

THE WEATHER OF THE MONTH.

By ALFRED J HENRY, Professor of Meteorology.

CHARACTERISTICS OF THE WEATHER FOR JUNE.

June, 1901, was a fairly typical summer month. The greater number of the lows that were charted during the month originated on the eastern edge of the middle Rocky Mountain region and drifted slowly northeastward, dissipating in the Lake region or the St. Lawrence Valley. The movement of the highs was eastward over the northern circuit, rather than southeastward across the interior of the country.

During the latter part of the month the weather became unusually warm in the lower Missouri and middle Mississippi valleys. At the close of the month the heated area included eastern Colorado, Kansas, the adjoining portions of Nebraska and Oklahoma, the whole of Missouri, Arkansas, Illinois, and western Kentucky and Tennessee. Over this region the maximum day temperature ranged from 95° to 106°.

The rainfall of the month was generally in excess of the normal from western Pennsylvania and central Ohio southward on both sides of the eightieth meridian and in Minnesota and the Dakotas. More than twice as many thunderstorms were reported as in the preceding month.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV and the numerical values are given in Tables I and VI.

The distribution of mean pressure during June, 1901, was somewhat similar to that of June, 1893, which, it will be remembered, was a month of similar general features. As compared with the previous month pressure rose on both coasts, the maximum increase being about 0.18 inch, and fell in the middle and southern plateaus and quite generally throughout the Plains region and upper Missouri and Mississippi valleys.

Both the Atlantic and Pacific highs seem to have encroached somewhat upon the land, while pressure in the interior of the country, especially in the middle Rocky Mountain region, was considerably below the normal value. A rise in pressure over the oceans and a corresponding fall over the interior of the continents are characteristic of the change from spring to summer. It would seem that when the changes in pressure from May to June are strong and well marked on both coasts there is a pronounced tendency toward strong contrasts of temperature over the interior land areas.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

The month was cold and backward in the Northwest, the average daily temperature being as much as 5° to 7° below the seasonal average in Montana and adjacent States. Likewise on the coast of the South Atlantic States the temperature was below the seasonal average, while in the interior of the country, from the Gulf States northeastward to the Great Lakes, the temperature was from 2° to 5° above the seasonal average. The greatest positive departures were in Kansas, Missouri, and southern Iowa. Over a somewhat irregular area extending from eastern Colorado to southern Illinois and western Tennessee, maximum temperatures ranged from

98° to 106°. Maximum temperatures of 100° and over were also registered in portions of the Gulf States, in the interior of Texas, and quite generally in the Southwest. In the Lake region, the upper Mississippi valley, the Middle and South Atlantic States a maximum temperature of 100° was not registered. Minimum temperatures as low as 30° were registered in northern Michigan, northern Minnesota, northern Wisconsin, and in North Dakota, as well as in the higher altitudes of the Rocky Mountains.

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

Average temperatures and departures from the 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	10	68.6	+ 0.6	- 4.2	- 0.7
Middle Atlantic	12	71.0	+ 0.2	- 5.1	- 0.8
South Atlantic	10	76.6	+ 0.7	-11.7	- 2.0
Florida Peninsula	7	79.5	+ 0.4	-12.7	- 2.1
East Gulf	7	79.8	+ 0.9	- 9.5	- 1.6
West Gulf	7	80.9	+ 1.8	+ 2.2	+ 0.4
Ohio Valley and Tennessee	12	75.2	+ 1.2	- 8.8	- 1.5
Lower Lake	8	67.6	+ 0.5	- 5.3	- 0.9
Upper Lake	8	68.5	+ 1.2	+ 4.4	+ 0.7
North Dakota	9	62.6	+ 1.9	-21.1	- 3.5
Upper Mississippi Valley	11	74.3	+ 3.1	- 5.8	+ 1.0
Missouri Valley	10	73.4	+ 2.8	-15.6	- 2.6
Northern Slope	7	60.4	+ 2.6	-12.0	- 2.0
Middle Slope	6	74.6	+ 3.1	+ 4.6	+ 0.8
Southern Slope	6	77.8	+ 2.0	+ 1.5	+ 0.2
Southern Plateau	15	70.9	- 2.4	+ 1.8	+ 0.3
Middle Plateau	9	61.6	- 2.7	+ 8.0	+ 1.3
Northern Plateau	10	56.7	- 3.9	+ 6.1	+ 1.0
North Pacific	5	55.1	- 3.2	- 5.7	- 1.0
Middle Pacific	5	61.1	- 0.8	- 1.0	- 0.2
South Pacific	4	65.8	- 0.7	+ 3.3	+ 0.6

