or 2.5 degrees higher than usual. This excess was due to both days and nights being considerably in excess of the normal over practically the whole country, the former by 2.9 degrees and the latter by 2.1 degrees on the mean. The monthly temperature at individual stations was in excess by 1–5 degrees over the Cape, but rising to 8.2 degrees at Bedford; similarly, the surplus monthly temperature was mostly from 2–3 degrees in the Orange Free State and 1–2 degrees over the Transvaal. The only exceptional stations were in Natal, where Durban and Dundee were 0.8 and 0.7 degree respectively lower than

usual. The mean maximum temperatures were above the average generally by 1-3 degrees in the Transvaal, 3-6 degrees in the Orange Free State, and mostly by similar amounts in the Cape Province. On the other hand the day temperatures were below normal by 1.5 to 3 degrees in Natal, and in the south-east of the Orange Free State by about 1 degree. The greatest excess was 7.4 degrees at Bedford, in the Cape Province, and the largest deficit 3.2 degrees at Dundee (Natal). Except at Belfast, in the high veld of the Transvaal, where there was a small deficit of 0.4 degrees in the night temperature, minimum temperatures were everywhere above the average, most commonly by 1-3 degrees, but rising to 4.8 degrees at Bedford (Cape Province). The mean warmest station was Komati Poort, with a monthly temperature of 79.2 degrees, and the mean coldest Belfast, with 61.8 degrees, a difference of 17.4 degrees. The warmest period of the month was from the 24th to 30th, stations being affected most widely on the 24th and 25th. Highest temperatures of the month were also registered on the 1st to 3rd, 17th, 19th, and 21st. The coldest spells were 1st, 2nd, 6th to 8th, 10th, 12th, 16th, 20th, and 26th to 30th; most widely on 1st and 27th. The extremes during the month were 109 degrees at Komati Poort on the 25th, and 31 degrees on the 1st at Belfast, a range of 78 degrees. This last was the only shade temperature below freezing-point, although frost was reported as causing considerable damage to crops at Groot Vallei, District Cradock, on the 27th.

Precipitation.—Although the rainfall during the month was, on the whole, well distributed in regard to time, unfortunately it was associated mostly with thunderstorms, more or less intense, causing an irregular distribution in regard to quantity. Precipitation was under the average over practically the whole of the Cape Province and in the Orange Free State, most commonly by amounts varying between one-third of an inch and one and three-quarter inch (0.3 to 1.75 inch). The only exceptional areas were the neighbourhood of Piquetberg, Knysna, and Mafeking, where the excesses were under three-quarters of an inch. In Natal the differences were much more accentuated, excessive precipitation being confined to a narrow central belt between Maritzburg and Dundee. The excess was greatest, 3.94 inches, at Howick, and least, 0.26 inch, at Dundee. The deficit varied between a few tenths of an inch and about one and a half inches, and extended into Zululand. The north and east of the Transvaal were the most favoured portions of that Province, the rainfall there being most commonly in excess of the normal by 1-2 inches. Over the south, west, and centre, however, there prevailed a deficiency in precipitation, averaging 2-3 inches in the west and centre, and 0.75 to 1.75 inches in the south and south-east. Even here, however, small surplus amounts were recorded, as at Rustenburg, Klerksdorp, and Johannesburg. Thunderstorms and rain were reported over the Transvaal, Natal, and Kafraria on more than half the number of days in the month, whilst over the Cape Province and the Orange Free State the weather was generally fine, with some cloudy days and light showers, particularly towards the end of the month. Thunderstorms were frequent and widespread, particularly in the Transvaal, where the lightning was of a somewhat unusual type, the flashes being of a sheet-like character, almost continuous, but interspersed with occasional zig-zag discharges. Some losses in stock occurred from this cause in the Stanger and Middelburg Districts; whilst two fatalities were reported in the Kokstad District, and one man killed and three stunned in Johannesburg on the 22nd. Severe and destructive hailstorms, accompanied in some cases by heavy wind, caused considerable damage over widely scattered areas. The most disastrous of these storms seems to have been that reported in the newspapers as affecting the northern suburbs of Johannesburg, Rosebank, Illovo, Dunkeld, Cyferfontein, and Sandfontein, on the evening of Saturday, the 20th. Although

(Continued on Page 7.)

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), NOVEMBER, 1920.

Place.	Observer.	Month.—Nov., 1920.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.		Date.	Lowest.	Highest.	Date.	Lowest.	Highest.
		Mean Max.	Mean Min.				° F.	° F.						
<i>Transvaal—</i>														
Beitost.	The Forester	75.7	48.0	61.8	60.2	+ 1.6	82.0	31.0	24th, 25th, & 26th	° F.	82.0	24th, 25th, & 26th	° F.	31.0
Barberton.	Walter Grubb	81.9	61.9	71.9	69.8	+ 2.1	87.0	54.0	24th	° F.	87.0	24th	° F.	54.0
Johannesburg (Observatory).	The Staff	76.5	64.2	65.4	63.0	+ 2.4	83.6	47.6	25th	° F.	83.6	25th	° F.	47.6
Klerksdorp (Strathmore).	Chas. Scott	87.2	57.2	72.2	70.8	+ 1.4	93.0	50.0	24th & 25th	° F.	93.0	24th & 25th	° F.	50.0
Komaggaspoort.	B. J. Potlbergill	91.6	66.7	79.2	76.9	+ 2.3	109.0	36.0	25th	° F.	109.0	25th	° F.	36.0
Lonia Richards.	L. J. de Bruyn	81.6	61.0	71.3	69.0	+ 2.3	99.0	52.0	27th	° F.	99.0	27th	° F.	52.0
Nyngroon.	G. Bakker	64.8	39.6	72.2	69.9	+ 2.3	93.0	30.0	24th & 25th	° F.	93.0	24th & 25th	° F.	30.0
Pietermaritzburg.	J. A. Sturton	78.7	55.1	66.0	65.9	+ 1.0	94.0	41.0	28th	° F.	94.0	28th	° F.	41.0
Pretzsburyg.	W. Franklynic	80.9	58.9	69.6	68.7	+ 1.1	94.0	48.0	26th	° F.	94.0	26th	° F.	48.0
Proctonroom (Exp. Farm).	The Manager.	87.1	55.4	71.2	67.5	+ 3.7	95.0	46.0	24th & 25th	° F.	95.0	24th & 25th	° F.	46.0
Proctonroom (Met. Office).	The Staff.	82.5	57.9	70.2	69.2	+ 1.0	92.1	48.1	25th	° F.	92.1	25th	° F.	48.1
Piet Reber.	J. Werner	76.5	58.7	68.6	64.1	+ 2.5	89.5	46.0	24th	° F.	89.5	24th	° F.	46.0
Zeerust.	H. Dietrich	87.1	59.2	73.2	72.0	+ 1.2	95.3	48.0	25th	° F.	95.3	25th	° F.	48.0
<i>Swaziland—</i>														
Mbabate.	Swaziland Police	77.5	56.5	67.0	64.6	+ 2.4	92.0	46.0	24th	° F.	92.0	24th	° F.	46.0
<i>Orange Free State—</i>														
Bloemfontein.	E. Arnold	85.5	56.7	71.1	67.7	+ 3.4	94.1	44.6	24th	° F.	94.1	24th	° F.	44.6
Harrismith.	The Forester	75.7	50.5	63.1	62.8	+ 0.3	86.0	40.0	24th & 25th	° F.	86.0	24th & 25th	° F.	40.0
Lindley.	J. Collier-Oates.	83.6	52.7	68.2	65.9	+ 2.3	93.5	42.0	25th	° F.	93.5	25th	° F.	42.0
Leathby.	The Forester	81.3	51.8	66.6	63.2	+ 3.4	89.0	44.0	24th	° F.	89.0	24th	° F.	44.0
Reduth.	J. J. Wardhaugh.	88.3	55.9	71.1	68.1	+ 3.0	94.5	41.6	21st	° F.	94.5	21st	° F.	41.6
<i>Natal—</i>														
Durban (Point).	Capt. D. Black	78.3	65.6	72.0	72.8	- 0.8	89.2	59.0	17th	° F.	89.2	17th	° F.	59.0
Dundee.	West Thorold	81.9	55.3	68.6	64.3	+ 0.7	92.0	45.0	24th & 25th	° F.	92.0	24th & 25th	° F.	45.0
Ellisras.	The Gardiner	82.0	63.4	72.7	69.6	+ 3.1	90.0	58.0	24th	° F.	90.0	24th	° F.	58.0
Marthaburg (Mental Hospital).	The Staff.	79.5	59.7	69.8	68.1	+ 0.7	87.2	52.8	19th	° F.	87.2	19th	° F.	52.8
<i>Cape—</i>														
Alfred North.	A. Alcock	85.2	58.7	69.4	65.4	+ 4.0	93.0	48.5	21st	° F.	93.0	21st	° F.	48.5
Bedford.	T. C. Hall.	83.8	54.5	69.2	63.0	+ 6.2	101.5	46.0	21st	° F.	101.5	21st	° F.	46.0
Carrarvon.	A. P. Malherbe.	85.6	53.9	69.8	67.6	+ 2.2	96.0	44.0	21st	° F.	96.0	21st	° F.	44.0
Cape Town (Royal Observatory).	The Staff	75.9	57.0	66.4	64.2	+ 2.2	87.2	48.0	27th	° F.	87.2	27th	° F.	48.0
Claarwilliam.	W. J. Downes	89.2	54.6	71.9	69.4	+ 2.5	106.0	47.0	1st	° F.	106.0	1st	° F.	47.0
East London.	M. G. Grogan	70.9	61.2	69.0	65.8	+ 3.2	84.0	56.0	30th	° F.	84.0	30th	° F.	56.0
Great-Britain.	S. E. D. Treadwell	88.6	56.7	72.6	67.1	+ 5.5	101.2	44.3	29th	° F.	101.2	29th	° F.	44.3
Groo Drakenstein.	Lionel Baker	80.1	55.8	68.0	64.4	+ 3.6	92.3	48.3	1st	° F.	92.3	1st	° F.	48.3
Kokstad.	H. D. Vyter	78.0	52.1	65.5	63.5	+ 2.0	91.6	42.0	24th	° F.	91.6	24th	° F.	42.0
Kimberley.	J. Arden	91.4	59.0	75.5	73.2	+ 2.3	101.0	42.0	21st	° F.	101.0	21st	° F.	42.0
Mareling (Convent).	The Mother Superior.	88.4	58.7	73.6	72.6	+ 1.0	95.0	49.8	1st	° F.	95.0	1st	° F.	49.8
Mossel Bay (Cape St. Blaize).	The Lightkeeper.	74.4	61.3	67.8	64.8	+ 3.0	79.0	54.0	24th	° F.	79.0	24th	° F.	54.0
Murraysburg.	A. Cameron	85.7	52.1	68.9	66.1	+ 2.8	98.0	40.0	21st	° F.	98.0	21st	° F.	40.0
O'okiep.	J. Burrows	83.3	55.3	69.4	64.2	+ 5.2	94.6	49.1	3rd	° F.	94.6	3rd	° F.	49.1
Port Elizabeth.	The Lightkeeper	74.3	61.6	68.0	65.1	+ 2.9	96.0	55.0	28th	° F.	96.0	28th	° F.	55.0
Port St. Johns (Cape Herms).	The Lightkeeper	75.1	68.7	69.4	68.7	+ 0.7	83.0	53.0	2nd	° F.	83.0	2nd	° F.	53.0
Umsusstown.	H. Holley	86.1	53.9	70.0	66.8	+ 3.2	98.0	43.0	21st	° F.	98.0	21st	° F.	43.0
Vryburg.	Chas. Bridler	92.1	57.0	74.8	71.2	+ 3.6	100.0	47.0	19th & 24th	° F.	100.0	19th & 24th	° F.	47.0
Wynberg (Convent).	The Mother Superior.	79.7	56.4	66.6	62.2	+ 4.4	86.2	48.5	27th & 28th	° F.	86.2	27th & 28th	° F.	48.5

RAINFALL, NOVEMBER, 1920.

