sixty-one, or 86.56 per cent., were justified by winds of twenty-five miles or more per hour at or within one hundred miles of the station. Sixty-nine off-shore signals were ordered, of which number fifty-nine, or 85.51 per cent., were fully justified, both as to direction and velocity; sixty-three, or 91.30 per cent., were justified as to direction; and sixty, or 87.95 per cent., were justified as to velocity. Two hundred and fifty-five signals of all kinds were ordered, two hundred and twenty, or 86.27 per cent., being fully justified. These do not include signals ordered at display stations where the velocity of the wind is only estimated. Of the above cautionary off-shore signals thirty-six were changed from cautionary. Three signals were ordered late. In one hundred and twenty cases winds of twenty-five miles or more per hour were reported for which no signals were ordered.

COLD-WAVE SIGNALS.

There were one hundred and seventy-six cold-wave signals ordered during December, of which number, one hundred and thirty-four, or 76.1 per cent. were justified.

RAILWAY WEATHER SIGNALS.

Prof. P. H. Mell, jr., director of the Alabama weather service, in his December report, makes the following statement:

A careful examination of the meteorological reports from all quarters of the state shows the verification of the weather predictions to be 83 per cent., and of the temperature 90 per cent.

TEMPERATURE OF WATER.

The following table shows the highest and lowest temperatures of water at the several stations; the monthly ranges of water temperature; the average depth at which the observations were made; and the mean temperature of the air at the stations.

Temperature of water for December, 1884.

Station.	Temperature at bottom. Max.	Temperature at bottom. Min.	Range.	Average depth, feet and inches. ft.	Average depth, feet and inches. in.	Mean temperature of the air at station.
	°	°				°
Atlantic City, New Jersey	49.6	34.3	14.6	2	7	37.5
Alpena, Michigan*	32.7	29.7	3.0	11	7	23.2
Augusta, Georgia	54.1	40.8	13.3	9	1	50.7
Baltimore, Maryland	48.3	35.1	13.2	9	9	37.4
Block Island, Rhode Island	47.9	30.8	17.1	7	4	37.0
Boston, Massachusetts	38.9	30.4	8.5	21	4	33.1
Buffalo, New York*	38.9	32.4	6.5	10	11	29.8
Canby, Fort, Washington Territory†	49.3	33.6	15.7	17	11	36.5
Cedar Keys, Florida	67.6	55.0	12.6	9	8	60.7
Charleston, South Carolina	58.5	49.4	9.1	41	8	53.7
Chicago, Illinois*	35.9	31.8	4.1	6	11	28.4
Chincoteague, Virginia*	52.0	31.0	21.0	4	0	40.8
Cleveland, Ohio*	40.2	31.6	8.6	14	0	30.0
Detroit, Michigan*	39.7	33.0	6.7	23	3	30.5
Delaware Breakwater, Delaware	52.7	32.5	20.2	8	3	39.5
Duluth, Minnesota*	36.5	34.2	2.3	9	11	10.3
Eastport, Maine	43.1	38.7	4.4	15	0	26.3
Escanaba, Michigan*	38.2	32.9	5.3	17	0	19.7
Galveston, Texas	63.3	46.2	17.1	12	2	57.6
Grand Haven, Michigan*	38.0	39.2	5.8	19	0	28.4
Indianola, Texas	68.2	41.5	26.7	8	0	54.0
Jacksonville, Florida	62.5	58.8	3.7	18	0	58.4
Key West, Florida	78.9	70.7	8.2	16	10	73.0
Mackinaw City, Michigan*	39.1	31.5	7.6	10	0	25.1
Macon, Fort, North Carolina	59.3	43.0	16.3	6	9	48.8
Marquette, Michigan*	38.0	34.7	3.3	10	0	20.4
Milwaukee, Wisconsin*	37.3	34.3	3.0	8	0	22.7
Mobile, Alabama	59.1	49.6	9.5	14	9	53.9
New Haven, Connecticut	44.5	30.5	14.0	15	2	31.5
New London, Connecticut	46.4	38.3	8.1	11	7	34.5
New York City	44.0	34.0	10.0	15	6	34.6
Norfolk, Virginia	52.0	37.1	14.9	16	6	45.2
Pensacola, Florida	63.1	52.0	11.1	17	5	56.0
Portland, Maine	40.9	30.5	10.4	13	7	30.7
Portland, Oregon	45.4	31.4	14.0	53	9	31.0
Sandusky, Ohio*	39.5	34.0	5.5	8	11	30.9
Sandy Hook, New Jersey	47.5	34.6	12.9	2	0	36.1
San Francisco, California	55.2	51.0	4.2	34	4	52.5
Savannah, Georgia	56.8	47.8	9.0	10	0	54.4
Smithville, North Carolina	59.0	48.5	10.5	10	5	49.3
Toledo, Ohio*	36.4	32.4	4.0	11	9	30.0
Wilmington, North Carolina	56.7	43.0	13.7	19	6	51.2

