

river are approximately as follows: 2000 feet, about 24 miles above Grand; 1500 feet, midway between Taloga and Thomas, 1000 feet, four miles above Union; 500 feet, 35 miles below Garner.—*F. O. S.*

Depth and width of the Canadian River during the flood of October 1-4, 1904.
[Stations are arranged in order from above toward the mouth.]

Stations.	Distance from preceding place.		Greatest depth.	Average width at highest stage.	Width before flood.
	Miles.	Feet.			
Grand, Okla.			15	1 1/4	1/2 mile.
Stone, Okla.	33	12		2	Dry.
Taloga, Okla.	41	*		1/2 to 2	
Thomas, Okla.	29	12		1	30 feet.
Ethel, Okla.	8	†		1	50 yards.
Thompson, Okla.	10	19 1/2		1 1/2	60 yards.
Bridgeport, Okla.	6	18		1 1/2	125 yards.
Niles, Okla.	17	18		1 1/2	50 feet.
Untou, Okla.	15	18		4	60 yards.
Mustang, Okla.	13	30		1	500 feet.
Noble, Okla.	30	20		1 1/2 to 2	400 to 800 feet.
Purcell, Ind. T.	11	12		1	1/2 mile.
Lexington, Okla.	1	15		1	1/2 mile.
Pecan, Okla.	11	†		1 1/2	1/2 mile.
Buckhead, Okla.	2	12 to 15		2 1/2	
Lakeview, Okla.	4	10		2	60 yards.
Corner, Okla.	24	30		1	40 yards.
Tyrola, Ind. T.	9	20		1	100 yards.
Francis, Ind. T.	9	20		1	1/2 mile.
Calvin, Ind. T.	30	20		1	1/2 mile.
Garner, Ind. T.	32	‡		1	

*12-foot rise. †4 1/2-foot rise. ‡5 1/2 feet higher than ever known before. §3-foot rise.

A PROPOSED INTERNATIONAL CONTEST OF WEATHER FORECASTERS.

We think that all sensible men will agree with the sentiments expressed in the following letter.—*C. A.*

WASHINGTON, D. C., January 7, 1905.

Mr. FERNAND JACOBS,
President, Société d'Astronomie, Brussels, Belgium.

DEAR SIR: I have the honor to acknowledge the receipt of your letter of the 14th of December, informing me that the Belgian Society of Astronomy has decided to organize an international contest of weather forecasters, to be held at Liege, September, 1905, during the session of a congress of meteorologists, and you further invite me to become one of the judges in that contest. If your action in the matter had not extended beyond this invitation, I should have simply declined it. But you have sent me a printed circular, stating in detail the terms under which the competition is to be carried out, and mentioning the individual names of those composing your jury, among which you have included my own name without my authority. I desire to protest against this action in the most emphatic manner possible, and shall communicate my protest to all of those distinguished gentlemen whom you have made my colleagues. It is not impossible that you have also printed their names without their personal permission, and that many of them will agree with me in my opinion of your action and of the inexpediency of any such public competition for prizes in forecasting.

It is probably not unknown to you that in America, as in Europe, there are numerous persons who derive profit from the sale of almanacs and newspaper forecasts, to the great disgrace of meteorology. This class of men, even though they fail to win the offered prize, will draw great profit

from such a public competition and official scientific recognition; I protest against allowing them any chance of receiving such favorable public recognition at the hands of scientific men.

Meteorological science, and especially the art of forecasting, can not be furthered by such public tests and competitions as those you would encourage, and you must not expect me to serve as a member of your jury. Up to the present time the official forecasts published by European and American nations have been based on the daily weather maps, and made in accordance with all the knowledge that is embodied in what we call the science of meteorology. This knowledge is public property; the methods of forecasting have frequently been explained. Forecast students are accepted in every government office and encouraged to become thoroughly acquainted with the methods used therein. A competitive examination between such students seeking an appointment to office or a promotion would be eminently proper, but there is apparently no occasion to institute such a competition at Liege.