PLACE.	OBSERVER.	Month.		Normal.	Difference from Normal.	From 1st Jan., 1920.	Normal.	Difference from Normal.	From 1st July, 1920.	Normal.	Difference from Normal.	
		Inches.	Nov., 1920									
<i>Transvaal—</i>												
Bethlehem...	W. Grubb	4.43	3.69	+ 0.74	Inches.	24.77	29.18	- 4.41	11.67	8.24	+ 3.43	
Bethel...	The Forester	6.83	4.19	+ 2.64	Inches.	28.15	26.06	+ 2.09	14.11	8.01	+ 5.29	
Bethel...	H. F. Joubert	4.11	5.85	- 1.74	Inches.	20.06	24.87	- 4.81	11.92	10.00	+ 1.92	
Bethel...	Mrs. S. M. Nicolson	4.31	5.28	- 0.97	Inches.	35.14	25.62	+ 9.52	15.52	10.63	+ 4.89	
Bethel...	W. A. et Horst	3.90	1.68	+ 2.22	Inches.	19.36	23.58	- 4.22	10.75	8.77	+ 1.98	
Bethel...	The Staff	3.92	3.87	+ 0.05	Inches.	34.61	22.78	+ 11.83	10.89	7.78	+ 3.11	
Bethel...	Chas. Scott	2.92	2.41	+ 0.51	Inches.	19.34	18.83	+ 0.51	6.81	5.08	+ 1.73	
Bethel...	R. J. Fochergill	3.51	2.94	+ 0.57	Inches.	31.07	22.47	+ 8.60	9.23	5.48	+ 3.75	
Bethel...	L. J. de Bruin	5.25	3.04	+ 2.21	Inches.	30.93	26.36	+ 4.57	8.85	7.06	+ 1.79	
Bethel...	Dr. Spencer	3.81	2.98	+ 0.83	Inches.	24.49	24.05	+ 0.44	11.06	8.86	+ 2.20	
Bethel...	W. Frankleyne	3.85	2.59	+ 1.26	Inches.	21.89	17.44	+ 4.45	8.73	5.27	+ 3.46	
Bethel...	J. Werner	5.98	4.14	+ 1.84	Inches.	30.77	30.41	+ 0.36	13.67	8.84	+ 4.83	
Bethel...	J. A. Hatton	4.11	4.11	0	Inches.	34.02	34.02	0	12.26	8.19	+ 4.07	
Bethel...	The Manager	1.94	3.11	- 1.17	Inches.	20.40	19.43	+ 0.97	5.48	6.44	- 0.96	
Bethel...	The Staff	1.69	3.68	- 1.99	Inches.	23.54	25.50	- 1.96	8.46	8.44	+ 0.02	
Bethel...	N. H. Munro	1.44	3.99	- 2.55	Inches.	19.73	20.74	- 1.01	7.31	6.80	+ 0.51	
Bethel...	S. A. Police	3.42	2.88	+ 0.54	Inches.	20.38	21.58	- 1.20	8.49	6.67	+ 1.82	
Bethel...	The Forester	6.22	5.71	+ 0.51	Inches.	65.59	60.73	+ 4.86	17.03	13.63	+ 3.40	
Bethel...	H. Dietrich	0.97	3.35	- 2.38	Inches.	17.50	20.81	- 3.31	5.94	5.84	+ 0.10	
<i>Swaziland—</i>												
Mbabane	Swaziland Police	7.76	6.93	+ 0.83	Inches.	54.48	42.67	+ 11.81	20.83	13.91	+ 6.92	
<i>Orange Free State—</i>												
Bloemfontein	E. Arritt	0.98	1.75	- 0.77	Inches.	22.80	16.49	+ 6.31	5.57	4.90	+ 0.67	
Bloemfontein	J. J. Wadsworth	0.67	1.29	- 0.62	Inches.	14.61	16.06	- 1.45	2.40	4.10	- 1.70	
Bloemfontein	J. B. Paterson	2.09	3.86	- 1.77	Inches.	27.36	23.97	+ 3.39	10.95	8.91	+ 2.04	
Bloemfontein	S. R. Northfield	2.06	3.11	- 1.05	Inches.	23.77	18.33	+ 5.44	6.18	7.65	- 1.47	
Bloemfontein	G. Stokes	2.71	3.57	- 0.86	Inches.	27.65	24.00	+ 3.65	8.83	9.94	- 0.11	
Bloemfontein	J. Collister-Oates	1.18	2.97	- 1.79	Inches.	20.34	20.73	- 0.39	6.89	6.87	+ 0.02	
<i>Natal—</i>												
Durban	West Thorold	3.71	3.49	+ 0.22	Inches.	34.07	26.68	+ 7.39	9.89	8.71	+ 1.18	
Durban	Capt. D. Black	4.16	4.86	- 0.70	Inches.	47.46	36.83	+ 10.63	18.19	14.54	+ 3.65	
Durban	The Gaoler	3.21	5.48	- 2.27	Inches.	44.43	37.06	+ 7.37	13.34	14.67	- 1.33	
Durban	The Gaoler	7.84	3.90	+ 3.94	Inches.	49.09	27.41	+ 21.68	13.79	9.68	+ 4.11	
Durban	D. A. R. Leatham	1.11	2.53	- 1.42	Inches.	22.21	23.90	- 1.69	6.73	6.88	- 0.15	
Durban	The Staff	6.57	4.08	+ 2.49	Inches.	43.52	28.76	+ 14.76	13.84	10.10	+ 3.74	
Durban	The Gaoler	4.05	4.26	- 0.21	Inches.	29.91	30.83	- 0.92	9.75	10.95	- 1.20	
Durban	The Gaoler	3.84	3.44	+ 0.40	Inches.	33.59	22.39	+ 11.20	7.99	7.60	+ 0.39	

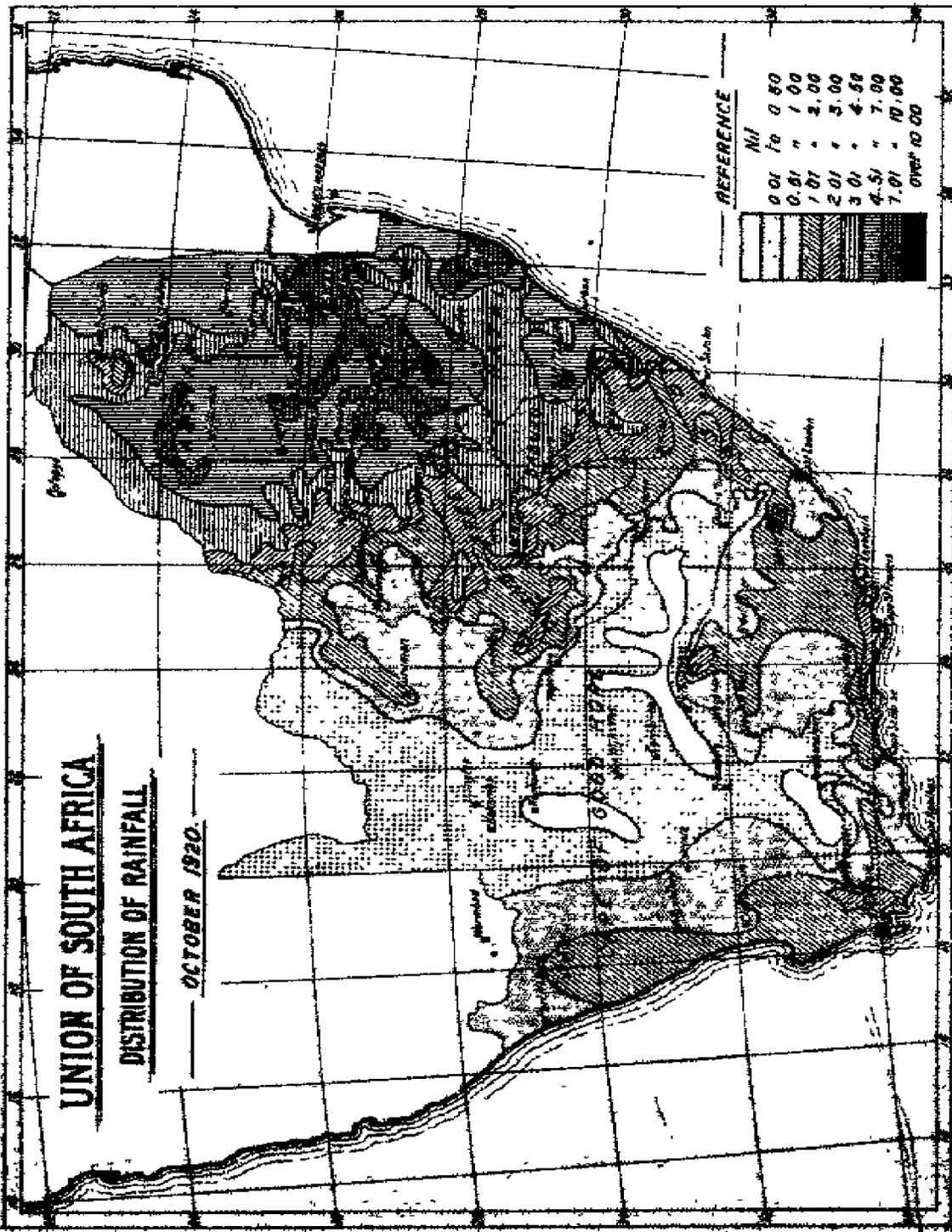
RAINFALL, NOVEMBER, 1920 (continued).