* Observations interrupted by ice.—See text. † Record for 29 days.

Observations were interrupted by ice during the month as follows: Alpena, Michigan, from 17th to 31st; Buffalo, New York, from 19th to 28th; Chincoteague, Virginia, 20th; Cleveland, Ohio, on 9th, 15th, 18th, and from 20th to 31st; Detroit, Michigan, from 8th to 31st; Duluth, Minnesota, from 16th to 31st; Escanaba, Michigan, 14th, 15th, and from 18th to 31st; Grand Haven, Michigan, from 18th to 27th; Mackinaw City and Marquette, Michigan, from 18th to 31st; Milwaukee, Wisconsin, from 13th to 31st; Sandusky, Ohio, from 16th to 31st; Toledo, Ohio, 3d, 4th, and from 17th to 31st.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroral displays occurred during December as follows:

Beloit, Wisconsin, 8th: an auroral arch above a dark cloud was observed at 9. 30 p. m.

Fort Totten, Dakota, 8th: an auroral light of pale yellow color, with dark segment beneath, was observed from 9.20 to 11.45 p. m.

Riley, Illinois, 10th.

Saint Vincent, Minnesota, 15th: at 5.30 p. m. a faint auroral display was observed.

Moorhead, Minnesota, 15th: an aurora was observed at 5.15 a. m., consisting of a pale glow and an arch resting upon a dark segment. In the evening on the same day a similar display was observed, appearing at 6.15 and continuing until early morning of the 16th.

Boyne, Michigan, 19th: auroral light extending to an altitude of 15°.

Alpena, Michigan, 19th: an aurora was observed at 9 p. m., consisting of a diffuse light on the northeastern horizon; no streamers were observed; the display ended at 11 p. m.

Escanaba, Michigan, 19th: a faint aurora of pale yellow color was observed from 10 to 10.50 p. m.

Le Roy, New York, 19th: aurora at 8.30 p. m.

Eastport, Maine, 19th: a faint auroral light of straw color was observed from 8 to 10 p. m.

Point Judith, Rhode Island, 20th: an auroral display was observed at 1.13 a. m., consisting of two yellow beams which remained visible twenty minutes; at 2 a. m. a low arch formed which remained until 3 a. m.

Fort Totten, 22d: an aurora in the north with shooting beams of 20° altitude was observed from 9 to 11.50 p. m.

Saint Vincent, Minnesota, 22d: a faint auroral display was noted from 7.10 to 11 p. m.; it consisted of a poorly defined arch of light of 15° altitude, extending over the northern horizon.

Escanaba, Michigan, 22d: an auroral display was visible from 10.15 p. m. until the early morning of the 23d; it consisted of a dark segment beneath a bright yellow light, from which beams extended to an altitude of 45°.

At Harvard College, Cambridge, Massachusetts, auroras were suspected on the following dates: 16th, 3 a. m.; 29th, 11 p. m.; 20th, 8.30 p. m.; 30th, 8.30 p. m.

The "Canadian Weather Review" for December, 1884, reports auroras as follows:

Winnipeg, Manitoba, 8th, 9th, 14th, 15th, 20th, 21st, 22d.

Halifax, Nova Scotia, 14th.

Charlottetown, Prince Edward Island, 14th, 19th, 27th.

THUNDER-STORMS.

Thunder-storms are reported to have occurred in the different states and territories as follows:

Alabama.—Birmingham, 11th, 21st; Greensborough, 20th; Mobile, 22d.

Arizona.—Maricopa, 7th; Tucson, 8th; Wickenburg and Prescott, 7th, 8th; Fort Grant, 7th, 9th; Fort McDowell, 7th, 8th, 9th, 10th, 12th, 26th, 27th.

