

70, Key West (8th); 69, New Orleans (frequently) and Pensacola (6th); 68, Tampa (10th), Jacksonville (20th), Charleston (9th). The lowest minima were: 31, Idaho Falls (2d) and Marquette (5th); 32, Sault Ste. Marie (7th), Moorhead (frequently), Huron and Williston (6th).

The years of highest maximum and lowest minimum temperatures for June are given in the last four columns of Table I of the REVIEW for June, 1896. During the current month the maximum temperatures were equal to or above the highest on record at: Amarillo, Wichita, and Concordia, 102; Topeka and Savannah, 100; Duluth, 99; Omaha, Keokuk, and Davenport, 98; Kansas City, 97; St. Paul, 94. The minimum temperatures were equal to or below the lowest on record at: Marquette and Idaho Falls, 31; Sault Ste. Marie, 32; Duluth and La Crosse, 33; Green Bay, 34; Grand Haven, 37; Dubuque, 40; Columbia, Mo., 42; Washington, D. C., 43; Wichita, 44; Oklahoma and Springfield, Mo., 46; Kansas City, 48; Memphis, 57.

The greatest daily range of temperature and the data for computing the extreme and mean monthly ranges are given for each of the regular Weather Bureau stations in Table I. The largest values of the greatest daily ranges were: Williston and Idaho Falls, 45; Pueblo, 44; Carson City and Baker City, 41; Miles City, Denver, and Phoenix, 40. The smallest values were: Key West, 13; Hatteras, 14; San Diego, 15; Block Island, Woods Hole, and Corpus Christi, 16; Nantucket and Port Eads, 17; Galveston, Fort Canby, and Tatoosh Island, 18; Eureka, 19.

Among the extreme monthly ranges the largest were: Williston, 69; Moorhead, 64; Bismarck, 62; Carson City and North Platte, 61; Salt Lake City, Huron, and Minneapolis, 60. The smallest values were: San Diego, 16; Key West and Tatoosh Island, 20; Port Eads, Jupiter, and Hatteras, 22.

Accumulated monthly departures from normal temperatures from January 1 to the end of the current month are given in the second column of the following table, and the average departures are given in the third column, for comparison with the departures of current conditions of vegetation from the normal condition.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
New England	+ 3.1	+ 0.5	Ohio Valley and Tenn...	- 1.7	- 0.3
Middle Atlantic	+ 0.7	+ 0.1	North Dakota	- 5.6	- 0.9
South Atlantic	+ 1.1	+ 0.2	Northern Slope	- 0.2	0.0
Florida Peninsula	+ 1.4	+ 0.2	Southern Slope	- 0.6	- 0.1
East Gulf	+ 1.1	+ 0.2	Southern Plateau	- 4.5	- 0.8
West Gulf	+ 5.1	+ 0.8	Middle Plateau	- 5.6	- 0.9
Lower Lake	+ 1.4	+ 0.2	Middle Pacific	- 2.2	- 0.4
Upper Lake	+ 6.2	+ 1.0	South Pacific	- 3.5	- 0.6
Upper Mississippi Valley..	+ 1.2	+ 0.2			
Missouri Valley	+ 0.6	+ 0.1			
Middle Slope	+ 2.7	+ 0.4			
Northern Plateau	+ 9.0	+ 1.5			
North Pacific	+ 0.4	+ 0.1			

MOISTURE.

The quantity of moisture in the atmosphere at any time may be expressed by the weight of the vapor coexisting with the air contained in a cubic foot of space, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-point for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, is given in Table I.

The rate of evaporation from a special surface of water on muslin at any moment determines the temperature of the wet-bulb thermometer. The mean wet-bulb temperature is now published in Table I; it is always intermediate, and

generally about half way between the temperature of the air and of the dew-point. The quantity of water evaporated in a unit of time from the muslin surface may be considered as depending essentially upon the wet-bulb temperature, the dew-point, and the wind.

The relative humidity, or the ratio between the moisture that is present in the air and the moisture that it would contain if saturated at its observed temperature is given in Table I as deduced from the 8 a. m. and 8 p. m. observations. The general average for a whole day or any other interval would properly be obtained from the data given by an evaporimeter, but may also be obtained, approximately, from frequent observations of the relative humidity.

PRECIPITATION.

[In inches and hundredths.]

The distribution of precipitation for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III. The total precipitation for the current month was largest, exceeding 8 inches in a small portion of western Missouri; it exceeded 6 inches in central New England, central Florida, Georgia, and South Carolina, western Arkansas, and a large portion of Missouri. Little or no rain fell over the southern Plateau Region and southern California.

The larger values for regular stations were: Tampa, 8.46; Kansas City, 7.09; Cairo, 6.87; Concordia, 6.82; Hatteras, 5.76. In Canada, Bermuda, 9.57.

Details as to excessive precipitation are given in Tables XI and XII.

The diurnal variation, as shown by tables of hourly means of the total precipitation, deduced from the self-registering gauges kept at the regular stations of the Weather Bureau, is not now tabulated.

The current departures from the normal precipitation are given in Table I, which shows that precipitation was in excess in parts of Kansas, Missouri, Illinois, Wisconsin, and New England. It was especially deficient on the central Gulf coast, Iowa, and southern Kansas.

The large excesses were: Minneapolis, 5.2; Green Bay, 4.3; St. Paul, 3.8; Havre, 3.4; Cairo and Concordia, 2.4. The large deficits were: Galveston, 4.5; Port Eads, 4.2.

The average departure for each district is given in Table I. By dividing each current precipitation by its respective normal the following corresponding percentages are obtained. (precipitation is in excess when the percentage of the normal exceeds 100):

Above the normal: New England, 107; North Dakota, 118; upper Mississippi, 111; southern Plateau, 179; northern Plateau, 135; north Pacific, 104; middle Pacific, 139.