In Canada.—Prof. R. F. Stupart says:

The mean temperature of June was above the average from Algoma eastward to the Gulf of St. Lawrence and the Atlantic, and below average from the Rainy River district westward to the Pacific; the highest positive departures, amounting to about 6°, occurred near the Georgian Bay, and the largest negative departures from 6° to 9° in southern Alberta and western Assiniboia; in Manitoba the negative departure ranged from 1° to 3°, and in British Columbia from 2° to 6°.

PRECIPITATION.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England	10	Inches. 2.06	68	Inches. +1.0	+1.4
Middle Atlantic	12	2.53	70	-1.1	-2.3
South Atlantic	10	5.64	114	+0.7	+1.4
Florida Peninsula	7	9.36	145	+2.9	+3.9
East Gulf	7	2.82	56	-2.2	-0.9
West Gulf	7	1.26	38	-2.6	-10.2
Ohio Valley and Tennessee	12	3.86	91	-0.4	-6.0
Lower Lake	8	2.92	81	-0.7	-2.0
Upper Lake	8	3.14	84	-0.6	-4.3
North Dakota	9	6.88	177	+3.0	-0.4
Upper Mississippi Valley	11	4.04	87	-0.6	-4.9
Missouri Valley	10	4.19	97	-0.1	-4.2
Northern Slope	7	3.36	126	+0.7	+1.0
Middle Slope	6	2.00	65	-1.1	-2.8
Southern Slope	6	0.76	23	-2.6	-0.4
Southern Plateau	15	0.15	48	-0.2	+1.1
Middle Plateau	9	0.44	81	-0.1	+0.1
Northern Plateau	10	1.09	78	-0.3	-1.4
North Pacific	5	2.17	96	-0.1	+0.9
Middle Pacific	5	0.02	4	-0.5	-0.8
South Pacific	4	T.	0	-0.1	+1.9

There was an abundance of rain in eastern Florida and also in the territory on both sides of the eightieth meridian northward to central Ohio and western Pennsylvania. The rainfall in Maine and also in Minnesota and the Dakotas was from 2 to 6 inches above the seasonal average; elsewhere there was a deficiency of rainfall, amounting in some cases to 4 inches. The region of diminished precipitation coincided fairly well with the region of high temperatures. In general, the area of drought extended from eastern Texas and Louisiana northward to Kansas, southern Iowa and Missouri.

*In Canada.*—Professor Stupart says:

The rainfall was excessive from Lake Superior to the Pacific and particularly so in Manitoba and southern Alberta. In British Columbia and the larger part of the Northwest Territories the average was exceeded to a lesser extent. In Ontario there was a fairly pronounced and general deficiency, except in New Ontario and that part of the province lying directly to the eastward of the Georgian Bay. In both the eastern and western portions of Quebec there was a deficiency, but in the middle sections a very pronounced excess, owing mainly to unusually heavy thunderstorms which occurred on the 27th. Along the gulf shores of New Brunswick and Nova Scotia, and also in Prince Edward Island, the rainfall was scant, but westward and southward of this in the Maritime Provinces, it was equal to average or above.

**SNOWFALL.**

Snow fell during the early part of the month at elevated points throughout the northern Rocky Mountain region, also in North Dakota and in the British Northwest Territories.