Arkansas.—Fort Smith, 4th, 26th, 30th; Lead Hill, 5th, 26th, 30th: Mount Ida, 28th, 29th, 30th.

California.—Fort Bidwell, 3d, 21st; Poway, 7th, 11th; Los Angeles, 8th; San Francisco and San Raphael, 24th, 25th; Oakland, 25th; at Salinas City, thunder was occasionally heard from 17th to 24th.

Table of miscellaneous meteorological data for December, 1884—Signal Service observations.

Stations.	Elevation above sea-level.	Atmospheric pressure. Mean actual barometer.	Departure from normal.	Mean reduced barometer.	Extremes. Highest barometer	Date.	Lowest barometer	Date.	Monthly range of barometer.	Temperature of the air (in degrees Fahrenheit). Monthly mean.	Departure from normal.	Extremes. Max.	Date.	Mean max.	Min.	Date.	Mean min.	Monthly range.	Daily ranges. Greatest.	Date.	Least.	Date.	Mean rel. humidity.	Mean dew-point.	Precipitation.	Departure from normal	Winds. Total movement.	Prevailing direction.	Max. velocity. Miles p.hr.	Direction.	Date.	No. of rainy days.	No. of cloudy days.	No. of fair days.	No. of clear days.
New England.																																			
Eastport	61	29.98	+.08	30.05	30.78	27	29.28	7	1.50	26.3	+1.0	51.3	7	33.5	—21.0	20	9.5	72.3	48.1	21	3.4	29	78.9	20.5	8.63	+5.22	8,219	n.	48	se.	15	14	13	12	5
Portland	45	30.04	+.08	30.09	30.80	27	29.34	7	1.46	30.7	+3.2	59.0	7	38.3	— 6.1	20	24.5	65.1	29.0	21	5.6	6	77.3	24.3	6.42	+3.79	6,426	n.	35	se.	7	10	9	18	4
Mount Washington	6,279	23.51	.....	30.14	30.76	29	29.59	7	1.17	11.9	+3.0	43.0	31	21.2	—42.2	19	4.2	85.2	40.1	20	3.3	6	92.8	12.0	4.70	—0.70	11,410	nw.	96	nw.	19	12	0	12	19
Thatcher's Island	48	.....	.....	.....	.....	..	.....	..	.....	34.2	+2.0	54.1	8	41.3	— 7.2	20	27.2	61.3	.....	..	.....	..	.....	.....	5.82	+2.08	.....	.....	.....	.....	..	13	.....	.....	.....
Boston	122	29.98	+.08	30.12	30.74	27	29.47	7	1.27	33.1	+2.9	62.1	31	41.3	— 9.5	20	26.2	71.6	55.4	21	4.5	12	70.8	24.2	4.46	+0.89	8,730	nw.	44	s.	21	13	13	12	6
Point Judith	.....	.....	.....	.....	.....	..	.....	..	.....	34.3	.....	58.0	7	41.0	— 8.0	20	27.7	66.0	.....	..	.....	..	.....	.....	5.04	.....	.....	.....	.....	.....	..	14	.....	.....	.....
Block Island	27	30.10	.....	30.14	30.68	27	29.58	7	1.10	37.0	+1.2	60.0	7	44.0	— 3.2	20	31.3	63.2	36.7	21	5.4	2	84.4	32.6	6.56	+2.44	13,603	ne.	44	ne.	26	13	13	15	3
Narragansett Pier	.....	.....	.....	.....	.....	..	.....	..	.....	33.8	.....	59.0	7	41.2	— 9.0	20	26.5	68.0	.....	..	.....	..	.....	.....	6.34	.....	.....	.....	.....	.....	..	19	.....	.....	.....