PLACB.	OBSERVER	Month.		Normal.	Difference from Normal.	From 1st Jan., 1920.	Normal.	Difference from Normal.	From 1st July, 1920.	Normal.	Difference from Normal.
		Inches.	Nov., 1920.								
Cape—											
Alford North.....	A. Alcock.....	0.80	1.85	1.05	10.64	18.32	-1.88	2.96	5.40	-2.44	
Beaufort West.....	The Gaoler.....	0.15	0.74	0.59	7.62	8.36	-0.96	1.21	2.65	-1.44	
Bedford.....	T. C. Hall.....	2.30	2.89	0.63	24.13	25.05	-0.92	5.44	9.92	-3.88	
Bristown.....	The Gaoler.....	0.05	0.78	0.73	14.22	10.41	+3.81	1.16	2.43	-1.27	
Calvinia.....	The Gaoler.....	0.06	0.40	0.34	10.83	7.32	+3.51	5.14	3.28	+1.91	
Cape Town (Royal Observatory)	The Staff.....	0.77	1.07	0.30	25.81	24.08	+1.73	14.91	12.03	+2.88	
Ceres.....	A. H. Atter.....	0.81	1.86	1.02	50.22	39.88	+10.34	26.50	21.40	+5.04	
Curruvann.....	A. P. Malherbe.....	0.00	0.52	0.52	6.59	7.54	-0.95	1.45	1.77	-0.32	
Chamwilliam.....	W. J. Downes.....	2.80	3.11	0.31	10.94	8.41	+2.53	4.18	4.18	0.00	
East London.....	A. Downes.....	0.09	0.39	0.30	18.27	30.04	-11.77	5.37	13.25	-7.88	
Fraserburg.....	The Gaoler.....	0.09	0.42	0.33	6.95	6.27	+0.68	1.37	1.09	+0.32	
Garies.....	The Gaoler.....	0.18	0.23	0.05	6.18	5.08	+1.10	2.63	2.63	0.00	
Graaff-Reinet.....	S. E. D. Treutwell.....	0.92	1.24	0.32	15.35	12.57	+2.78	2.98	4.63	-1.65	
Grimontown.....	The Gaoler.....	0.06	0.84	0.78	14.09	11.77	+2.32	2.20	2.20	0.00	
Hanover.....	The Gaoler.....	0.00	1.01	1.01	13.26	12.15	+1.11	0.90	3.07	-2.17	
Hope Town.....	The Gaoler.....	0.32	1.11	0.80	15.15	11.06	+4.09	0.69	2.81	-2.12	
Kenilworth.....	The Gaoler.....	0.00	0.26	0.26	6.59	5.83	+0.76	0.98	1.10	-0.12	
Kimberley.....	The Gaoler.....	0.78	1.53	0.75	17.47	14.18	+3.29	2.81	3.65	-0.84	
Kroonstad.....	J. Acton.....	3.08	3.30	0.22	22.38	20.40	+1.98	2.81	3.04	-0.24	
Koosastad.....	The Gaoler.....	0.12	0.16	0.04	27.52	23.00	+4.52	6.28	7.62	-1.34	
Kruihoek.....	H. D. Coyte.....	0.55	1.42	0.87	25.87	14.17	+11.70	2.42	2.85	-0.43	
Kruihoek (Abomas).....	A. F. Stowell.....	2.74	2.96	0.22	20.80	18.11	+2.69	7.07	4.92	+2.15	
Matieling (Convent).....	The Mother Superior.....	0.62	1.14	0.52	9.20	15.09	-5.89	3.99	7.24	-3.25	
Mossel Bay (Cape St Blaize).....	The Lightkeeper.....	0.12	0.80	0.68	8.91	10.19	-1.28	1.31	2.70	-1.43	
Murraysburg.....	A. Cameron.....	0.02	0.23	0.21	0.50	6.04	-0.36	3.32	3.17	+0.15	
Oxley.....	J. Burrows.....	0.56	1.17	0.61	21.03	12.42	+8.61	1.03	3.10	-2.07	
Philips town.....	The Gaoler.....	1.45	1.01	0.44	23.05	20.64	+2.41	12.50	10.70	+1.80	
Pietermaritzburg.....	The Gaoler.....	1.34	2.07	0.73	12.28	20.55	-8.27	4.40	10.60	-6.20	
Port Elizabeth.....	J. E. Allen.....	0.77	5.21	0.44	48.70	42.84	+5.86	11.60	18.44	-6.84	
Port St. Johns (Cape Hermes).....	The Lightkeeper.....	0.01	0.64	0.63	10.78	8.94	+1.84	6.60	1.71	+4.89	
Prinsloo.....	The Gaoler.....	1.53	2.04	0.51	18.14	18.36	-0.22	3.53	5.76	-2.23	
Stellenbosch.....	H. Holley.....	0.80	0.86	0.06	9.35	8.42	+0.93	3.10	9.02	-5.92	
Stellenbosch.....	The Gaoler.....	0.15	0.40	0.25	0.94	8.80	-7.86	4.57	3.41	+1.16	
Swellendam.....	The Gaoler.....	1.70	2.52	0.82	19.19	29.56	-10.37	7.50	18.15	-10.65	
Swellendam.....	A. Dingspeck.....	1.78	2.52	0.74	18.64	22.78	-4.14	4.95	8.10	-3.15	
Uitenhage.....	The Gaoler.....	0.30	1.07	0.77	10.79	12.32	-1.53	4.04	5.95	-1.91	
Uniondale.....	The Gaoler.....	0.04	0.47	0.43	5.52	6.40	-0.88	0.25	1.12	-0.87	
Uitenhage.....	The Gaoler.....	0.60	0.58	0.02	13.00	9.25	+3.75	0.35	2.24	-1.89	
Victoria West.....	The Gaoler.....	0.40	1.44	1.04	16.68	17.00	-0.32	0.75	3.17	-2.42	
Vryburg.....	Chris Butler.....	0.00	0.54	0.54	11.03	12.26	-1.23	5.49	6.96	-1.47	
Worcester.....	The Gaoler.....	0.85	1.77	0.92	55.63	45.72	+9.91	30.75	24.66	+6.09	
Wynberg (Convent).....	Mother Superior.....	0.85	1.77	0.92	55.63	45.72	+9.91	30.75	24.66	+6.09	

UNION OF SOUTH AFRICA

DISTRIBUTION OF RAINFALL

OCTOBER 1920.



REFERENCE

MI	To	MI
0.01	To	0.50
0.01	"	1.00
1.01	"	2.00
2.01	"	3.00
3.01	"	4.50
4.51	"	7.00
7.01	"	10.00
		OVER 10.00

it lasted only about half an hour, damage estimated as amounting to many thousands of pounds was wrought by the hail, wind, and water combined, to crops, houses, and lands. Houses were unroofed, one roof being carried about half a mile, market gardens destroyed, crops of mealies and fruit ruined, and hundreds of small birds killed by the hail. The hail, where it had been banked up against the fences, lay on the ground till late on Sunday. A similar storm on the 14th at Bedford (Witwatersrand) caused £800 damage to fruit and vegetable crops. Destructive hailstorms occurred on the 5th, 6th, 8th, 11th, 12th, 14th, 19th, 20th, 21st, 24th, and 30th at various stations in the Transvaal, Natal, Orange Free State, the east of the Cape Province and the Transkei. The cumulative rainfall since the beginning of the calendar year is mostly above the average by large amounts (10 inches or over) in the south-west of the Cape Province, greater part of Natal, and east of the Transvaal; the excess is most commonly 2-5 inches in the Cape Province, Orange Free State, and the Transvaal, except in the central portion of the last province, where it decreases to under 1 inch. A serious deficiency in rainfall has, however, been experienced along the south coast and the south-east and north-east of the Cape Province, where the shortage amounts at a number of stations to 4-12 inches. Smaller deficits of 1-3 inches are met with in the west of the Transvaal, parts of the Orange Free State, portions of the Karroo, Namaqualand, and the north and west of Natal, as well as in the neighbourhood of Barberton, in the eastern Transvaal. The maximum excess is 19.76 inches at Pietermaritzburg (Natal), and the greatest deficit 11.77 inches, at East London. The season's cumulative rainfall since the 1st July is in excess of the usual amounts most frequently by 2-5 inches over the Transvaal (except in portions of the west, where there are small deficits), also in the central and southern parts of Natal, and south-west of the Cape Province. Smaller excesses are met with in the east and centre of the Orange Free State, Namaqualand, the west of the northern Karroo, parts of the central Karroo, and Bechuanaland. Small deficits varying from a few tenths to 2-5 inches are general over the central, north-west, north-east of the Cape Province, the more northerly portions of Natal, and the north and south of the Orange Free State, but much larger shortages along the south coast and south-east of the Cape Province, and Kaffraria, where it ranges from 3 inches to almost 8 inches at East London. Taken as a whole, weather conditions in November were favourable to agriculture over the Transvaal except in the western section, particularly the District of Lichtenburg, where some farms have had no ploughing rain yet; also parts of Potchefstroom and Bustenburg. In Natal rain is badly needed for ploughing, but growing crops and stock seem generally in good condition, and the veld is looking well, also in Zululand. Although the weather conditions were, generally speaking, not too favourable to ploughing operations in the Orange State, the good rains of the previous month, in conjunction with the showers that fell in November, prevented crops from suffering to any serious extent, and stock generally are in good condition, although the veld was getting dry towards the end of the month. In the Cape Province the fruit crop is ripening earlier than usual, whilst the harvest in Namaqualand is described as satisfactory. The unusual heat and strong winds prevented full advantage being taken of the occasional good showers for sowing, and the drought is making itself felt over an increased area. Crop prospects are poor generally over the summer rainfall area. Cut-worms are attacking the young mealies in the Winburg District of the Orange Free State, whilst insect pests are more troublesome than usual in the Weenen District of Natal.

OBSERVERS' NOTES FOR NOVEMBER, 1920.

TRANSVAAL.

Middelburg.—The rainfall for the month has been up to the average, and regularly distributed throughout the month. Rivers and spruits are now running up to their summer levels, and the countryside is green and luxurious with vegetation. The temperature has, in consequence of the regularity of the rainfalls, been temperate, with cool nights.—Dr. H. A. Spencer.

Lichtenburg.—Rainfall not general. Farmers complaining of cut-worm doing damage to mealies.—J. T. Allman.

Krugersdorp.—The weather for the month was somewhat erratic. The maximum temperature dropped 11 degrees on the 8th. The veld in the surrounding districts is at its best. Fruit trees and crops doing well. Weather somewhat dry and warm at latter end. Rainfall, 1.41 inches on eight days of month.—George S. Garnett.

Jakhalsfontein 2375 (Zoupsansberg).—The distribution of the rain was very favourable to ploughing and growth of crops. No damage to crops from hail.—J. C. Palmer.

Mosdene (Waterberg).—Good rains, and conditions very favourable for the ploughing and planting of summer crops, which are proceeding apace. On the afternoon of the 15th there was a very destructive wind-storm on the farm Sjambokkopjes 1951, six miles south-east of this station. Trees of the largest size were either uprooted or snapped off.—Ernest E. Galpin.

