6, 13, 24, 29. North Carolina, 5 to 8. North Dakota, 27. Ohio, 2, 3, 4, 6, 8, 10, 12, 13, 15, 16, 23, 24, 29. Oklahoma, 6, 9. Oregon, 1, 9, 28, 29. Pennsylvania, 1, 3, 4, 6, 8, 9, 13, 23, 28. Rhode Island, 5. South Carolina, 5, 17, 24, 25. Tennessee, 5 to 8, 28. Texas, 12, 24, 25. Utah, 4, 5, 29. Vermont, 6. Virginia, 3, 6, 8, 16, 19. Washington, 2, 4, 9, 21, 28, 29. West Virginia, 2, 3, 4, 6, 8, 11, 14.

WIND.

The *prevailing winds* for February, 1896, 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 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.

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*	
Amarillo, Tex	27	66	n.	Hatteras, N. C	19	50	n.
Block Island, R. I	3	51	ne.	Kittyhawk, N. C	6	66	sw.
Do	6	55	e.	Do	17	58	ne.
Do	7	54	w.	Do	18	60	n.
Do	11	50	w.	New Haven, Conn	6	54	e.
Do	29	50	se.	New York, N. Y	2	53	nw.
Boston, Mass	6	58	se.	Do	6	64	e.
Buffalo, N. Y	10	54	w.	Do	7	65	w.
Do	11	64	w.	Do	11	60	w.
Do	19	60	nw.	Do	14	64	nw.
Cheyenne, Wyo	28	58	nw.	Do	19	52	w.
Cleveland, Ohio	11	61	w.	Do	29	52	se
Denver, Colo	28	54	nw.	Norfolk, Va	6	56	sw.
Eastport, Me	6	60	e.	Tatoosh Island, Wash	5	54	w.
Do	7	54	e.	Do	13	54	s.
Do	9	52	e.	Do	18	50	e.
Fort Canby, Wash	13	66	s.	Do	25	58	s.
Do	21	67	s.	Do	27	50	w.
Do	25	54	s.	Do	28	68	w.
Grand Haven, Mich	10	51	w.	Williston, N. Dak	27	52	n.
Do	11	52	nw.	Winnemucca, Nev	28	58	w.
Hatteras, N. C	6	54	sw.	Woods Hole, Mass	7	56	sw.
Do	18	60	n.	Do	9	50	sw.

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 upon the absorption by the atmosphere, and varies largely 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 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 local mean 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 the clearness of the sky from sunrise to sunset in the neighborhood of the sun. The twilight correction is not needed when the self-registers are used for ascertaining the duration of a special intensity of sunshine, but is necessary when the duration of cloudiness is alone desired, as is usually the case.

The average cloudiness of the whole sky is determined by numerous personal observations at all stations during the daytime, and is given in the column "average cloudiness" in Table I; its complement, or percentage of clear sky, is given in the last column of Table XI.

Difference between instrumental and personal observations of sunshine.

Stations.	Apparatus.	Total possible duration.	Personal estimated area of clear sky.	Instrumental record of sunshine.			
				Photographic.	Difference.	Thermometric.	Difference.
		H'rs.	%	%	%	%	%
Galveston, Tex	P.	324.7	57	56	— 1	.....	.....
New Orleans, La	T.	323.6	57	.....	.....	58	+ 1
Savannah, Ga	P.	321.3	53	67	+14	.....	.....
Vicksburg, Miss	T.	321.3	52	.....	.....	56	+ 4
Phœnix, Ariz	P.	319.8	70	87	+17	.....	.....
San Diego, Cal	P.	319.8	71	78	+ 7	.....	.....
Atlanta, Ga	T.	318.5	57	.....	.....	63	+ 6
Wilmington, N. C	T.	318.5	55	.....	.....	62	+ 7
Little Rock, Ark	T.	317.2	51	.....	.....	66	+15
Santa Fe, N. Mex	P.	316.4	62	73	+11	.....	.....
Independence, Cal	T.	314.8	79	.....	.....	92	+13
Dodge City, Kans	P.	313.7	68	75	+ 7	.....	.....
Louisville, Ky	T.	313.7	41	.....	.....	46	+ 5
San Francisco, Cal	T.	313.7	75	.....	.....	74	— 1
Baltimore, Md	T.	312.1	40	.....	.....	45	+ 5
Cincinnati, Ohio	T.	312.1	39	.....	.....	47	+ 8
Kansas City, Mo	P.	312.1	48	49	+ 1	.....	.....
St. Louis, Mo	T.	312.1	39	.....	.....	50	+11
Washington, D. C	P.	312.1	55	48	— 7	.....	.....
Columbus, Ohio	T.	311.0	28	.....	.....	37	+ 9
Denver, Colo	P.	311.0	57	74	+17	.....	.....
Philadelphia, Pa	T.	311.0	43	.....	.....	56	+13
Eureka, Cal	P.	309.7	52	59	+ 7	.....	.....
New York, N. Y	T.	309.7	40	.....	.....	50	+10
Salt Lake City, Utah	P.	309.7	43	63	+20	1	.....
Boston, Mass	T.	307.7	48	.....	.....	54	+ 6
Chicago, Ill	T.	307.7	47	.....	.....	55	+ 8
Cleveland, Ohio	P.	307.7	27	27	0	.....	.....
Des Moines, Iowa	T.	307.7	44	.....	.....	62	+18
Detroit, Mich	T.	307.7	33	.....	.....	40	+ 7
Buffalo, N. Y	T.	306.6	19	.....	.....	35	+16
Rochester, N. Y	T.	306.6	33	.....	.....	53	+20
Northfield, Vt	P.	305.0	34	35	+ 1	.....	.....
Portland, Me	T.	305.0	43	.....	.....	53	+10
Eastport, Me	P.	303.0	33	37	+ 4	.....	.....
Portland, Oreg	T.	301.5	37	.....	.....	30	— 7
	P.	301.5	37	29	— 8	.....	.....
Bismarck, N. Dak	P.	299.8	49	45	— 4	.....	..
Helena, Mont	P.	299.8	47	47	0	.....	.....

COMPARISON OF DURATIONS AND AREAS.

The sunshine registers give the *durations* of effective sunshine whence the percentage of duration relative to possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. These numbers have no necessary relation to each other, since stationary banks of clouds may obscure the sun without covering the sky, but when all clouds have a steady motion past the sun and are uniformly scattered over the sky, the percentages of duration and of area agree closely. For the sake of comparison, these percentages have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental durations of sunshine are almost always larger than the personal estimates of area of clear sky; the average excess for February is 5 per cent for photographic and 8 per cent for thermometric records. The details are shown in the above table in which the stations are arranged according to the greatest possible duration of sunshine, and not according to the *observed* duration as heretofore.