

The years of highest and lowest mean temperature are shown in Table I of the REVIEW for August, 1894. The mean temperature for August, 1895, was the highest on record at Nantucket, 68.8; Philadelphia, 77.4; Harrisburg, 75.0; Pittsburgh, 74.5; Parkersburg, 76.2; Columbus, Ohio, 75.6; Green Bay, 68.4; Milwaukee, 71.6; Jacksonville, 82.9; Palestine, 82.3. It was the lowest on record at Tatoosh Island, 54.6; Neah Bay, 57.4; Eureka, 54.0; Carson City, 65.2; Fresno, 80.6.

The maximum and minimum temperatures of the current year are given in Table I. The highest maxima were: Yuma, 114 (5th); Fresno, 110 (5th); Red Bluff, 107 (4th); Fort Smith, 106 (21st); Walla Walla, 102 (2d); Huron, 13th, Concordia, 27th, and Abilene, 14th, 100. The lowest maxima were: Eureka, 66 (5th); Tatoosh Island, 70 (29th). The highest minimum was: Corpus Christi, 73 (2d). The lowest minima were: St. Vincent, Bismarck, and Port Crescent, 32 on the 20th, 21st, and 26th, respectively.

The years of highest maximum and lowest minimum temperatures are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at: Harrisburg, 95; Parkersburg, 96; Charleston, 98; Jupiter, 93; Port Angeles, 88; Carson City, 95. The minimum temperatures were the lowest on record at: Harrisburg, 50; Bismarck, 32; Williston and Havre, 34; Neah Bay, 40; Port Angeles and Seattle, 38; Fort Canby, 48; Astoria and Eureka, 45; Carson City, 34; Fresno, 51; San Diego, 54.

The greatest daily range of temperature and the extreme monthly range are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values among the greatest daily ranges were: Havre, 51; Idaho Falls, 50; Baker City and Lander, 49. The smallest values were: Block Island and Hatteras, 14; Port Eads and Galveston, 15; Nantucket and Jupiter, 16; Kittyhawk, Key West, and San Diego, 17. Among the extreme monthly ranges the largest values were: Bismarck, 66; Huron, 63; Havre and Williston, 62; Carson City, 61; Pierre, 60. The smallest values were: Hatteras, 19; Corpus Christi, Port Eads, and Key West, 20.

The 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 conditions.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
Upper Lake	+ 0.7	+ 0.1	New England.....	- 2.3	- 0.3
North Dakota	+ 4.7	+ 0.6	Middle Atlantic.....	-10.1	- 1.3
Missouri Valley	+ 1.1	+ 0.2	South Atlantic.....	-16.9	- 2.1
Northern Plateau.....	+ 5.0	+ 0.6	Florida Peninsula.....	-18.0	- 1.6
			East Gulf.....	-18.7	- 2.3
			West Gulf.....	-17.7	- 2.2
			Ohio Valley and Tenn.....	-18.3	- 1.7
			Lower Lake.....	- 5.5	- 0.7
			Upper Mississippi.....	- 2.1	- 0.3
			Northern Slope.....	- 9.9	- 1.2
			Middle Slope.....	- 7.8	- 1.0
			Southern Slope (Abilene).....	-18.9	- 2.4
			Southern Plateau.....	- 9.0	- 1.1
			Middle Plateau.....	- 9.3	- 1.2
			North Pacific.....	- 0.5	- 0.0
			Middle Pacific.....	- 2.7	- 0.3
			South Pacific.....	- 6.7	- 0.8

MOISTURE.

The quantity of moisture in the atmosphere at any time may be expressed by means of the weight contained in a cubic foot of air, or by the tension or pressure of the vapor, or by

the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are 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, but a properly constructed evaporimeter may be made to give the quantity of water evaporated from a similar surface during any interval of time. Such an evaporimeter, therefore, would sum up or integrate the effect of those influences that determine the temperature as given by the wet bulb; from this quantity the average humidity of the air during any given interval of time may be deduced.

The sensible temperature experienced by the human body and attributed to the atmosphere depends not merely upon the temperature of the air, but equally upon the dryness, the velocity of the wind, and the suddenness of atmospheric changes. The temperature of the wet-bulb thermometer as obtained by the whirling apparatus used in the shaded shelter corresponds to the temperature felt by persons standing in the shade of trees or houses, exposed to a natural breeze of at least 6 miles per hour. This temperature and its depression below the dry bulb are the fundamental data for all investigations into the relations between human physiology and the climate. In order to present a monthly summary of the atmospheric conditions from a hygienic and physiological point of view, Table VIII has been prepared, showing the maximum, minimum, and mean readings of the wet-bulb thermometer at 8 a. m. and 8 p. m., seventy-fifth meridian time.