Pietersburg.—Good soaking rains; veld and crops luxuriant; brilliant days.—W. A. Frankleyne.

Barberton.—An average month; the rainfall somewhat deficient for ideal farming conditions. Practically no hail fell.—W. Grubb.

Steynsdorp (Barberton).—11th: Hail, 3 p.m. to 3.20 p.m.; average size, $\frac{3}{4}$ inch; largest, 1 inch; much damage to crops; storm from south-west. 19th: Hail, 4.5 p.m. to 4.15 p.m.; average size, $\frac{3}{4}$ inch, largest, 1 inch; much damage; storm from north-west.—A. P. Wilson Moore.

Weltevreden 17 (Carolina).—5th: Fair amount of small hail, slight damage to fruit.—J. E. Kent.

Elandshoek (Carolina).—11th: Bad hailstorm; considerable damage.—H. T. Shaw.

Rietfontein No. 72 (Heidelberg).—6th: Hail, slight damage.—A. Smith.

Schoonoord (Lichtenburg).—A large part of this district has had no ploughing rain yet.—A. Snodgrass.

Kleppan No. 272 (Lichtenburg).—All about stories of drought.—J. H. Fisher.

Schoongezicht No. 302 (Lydenburg).—21st: Hail: crops partly damaged.—M. H. Rademeyer.

Bothsabelu (Middelburg).—14th: Frightful thunderstorm; my best cow killed by lightning in the field.—(Mrs.) L. Eiselen.

Bergplaats (Piet Retief).—26th: 2.07 inches of rain; storm from north-east. Rush of water doing much damage to lands, etc.—P. Viljoen.

Tafelberg (Piet Retief).—Small hail on 8th: did but little damage.—J. H. B. Engelbrecht.

Vliëgen Farm (Potchefstroom).—This is the driest November since I have kept a record. At present no prospect of any mealie crop in the immediate neighbourhood.—W. Haggett.

Strydpan (Pretoria).—12th: Hailstorm from west and south, at 4 p.m., lasting about half an hour; damage to fruit; hail size of pigeons' eggs.—J. A. Rossouw.

Zandfontein (Rustenburg).—Many hailstorms reported in the neighbourhood; very dry towards end of month; farmers anxious for rain.—R. Boon.

Wetveerden (Standerton).—A good season so far for crops; stock in good condition. Lightning very severe here and in neighbourhood, causing loss in stock.—D. Lane.

Hamburg (Waterberg).—Was getting very dry; a grand rain came just in time for the planted mealies.—J. L. Harries

Kromdraai (Witwatersrand).—28th: Heavy hail, much damage; storm on lasted twenty minutes.—W. Frost.

Parkton North (Witwatersrand).—10th: Violent hurricane with heavy hail in neighbourhood; practically no damage to us.—L. Edwards.

Hlein Begin (Zoutpansberg)—Veld and crops looking well.—A. Bicheno.

Bedford (Witwatersrand).—14th: Terrific hail and windstorm, causing £800 damage to fruit and vegetable crops.—Alex. H. Whitton.

SWAZILAND.

Pigg's Peak.—5th: Severe hailstorm; stones as large as golf balls
H. W. Ansell

NATAL.

Cape St. Lucia.—Strong hot winds from north-east and south-west; good grazing throughout the location, and stock in good condition.—J. Murphy.

Ladysmith—Dry, hot weather, with very light rains and occasional hot winds from the west. Country very dry, and ploughing and planting in some parts have ceased, owing to lack of rain.—D. A. R. Leathern.

Paulpietersburg.—Exceptionally heavy thunderstorms prevailed during the month, the most unusual feature being that storms came from all points of the compass. An exceptionally heavy wind came from the north at midnight on the 25th.—Arthur A. Carter.

Hlabisa.—Nice rains during the month, and the country is looking well. Crop prospects are good.—L. Double.

Enon Grange (Estcourt).—An exceedingly bad hailstorm on the 24th, lasting fifteen minutes; stones size of small hen's egg.—S. Hodges.

Nottingham Road (Weenen).—Few hailstorms, some very severe, during month; stock all healthy; insect pests more troublesome than usual.—(Miss) E. Smythe.

Edendale (Ladysmith).—Good rain badly needed for planting and ploughing, but growing crops and all stock are in excellent condition.—T. P. Niland.

Mutawanshloof (Klip River).—Very dry month and lot of wind; rain badly wanted for crops.—F. J. T. Brandon.

Mpofana.—Severe hailstorm on the lower portion of the location on the 12th.—The Magistrate.

Rongpoort (Klip River).—Pleasant month, nice showers, just enough to go on with, but no soaking rains.—J. H. Bartholomew.

ORANGE-FREE STATE.

Hoffontein (Kroonstad).—Rainfall for month, 1.26 inches on four days; very dry; prospects for crops poor.—H. W. Müller.

Blompkop (Bethlehem).—Severe hailstorm on 30th; much damage over wide area.—C. P. v. d. Merwe.

Zandkop (Frankfort).—Very hot days; ground too dry to plough; veld getting very dry.—A. G. Purves.

Blairville (Harroville).—A very dry month; all crops at a standstill; stock in good condition.—C. C. Atkins.

Heilbron.—Crops: So far as can be ascertained from outside sources, crops are in good condition generally, although sowings have not been so large or so extensive as might have been expected. Live stock: Stock are very good, and feeding is very fair. The latter half of the month rain eased off, and consequently the growth of veld made during the first portion of the month suffered a set-back, and veld is now showing the want of rain. Diseases: Nothing has been reported to date.—P. A. du P. Naudé.

Woudzicht (Vrede).—Rainfall below normal, but owing to heavy rainfall in October crops did not suffer.—J. N. Kohler.

Prospect (Vrede).—The month began very dry, and the good rains which fell from the 5th to the 14th did much good. Ploughing was carried on under favourable conditions, and the young crops are now looking well. The veld is excellent, and live stock are getting into very good condition.—T. Pitcairn.

Paardekraal (Winburg).—A dry month, with sufficient picking for sheep, but veld too short for cattle, which still have to be fed. Some cut-worm in young mealies.—G. S. Lowe.

CAPE.

Lovedale.—A very hot month, mean maximum temperature was 0.9 degree above figure for January, 1920, and temperature of month about 5 degrees above average for November. Two good falls of rain enabled ploughing to be started, but great heat dried up ground very quickly.—C. A. Filson.

Cala.—Prospects for mealie season poor, unless rain comes soon.—D. A. Grundlingh.

Groot Drakenstein.—A warm month, but with no high temperatures and no low night temperatures. Rainfall normal—1.53 inch on seven days. Fruit ripening early (though not the earliest date recorded), and a fortnight earlier than last season.—Lionel Baker.

O'okiep.—Unusual features; rain on 25th and 29th, with wind from south-west. Harvest in full swing this month, generally referred to as "satisfactory."—J. Burrows

Kokstad.—Rainfall much below normal; mean temperature above normal; several severe storms; hail has done damage to crops on neighbouring farms. On the 4th a poplar tree in Main Street was struck by lightning. There have been two fatalities in the district from lightning.—H. D. Coyte.

Commando Kraal (Uitenhage).—Excessively hot days made almost unbearable by dust and wind.—(Major) J. Krefit.

Mafeking (The Convent).—Hot weather throughout the month; a fair amount of rain; two severe thunderstorms.—The Mother Superior.

Carnarvon.—Hot weather first and third weeks of month; district feeling the effects of drought.—A. P. Malherbe.

Queenstown.—Hot month; strong westerly winds.—H. Holley.

Cromdale (Aberdeen).—Stock in low condition; lambing very poor, losses in parts.—J. N. Cruickshank.

Olivewood (Colesberg).—Crops fairly good.—C. H. Waldeck.

Dwingsfontein (Cradock).—Very dry, but cattle in good condition.—H. P. van Heerden.

Oatlands (Albert).—Very dry, rains too late for wheat crop.—F. Dickinson.

Scholtsfontein (Vryburg).—21st: Heavy downpour of rain; no damage done.—Douglas Butler.

Grootvallei (Cradock).—27th: Very cold winds, and rain and frost; considerable damage to crops.—W. du Plessis.

Keilands (Stutterheim).—6th: Hail the size of fowls' eggs.—A. Schweiger.

Kingwilliamstown.—6th: Hailstorm, with vivid lightning and thunder; hail fell for ten minutes, making a terrific noise.—L. Clayton.

JANUARY WEATHER CHARACTERISTICS.

Except along the west coast, where the minimum of 0·14 inch is reached, and in the south-western districts of the Cape Province, the rainfall is now increasing. Over the eastern half of the Union the precipitation is usually at its maximum during January. Swaziland and Basutoland—the latter with a normal of about 7 inches—are the districts where the heaviest rainfall may be expected. About 5·5 inches should fall in the Transvaal; 5 inches in Natal; 4·5 inches in Kaffraria, and over the north-east of the Cape Province; 4 inches in the Orange Free State, and over the south-east of the Cape Province, 2·5 inches over the Cape northern border: 2 inches over the northern and east-central Karroo, and along the south coast; 1·5 inch over the west-central Karroo and less than an inch over the remainder of the Union.

The highest mean daily temperatures still experienced over the northern borders of the Cape Province, where the normal remains at 77 degrees, and the eastern Transvaal follows with 75 degrees, the southern Karroo with 74 degrees, the east-central Karroo and the Orange Free State with 72 degrees; Natal, the south-east and the south-west of the Cape Province and the northern Karroo with 71 degrees, Basutoland, the central Karroo, and the Cape western coast with 70 degrees; the south coast and the north-east of the Cape Province and the Transvaal high veld with 69 degrees; and then Kaffraria and the Cape Peninsula with 68 degrees. On the high veld generally the temperature is now at its maximum.

Notwithstanding a considerable decrease in the frequency of north-north-westerly winds at Johannesburg compared with those of the previous month, this continues to be the prevalent direction, although northerly winds are almost of equal frequency. A similar state of affairs occurs at Kimberley, where north-north-west is also the direction of most frequent occurrence; at East London north-easterly winds are most numerous, although those from the south-south-west, south-west, and west-south-west are collectively more numerous than those from the north-north-east, north-east, and east-north-easterly directions: whilst over the Cape Peninsula south continues to be the prevalent wind-direction. Compared with December, there is at Johannesburg a general increased frequency of winds from all easterly directions between north and south-south-east, particularly east and east-south-east, and a decrease of all others, especially north-west and north-north-west. At Kimberley there is a diminution in frequency of winds between north-north-west and south-west, as well as of those from south-east, south-south-east, and north-north-east, more particularly of westerly breezes; and an increase in those from the remaining directions, especially east-north-east and east-south-east. At East London there is an increase in north-east to north-north-west, as well as south-west and west-south-westerly winds, but a decrease in all others. Over the Cape Peninsula there is a falling off in south-east and south-south-easterly winds, with a corresponding increase of north-westerly breezes. Kimberley is the only station at which there is an increased wind-velocity, all the others showing diminished force.