The phraseology of the forecasts differs in different countries in accordance with the needs of the people, and some attempt much more detailed forecasts than others. In no case, so far as I know, do the forecasts extend more than two days in advance, except for the seasonal forecasts in India. All such work is a legitimate application of science, and the whole meteorological world is cooperating in efforts to improve it. It is not advisable to set these scientific men and government officials into public competition or rivalry with one another. Who would think of doing this in the matter of astronomical ephemerides or predictions of the places of the sun, moon, or planets?

The last article of your projet provides that amateurs may compete for the prize for long-range forecasts of the details of the weather during the month of September, 1905. But there is no rational or scientific basis for such long-range forecasts, and therefore the planetary astrologers or any one who guesses what September will be may come into the competition and receive a diploma of merit if by accident he makes a partially satisfactory forecast for the month. But such a single success can have no weight whatever in establishing the merit of any system. As before said, the competition itself can have no value to the scientific world, but will be taken advantage of by the popular charlatans and imposters of Europe and America.

Your proposed competition is directly contrary to the expressed opinion of some of the best European meteorologists, and I may especially refer you to the accompanying letter of Prof. J. N. Pernter, reprinted from the MONTHLY WEATHER REVIEW for May, 1904. You may be interested also in reading the enclosed pages from the advance proof of my Annual Report, in which I have referred to long-range forecasts.

Regretting that I can not encourage your public competition, but with the best wishes for the prosperity of the Belgian Astronomical Society, I am,

Very respectfully,
(Signed)

WILLIS L. MOORE,
Chief U. S. Weather Bureau.

CORRIGENDA.

MONTHLY WEATHER REVIEW for August, 1904, p. 372, column 2, line 10, "involve" read "evolve."

MONTHLY WEATHER REVIEW for October, 1904, p. 458, column 2, Table 1, number of days with thunderstorms in May, 1895, for "6" read "5"; p. 459, column 1, Table 4, average duration of thunderstorms in November, 1890, for "... " read "0"; p. 465, column 1, line 11, for "Helmholz" read "Helmholtz," line 16, for "Neuchoff" read "Neuhoff," line 18, for "Eckholm" read "Ekholm."

THE WEATHER OF THE MONTH.

By Mr. WM. B. STOCKMAN, Chief, Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart VIII and the average values and departures from normal are shown in Tables I and VI.

The mean barometer was highest over the Plateau regions, with the crest over western Wyoming. It was lowest over eastern New England.

The mean barometer was above the normal in the west Gulf States, the Mississippi and Missouri valleys, slope and Plateau regions, the south Pacific region, except the extreme south-western portion, and the middle Pacific region, except the extreme northwestern portion. In all other districts it was below the normal.

The greatest positive departures from the normal ranged from +.10 to +.18 inch, and occurred in the middle and

southern Plateau regions. The greatest negative departures ranged from -.10 to -.15 inch, and occurred over New England, and the extreme eastern portion of New York.

The mean pressure decreased from that of October, 1904, in New England, Middle Atlantic States, northern portion of the South Atlantic States, Ohio Valley and Tennessee, except the western portion, the Lake region, and the north Pacific district. In all the remaining districts it increased.

The maximum increase ranged from +.10 to +.16 inch, and occurred over the middle and southern slope and Plateau regions, the southern portion of the northern slope region, and southwestern North Dakota. The maximum decrease ranged from -.10 to -.17 inch, and occurred over New England, and the northeastern portion of the Middle Atlantic States.

TEMPERATURE OF THE AIR.

The distribution of maximum, minimum, and average surface temperatures is graphically shown by the lines on Chart V.

The mean temperature for the month was below the normal over the region east of the Appalachian Mountains; and above the normal in the remaining districts, except the central Rio Grande Valley.

The deficiency in temperature was not very marked, except in southern Florida where it ranged from -2° to -3° , and in New England, and the eastern portions of the Middle Atlantic States where it ranged from -2.5° to -6.7° , the greatest departure occurring over New England. Over the region west of the Appalachian Mountains the excess in temperature was, as a rule, very marked, the departures amounting to $+11^{\circ}$ in western Minnesota, and North Dakota, and gradually decreasing to 2° eastward to Lake Huron, thence southwestward to central Texas, and westward over southeastern Arizona. An area in which the departures amounted to $+2^{\circ}$, or less, overlay central California.

