land and Massachusetts, 31. Michigan, 7, 8, 14, 16, 18, 19, 20, 25, 29. Minnesota, 14. Missouri, 22, 23, 24, 29, 30. Montana, 13. Nebraska, 1, 30. New Hampshire, 17. New York, 8, 15, 16, 17, 19, 20, 23, 28, 29, 31. Ohio, 1, 8, 9, 19, 20, 31. Oklahoma, 23. Pennsylvania, 31. South Dakota, 10. Utah, 4, 21. Vermont, 9, 17. Virginia, 31. Wisconsin, 12.

WIND.

The *prevailing winds* for October, 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.
		Miles				*Miles*	
Buffalo, N. Y	19	54	w.	Cleveland, Ohio	19	50	sw.
Do	28	59	w.	Jupiter, Fla	22	55	ne.
Chicago, Ill	10	52	s.	Kittyhawk, N. C	4	52	ne.
Do	18	56	sw.	Williston, N. Dak	18	50	nw.

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 15 regular stations of the Weather Bureau by its photographic, and at 22 by its thermal effects. At one station 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.

Photographic and thermometric registers give the duration of that intensity of sunshine which suffices to make a record, and, therefore, they generally fail to record for a short time after sunrise and before sunset, because, even in a cloudless sky, the solar rays are then too feeble to affect the self-registers. If, therefore, such records are to be used for determining the amount of cloudiness, they must be supplemented by special observations of the sky near the sun at these times. The duration of clear sky thus specially determined constitutes the so-called twilight correction (more properly a low-sun correction), and when this has been applied, as has been done in preparing Table XI, there results a complete record of clear sky from sunrise to sunset in the neighborhood of the sun. The twilight correction would not be needed if the self-registers were used for ascertaining the duration of a special intensity of sunshine, but is necessary if the duration of cloudiness is alone desired, as is usually the case.

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 percentage of clear sky, is given in the last column of Table XI.

COMPARISON OF DURATIONS AND AREAS.

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 observers' personal estimate of percentages of area of clear sky; the average excess for October, 1895, is 6 per cent for photographic records, and 10 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshine.

Photographic stations.	Instrumental.	Personal.	Difference.	Thermometric stations.	Instrumental.	Personal.	Difference.
Phœnix, Ariz	88	71	17	Cincinnati, Ohio	84	70	14
Denver, Colo	83	64	19	Des Moines, Iowa	83	71	12
Santa Fe, N. Mex	80	68	12	New Orleans, La	80	80	0
Washington, D. C	79	84	— 5	Vicksburg, Miss	80	78	2
Dodge City, Kans	77	70	7	St. Louis, Mo	79	70	9
Helena, Mont	77	62	15	Atlanta, Ga	78	74	4
Salt Lake City, Utah	77	61	16	Louisville, Ky	78	74	4
Kansas City, Mo	76	72	4	Chicago, Ill	77	65	12
Savannah, Ga	76	69	7	Philadelphia, Pa	76	69	7
Galveston, Tex	75	74	1	Little Rock, Ark	75	65	10
Bismarck, N. Dak	71	58	13	Wilmington, N. C	73	73	0
Portland, Oreg. †	66	56	10	Baltimore, Md	72	76	— 4
San Diego, Cal	65	56	9	New York, N. Y	70	64	6
Cleveland, Ohio	61	54	7	Detroit, Mich	67	57	10
Eastport, Me	52	36	16	San Francisco, Cal	64	62	2
				Portland, Oreg. †	62	56	6
				Boston, Mass	61	54	7
				Rochester, N. Y	60	52	8
				Columbus, Ohio	56	47	9
				Portland, Me	52	44	8
				Buffalo, N. Y	38	35	3
				Marquette, Mich	31	21	10

* No thermometric report. † Records kept by both methods.

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, 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.

The dates on which reports of thunderstorms for the whole country were most numerous were: 11th, 24; 15th, 27; 26th, 26; 27th, 59.

Thunderstorm reports were most numerous in: California, 44; Colorado, 23; Missouri, 22; Nevada, 27; Ohio, 36.

Thunderstorms were most frequent in: California, 10 days; Colorado, 9; Texas, 8.

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 1st to the 7th, inclusive, and also the 28th, 29th, 30th, and 31st. On the remaining twenty days of this month 574 reports were received, or an average of about twenty-nine per day. The dates on which the number of reports especially exceeded the average were: 12th, 215; 15th, 132; and 16th, 52.

Auroras were reported by a large percentage of observers in: Minnesota, 119; Wisconsin, 103; and Iowa, 57.

Auroras were reported most frequently in: North Dakota, 16 days; Minnesota, 15; Montana, 13; and Wisconsin, 10.