In the Transvaal about 56 per cent., on the Peninsula about 76 per cent., over the Cape northern border about 74 per cent., and in the south-east of the Cape Province about 48 per cent., of the total possible hours of bright sunshine should be enjoyed.

C. STEWART,
Chief Meteorologist.

Pretoria.

THE GOVERNMENT PRINTING AND STATIONERY OFFICE

8589—24/12/20—600



UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. I.

DECEMBER, 1920.

No. 12.

A MEAN monthly pressure lower over the central portions of the Union, but slightly greater than usual over the north-east, mean temperature practically normal, but with a cold spell about Christmas; an excess of rainfall in the west and south of the Cape Province, but deficient in its central and north-eastern sections, Orange Free State, Natal, and the Transvaal; a number of destructive hailstorms; unusually strong winds with vivid lightning on 30th, bringing destruction in its train over a wide belt in the south-central and south-eastern portions of the Cape Province, some snow on mountain tops, such were the most noteworthy features of the closing month of the year 1920.

Pressure.—The low pressure over the interior was more prominent than usual, extending southwards to the coast on nineteen days of the month, whilst the mean position of the axis of lowest pressure appears to have been farther to the west than usual. The result is graphically shown on the mean isobaric map, where it will be noticed that the isobars over the interior are lower, whilst the relatively high isobar of 29.95 inches covers a larger area than usual in the north-east of the Union. High pressure areas were present from 30th November to 6th December, from 13th to 14th and 25th to 28th, moving from south to north-east. Pressure was lowest on the 19th, when an isobar of 29.60 inches lay over the east coast. The most noteworthy occurrence of the month was the exceptionally strong wind (described as a cyclone) which affected portion of the south-east of the Cape on the 30th. This was associated with a tongue of low pressure extending from the interior south to the Cape Peninsula. One consequence of this mean pressure distribution during the month was that rains were experienced in excess in the west and south, whilst the area affected by absolute drought was reduced to a few isolated patches. On the other hand the major portion of the east and centre suffered from a shortage of precipitation.

Temperature.—The monthly temperature over a mean of all stations was practically normal, being only 0.1 degree higher than usual; the days were half a degree warmer and the nights 0.3 degree cooler than the corresponding averages. At individual stations, however, there was considerable variation. Thus, all along the south and south-east coast, also for some distance inland, over Natal, the north-centre and south-east of the Transvaal, the northern eastern section of the Orange Free State, and in Namaqualand, the mean temperature was below the average. The deficit was half a degree less along the south and south-east, but increasing to 3 and 5 degrees in Natal,

and decreasing to a few tenths in the Transvaal. Over the other portions mentioned the deficit was generally between 1.5 and 2 degrees. Over the south-west, central, and north-east portions of the Cape Province, in Natal, and the major portion of the Transvaal, as well as Swaziland and Zululand, the month was warmer than usual, usually by more than half a degree, and rising to over 2 degrees in the Orange Free State and north-east of Cape, and exceeding 3 degrees in Zululand. The mean maxima were above the average at the more inland stations and in the south-west of the Cape. The excess was greatest in the centre of the Orange Free State, the east and south of the Transvaal, and south-east Cape, including parts of Kaffraria. The surplus amounts there were commonly about 3 degrees, but rising to 5.8 degrees at Lindley in the Orange Free State; elsewhere there was an increase of about 1 degree above normal. Over Namaqualand, along the south coast, and in Natal, as well as the north and south-east of the Transvaal and eastern Orange Free State, the central Karroo, and south-east Cape, the day temperatures were lower than usual, particularly in Natal and part of the south-east of the Cape, where the mean maxima were 4.6 degrees lower than usual. The nights were warmer than the average in the more westerly portions of the Transvaal, Orange Free State, and the greater part of the Cape and Zululand usually by amounts less than 1 degree. All along the south and east coasts, however, as well as in Natal, the central and eastern sections of the Orange Free State and Transvaal, the mean minimum temperatures were lower than the corresponding normals, commonly by 1-2 degrees; the deficits increased, however, to between 2 and 3 degrees in the eastern Transvaal and to almost 5 degrees at Dundee (Natal). Thus both days and nights were exceptionally cold in Natal and along the coasts, whilst inland the days were usually warmer but the nights colder than the average. The mean warmest station was Komatipoort (80.9 degrees), and the mean coolest Belfast (61.8 degrees), on the Transvaal high veld, a difference of 19.1 degrees. The highest mean day temperature was 94.6 degrees at Komatipoort, and the lowest mean night temperature, 47.6 degrees at Belfast. The extreme readings for the month were registered most commonly between the 3rd and 11th, particularly the 5th, 6th, and 7th, but also at a few stations on the 1st, 14th, 20th, 21st, 24th, and 25th. On the other hand, the lowest temperatures were most widely recorded towards the end of the month, between 24th and 28th (particularly on the 26th), but also on the 5th, 7th, 14th to 16th, and 20th. The extremes were 111.0 degrees at Clanwilliam on the 3rd, and 36.0 degrees at Belfast on the 28th, a monthly range of 83 degrees over all stations.

Precipitation over the Union was generally below the average to the east of 22° E Longitude and north of the 31st parallel. Over the northern and eastern Transvaal, Orange Free State, and Natal the shortage was commonly between 1 and 2 inches, but increased to 9.02 inches at Woodbush and 4.67 inches at Louis Trichardt. In the west and south Transvaal, north and east of the Orange Free State, and the north-central portions of the Cape Province the deficits were usually less than 1 inch. Even here, however, there were a few stations with rainfall slightly in excess of the normal, as at Bethal and Pretoria in the Transvaal, Mbabane in Swaziland, Maritzburg in Natal, and Britstown in the Karroo, but at none of these did the excess exceed 0.3 of an inch. Outside of this area the precipitation was in excess of the average, mostly by less than half an inch. The excess, however, rose to slightly over an inch at Clanwilliam, Beaufort West, Mossel Bay, and East London, being largest (2.12 inches) at Bedford in the south-east of the Cape. Even here a few stations had less rainfall than usual, e.g. Wynberg in the Cape Peninsula, Port Elizabeth on the south coast, and Murrayburg in the northern Karroo, but in none of these instances did the shortage amount to 1 inch. Taken as a whole the rainfall was very partial in many districts, the shortage being as

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AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), DECEMBER, 1920.

PLACB.	OBSERVER.	Month.—Dec., 1920.		Normal Monthly Temperature.	Difference from Normal.	Highest.	Date.	Extremes.	
		Mean Max.	Mean Min.					° F.	Lowest.
<i>Transvaal—</i>									
Delaté.	The Forester	75.9	47.4	61.8	+ 0.6	84.0	5th	86.0	28th. & 28th
Bachetou.	Walter Grubb	84.2	61.0	72.6	+ 0.5	95.3	5th	95.3	27th & 15th.
Johannesburg (Observatory)	The Staff	78.4	54.1	64.8	+ 1.4	86.0	5th.	86.0	15th.
Johannesburg (Strathmore).	Chas. Scott	86.3	58.9	73.7	+ 0.3	90.0	6th	90.0	28th.
Koosaberg.	B. J. Forbergill.	84.6	67.2	80.6	+ 0.3	110.0	24th.	110.0	28th.
Leysia Ithandé.	F. J. Labuschagne	82.2	60.7	71.4	+ 0.0	97.0	21st.	97.0	28th.
Nyström	G. Bakker	84.8	59.2	72.0	+ 0.0	90.5	20th.	90.5	15th.
Pietermaritzburg	J. A. Sturton.	81.3	54.6	67.3	+ 0.7	91.5	25th.	91.5	28th.
Pietermaritzburg	W. Frankleyne	81.4	58.0	69.7	- 0.5	89.0	20th.	89.0	28th.
Pretoria	J. Werner	77.8	55.7	66.8	- 0.6	90.0	24th.	90.0	27th.
Pretoria (Meteorological Office)	The Staff.	82.4	59.1	70.8	- 0.3	90.2	6th	90.2	15th.
Zeerust.	H. Dietrich	88.6	62.0	74.7	+ 0.0	96.4	7th	96.4	6th
<i>Swaziland—</i>									
Mbabane.	Swaziland Police.	78.9	56.2	67.2	+ 0.8	80.0	3th	80.0	27th & 28th.
<i>Orange Free State—</i>									
Bloemfontein	G. A. Scheepers	86.6	58.3	73.4	+ 1.3	95.2	6th	95.2	28th
Harrismith	The Forester	77.0	50.1	63.6	- 1.8	86.0	4th, 5th, 10th, & 11th	86.0	27th
Manley.	J. Collister-Gates	85.7	54.3	70.0	+ 2.4	92.5	6th & 7th	92.5	20th
Ladyburg.	The Forester	84.2	53.8	69.0	+ 0.8	90.0	6th & 22nd	90.0	26th.
Beaufort.	J. J. Wardhaugh	86.3	58.0	73.2	+ 0.3	95.4	10th	95.4	26th.
<i>Natal—</i>									
Durban (Point)	Capt. D. Black.	76.9	65.9	72.4	- 2.4	84.2	22nd	84.2	26th
Dundee.	West Thorold.	82.8	54.6	68.7	- 3.0	95.0	8th	95.0	27th
Hiabisa	The Garlet.	85.4	63.0	74.7	+ 3.1	92.0	5th, 8th, & 25th	92.0	26th
Mariburg (Mental Hospital)	The Staff	78.1	59.5	68.8	- 3.0	94.8	10th.	94.8	14th
<i>Cape—</i>									
Alwal North.	A. Alcock	86.6	55.3	71.0	+ 2.7	95.5	9th	95.5	26th
Bedford	T. C. Hall	77.8	54.2	66.3	- 2.3	99.7	4th	99.7	26th.
Carnarvon.	A. P. Matherbe	86.2	76.0	71.1	- 2.4	98.0	3rd	98.0	26th.
Cape Town (Royal Observatory)	The Staff	77.3	70.1	68.2	+ 0.9	93.5	3rd	93.5	24th
Chawillan.	W. J. Downes	80.8	57.9	73.5	+ 0.4	111.0	3rd	111.0	7th.
East London	M. G. Grogan	75.5	61.2	68.4	- 0.1	96.0	4th	96.0	26th.
Graaff-Reinet.	S. E. J. Treadwell.	85.3	61.2	71.6	- 0.7	101.5	4th	101.5	26th.
Greenwood Drakenstein	Leonel Baker	81.2	58.6	69.9	- 2.4	100.0	3rd	100.0	25th.
Kobstad	H. D. Coyte	78.9	52.3	65.6	- 2.4	93.0	4th	93.0	26th.
Kimberley.	J. Ar'loh	92.7	61.6	75.7	+ 1.3	100.2	6th	100.2	26th.
Makling (Convent)	The Mother Superior.	89.8	60.5	74.7	+ 0.7	97.0	7th	97.0	20th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	72.4	61.0	67.1	- 0.8	78.0	1st	78.0	23th.
Murraysburg.	A. Cameron	84.7	54.4	69.4	- 0.2	99.0	4th	99.0	26th.
O'okiep.	J. Burrows.	83.1	56.4	69.8	- 1.6	101.4	3rd	101.4	10th
Port Elizabeth (Cape Hermes)	The Lightkeeper	72.7	60.6	67.7	- 1.3	91.0	4th.	91.0	26th.
Port St. Johns (Cape Hermes)	The Lightkeeper.	75.5	64.0	69.8	- 1.3	86.0	4th.	86.0	26th.
Uitenhage.	H. Holley	84.0	55.4	69.7	+ 1.3	100.0	10th	100.0	26th.
Vryburg.	Chas. Entier	94.2	61.1	77.6	+ 2.3	100.0	6th	100.0	27th.
Wynberg (Convent)	The Mother Superior	78.2	58.4	68.3	+ 1.9	92.5	14th	92.5	27th.

