of clear sky; the average excess for January, 1895, is 5 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 for January, 1895.

Photographic stations.	Instrumental.	Personal.	Difference.	Thermometric stations.	Instrumental.	Personal.	Difference.
Denver, Colo	73	55	18	Key West, Fla	79	65	14
San Diego, Cal	66	58	8	New York, N. Y	66	38	28
Santa Fe, N. Mex	66	55	11	Vicksburg, Miss	66	50	16
Tucson, Ariz	66	50	16	Norfolk, Va	65	55	10
Kansas City, Mo	57	55	2	St. Louis, Mo	62	59	3
Bismarck, N. Dak	51	40	11	San Francisco, Cal	61	44	17
Dodge City, Kans	51	50	1	Des Moines, Iowa	58	52	6
Galveston, Tex	50	51	— 1	New Haven, Conn	57	50	7
Savannah, Ga	49	41	8	Baltimore, Md	54	44	10
Eastport, Me	44	36	8	Philadelphia, Pa	54	38	16
Cincinnati, Ohio	42	38	4	Portland, Me	53	45	8
Memphis, Tenn	40	40	0	Marquette, Mich	51	27	24
Washington, D. C	39	36	3	Wilmington, N. C	51	47	4
Helena, Mont	32	33	— 1	Boston, Mass	49	40	9
Cleveland, Ohio	24	26	— 2	Chicago, Ill	46	42	4
Spokane, Wash	24	18	6	Detroit, Mich	46	37	9
Portland, Oreg.*	13	25	—12	New Orleans, La	43	41	2
				Salt Lake City, Utah	43	20	23
				Atlanta, Ga	42	39	3
				Louisville, Ky	42	33	9
				Little Rock, Ark	37	29	8
				Columbus, Ohio	32	28	4
				Rochester, N. Y	32	28	4
				Buffalo, N. Y	29	20	9
				Seattle, Wash	26	18	8
				Portland, Oreg.*	23	25	— 2

The average excess for February, 1895, is 3 per cent for photographic records, and 12 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshine for February, 1895.

Photographic stations.	Instrumental.	Personal.	Difference.	Thermometric stations.	Instrumental.	Personal.	Difference.
Tucson, Ariz	78	64	14	Baltimore, Md	79	60	19
Santa Fe, N. Mex	74	62	12	New York, N. Y	79	51	28
San Diego, Cal	68	66	2	Boston, Mass	74	51	23
Washington, D. C	68	61	7	St. Louis, Mo	74	58	16
Cincinnati, Ohio	64	65	— 1	Detroit, Mich	72	54	18
Denver, Colo	62	51	11	New Haven, Conn	72	59	13
Dodge City, Kans	58	50	8	Norfolk, Va	71	70	1
Helena, Mont	57	54	3	San Francisco, Cal	69	62	7
Savannah, Ga	55	51	4	Chicago, Ill	67	59	8
Memphis, Tenn	54	53	1	Key West, Fla	67	49	18
Salt Lake City, Utah*	50	37	13	Marquette, Mich	67	33	34
Kansas City, Mo	48	45	3	Philadelphia, Pa	66	53	13
Eastport, Me	48	42	6	Portland, Me	64	46	18
Galveston, Tex	47	52	— 5	Des Moines, Iowa	62	39	23
Spokane, Wash	46	36	10	Atlanta, Ga	61	53	8
Bismarck, N. Dak	45	47	— 2	Louisville, Ky	57	51	6
Cleveland, Ohio	45	47	— 2	Columbus, Ohio	56	50	6
Portland, Oreg.*	26	37	—11	Wilmington, N. C	56	57	— 1
				Little Rock, Ark	54	41	13
				Salt Lake City, Utah*	54	37	17
				Buffalo, N. Y	47	30	17
				Rochester, N. Y	47	42	5
				Vicksburg, Miss	45	42	3
				Seattle, Wash	43	30	13
				New Orleans, La	41	40	1
				Portland, Oreg.*	38	37	1

*Records kept by both registers.

WIND.

The *prevailing winds* for February, 1895, viz, those that were recorded most frequently at Weather Bureau stations, are shown in Table I.