New London	47	30.11	+.10	30.16	30.73	27	29.58	7	1.15	34.5	+2.5	57.3	7	41.3	— 5.2	20	27.7	62.5	44.7	21	3.4	13	81.7	29.2	7.30	+4.14	6,124	n.	sw.	40	se.	7	17	10	13	8
New Haven	107	30.03	.....	30.15	30.72	27	29.57	7	1.15	31.5	—0.1	60.0	7	39.9	— 9.5	20	24.0	69.5	48.3	21	6.2	24	79.5	25.4	6.41	+3.28	6,701	n.	29	se.	7	15	8	14	9
Middle Atlantic states.																																			
Albany	75	30.07	+.07	30.17	30.63	27	29.48	7	1.35	27.8	—1.0	57.9	7	35.2	—15.9	20	20.5	73.8	36.4	28	2.5	14	72.7	19.9	3.20	+0.49	4,841	n.	32	sw.	7	14	15	14	2
New York	164	29.98	+.06	30.17	30.72	20	29.52	7	1.18	34.6	+1.2	60.0	31	41.7	1.2	20	28.5	58.8	28.3	21	6.5	24	79.5	28.6	6.66	+3.68	8,419	nw.	40	nw.	9	14	13	13	5
Sandy Hook	28	30.15	+.08	30.18	30.70	27	29.50	6	1.14	36.1	+1.1	61.3	31	43.6	0.8	20	29.9	60.5	33.9	21	5.3	22	79.0	30.0	5.64	+1.92	13,861	n.	60	n.	19	15	13	12	6
Barnegat City	22	30.14	+.07	30.16	30.64	27	29.62	6	1.02	38.6	+3.5	62.1	7	46.4	— 0.2	20	31.6	62.3	30.3	20	8.1	31	83.8	34.0	7.09	+2.86	12,077	n.	50	s.	6	12	13	11	7
Little Egg Harbor	.....	.....	.....	.....	.....	..	.....	..	.....	37.6	.....	59.4	7	44.9	— 2.0	20	30.3	61.4	.....	..	.....	..	.....	.....	5.92	.....	.....	.....	.....	.....	..	13	.....	.....	.....
Atlantic City	13	30.14	+.05	30.15	30.62	20	29.59	6	1.04	37.5	+1.6	61.0	7	44.4	2.1	20	31.5	58.9	24.9	20	5.8	31	83.0	32.5	7.71	+3.85	6,977	nw.	32	e.	12	13	12	10	9
Cape May	27	30.14	.....	30.17	30.64	20	29.63	6	1.00	40.0	+2.6	59.0	30	46.7	4.6	20	33.8	54.4	32.1	21	5.3	11	79.3	34.0	6.87	+2.72	12,567	n.	60	w.	9	10	16	8	7
Philadelphia	117	30.06	+.05	30.18	30.68	26	29.50	6	1.12	34.6	—0.3	66.0	31	41.2	0.8	20	28.2	65.2	28.9	21	4.6	25	74.7	26.8	3.28	+0.74	7,593	nw.	40	s.	6	11	13	13	5
Baltimore	45	30.15	+.06	30.20	30.68	27	29.54	6	1.14	37.4	+0.2	66.2	31	44.4	8.6	20	31.8	57.6	20.8	6	6.6	25	68.6	27.5	3.91	+0.80	3,928	n.	28	nw.	9	14	13	8	10
Washington City	106	30.08	+.05	30.20	30.70	27	29.58	6	1.12	36.0	0.0	66.6	31	43.3	6.1	19	29.7	60.5	25.0	4	4.3	14	79.4	29.7	4.70	+1.78	4,392	s.	nw.	30	w.	9	14	15	11	5
Delaware Breakwater	20	30.15	+.05	30.17	30.64	20	29.60	6	1.03	39.5	+1.7	60.8	15	45.0	8.9	20	34.2	51.9	24.6	15	2.8	23	83.1	34.4	3.22	+0.83	13,721	sw.	51	nw.	9	12	9	16	6
Ocean City	.....	.....	.....	.....	.....	..	.....	..	.....	38.8	.....	61.0	7	47.0	8.0	20	32.6	69.0	.....	..	.....	..	.....	.....	6.04	.....	.....	.....	.....	.....	..	16	.....	.....	.....
Chincoteague	8	30.16	+.04	30.17	30.62	20	29.63	6	1.00	40.8	+2.3	62.2	30	47.5	9.0	20	33.6	53.2	31.6	21	5.5	20	82.1	35.4	5.75	+2.09	9,182	n.	45	nw.	9	19	12	14	5