PRECIPITATION.

[In inches and hundredths.]

The distribution of precipitation for the month of August, 1895, 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 precipitation for the current month was heaviest, 5 to 14 inches, on the Gulf Coast from Louisiana to Florida, and the interior of Georgia and South Carolina, but least, namely zero, on the coast and central parts of California.

The diurnal variation is shown by Table XII, which gives the total precipitation for each hour of seventy-fifth meridian time, as deduced from self-registering gauges kept at about 43 regular stations of the Weather Bureau; of these 37 are float gauges and 6 are weighing gauges.

The normal precipitation for each month is shown in the Atlas of Bulletin C, entitled "Rainfall and Snow of the United States, compiled to the end of 1891, with annual, seasonal, monthly, and other charts."

The current departures from the normal precipitation are given in Table I, which shows that precipitation was in excess in the St. Lawrence Valley, the east Gulf States, Georgia, and a small portion of Missouri, Kansas, Nebraska, and Iowa. Elsewhere it was generally deficient. Large excesses were: Montreal, 4.8; Wichita and Atlanta, 4.0; Omaha and Columbia, 3.8; Augusta, 3.7; Chicago, 3.5. The large deficits were: Kittyhawk, 4.5; Philadelphia, 4.2; Jacksonville, 4.1; Raleigh, 4.0; Norfolk, 3.8.

The average departure for each district is also given in Table I. By dividing these by the respective normals the following corresponding percentages are obtained (precipitation is in excess when the percentages of the normal exceed 100):

Above the normal: East Gulf, 122; lower Lake, 110; Missouri Valley, 117; middle Slope, 120; southern Plateau, 112. Normal: Middle Pacific, 100.

Below the normal: New England, 91; Middle Atlantic, 55; South Atlantic, 88; Florida Peninsula, 90; west Gulf, 75; Ohio Valley and Tennessee, 58; upper Lake, 94; North Dakota, 63; upper Mississippi, 81; northern Slope, 63; Abilene

(southern slope), 81; middle Plateau, 14; northern Plateau, 66; north Pacific, 38; southern Pacific, 0.

The years of greatest and least precipitation are given in the REVIEW for August, 1894. The precipitation for the current month was the greatest on record at Concordia, 4.98; Atlanta, 8.55. It was the least on record at Sault Ste. Marie, 1.34; Harrisburg, 2.36; Philadelphia, 0.59; Jacksonville, 2.54; Palestine, 0.06; San Diego, 0.00; Salt Lake City, 0.02; Havre, 0.04; Spokane, 0.03.

The total accumulated monthly departures from normal precipitation from the beginning of the year to the end of the current month are given in the second column of the following table; the third column gives the ratio of the current accumulated precipitation to its normal value.

Districts.	Accumulated departures.	Accumulated precipitation.	Districts.	Accumulated departures.	Accumulated precipitation.
<i>Excesses.</i>	<i>Inches.</i>	<i>Perct.</i>	<i>Deficits.</i>	<i>Inches.</i>	<i>Perct.</i>
North Dakota.....	+ 0.10	101	New England.....	- 3.60	88
Abilene (southern Slope)...	+ 3.90	121	Middle Atlantic.....	- 4.90	85
Southern Plateau.....	+ 1.10	115	South Atlantic.....	- 0.30	100
			Florida Peninsula.....	- 2.70	92
			East Gulf.....	- 0.80	98
			West Gulf.....	- 2.00	93
			Ohio Valley and Tenn.....	- 8.70	74
			Lower Lakes.....	- 6.20	73
			Upper Lakes.....	- 5.90	73
			Upper Mississippi.....	- 6.10	75
			Missouri Valley.....	- 2.60	89
			Northern Slope.....	- 0.30	96
			Middle Slope.....	- 0.30	96
			Middle Plateau.....	- 0.90	86
			Northern Plateau.....	- 3.40	89
			North Pacific.....	- 1.30	96
			Middle Pacific.....	- 2.30	88
			South Pacific.....	- 2.30	81

HAIL AND SLEET.