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, in connection with the isobars based on the same system of simultaneous observation; 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 wind of average velocity; these figures (or the ratio between them and the total number of observations in this month) indicate the extent to which winds from different directions counterbalanced each other.

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	6	56	n.	Detroit, Mich	20	60	sw.
Do	7	52	n.	Eastport, Me	8	72	e.
Block Island, R. I	7	60	e.	Hatteras, N. C	8	57	nw.
Do	8	66	w.	Do	9	50	nw.
Fort Canby, Wash	10	50	e.	Kittyhawk, N. C	8	56	nw.
Do	11	68	e.	Oklahoma, Okla	6	52	n.
Do	12	64	e.	Tatoosh Island, Wash.	10	58	e.
Do	15	73	se.	Titusville, Fla	15	72	e.
Do	16	71	se.	Woods Holl, Mass	5	57	nw.
Chicago, Ill	20	51	sw.	Do	8	70	sw.

No severe local storms were reported during February.

ATMOSPHERIC ELECTRICITY.

The 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: 1st, 11; 2d, 6; 22d, 9; 25th, 11. Thunderstorms were most numerous in Colorado, California, and Louisiana. The dates of thunderstorm occurrence were most numerous in: Florida, eight days; Colorado and Texas, five days.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four days preceding and following the date of full moon, viz, from the 5th to the 13th, inclusive. On the remaining nineteen days of this month 480 reports were received, or an average of about 25 per day. The dates on which the reported number especially exceeded this average were: 14th, 97; 15th, 139; 23d, 65.

Auroras were reported by a large percentage of observers in Minnesota, Maine, Michigan, Montana, New Hampshire, North Dakota, and Wisconsin.

The dates of auroras were most frequent in: New Hampshire, 13; Wisconsin, 12; Minnesota, Montana, and Ohio, 10; Massachusetts and North Dakota, 9; Iowa and South Dakota, 8.

The aurora observed on the evening of February 26 at Washington, D. C., was reported to have been accompanied by a severe disturbance of the telephone lines, but a special report from Mr. Samuel M. Bryan, President of the Chesapeake and Potomac Telephone Company, states that this disturbance was due to the telephone lines being rendered useless by the grounding of a heavy electric-light circuit, so as to seriously impair and in some cases totally destroy the efficiency of the underground system.

CANADIAN DATA—THUNDERSTORMS AND AURORAS.

No thunderstorms were reported.

Auroras were reported as follows: 1st, Minnedosa, Man., and Prince Albert, Sask. 2d, Quebec, Que., Minnedosa, Man., and Prince Albert, Sask. 3d, Minnedosa, Man. 7th, Prince Albert, Sask. 8th, Winnipeg, Man., and Prince Albert, Sask. 13th, Winnipeg and Minnedosa, Man., and Medicine Hat, Assin. 14th, Grand Manan and St. Andrews, N. B., Charlottetown, P. E. I., Father Point, Que., Toronto, White River, Kingston, Saugeen, and Port Arthur, Ont., Winnipeg and Minnedosa, Man., Medicine Hat and Qu'Appelle, Assin., and Battleford, Sask. 15th, Halifax and Yarmouth, N. S., Grand Manan and St. Andrews, N. B., Charlottetown, P. E. I., Father Point, Que., Toronto, White River, Kingston, Port Stanley, Saugeen, Parry Sound, and Port Arthur, Ont., Winnipeg, Man., and Battleford, Sask. 16th, Halifax, N. S., Medicine Hat, Assin., and Battleford, Sask. 17th, Father Point, Que., and Kingston, Ont. 18th, Prince Albert, Sask. 20th, Father Point, Que., and Winnipeg, Man. 23d, Yarmouth, N. S., St. Andrews, N. B., Father Point and Quebec, Que., Toronto, White River, and Kingston, Ont., Winnipeg, Man., Medicine Hat, Assin., Banff, Alberta, and Prince Albert, Sask. 24th, Grand Manan, N. B., Medicine Hat and Swift Current, Assin., Banff, Alberta, Prince Albert and Battleford, Sask. 25th, Minnedosa, Man. 27th, Winnipeg, Man., and Esquimalt, B. C. 28th, Winnipeg, Man., and Medicine Hat and Swift Current, Assin.