Cape Henry	16	30.16	+.04	30.18	30.61	20	29.68	6	0.94	44.9	+1.3	71.8	12	52.9	15.3	19	38.1	56.5	30.0	18	3.7	28	76.1	37.4	3.49	—0.99	11,185	n.	54	nw.	9	14	12	13	5
Norfolk	30	30.15	+.04	30.18	30.60	20	29.72	6	0.88	45.2	+2.8	70.0	12	52.5	12.2	19	38.2	57.8	30.2	18	4.8	1	76.8	37.8	4.36	+0.56	6,308	n.	32	s.	6	16	12	15	4
Lynchburg	652	29.47	+.05	30.20	30.65	27	29.62	6	1.03	40.1	+2.0	68.0	12	47.9	5.5	19	32.4	62.5	32.9	18	6.4	20	75.6	32.4	11.81	+8.51	2,728	n.	19	nw.	16	10	13	14	4
South Atlantic states.																																			
Kitty Hawk	22	30.17	+.02	30.18	30.58	20	29.74	7	0.83	48.5	+3.6	69.8	31	55.1	14.7	19	41.2	55.1	25.1	21	5.0	28	80.0	42.2	5.65	+0.45	12,772	n.	60	n.	18	16	18	8	5
Hatteras	12	30.15	+.03	30.16	30.52	28	29.78	18	0.74	50.4	+2.4	51.0	15	57.5	20.2	19	44.3	50.8	24.3	21	3.2	28	84.9	45.7	7.41	+1.09	10,336	ne.	41	n.	18	14	17	10	4
Fort Macon	11	30.17	+.04	30.18	30.55	20	29.82	18	0.74	48.8	+0.5	68.1	30	55.0	15.2	19	40.8	52.9	36.9	21	3.5	22	81.8	43.4	5.40	+1.36	11,824	n.	44	nw.	18	20	12	13	6
Wilmington	52	30.13	+.05	30.19	30.55	20	29.78	18	0.78	51.2	+3.3	74.9	31	60.6	16.6	20	42.4	58.3	30.2	23	8.0	26	75.7	43.2	3.52	+0.07	5,359	ne.	30	sw.	15	15	14	9	8
Smithville	34	30.16	+.04	30.20	30.54	27	29.81	18	0.73	49.3	+0.9	69.9	8	56.1	15.9	20	40.1	54.0	28.9	18	7.2	26	81	43.3	2.93	—0.79	7,210	ne.	48	se.	15	15	11	10	10
Charlotte	808	29.32	+.05	30.21	30.62	27	29.69	6	0.93	44.1	+1.1	71.0	12	52.4	11.0	19	35.8	60.0	31.2	18	7.8	26	72.7	34.8	5.72	+0.55	3,861	ne.	24	s.	6	14	9	14	8
Atlanta	1,129	28.97	+.01	30.20	30.52	27	29.74	6	0.78	45.1	—0.5	66.5	22	52.5	11.0	19	36.7	55.5	36.2	18	5.0	30	73.1	35.9	6.09	+0.07	8,192	e.	30	nw.	18	12	9	16	6
Augusta	183	30.02	+.03	30.22	30.62	27	29.74	6	0.89	50.7	+3.2	74.6	22	60.1	23.0	20	41.6	51.6	34.6	22	9.0	24	73.4	41.5	4.19	+0.26	2,116	ne.	19	sw.	22	14	11	14	4
Charleston	52	30.11	+.01	30.17	30.51	27	29.76	6	0.75	53.7	+2.3	70.0	12	60.3	26.0	20	46.3	44.0	28.2	21	7.0	22	81.7	47.9	3.26	—0.33	5,112	ne.	28	s.	6	11	12	12	7
Savannah	87	30.08	+.01	30.18	30.51	27	29.80	6	0.71	54.4	+1.8	75.5	11	62.5	27.5	20	45.4	48.0	32.2	21	8.3	25	74.0	45.8	3.21	—0.22	4,521	n.	25	sw.	6	12	12	9	10
Jacksonville	43	30.11	.00	30.16	30.41	27	29.84	6	0.56	58.4	+2.2	74.6	12	65.9	32.9	19	51.4	41.7	26.1	18	2.9	25	86.2	53.9	4.04	+1.15	4,265	n.	24	s.	6	12	15	9	5
Florida peninsula.																																			
Sanford	50	30.06	.....	30.10	30.28	19	29.85	6	0.43	65.5	.....	84.6	12	74.5	37.4	3	54.3	47.2	35.9	12	9.5	31	79.0	58.1	2.51	.....	3,735	n.	20	n.	19	10	5	18	8