**HAIL.**

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

Alabama, 2, 11. Arizona, 14, 21. Arkansas, 6, 8, 11, 13. California, 12, 19. Colorado, 7, 10, 11, 12, 13, 14, 15, 16. District of Columbia, 16. Georgia, 3, 6, 17, 23, 29. Idaho, 2, 3, 4, 7, 10, 19, 25. Illinois, 5, 11, 12, 13, 16, 19, 20, 21, 22, 23, 25, 26, 27, 28. Indiana, 2, 5, 12, 13, 17, 19, 20, 21, 22, 23, 24, 25, 28. Indian Territory, 4, 7, 18. Iowa, 1, 4, 5, 11, 12, 14, 22, 27, 28, 29. Kansas, 3, 7, 8, 12, 14, 17, 18, 21, 22, 27. Kentucky, 2, 5, 12, 17, 23, 25, 28. Louisiana, 4, 7, 8, 29. Maine, 3, 28. Maryland, 13, 22. Massachusetts, 23. Michigan, 2, 12, 13, 24, 25, 27, 28. Minnesota, 4, 5, 6, 11, 12, 14, 15, 17, 18, 24, 25, 27, 28, 30. Mississippi, 1, 11, 17, 24, 25, 27, 28, 29, 30. Missouri, 5, 9, 11, 12, 13, 16, 19, 24, 27, 28. Montana, 3, 9, 11, 18, 19, 20, 23, 25, 28, 29, 30. Nebraska, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 28. Nevada, 10, 12, 13. New Jersey, 2. New Mexico, 1, 21, 27. North Carolina, 17, 22, 23, 24, 25, 28, 29, 30. North Dakota, 3, 6, 9, 17, 23, 24, 25, 27, 28, 29, 30. Ohio, 1, 2, 5, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 26. Oklahoma, 3, 4, 7, 12, 18. Oregon, 4, 5, 9, 11, 12, 14, 23. Pennsylvania, 1, 2, 6, 8, 13, 20, 21, 25, 29. South Carolina, 3, 23, 24, 30. South Dakota, 3, 6, 9, 10, 11, 13, 15, 18, 20, 21, 23, 28, 30. Tennessee, 10, 17, 21, 24, 25. Texas, 2, 5, 17. Utah, 2, 3, 13, 14. Vermont, 3. Virginia, 3, 12, 17, 20, 24, 25, 28. Washington, 2, 3, 4, 5, 6, 7, 8, 10, 13, 19, 22, 23, 24, 25, 29. West Virginia, 2, 6, 12, 22, 23. Wisconsin, 4, 5, 11, 12, 16, 17, 24, 25, 27, 29. Wyoming, 7, 9, 10, 11, 13, 20, 30.

**SLEET.**

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

Oregon, 4. South Dakota, 5, 6.

**SUNSHINE AND CLOUDINESS.**

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

The averages for the various districts, with departures from the normal, are shown in the table below:

*Average cloudiness and departures from the normal.*

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England .....	4.2	-0.9	Missouri Valley .....	4.2	-0.6
Middle Atlantic .....	4.6	-0.4	Northern Slope .....	5.3	+0.5
South Atlantic .....	5.1	+0.2	Middle Slope .....	3.4	-0.3
Florida Peninsula .....	6.0	+0.5	Southern Slope .....	2.8	-1.6
East Gulf .....	4.4	-0.4	Southern Plateau .....	1.5	-0.4
West Gulf .....	3.5	-1.1	Middle Plateau .....	3.2	+0.2
Ohio Valley and Tennessee .....	4.2	-0.8	Northern Plateau .....	5.5	+0.4
Lower Lake .....	4.9	0.0	North Pacific Coast .....	6.5	+0.4
Upper Lake .....	5.2	0.0	Middle Pacific Coast .....	2.6	-0.6
North Dakota .....	5.7	+0.5	South Pacific Coast .....	3.0	-0.3
Upper Mississippi .....	4.8	-0.7			