METEOROLOGY AND MAGNETISM.

For general remarks relative to this subject see page 7 of the REVIEW for January, 1895.

The comparison of the air temperature with magnetic horizontal force is shown in detail on Chart V, and the special features of the February curves are as follows:

The temperatures of the Calgary, Williston, and Sioux City groups each need the correction—1 for slope. Washington is corrected for slope by + 1; San Antonio is compensated for amplitude by the factor $\frac{1}{2}$, and for slope by + 2. The mean temperatures are reduced to a zero datum line by — 8, and the mean magnetic force by + 23. The new solar magnetic period begins February 13.12.

After about a full year has been exhibited in this comparison of temperature and magnetic force variations, it will be proper to make some comments on the relations of the two systems of forces.

INLAND NAVIGATION.

The extreme and average stages of water in the rivers during the current month are given in Table VII. The only river that approached the danger line was the Sacramento, which was rather high during the first part of the month.

The thickness of ice in rivers and harbors is given for each Monday of the winter months in the Weekly Bulletin of Depth of Snow on Ground. On Monday, February 25, the reports indicated the following conditions: In the Missouri River the thickness of ice varied from 33 inches at Williston to 16 inches at the mouth; in the Mississippi River, from 26 at St. Paul to 0 at Cairo; in the Ohio, from 6 at Pittsburg to 3 at Louisville; in the Hudson, from 18 at Albany to 0 at New York. In the Lake region the reports were: Duluth, 26.5; Marquette, 17.5; Green Bay, 18: Grand Haven, 15; Detroit, 15; Toledo, 24; Sandusky, 12; Cleveland, 14; Erie, 18; Rochester, 22; Oswego, 17.5. On the afternoon of the 25th the ice was reported as breaking up and moving at Miles City, Mont., Hermann, Mo., and North Bend, Ind.; and in a few days after this much ice in the rivers had broken up.

On February 5, at Nyack, the Hudson River, which is three and a half miles wide at this place, was frozen entirely over for the first time this season.

STATE WEATHER SERVICES.

The following extracts relating to general weather conditions are taken from the reviews published by the respective State services:

Alabama.—The month was remarkable for the extreme cold periods, especially during the first week The temperature at many stations was several degrees lower than ever recorded at that season. The average monthly temperature for the whole State was 12° below the normal. The snowfall was also heavier than ever known in this section during this month, the monthly fall averaging from a few inches in the southern portions to a foot deep in northern portions, where it was sufficient, on the 14th and 15th, to impede railroad traffic. The Weather Bureau's cold-wave warning of the 6th, which was very widely distributed, did much to avert damage to early trucking crops, but in southern portions of the State, where such crops were further advanced, a great deal of damage was done, and most of such in that section had to be replanted. Fortunately the cold has retarded development of sap in fruit trees, and the prospect for a bountiful fruit crop is now very favorable.

Arizona.—Temperature for the month nearly normal. Rainfall, for an average of 42 stations, about a quarter of the normal for February; 13 stations reported no precipitation.

Arkansas.—The monthly mean temperature for February was 13.2° below the normal, and was the lowest of which there is a record. From the 1st to the 17th the temperature was constantly 13° or more below the normal, the daily average deficiency for these days being 21.3°. The lowest temperature occurred on the 7th, which was the coldest day generally throughout the State. On this date the minimum temperature ranged from 4° above zero in the extreme southern part of the State to 17° below at Pocahontas. The average precipitation for the State was 0.73 inch, which is 3.61 inches less than the normal amount and the lowest average ever recorded for the State during February. A large part of it was in the form of snow, the total fall ranging from a trace in the extreme southern part to 7.00 inches at Hot Springs. The snow that fell on the morning of the 7th was accompanied by a fine black sand or drift soil, which must have been brought from some distance, as the ground was covered with snow when this fell. Reports of this snow dust were received from Silver Springs, Benton Co.; Keesees Ferry, Marion Co.; Ozark, Franklin Co., and Fayetteville, Washington Co. (See January REVIEW, 1895, page 15).

California.—As compared with the normal temperature for this month, an excess of from 1° to 4° was reported from all portions of the State, while the precipitation was deficient. The excess of temperature and deficiency of rainfall have produced a wonderful effect