The maximum temperature during any November since the establishment of the station was exceeded by 1° at Alpena, Mich.; 2° at Williston, N. Dak., and San Diego, Cal.; 4° at Marquette, Mich.; and 7° at Eureka, Cal.

The mean temperature for November, 1904, was higher than any other November mean by 1° at Baker City and Roseburg, Oreg.; 2° at Tatoosh Island, Wash., and Lewiston, Idaho; 3° at Point Reyes Light, Cal.; and 6° at North Head, Wash. At Northfield, Vt., the mean was 1° lower than any other recorded during November.

Maximum temperatures of 80° , or higher, occurred generally in the Peninsula of Florida, southwestern Arizona, and southern, northwestern, and the interior of central California.

Freezing temperatures occurred generally as far south as northern Florida, and the Gulf of Mexico, except along the littoral of the Carolinas, Georgia, Mississippi, Louisiana, and Texas.

Minimum temperatures above freezing were reported from the Pacific district, and southwestern Arizona.

The average temperatures for the several geographic districts and the departures from the normal values are shown in the following table:

Average temperatures and departures from normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
New England	8	35.5	-4.4	-24.0	-2.2
Middle Atlantic	12	42.4	-2.2	-20.6	-1.9
South Atlantic	10	53.2	-0.9	-11.7	-1.1
Florida Peninsula*	8	64.7	-1.9	+1.2	+0.1
East Gulf	9	55.9	-0.1	-2.4	-0.2
West Gulf	7	58.3	+1.8	+8.7	+0.8
Ohio Valley and Tennessee	11	45.1	+0.4	-13.7	-1.2
Lower Lake	8	39.6	+0.5	-22.1	-2.0
Upper Lake	10	37.7	+4.2	-18.5	-1.7
North Dakota*	8	36.0	+11.8	-6.4	-0.6
Upper Mississippi Valley	11	43.1	+5.7	-14.1	-1.3
Missouri Valley	11	43.9	+7.0	+1.6	+0.1
Northern Slope	7	40.6	+8.0	+15.7	+1.4
Middle Slope	6	46.6	+5.3	+12.6	+1.1
Southern Slope*	6	52.5	+3.4	+15.5	+1.4
Southern Plateau*	13	48.4	+1.1	+3.5	+0.3
Middle Plateau*	8	39.5	+2.4	+5.5	+0.5
Northern Plateau*	12	43.2	+5.5	+26.5	+2.4
North Pacific	7	50.2	+4.9	+7.3	+0.7
Middle Pacific	5	56.2	+2.7	+8.3	+0.8
South Pacific	4	61.4	+3.8	+14.0	+1.3

* Regular Weather Bureau and selected voluntary stations.

In Canada.—Prof. R. F. Stupart says:

The temperature was below the average in Ontario from the Georgian Bay and Lake Huron eastward, and throughout Quebec and the Maritime Provinces; elsewhere it was above the average. The negative departures varied from average to 3° below in Ontario from the shores of Lake Superior to the eastern boundary, and from 2° to 4° below in Quebec and the Maritime Provinces. The positive departures were excess-

ive, ranging from 4° on the eastern shores of Lake Superior to 13° and 14° in Manitoba, attaining as much as 15° and 16° in the western parts of Saskatchewan and Assiniboia, and then gradually diminishing to 6° on the British Columbia coast and over Vancouver Island.

PRECIPITATION.

The distribution of total monthly precipitation is shown on Chart III.

The precipitation was above the normal in central and western North Carolina, northeastern Georgia, central and southern Florida, northwestern Oregon, and western Washington; and below the normal in all the remaining districts.