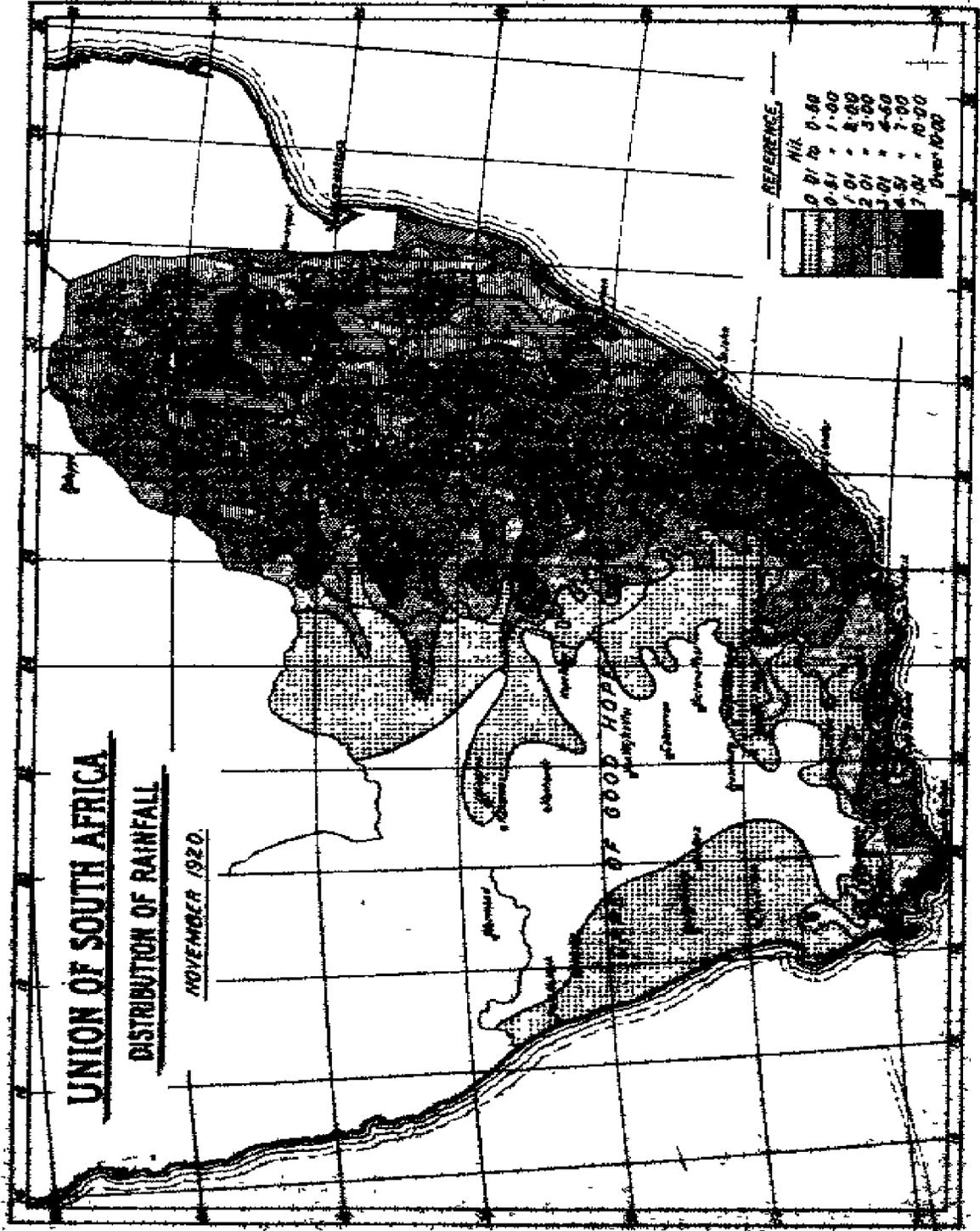
RAINFALL, DECEMBER, 1920.

PLACE.	OBSERVER	Month.		Normal.	Difference from Normal.		From 1st Jan., 1920.	Normal.	Difference from Normal.		From 1st July, 1920.	Normal.	Difference from Normal.		
		Inches.	Dec., 1920		Inches.	Normal.			Inches.	Normal.			Inches.	Normal.	Inches.
<i>Trompsburg--</i>															
Basfontein.....	W. Grubb.	4.25	4.56	4.56	- 0.31	39.62	39.74	16.92	12.80	+ 4.72	16.92	12.80	+ 4.12	3.08	+ 3.08
Beitost.....	The Forester	3.77	5.94	5.94	- 2.17	31.92	32.40	17.86	14.86	- 3.00	17.86	14.86	+ 3.00	3.00	+ 3.00
Beitost.....	H. F. Joubert	2.58	5.52	5.52	- 2.94	22.64	30.39	14.50	15.32	- 0.82	14.50	15.32	- 0.82	0.82	+ 0.82
Brande.....	Mrs. S. M. Nicholson	5.78	5.10	5.10	+ 0.68	40.92	30.72	21.80	16.78	+ 5.12	21.80	16.78	+ 5.02	5.02	+ 5.02
Heidelberg.....	W. A. ter Haar.	2.74	4.14	4.14	- 1.40	22.09	27.73	13.48	12.91	+ 0.57	13.48	12.91	+ 0.57	0.57	+ 0.57
Johannesburg (Observatory).....	The Staff.	3.35	4.31	4.31	- 0.96	33.93	26.69	14.24	11.60	+ 2.64	14.24	11.60	+ 2.64	2.64	+ 2.64
Klerksdorp (Strathmore).....	Chas. Scott	2.17	3.06	3.06	- 0.89	31.51	21.49	8.98	8.12	+ 0.86	8.98	8.12	+ 0.86	0.86	+ 0.86
Kornaspoort.....	B. J. Fothergill	1.57	3.80	3.80	- 2.23	32.64	26.27	10.80	9.28	+ 1.52	10.80	9.28	+ 1.52	1.52	+ 1.52
Kosk Treksburg.....	F. J. Labuschague	1.33	6.00	6.00	- 4.67	32.20	32.36	40.18	13.06	+ 2.88	40.18	13.06	+ 2.88	2.88	+ 2.88
Middelburg.....	Dr. Spencer	0.80	4.60	4.60	- 3.80	25.83	28.74	14.92	13.05	+ 1.87	14.92	13.05	+ 1.87	1.87	+ 1.87
Nyström.....	W. Franklyn	2.75	4.25	4.25	- 1.50	24.64	21.69	10.29	10.92	- 0.63	10.29	10.92	- 0.63	0.63	+ 0.63
Pieterburg.....	G. Bakker	0.80	3.88	3.88	- 3.08	25.83	28.00	11.96	10.92	+ 1.04	11.96	10.92	+ 1.04	1.04	+ 1.04
Piet Retief.....	J. Wagner	1.85	6.80	6.80	- 4.95	35.82	37.21	18.52	15.64	+ 2.88	18.52	15.64	+ 2.88	2.88	+ 2.88
Pieterburg.....	J. A. Starton	3.32	5.06	5.06	- 1.74	41.51	43.38	13.56	14.05	- 0.49	13.56	14.05	- 0.49	0.49	+ 0.49
Potchefstroom (Exp. Farm).....	The Manager	1.68	4.20	4.20	- 2.52	21.08	20.69	7.16	10.70	- 3.54	7.16	10.70	- 3.54	3.54	+ 3.54
Prunias (Meteorological Office).....	The Staff.	1.34	4.18	4.18	- 2.84	17.48	19.68	12.82	12.62	+ 0.20	12.82	12.62	+ 0.20	0.20	+ 0.20
Roseburg.....	N. H. Kloono	2.60	3.15	3.15	- 0.55	22.47	23.89	9.91	9.95	- 0.04	9.91	9.95	- 0.04	0.04	+ 0.04
Rustenburg.....	S. A. Polze	4.66	4.28	4.28	+ 0.38	24.43	25.60	12.58	10.95	+ 1.63	12.58	10.95	+ 1.63	1.63	+ 1.63
Woodbush.....	The Forester	2.24	11.20	11.20	- 8.96	49.83	71.90	19.27	25.09	- 5.82	19.27	25.09	- 5.82	5.82	+ 5.82
Zwartkops.....	H. Dietrich	2.40	3.54	3.54	- 1.14	19.90	24.05	7.94	9.08	- 1.14	7.94	9.08	- 1.14	1.14	+ 1.14
<i>Swaziland--</i>															
Mbabane.....	Swaziland Police	7.83	7.51	7.51	+ 0.32	42.41	50.38	28.76	21.42	+ 7.34	28.76	21.42	+ 7.34	7.34	+ 7.34
<i>Orange Free State--</i>															
Bloemfontein.....	G. A. Schepers	0.60	2.78	2.78	- 2.18	23.20	19.22	6.17	7.63	- 1.46	6.17	7.63	- 1.46	1.46	+ 1.46
Beethun.....	J. J. Wardhaugh	1.03	2.40	2.40	- 1.37	15.70	12.46	3.32	4.50	- 1.18	3.32	4.50	- 1.18	1.18	+ 1.18
Harrismith.....	J. B. Patterson	3.40	4.22	4.22	- 0.82	30.78	28.19	14.35	13.13	+ 1.22	14.35	13.13	+ 1.22	1.22	+ 1.22
Kopmansburg.....	S. K. Northfield	3.60	3.72	3.72	- 0.12	27.46	22.05	0.87	11.87	+ 5.50	0.87	11.87	+ 5.50	5.50	+ 5.50
Ladybrand.....	G. Stokes	1.27	3.34	3.34	- 2.07	28.92	27.34	10.10	11.98	- 1.88	10.10	11.98	- 1.88	1.88	+ 1.88
Lindley.....	J. Collister-Oates	2.45	3.51	3.51	- 1.06	28.19	24.34	9.24	10.49	- 1.25	9.24	10.49	- 1.25	1.25	+ 1.25
<i>Total--</i>															
Dundee.....	West Tharold	4.15	4.61	4.61	- 0.46	38.22	31.27	14.05	13.92	+ 0.13	14.05	13.92	+ 0.13	0.13	+ 0.13
Dunoon (Point).....	Capt. D. Black	1.45	4.93	4.93	- 3.48	51.91	41.76	22.65	19.47	+ 3.18	22.65	19.47	+ 3.18	3.18	+ 3.18
Elmslie.....	The Gloder	4.34	6.17	6.17	- 1.83	48.97	43.79	17.88	20.64	- 2.76	17.88	20.64	- 2.76	2.76	+ 2.76
Grey.....	The Gloder	3.03	4.43	4.43	- 1.40	51.72	32.04	17.32	14.81	+ 2.51	17.32	14.81	+ 2.51	2.51	+ 2.51
Kay'sburgh.....	E. G. Arnold	5.38	4.41	4.41	+ 0.97	25.02	27.91	9.54	11.24	- 1.70	9.54	11.24	- 1.70	1.70	+ 1.70
Peasequitzburg (Mental Hospital).....	The Staff	5.38	5.04	5.04	+ 0.34	33.40	33.40	19.02	15.14	+ 3.88	19.02	15.14	+ 3.88	3.88	+ 3.88
Wynberg.....	The Gloder	4.27	6.04	6.04	- 1.77	34.31	36.89	14.12	10.99	+ 3.13	14.12	10.99	+ 3.13	3.13	+ 3.13
Wynberg.....	The Gloder	2.79	3.98	3.98	- 1.19	36.78	26.37	10.78	11.58	- 0.80	10.78	11.58	- 0.80	0.80	+ 0.80