Cedar Keys	22	30.11	—.02	30.13	30.34	19	29.80	6	0.53	60.7	+1.2	74.1	30	66.6	32.2	19	55.1	41.9	25.3	18	4.3	23	83.5	55.4	5.66	+2.93	5,774	ne.	28	nw.	18	11	7	8	16
Key West	20	30.06	—.02	30.08	30.20	29	29.91	5	0.29	73.0	+2.5	82.2	6	77.7	62.0	2	70.0	20.2	12.3	4	2.9	7	82.9	67.3	1.68	—0.10	7,238	ne.	28	ne.	3	11	3	17	11
Eastern Gulf states.																																			
Montgomery	219	29.91	—.03	30.15	30.45	19	29.69	5	0.77	51.2	+1.7	77.1	22	60.3	16.0	19	41.5	61.1	34.5	18	8.1	1	75.9	43.0	4.00	—1.53	4,636	se.	22	w.	6	12	14	12	5
Pensacola	30	30.09	—.04	30.12	30.41	19	29.72	5	0.70	56.0	—0.8	73.6	11	63.7	23.0	19	48.6	50.6	40.1	18	3.4	5	81.5	49.8	5.60	+0.28	6,294	e.	24	se.	5	12	13	11	7
Mobile	35	30.09	—.03	30.13	30.45	19	29.68	5	0.76	53.9	+1.7	78.8	22	62.5	20.3	19	45.0	58.5	30.2	18	8.6	25	83.5	48.4	5.10	+0.39	5,230	se.	24	se.	11	13	12	10	9
Vicksburg	244	29.85	—.06	30.12	30.51	19	29.68	5	0.82	50.9	—0.4	73.8	11	59.6	18.1	19	41.8	55.7	30.2	22	7.0	28	72.5	41.5	14.09	+8.81	5,750	se.	27	sw.	11	13	17	7	7
New Orleans	52	30.02	—.08	30.08	30.46	19	29.68	5	0.78	58.7	+3.4	76.5	22	65.6	28.8	19	51.8	47.7	32.5	18	2.7	13	77.0	50.9	8.01	+3.16	7,090	n.	28	se.	28	15	13	11	8
Western Gulf states.																																			
Fort Smith	451	29.60	—.06	30.10	30.56	18	29.61	5	0.95	36.8	—3.8	72.5	4	46.5	12.2	24	29.5	60.3	38.8	30	5.0	14	80.1	30.8	6.30	+3.85	4,404	w.	24	w.	11	12	12	13	6
Little Rock	298	29.77	—.07	30.10	30.52	18	29.61	5	0.91	41.2	—4.9	69.0	4	49.1	13.0	19	34.2	56.0	29.0	4	6.0	29	81.7	35.8	16.92	*	3,600	e.	22	se.	30	13	12	12	7
Shreveport	227	29.83	—.08	30.08	30.49	25	29.67	21	0.82	40.7	—2.3	74.4	4	57.2	19.6	19	38.2	54.8	32.0	27	6.0	29	77.3	39.2	15.55	†	3,907	se.	26	se.	30	12	17	8	6
Palestine	533	29.51	—.08	30.09	30.52	25	29.67	4	0.85	45.1	—4.9	76.2	4	56.4	15.2	25	35.6	61.0	39.0	17	9.5	29	73.6	36.3	6.94	+3.58	72,96	ne.	34	s.	4	11	11	13	7
Indianola	26	30.01	—.09	30.04	30.43	25	29.66	4	0.76	54.0	—2.4	76.6	10	62.9	25.1	25	46.0	51.5	34.0	31	5.5	8	80.3	49.6	2.05	—1.26	10,921	n.	46	n.	18	20	7	17	7
Galveston	40	30.00	—.10	30.04	30.38	19	29.71	4	0.67	57.6	+1.2	72.5	21	65.0	29.3	18	50.5	43.2	34.6	31	7.0	4	83.5	52.4	9.44	+5.44	9,183	s.	36	n.	31	16	10	15	7
Rio Grande valley.																																			
Rio Grande City	230	29.83	—.10	30.08	30.47	25	29.71	4	0.77	58.1	—1.5	83.1	10	68.1	34.0	25	49.6	49.1	34.6	6	5.4	13	72.8	47.9	0.33	—1.23	3,765	n.	24	nw.	5	8	8	13	10