The excess in precipitation was about 3 inches in central North Carolina; 2 to 4 inches in extreme southern Florida; and 2 to 5.8 inches in northwestern Washington. Over the region from eastern Texas and southern Louisiana northeastward to the St. Lawrence Valley and the New England coast the deficiency ranged from -2.0 to -4.1 inches, the greatest deficiency occurring in the lower Ohio Valley, Arkansas, northern Louisiana, and northeastern Texas.

By geographic districts the precipitation was above the normal in the Florida Peninsula, and the north Pacific district; and below the normal in all other districts.

The least precipitation during any November since the compilation of State records as a whole, was reported from Illinois, Idaho, Iowa, Wisconsin, and Pennsylvania.

Practically no precipitation occurred during the first fourteen days of the month in Montana; and after the 10th in Nebraska and Iowa, and after the 11th in Kansas, Colorado, Missouri, and Illinois.

Fifty-five stations in Utah reported no precipitation during the month, and ten others but a trace; Wyoming six without precipitation, and eight with but a trace; North Dakota four without and twelve but a trace; Idaho seven but a trace; Iowa one without and seven but a trace; Arkansas four without; and Indiana three with but a trace. In Kentucky the drought was general.

Well defined periods without precipitation occurred in the South Atlantic States from the 6th to the 11th, inclusive; 14th to 21st, inclusive; and 24th to 29th, inclusive; in the Florida Peninsula, on and after the 23d; in the east Gulf States 5th to 11th, inclusive, 14th to 20th, inclusive, and 23d to 28th, inclusive; in the west Gulf States 4th to 18th, inclusive, and 22d to 28th, inclusive; in the Ohio Valley and Tennessee 14th to 19th, inclusive, with scattered rains on and after the 23d. Light and scattered precipitation only occurred in the lower Lake region from the 6th to the 19th, inclusive. Measurable precipitation occurred on but five days in North Dakota; six in the upper Mississippi Valley; on practically but two in the Missouri Valley; three in the middle slope; five in the southern slope; three in the southern Plateau; and scattered on but three days in the middle Plateau and south Pacific regions.

The southern limit of snow extended to the northern portion of the South Atlantic and northeastern portion of the east Gulf States, central Mississippi Valley, northwestern Arkansas, northern Texas, south-central New Mexico, and westward to the Rocky Mountains.

HAIL.

The following are the dates on which hail fell in the respective States:

Arkansas, 11. California, 15, 18, 27. Connecticut, 6, 13. Delaware, 13. Idaho, 15, 28. Indiana, 10, 13. Maine, 5, 14. Massachusetts, 13, 30. Michigan, 13, 29. Missouri, 9. New Jersey, 13. New Mexico, 3, 4. New York, 5-7, 9, 13, 14, 19, 30. Ohio, 26. Oregon, 13, 15-17, 26, 27. Pennsylvania, 5, 29. Rhode Island, 13. South Carolina, 22. Texas, 4, 10, 11. Vermont, 28. Washington, 3, 30. Wyoming, 27.

SLEET.

The following are the dates on which sleet fell in the respective States:

Arkansas, 10, 12. Connecticut, 6, 11, 13. Delaware, 13. Illinois, 10. Indiana, 13, 25. Iowa, 9, 10, 28. Kansas, 9. Maine, 14, 24, 29. Maryland, 13. Massachusetts, 13, 14, 29. Michigan, 5, 13, 25. Minnesota, 9. Montana, 18, 20, 28. Nebraska, 8, 9, 29. New Hampshire, 23. New Jersey, 13. New Mexico, 10. New York, 5-7, 9, 13, 14, 20, 21, 24. North Carolina, 13. North Dakota, 9, 23. Ohio, 5, 6, 10, 13, 25. Oklahoma, 10, 11. Pennsylvania, 9, 13. Rhode Island, 9, 11, 13. South Carolina, 13. South Dakota, 9. Tennessee, 12. Texas, 12, 20. Vermont, 21, 28, 30. Washington, 20. West Virginia, 6, 8. Wisconsin, 28. Wyoming, 28.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		<i>Inches.</i>		<i>Inches.</i>	<i>Inches.</i>
New England.....	8	1.95	49	-2.0	-4.8
Middle Atlantic.....	12	1.60	52	-1.5	-9.3
South Atlantic.....	10	2.69	93	-0.2	-12.2
Florida Peninsula*.....	8	3.40	155	+1.2	+0.3
East Gulf.....	9	2.82	74	-1.0	-16.5
West Gulf.....	7	1.20	31	-2.7	-9.2
Ohio Valley and Tennessee.....	11	1.03	28	-2.6	-12.2
Lower Lake.....	8	0.30	10	-2.9	-1.7
Upper Lake.....	10	0.61	24	-1.9	-3.7
North Dakota*.....	8	0.11	14	-0.7	-0.4
Upper Mississippi Valley.....	11	0.16	8	-1.9	-2.2
Missouri Valley.....	11	0.17	13	-1.1	-0.9
Northern Slope.....	7	0.05	11	-0.4	-0.4
Middle Slope.....	6	0.06	6	-0.9	+1.5
Southern Slope*.....	6	0.13	8	-1.4	-1.8
Southern Plateau*.....	13	0.04	6	-0.6	-0.4
Middle Plateau*.....	8	0.01	1	-0.8	+2.0
Northern Plateau*.....	12	0.59	35	-1.1	-1.9
North Pacific.....	7	9.17	133	+2.3	-1.9
Middle Pacific.....	5	2.33	72	-0.9	+7.9
South Pacific.....	4	0.05	4	-1.3	+0.1

*Regular Weather Bureau and selected voluntary stations.

In Canada.—Professor Stupart says:

The precipitation was below the average in all portions of the Dominion, except in Prince Edward Island and Cape Breton, Charlottetown, in the former district, recording a positive departure of 1.6 inches, and Sidney, in the latter, 2.7 inches. The deficiency was very remarkable over Ontario and the greater portion of Quebec, particularly so in the more southern portions of Ontario, where the fall for the month was almost nil. Brantford reports a few snow flurries only, and Toronto, with 0.11 of an inch, registers the driest November on record, the next driest being 1894, with 0.61 of an inch. Montreal and Quebec were each over two and a quarter inches below the average amount, and Father Point half an inch below. In Manitoba and the Territories the precipitation, which was chiefly snow, was also extremely light. British Columbia, likewise, was very deficient in precipitation, Cariboo recording two and a quarter inches less than the average amount, and Victoria more than an inch and a half.

At the close of the month a light covering of snow was reported on the ground over the greater portion of the Northwest Territories and Manitoba, as well as in many parts of Quebec. In Ontario, along the shores of Lake Superior, the ground was covered to a depth of from three to five inches, and in the Georgian Bay region and locally elsewhere from three to nine inches. In the neighborhood of Collingwood, however, the depth is reported to be as much as eighteen inches. Northern New Brunswick was also covered to a depth of several inches.

HUMIDITY.

The averages by districts appear in the subjoined table:

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	74	-4	Missouri Valley.....	61	-10
Middle Atlantic.....	73	-2	Northern Slope.....	62	-5
South Atlantic.....	72	-6	Middle Slope.....	56	-6
Florida Peninsula.....	79	-1	Southern Slope.....	60	-2
East Gulf.....	72	-4	Southern Plateau.....	40	-3
West Gulf.....	70	-4	Middle Plateau.....	51	-3
Ohio Valley and Tennessee.....	69	-4	Northern Plateau.....	62	-10
Lower Lake.....	73	-4	North Pacific.....	85	0
Upper Lake.....	76	-4	Middle Pacific.....	79	+4
North Dakota.....	70	-9	South Pacific.....	64	-3
Upper Mississippi Valley.....	71	-3			

The relative humidity was normal in the north Pacific region; above normal in the middle Pacific region; and below normal in all other districts.

CLEAR SKY AND CLOUDINESS.

Average cloudiness obtained in New England and the Middle Atlantic States. In the Florida Peninsula, east Gulf States, and southern slope and Pacific regions, it was above the average; and below the average in the remaining districts.