UNION OF SOUTH AFRICA

DISTRIBUTION OF RAINFALL

NOVEMBER 1920.



lightly localized in some instances that only portions of a farm benefited from the precipitation. Although rainfall was mostly associated with thunderstorms, which occurred on twenty-six days of the month, showers were comparatively light with but little run-off. Although some good rains, exceeding 1 inch, were experienced at a number of stations, the beneficial effect was neutralized to a great extent by succeeding hot days with strong winds. The result of these conditions is that although in most cases crops were able to survive, growth was but slight, whilst a number of insect pests, particularly the mealy-borer, made their appearance in a number of places. In a limited number of cases crops promise a record yield, but, generally, heavy rains are still required for storage purposes. Late ploughing and planting were seriously interfered with owing to droughty conditions, particularly in the neighbourhood of Dundee (Natal) and the Waterberg (Transvaal). Hailstorms, frequently accompanied by very strong winds, caused in some instances not only considerable damage to crops, but also killed sheep, poultry, etc. The stones were frequently small, but reached the size of hens' eggs to the south-south-west of Effort Farm (Mooi River, Natal) on the 11th, when trees were stripped of fruit, meales cut down, and about 50 sheep killed. Another, in the last day of the year, at Linwood, Fouriesburg (Orange Free State), destroyed crops and fruit, broke windows; in this case the stones were of the size of pigeons' eggs, and precipitation to the amount of 2.46 inches was recorded in 45 minutes. Another heavy fall occurred at Barneo (Ladybrand District, O.F.S.), when damage was done to wheat and rye by a short storm yielding 0.70 inch in 10 minutes. On the 29th, there occurred at Umzimkulivana, Alfred County, Natal, the heaviest storm known for ten years, although the stones were only 1 inch diameter. Destructive storms of this nature occurred on 17 days, and were most frequently reported on 9th, 23rd, 30th, and 31st. The most noteworthy occurrence, however, was the series of destructive winds of cyclone force on the night of the 30th, which affected an area extending approximately from the neighbourhood of Drennan (south of Cradock) on the Port Elizabeth railway line eastwards to Toise River on the East London railway line, a distance of approximately 100 miles. The greatest intensity of this storm, which was accompanied by rain, hail, thunder, and lightning, seems to have been felt in the neighbourhood of Stutterheim and Cathcart. The track of the storm is reported to have been about nine miles wide. Houses, sheds, trees, etc., were blown down, Kubais and Dohus railway stations destroyed, whilst many telegraph poles (iron) between Amabele and Toise River were broken off or bent over. A similar occurrence was reported on the afternoon of the same day from Piet Retief (Morgenzon), where several houses were destroyed and a native lifted and flung a distance of about 200 yards. Horses, cattle, and sheep were killed during this storm. The data are insufficient to determine whether or not these were true tornadoes. Snow was reported as having fallen on Christmas Day on Naudes Berg (Graaf-Reinet District), whilst the Worcester mountains were also said to be snow-capped. The total rainfall for the year was below the average over the greater part of the Transvaal, portion of the north and south-west of the Orange Free State, and the west and north of Natal, and more particularly the south and south-east coastal areas of the Cape Province, where a severe drought was experienced throughout the greater part of the year. The deficiency varied from 3 to about 11 inches between Swellendam and Umata, and was but little short of these amounts over portions of the east and north of the Transvaal. In the western Transvaal, Orange Free State, and Natal the shortage was mostly between 1 and 2 inches. On the other hand, large excesses of 8 to 20 inches were recorded in Natal; 3 to 10 inches at a few places in the south and east of the Transvaal; and 1 to 11 inches at several stations in the central and western portions of the Cape Province. Excesses over these areas less than 2 inches were the exception. The cumulative rainfall since 1st July last was in excess of the

normal by 1-4 inches over the greater part of the eastern and central Transvaal, Natal, and west and south-west Cape. A shortage of, approximately, equal amounts occurred over the north and west Transvaal, Orange Free State, and the central, south, and south-eastern portions of the Cape, including the Transkei. The deficit was greatest along the south and south-east littoral and part of the north-east section of Cape Province.

OBSERVERS' NOTES FOR DECEMBER, 1920.

TRANSVAAL.

Piet Retief.—On the 30th (3 p.m.), about 16 miles from Piet Retief (Morgenzenon), a terrific cyclone was experienced. At Mr. Hintze's farm, where apparently the cyclone commenced, the roof of his house was taken away; about one mile further on, at Mr. E. Landsberg's farm (where his new homestead was under construction and was practically completed with the exception of the roof), the cyclone destroyed one half of his building. A couple of miles farther on, at Mr. H. Landsberg's farm, the veranda and one room adjoining same and part of the stables were taken away by the cyclone. It is interesting to note that at the latter farm, Mr. Landsberg and family had to run out of the house to a distance of about 100 yards away and throw themselves on the ground and had to cling to the grass for fear of being carried away. It has also been reported that a native boy was lifted and flung a distance of about 200 yards. This individual is still lying unconscious. The total loss of animals, I understand, is as follows: 4 horses, 10 head of cattle, and about 26 sheep.—J. Werner.

Pietersburg.—Drought and heat relieved by couple of downpours, but rain still badly needed. Gale doing damage to fruit on 13th. Severe hail-storm five miles south on the 13th; 16 head of cattle killed; crops obliterated.—W. Frankleyne.

Barberton.—Fairly average weather; the rainfall somewhat deficient and crops have suffered slightly.—Walter Grubb.

Middelburg.—Hot, dry weather with cold nights and saving rains (as regards the growing crops) at intervals has characterized this month. Crops are promising very well.—Dr. H. A. Spencer.

Messina (Zoutpansberg).—Very hot month; country looking very dry; grass all withered.—C. V. B. Frost.

Mosdene (Waterberg).—A very dry month. Growth of young crops was checked, but there has been little loss from drought. Ploughing was held up for a fortnight on some soils.—Ernest E. Galpin.

Rustenburg.—Severe hailstorm in district during month, doing great damage to crops and fruit trees; in some places farmers had to plough over again as crops were ruined. Veld looking very good; cattle in good condition.—H. J. Streatfield (Sergt.).

Ermelo.—This has been a very dry month; not one good rain fell at Ermelo during the whole month. The showers which were frequent kept growth going and everything looks beautifully green; stock sleek and shining; if, however, ground rains fail us we shall be short of water soon.—(Mrs.) S. M. Nicolson.

Lichtenburg.—Very dry month. Stalk-borer and other insect pests prevalent.—J. T. Allman.

Wakkerstroom.—Most of the storms were accompanied by hail. While no damage was done in town, reports come in from farms towards the centre of the district that serious damage has been wrought, and one farmer lost 36 sheep in a storm, excluding those injured.—Louis le Roux.

Krugersdorp.—The weather at the commencement of the month was somewhat unsettled: wind, dust, and passing storms. Hail fell on the 7th inst.

for a short period and did much damage in Krugersdorp West, stripping fruit trees and damaging garden crops, etc. Hail, size of hens' eggs, but somewhat smaller in town and in the vicinity of observation station. Hail on the 10th, about 10 p.m., doing much damage to crops and fruit in district township; hail about $\frac{1}{2}$ inch to $\frac{3}{4}$ inch in diameter covered ground to a depth of about 2 inches. Total rainfall for the month 5.01 inches on ten days.—George S. Garnett.

Malmansoo (Marico)—A year of record calamities in herds and crops — J. G. Gubbins.

Mullingar (Pitchefstroom).—12th and 13th hail; serious damage to fruit, crops, poultry, etc.—J. C. Hamilton.

Bushy Park (Pretoria).—Crops very much below normal owing to drought. —C. E. Park.

Boesmanspruit (Standerfontein)—Getting rather dry, otherwise a good growing month.—C. Lambert

Illawarra (Waterberg).—Very hot with drying winds. Crops suffering.—J. A. Manson.

Huylands (Waterberg).—Drought bad; grass very dry; ploughing completely stopped for the last ten days; extreme heat—A. R. Mathewson.

Vyfhock (Wakkerstroom).—6th. A severe hailstorm with much damage to crops, etc.—J. E. Gouws

SWAZILAND.

Natalia Ranching and Development Co., Ltd.—Although the rainfall registered this month is 0.40 inch in excess of that recorded last December, the grass shows signs of withering, good steady rain is urgently required. The rivers, presumably fed by the "high veld," are still running; the Um-tinteqwa, a low-veld stream, is quite dry, and the pools are lower than they have been all the winter. The native mealie crops are very poor and will have to be replanted, the "Mabela" crops are also very stunted.—Allan W. MacBeth.

Mbabane.—Grazing excellent, appearance of a record harvest. Lightning and thunder have been very severe this month. A few hailstorms in the district.—R. C. S. Markham.

ORANGE FREE STATE.

Shannon (Bloemfontein).—Everywhere dried up; no grass and mealies, there are only a few crops in a bad way—J. G. Hatchard.

Sterkstroom (Boshof)—This month was very warm with strong winds from the west almost every day. Stock in district, however are not bad. Fruit will be scarce.—J. B. Moolman

Buffelbout (Foucault)—Very dry. Good harvest all round. C. J. Louw.