**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 .....	77	- 3	Missouri Valley .....	63	- 6
Middle Atlantic .....	72	- 1	Northern Slope .....	64	+ 3
South Atlantic .....	80	+ 2	Middle Slope .....	54	- 5
Florida Peninsula .....	80	+ 1	Southern Slope .....	50	-10
East Gulf .....	72	- 3	Southern Plateau .....	26	- 2
West Gulf .....	72	+ 2	Middle Plateau .....	36	+ 1
Ohio Valley and Tennessee .....	72	+ 2	Northern Plateau .....	58	+ 1
Lower Lake .....	72	0	North Pacific Coast .....	75	- 4
Upper Lake .....	76	+ 3	Middle Pacific Coast .....	56	- 9
North Dakota .....	74	+ 6	South Pacific Coast .....	64	0
Upper Mississippi .....	66	- 5			

**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.
Amarillo, Tex. ....	7	55	sw.	Mount Tamalpais, Cal.	4	59	nw.
Do.....	13	50	sw.	Do.....	6	59	nw.
Do.....	14	60	s.	Do.....	7	70	nw.
Do.....	18	72	sw.	Do.....	8	78	nw.
Cape Henry, Va.....	7	52	nw.	Do.....	9	75	nw.
Chicago, Ill.....	5	54	s.	Do.....	10	67	nw.
Do.....	29	50	w.	Do.....	11	56	nw.
Cincinnati, Ohio.....	23	52	nw.	Do.....	21	57	nw.
El Paso, Tex.....	1	65	nw.	Do.....	22	53	nw.
Fort Smith, Ark.....	18	50	nw.	Do.....	23	56	nw.
Hannibal, Mo.....	10	52	s.	Do.....	24	60	nw.
Huron, S. Dak.....	11	50	se.	Do.....	25	50	nw.
Lexington, Ky.....	23	57	nw.	Point Reyes Light, Cal.	1	70	nw.
Mount Tamalpais, Cal..	1	73	nw.	Saint Paul, Minn.....	28	56	w.
Do.....	2	57	nw.	Salt Lake City, Utah..	6	54	nw.
Do.....	3	61	nw.	Williston, N. Dak.....	24	60	nw.

**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 6,670 thunderstorms were received during the current month as against 5,736 in 1900 and 2,479 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 22d, 345; 21st, 335; 5th, 308.

Reports were most numerous from: Ohio, 534; Illinois, 438; Nebraska, 403.

*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 date of full moon, viz: May 29 to June 6.

*In Canada.*—Thunderstorms were reported as follows: Halifax, 3d, 14th, 24th; Grand Manan, 14th, 23d, 24th, 27th, 28th; Yarmouth, 3d, 14th, 15th, 23d, 24th, 28th, 29th; Father Point, 3d, 7th, 8th, 14th, 21st, 27th, 30th; Quebec, 7th, 13th, 19th, 20th, 21st, 23d, 25th, 27th, 28th, 29th; Montreal, 3d, 19th, 23d, 28th; Bissett, 1st, 19th, 22d; Ottawa, 1st, 19th, 23d; Kingston, 2d, 18th, 22d, 23d; Toronto, 2d, 6th; White River, 18th, 29th; Port Stanley, 12th, 20th; Saugeen, 22d, 28th; Parry Sound, 1st, 5th, 22d, 28th; Port Arthur, 12th, 17th, 25th, 29th; Winnipeg, 15th, 23d, 26th; Minnedosa, 2d, 3d, 23d, 25th, 26th; Qu'Appelle, 9th, 16th, 22d, 25th, 30th; Medicine Hat, 4th, 7th, 18th, 19th, 23d, 29th; Prince Albert, 21st; Barkersville, 19th; Hamilton, Bermuda, 25th.

*Auroras.*—One aurora was reported from Quebec on the 14th.

## DESCRIPTION OF TABLES AND CHARTS.

By ALFRED J. HENRY, Professor of Meteorology.

For description of tables and charts see page 223 of REVIEW for May, 1901.