The distribution of clear sky is graphically shown on Chart IV, and the numerical values of average daylight cloudiness, both for individual stations and by geographic districts, appear in Table I.

The average for the various districts, with departures from the normal, are shown in the following table:

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	5.6	0.0	Missouri Valley.....	3.4	-1.5
Middle Atlantic.....	5.2	0.0	Northern Slope.....	4.3	-0.3
South Atlantic.....	4.3	-0.2	Middle Slope.....	3.2	-0.4
Florida Peninsula.....	5.2	+0.6	Southern Slope.....	4.0	+0.8
East Gulf.....	4.6	+0.1	Southern Plateau.....	1.6	-0.7
West Gulf.....	3.9	-0.7	Middle Plateau.....	3.2	-0.4
Ohio Valley and Tennessee.....	5.0	-0.7	Northern Plateau.....	5.7	-0.3
Lower Lake.....	6.5	-0.7	North Pacific.....	8.4	+1.4
Upper Lake.....	6.2	-0.8	Middle Pacific.....	5.6	+1.8
North Dakota.....	3.8	-1.5	South Pacific.....	3.0	+0.1
Upper Mississippi Valley.....	4.0	-1.3			

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Block Island, R. I.....	13	74	ne.	North Head, Wash.....	5	63	se.
Do.....	14	59	sw.	Do.....	7	65	se.
Buffalo, N. Y.....	12	57	sw.	Do.....	12	50	se.
Cape Henry, Va.....	13	62	nw.	Do.....	15	86	se.
Cheyenne, Wyo.....	28	51	nw.	Do.....	16	89	se.
Cleveland, Ohio.....	13	60	n.	Do.....	17	56	se.
Do.....	24	52	nw.	Do.....	19	84	se.
Do.....	26	52	nw.	Do.....	20	59	a.
Eastport, Me.....	13	52	ne.	Do.....	21	74	se.
Do.....	14	60	ne.	Do.....	27	74	se.
Hatteras, N. C.....	13	68	sw.	Do.....	30	62	a.
Do.....	14	54	w.	Point Reyes Light, Cal.....	14	60	se.
Havre, Mont.....	22	58	sw.	Do.....	15	53	se.
Mount Tamalpais, Cal.....	1	56	s.	Syracuse, N. Y.....	29	50	a.
Do.....	30	53	sw.	Tatoosh Island, Wash.....	2	52	sw.
Mount Weather, Va.....	14	66	nw.	Do.....	4	52	sw.
Do.....	21	50	nw.	Do.....	9	56	e.
Do.....	24	56	nw.	Do.....	15	56	sw.
Do.....	25	60	nw.	Do.....	17	52	sw.
Nantucket, Mass.....	13	60	ne.	Do.....	19	80	a.
New Haven, Conn.....	13	50	ne.	Do.....	20	52	sw.
New York, N. Y.....	14	60	nw.	Do.....	21	78	a.
Do.....	21	52	nw.	Do.....	23	52	e.
North Head, Wash.....	1	57	se.	Do.....	24	60	e.
Do.....	15	52	se.	Do.....	27	66	a.
Do.....	4	62	se.	Do.....	30	56	a.

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table IV, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 159 thunderstorms were received during the current month as against 889 in 1903 and 1227 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country was most numerous were: 3d, 16th, 27th, 16; 20th, 22d, 13.

Reports were most numerous from: Oregon, 35; Florida, 23; Texas, 18.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed

to be the four preceding and following the dates of full moon, viz, November 18 to 26, inclusive.

In Canada: Thunderstorms were reported from Rockliffe, 20; Port Stanley, 19; Parry Sound, 19.

Auroras were reported from Quebec, 4; Port Arthur, 16; Minnedosa, 17; Qu'Appelle, 16; Swift Current, 15, 16; Edmonton, 2, 4, 15, 16; Battleford, 16.

DESCRIPTION OF TABLES AND CHARTS.

By Mr. WM. B. STOCKMAN, Chief, Division of Meteorological Records.

For description of tables and charts see page 475 of REVIEW for October, 1904.