Below the normal: Middle Atlantic, 78; south Atlantic, 84; Florida Peninsula, 84; east Gulf, 58; west Gulf, 69; Ohio Valley and Tennessee, 74; lower Lake, 75; upper Lake, 92; Missouri Valley, 95; northern Slope, 96; middle and southern Slopes, 94; middle Plateau, 55; south Pacific, 0.00.

In Canada, Professor R. F. Stupart says: "The rainfall has been above the average in British Columbia and over the greater portion of the Northwest Territories, on the higher lands of Ontario, in Prince Edward Island, over the greater part of Nova Scotia and in southern New Brunswick. Excessive rains fell during thunderstorms in Alberta and Assiniboia.

The years of greatest and least precipitation for June are given in the REVIEW for June, 1890. The precipitation for the current month was the greatest on record at: Green Bay, 7.56; Havre, 6.39; Pueblo, 2.13. It was the least on record at: Port Eads, 0.00; Chattanooga, 1.03; Miles City, 1.23; Omaha, 1.43; Nashville, 1.82.

The total accumulated monthly departures from January 1 to the end of the current month are given in the second column of the following table: The third column gives the percentage of the current accumulated precipitation relative to its normal value.

Districts.	Accumulated departures.	Accumulated precipitation.	Districts.	Accumulated departures.	Accumulated precipitation.
	Inches.	Per cent.		Inches.	Per cent.
Florida Peninsula	4.60	122	New England	0.80	96
Ohio Valley and Tenn.	1.20	106	Middle Atlantic	2.40	89
Upper Mississippi Valley ..	2.80	113	South Atlantic	2.30	91
Missouri Valley	0.50	108	East Gulf	3.90	87
Middle Slope	1.00	106	West Gulf	3.90	83
Southern Slope	2.10	119	Lower Lake	2.10	88
Southern Plateau	2.60	194	Upper Lake	0.60	97
Middle Plateau	0.10	101	Northern Slope	0.90	90
Northern Plateau	0.30	103	North Pacific	1.80	94
South Pacific	0.50	110	Middle Pacific	2.20	88
North Dakota	0.00	100			

SNOWFALL.

The total monthly snowfall at each station is given in Tables I and II. The chart of geographical distribution is omitted for this month.

The reported snowfalls may be classified as follows: California, 2 stations; Colorado, 17 stations, with amounts ranging from Trace to 10 inches; Idaho, 2; Michigan, 2; Minnesota, 1; Montana, 4; Nevada, 9; New Jersey, 1; Utah, 1.

HAIL.

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

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

SLEET.

The only States reporting sleet were: Minnesota, 1st, 5th. Montana, 2d, 17th.

WIND.

The prevailing winds for June, 1897, viz, those that were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

The resultant winds, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table VIII. These latter resultants are also shown graphically on Chart

IV, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

Maximum wind velocities are given in Table I, which also gives the altitudes of the Weather Bureau anemometers above the ground. Maxima of 50 miles or more per hour were reported during this month at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				Miles	
Amarillo, Tex	18	66	w.	Helena, Mont	16	50	sw.
Chicago, Ill	2	55	s.	Lincoln, Nebr	17	55	sw.
Columbia, Mo	24	59	nw.	Montgomery, Ala	19	54	nw.
Denver, Colo	20	60	se.	New York, N. Y	1	53	nw.
Dodge City, Kans	17	67	s.	San Antonio, Tex	3	50	n.
Fort Canby, Wash	10	54	s.	Sioux City, Iowa	18	72	s.
Galveston, Tex	8	50	n.				

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table IX, 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.—The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 3d, 268; 15th, 334; 16th, 258; 19th, 325; 24th, 283; 25th, 252.

Reports were most numerous in: Florida, 239; Illinois, 329; Missouri, 527; North Carolina, 244; Ohio, 316.

Thunderstorm days were most numerous in: Florida, 30 days; Kansas, Missouri, and South Carolina, 29; Georgia, Louisiana, and North Carolina, 27; Illinois and Colorado, 26.

In Canada.—Thunderstorms were reported as follows: Halifax, 18th; Grand Manan, 16th, 18th, 28th; Yarmouth, 30th; Charlottetown, 18th, 26th; Father Point, 25th; Quebec, 12th, 15th, 21st, 24th, 25th; Montreal, 13th, 24th; Rock-liffe, 6th, 7th, 12th; Toronto, 23d, 24th; White River, 12th; Port Stanley, 3d, 15th, 16th, 20th, 30th; Saugeen, 6th; Parry Sound, 23d; Port Arthur, 29th; Winnipeg, 10th, 14th, 28th, 30th; Qu'Appelle, 14th, 15th, 18th; Banff, 7th, 8th, 15th, 22d, 27th, 28th, 29th; Swift Current, 8th, 13th, 15th, 20th, 30th; Calgary, 7th, 15th, 20th, 21st; Prince Albert, 15th; Edmonton, 16th, 30th; Battleford, 30th.

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, from the 10th to the 18th, inclusive. On the remaining twenty-one days of this month 37 reports were received, or an average of about 1 per day. The dates on which the number of reports of auroras for the whole country especially exceeded this average were: 16th and 27th.

Reports were most numerous in: Illinois, New Hampshire, and Ohio, 6; North Dakota, 5; Minnesota, 4.

The number of reports was a large percentage of the number of observers in: Delaware, 50; New Hampshire, 26; North Dakota, 13.

In Canada.—Auroras were reported as follows: Yarmouth, 16th; Father Point, 2d; Quebec, 2d, 16th, 18th, 20th, 26th,