Stanleyvale (Harrismuth).—A fair month; could have done with more rain earlier in the month. Crops inclined to get top-worm.—G. C. Atkins.

Heilbron.—Crops over the district have benefited to a very large extent by the showers towards the end of the month—these have practically saved the crops. Grubs have made their appearance. Stock of all kinds are in good condition and no sickness has been reported for a considerable time—P. A. du P. Naude.

Ben Nevis (Thaba Nchu).—Crops are suffering a good deal from want of rain.—A. K. Worringham.

Prospect (Vrede).—The veld was getting very dry by the 20th of the month although the mealie crops still looked well; but by the end of the month all vegetation looked fresh and vigorous. All kinds of live stock look well.—T. Pitcairn.

Mon Repos (Wepener).—Very dry; stock-water drying up fast. Mealies shrivelling up; grass being burnt up. Rain wanted badly.—E. M. Hardiman (Major).

Paardekraal (Winburg).—Drought serious. Some green picking for sheep after Christmas rains, but cattle suffering. Mealies looking well. No deaths of stock.—G. S. Lowe.

Bethulie.—Drought becoming serious.—J. J. Wardhaugh.

Holfontein Nursery (Kroonstad).—Days very hot with strong drying winds. Rain on 23rd came just in time to save most of the crops.—The Forester.

Vierfontein (Kroonstad).—Weather dry. Storms accompanied with strong winds. Veld very short, mealies suffering badly.—A. H. Bloomfield.

NATAL.

Ladysmith.—Dry and hot throughout the month, good rains badly required. Several indications of heavy storms which were invariably spoilt by wind scattering clouds.—R. G. Arnold.

Dundee.—Several severe hailstorms in district, town escaped. Very dry generally, sowing of mealie crops interfered with through drought.—West Thorold.

Hlabisa.—Splendid rains have fallen in the district and agricultural prospects are bright.—L. A. Double.

Strathern (Weenen).—Some cold snaps but no snow has been seen on the Drakensberg. Nearly every thunderstorm brought hail. Stock of all kinds healthy. Fruit early, crops normal.—(Miss) E. Smythe.

Cape St Lucia.—Light, hot winds during greater part of month. Promise good crops. Stock healthy.—J. Murphy.

Houriel.—Exceptionally cold at night during Christmas week.—H. Ellis.

Effort Farm (Mooi River).—There was a very heavy hailstorm on December 11th. It started about ten miles to south-south-west of Effort Farm, killed about 9 sheep, about five miles to the south-west of Effort Farm, and stripped trees wholly of fruit and cut mealies off by the roots; passed to the south of us, smashing up everything as it went, and killed about 40 sheep below Mooi River. The stones were about the size of hens' eggs and very jagged.—G. B. Lund.

Krantzkop.—Splendid rain in the location; this season's crops magnificent.—G. Bruce.

Romy Poort (Ladysmith).—Remarkable month for light showers and no heavy rains. Just enough to keep things alive, but not growing. Crops in a bad way, cut-worm in mealies exceptionally bad. J. H. Bartholomew.

Tsuranywane (Ipolela).—Hailstorm on 18th. I found on making inquiries that on top of the Embanzeni Forest Reserve, north of this station, the storm split in two, one travelling almost due north and one in a south-easterly direction. The one travelling north did considerable damage to the young mealie crops, which now appear to have recovered; the storm travelling in a southerly direction appears to have done damage to the pumpkin crops more so than to mealies. I estimate the width of each of the storms to be about seven-tenths of a mile wide.—T. H. Household.

CAPE.

Carlton (Middelburg).—Heavy winds; crops in poor condition.—G. Estment.

Theefontein (Hanover).—Drought serious; stock in fair condition. Wheat generally good.—E. A. Murray.

Woodlands (Kimpewillbomstown).—Crops doing fairly well except for damage done by ladybirds.—S. P. Landrey.

Lauriston (Barkly East).—Terrific storm, thunder and lightning accompanied by hail on 30th.—O. H. R. Giddy.

Sledmere (Cathcart).—On Thursday night, 30th, a thunderstorm with incessant lightning, accompanied by cyclone which blew down houses, sheds, and trees, did a lot of damage to crops. Such a cyclone never experienced before in these parts; storm started 10.45 p.m.—J. C. Froneman.

Doon (Cathcart).—30th. The wildest storm experienced for many years: the wind was terrific, and never before has such vivid lightning been known—James Field.

Bizana Plantation.—Hailstorm, stones about 1 inch in diameter on 23rd: all crops ruined—C. R. Hampson.

Groot Drakenstein.—Rainfall more than double the mean for 25 years. An average temperature, with an extraordinary cold spell at Christmas. A severe south-easterly gale prevailed from 26th-29th, and considerable damage was done to the fruit crops and also trees, chiefly during the night of 27th and 28th. Total rainfall for year 43.41 inches, which is 7.32 above the normal. Wettest year since 1903 (44.46 inches), after being exceptionally dry up to May.—Lionel Baker

Jansenville.—Sky overcast for greater part of month. Rainfall 2.34 inches on eight days, the largest amount since last February. Heat mild enough as compared with usual December temperature. Prevailing wind south-east, which comes up in the late afternoon.—Geo. E. Hurter

Willowmore.—Rain is badly needed. There has been much wind.—(Mrs.) Beatrice Maud Hemens.

Murraysburg.—Several duststorms during the month. The late frost killed the fruit.—A. Cameron.

Kimberley.—Duststorms frequent, very cold south-east wind on the 26th.—Jno. Acton.

Graaff-Reinet.—Winds light and variable, good deal of difference in temperature, maximum 101.5 degrees on the 4th, minimum 41.1 degrees on 26th. Splendid rain on 18th and 19th, followed by fine soaking rain on Christmas Day (similar to weather on Christmas Day, 1909)—S. E. D. Treadwell

Somerset East.—During first half of month abrupt changes of temperature, generally accompanying a strengthening of wind from east, with overcast skies and cloud enveloped mountains. Rain fell abundantly during the last fortnight throughout the district.—C. Harris.

Prieska.—Weather very promising during the month, with very little rain; strong north and north-west duststorms prevailed during the best part of the month; grip of drought being felt.—J. Fourie.

Bedford.—31st. Heavy storms last night; cyclone up the Baviaans River, where new house was demolished at Venn Grove, sheet of iron being found on the mountain four miles away. At Eildon a poplar grove was destroyed.—T. C. Hall.

Queenstown.—Heavy dew; cool mornings and evenings; hot days; very cold on 25th. Country looking fine; grass splendid.—H. Holley

Mafeking (The Convent).—Total absence of hail and severe thunderstorms.—The Mother Superior.

Evelyn Valley (Stutterheim).—Severe storm Thursday night, the 30th, at 11.30; one or two very large hailstones; wind slight.—L. Youlding Hall.

Stutterheim.—25th. Crops injured by cold. On the 30th, from 11.15 p.m. to 12 midnight, cyclone with rain, hail, lightning, and thunder: enormous damage to buildings and crops in the track of the storm, which was about nine miles wide. Kubusie and Dohne railway stations destroyed. The storm came from the south-west and passed to the north-east. Nearly all telegraph poles between Amabelo and Toise River broken off or bent over.—F. C. Bousfield.

Sydney-on-Vaal (Barkly West).—Considerable wind throughout the month. Rain in south of Province during latter half of month had considerable effect on our maximum temperatures. Local rain was slight and of little effect beyond slight improvement of the veld, which had been very dry and parched.—J. G. Richards.

Grahamstown (Veterinary Research Laboratory).—Splendid rain recorded on 29th (1.46 inches). Country looking beautifully green and dams com-

mencing to fill up. Stock improving in condition and parasitic diseases (both internal and external) disappeared.—The Veterinary Research Officer.

Lovedale - Good, well-distributed rains with unusually little run-off, were excellent for veld and crops. Meales sown last month coming up well throughout district. A severe thunderstorm on night of 30th, with vivid and continuous lightning mainly reflected, and heavy rain for short time. C. A. Pilon.

Abtonia (Kunman) - Stock doing well with the exception of several cases of gallanziekte in the districts towards the end of the month. Sheep and cattle fat. Christmas night exceptionally cold with cold wind. A. T. Sitwell.

Rietfontein (Alwal North).— Very dry month. No meales sown. Thunderstorm on 18th (1.03 inches) only local. Hot winds all month, with cold snap 26th and 27th. A. G. Smith.

FEBRUARY WEATHER CHARACTERISTICS.

Except along the west coast where it is increasing there is a marked decrease in the rainfall throughout the Union during the month of February. The eastern Transvaal with a normal of about 5.5 inches is now the area of heaviest precipitation, whilst the Transvaal high veld follows with slightly less than 5.0 inches. In Natal and Basutoland 4.0 inches, in Kaffraria 3.5 inches over the Orange Free State and the north-east and south-east of the Cape Province 3.0 inches; over the Cape northern borders 2.0 inches; along the south coast and over the northern and east-central Karroos 1.5 inches, and over the remainder of the Cape Province less than 1.0 inch, constitutes the normal.

The mean daily temperature is now decreasing inland but over the coastal districts it is generally slightly higher than during the preceding month, and the yearly maximum is reached. The mean temperature usually experienced over the Cape northern border is about 77 degrees; over the southern Karroo 75 degrees; over the Transvaal low veld 74 degrees; over the east-central Karroo 73 degrees; in the Orange Free State, Natal, over the northern Karroo, and the south-western and south-eastern districts of the Cape Province, and along the west coast 71 degrees; along the south coast and in Basutoland 70 degrees; and in Kaffraria and over the Peninsula 68 degrees.

The prevalent wind directions during this month are south over the south-west of the Cape Province, north-east at East London, east-north-east at Kimberley; and north-north-west at Johannesburg. Compared with the previous month there is a large increase of southerly winds over the Cape Peninsula, together with a slight increase of north-north-westerly winds, but a slight decrease of those from all other directions. At East London there is an increase of northerly and north-easterly winds, as also of westerly and west-north-westerly winds but a diminution in the frequency of all other breezes, particularly of those from south-west; this is counterbalanced by an almost equal increase of those from north-east. Kimberley shows an increase in frequency of winds lying between north-east and south, also of those from west and west-north-west, more particularly of those from south-east; but a diminution in all others, especially those from south-south-west. At Johannesburg, there is a considerable falling off of all northerly winds (north-north-westerly and north-north-easterly), but a much smaller decrease of those from south-east, whilst all other directions, especially east-north-east and east, show enhanced values. Over the Cape Peninsula the winds attain their maximum force during February; at East London and Johannesburg the velocity remains the same as in the preceding month, whilst there is a slight decrease in velocity at Kimberley.

On the high veld this is the cloudiest month of the year; the hours of bright sunshine in the Transvaal being now only 55 per cent. of the total number possible, whereas in the south-west of the Cape Province the percentage is now 87, and as the maximum of the year.

G. STEWART,

Pretoria.

Chief Meteorologist.