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

Alabama, 7, 27, 28. Arizona, 4, 6, 12, 21, 22. Arkansas, 11. California, 27. Colorado, 3, 5 to 11, 20, 28, 29, 31. Delaware, 16. Georgia, 27. Idaho, 1, 14, 28. Illinois, 11, 14, 18, 27, 29. Indiana, 6. Iowa, 2, 4, 9, 12, 18, 22, 27, 30. Kansas, 19. Kentucky, 9, 20. Maryland, 6, 10, 11, 16, 31. Massachusetts, 17, 21. Michigan, 9, 11, 17, 18. Minnesota, 4, 5, 9, 13, 14, 16, 26, 27, 28. Missouri, 4, 18. Montana, 8, 25. Nebraska, 4, 7, 8, 10, 11, 12, 18, 22, 23, 27. Nevada, 13, 27. New Jersey, 4, 16. New Mexico, 7, 29. New York, 4, 6, 17, 18, 28. North Carolina, 27. North Dakota, 8, 13, 21, 22, 26. Ohio, 3, 6, 17, 24, 28. Oklahoma, 2. Oregon, 6. Pennsylvania, 5, 6, 11, 13, 18, 24. South Carolina, 26, 28. South Dakota, 2, 7, 13, 16, 21. Tennessee, 14. Texas, 28. Utah, 8, 12, 18, 30. Vermont, 21. Wisconsin, 14, 26, 23. Wyoming, 30.

WIND.

The prevailing winds for August, 1895, 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 IX. These latter resultants are also shown graphically on Chart II, 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.

HIGH WINDS.

Maximum wind velocities of 50 miles or more per hour were reported 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.
		<i>Miles</i>				<i>Miles</i>	
Cleveland, Ohio.....	25	53	se.	Huron, S. Dak.....	18	50	sw.
El Paso, Tex.....	5	50	ne.	Huron, S. Dak.....	21	60	s.
El Paso, Tex.....	30	55	ne.	New York, N. Y.....	4	62	sw.
Huron, S. Dak.....	7	65	nw.	Oklahoma, Okla.....	10	50	se.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere as a whole is very nearly constant from year to year, but the proportion received by the surface of the earth depends largely upon the absorption by the atmosphere, and varies with the distribution of cloudiness. The sunshine is now recorded automatically at 17 regular stations of the Weather Bureau by its photographic, and at 21 by its thermal effects. At two stations records are kept by both methods. The photographic record sheets show the apparent solar time, but the thermometric sheets show seventy-fifth meridian time. For convenience the results are all given in Table XI for each hour of mean local time. The cloudiness is determined by numerous personal observations at all stations during the daytime, and is given in the column of "average cloudiness" in Table I; its complement or clear sky is given in the last column of Table XI.

COMPARISON OF SUNSHINE AND CLEAR SKY.

The sunshine registers give the duration of direct sunshine whence the percentage of possible sunshine is derived; the observer's personal estimates give the percentage of area of clear sky. It should not be assumed that these numbers should agree, and for comparative purposes they have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental record of percentages of duration of sunshine is almost always larger than the observer's personal estimate of percentages of area of clear sky; the average excess for August, 1895, is 12 per cent for photographic records, and 14 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshins.

Photographic stations.	Instrumental.			Thermometric stations.	Instrumental.		
	Personal.	Difference.	Personal.		Difference.		
Portland, Oreg. *.....	93	88	5	Portland, Oreg. *.....	93	88	4
Salt Lake City, Utah †..	88	52	36	Cincinnati, Ohio *.....	85	61	24
Phoenix, Ariz. †.....	85	54	31	Philadelphia, Pa.....	89	57	32
Helena, Mont.....	81	76	5	Baltimore, Md.....	81	64	17
Galveston, Tex.....	79	72	7	Des Moines, Iowa.....	81	65	16
Washington, D. C.....	78	67	11	Chicago, Ill.....	79	67	12
Dodge City, Kans.....	75	65	10	Portland, Me.....	79	45	34
Santa Fe, N. Mex.....	74	54	20	Detroit, Mich.....	77	65	12
Denver, Colo.....	72	56	16	Little Rock, Ark.....	77	61	16
Cleveland, Ohio.....	69	57	12	St. Louis, Mo.....	76	60	16
Bismarck, N. Dak.....	69	—	—	Louisville, Ky.....	74	58	16
San Diego, Cal.....	67	60	7	Rochester, N. Y.....	72	56	16
Kansas City, Mo.....	63	50	13	New York, N. Y.....	68	56	12
Vicksburg, Miss.....	63	56	7	Boston, Mass.....	67	53	14
Savannah, Ga.....	59	57	2	Marquette, Mich.....	65	48	17
Eastport, Me.....	56	42	14	Columbus, Ohio.....	62	48	14
Cincinnati, Ohio * §.....	—	—	—	Atlanta, Ga.....	61	47	14
				New Orleans, La.....	60	62	- 2
				Wilmington, N. C.....	56	54	2
				Buffalo, N. Y.....	55	45	10
				San Francisco, Cal.....	54	59	- 5

* Records kept by both methods.
 † All values for 15 days only.
 ‡ Thermometric record discontinued.
 § Photographic record incomplete.
 Key West, Fla., Memphis, Tenn., Norfolk, Va., New Haven, Conn., Seattle and Spokane, Wash., discontinued.