Brownsville	57	29.95	—.12	30.01	30.38	18	29.68	4	0.70	60.2	—1.0	82.6	11	70.3	30.0	25	52.5	52.6	37.6	31	6.5	13	84.4	54.9	1.33	—0.98	6,061	n.	27	s.	6	10	7	19	5
Tennessee.																																			
Nashville	549	29.54	—.03	30.15	30.58	19	29.53	6	1.05	40.4	—0.9	67.0	30	49.5	0.9	19	31.2	66.1	32.9	31	4.7	25	77.8	33.7	3.78	—0.05	5,810	se.	30	w.	14	10	20	8	3
Memphis	321	29.78	—.04	30.14	30.60	19	29.61	5	0.98	41.3	—1.3	68.1	4	49.4	8.1	19	33.5	60.0	33.2	31	4.5	13	78.7	34.8	9.14	+5.46	5,559	se.	28	nw.	18	16	17	12	2
Chattanooga	783	29.32	—.02	30.18	30.50	19	29.66	6	0.84	43.1	—0.6	64.8	11	52.2	8.3	19	34.9	56.5	26.8	18	7.8	30	73.4	34.7	6.80	+0.96	4,664	s.	28	sw.	6	14	17	8	6
Knoxville	980	29.11	—.02	30.19	30.49	8	29.61	6	0.88	40.2	+1.0	69.5	29	49.3	5.2	19	31.7	64.3	29.6	29	6.7	13	75.5	32.3	6.11	+1.76	4,107	ne.	36	sw.	6	13	12	13	6
Ohio valley.																																			
Pittsburg	766	29.29	+.01	30.15	30.56	26	29.47	6	1.10	34.3	+0.9	67.2	5	43.7	— 2.0	19	26.4	69.2	30.2	22	8.6	13	80.5	28.6	4.07	+1.13	5,018	w.	36	w.	9	16	16	13	2
Columbus	805	29.25	+.01	30.16	30.65	19	29.41	6	1.24	31.9	—0.5	59.6	5	40.3	— 7.9	19	24.1	67.5	33.3	27	6.5	12	82.0	26.8	2.77	—1.20	6,282	s.	43	w.	7	14	17	10	4
Indianapolis	753	29.30	+.01	30.15	30.64	19	29.39	6	1.24	29.9	—3.0	60.7	5	37.1	—12.3	19	22.5	73.0	39.2	31	4.0	12	85.2	25.8	6.05	+2.72	4,829	se.	20	sw.	7	20	20	6	5
Greencastle	.....	29.16	.....	.....	.....	..	.....	..	1.21	28.0	.....	59.3	6	35.9	—14.5	19	20.5	73.8	44.8	31	6.4	21	83.9	23.6	6.74	.....	6,492	se.	30	s.	31	29	22	4	5
Cincinnati	620	29.48	.00	30.18	30.68	19	29.43	6	1.25	36.1	—0.8	65.9	31	44.0	— 2.8	19	28.3	68.7	37.2	31	4.8	12	75.0	28.7	3.99	+0.01	4,615	e.	25	w.	6	17	18	10	3
Louisville	530	29.56	—.02	30.16	30.65	19	29.48	6	1.17	37.6	—0.4	65.5	30	45.4	— 5.0	19	30.1	70.5	30.4	31	5.9	13	76.9	30.7	5.11	+0.64	6,111	n.	31	sw.	14	16	21	3	7
Lower lake region.																																			
Detroit	661	29.36	+.01	30.12	30.65	26	29.32	6	1.33	30.5	+1.8	60.0	6	37.0	— 6.1	19	23.5	66.1	31.8	31	3.8	21	73.2	23.0	3.05	+0.27	8,601	s.	39	sw.	8	24	16	9	4
Toledo	651	29.40	+.03	30.14	30.65	19	29.34	6	1.31	30.0	—1.1	59.0	4	36.1	— 8.5	19	22.7	67.5	33.9	31	3.0	12	77.8	23.9	2.03	—0.42	6,480	sw.	37	sw.	7	20	19	9	3
Sandusky	639	29.41	+.02	30.14	30.65	26	29.36	6	1.29	30.9	—1.9	62.0	30	37.0	—11.3	19	23.2	73.3	35.0	31	4.6	12	74.1	23.6	2.44	—0.53	10,380	sw.	45	w.	9	21	20	8	
Cleveland	690	29.35	+.01	30.14	30.67	22	29.40	6	1.27	30.0	—0.2	61.7	30	37.4	— 4.0	19	22.8	66.3	34.2	31	3.6	12	81.2	24.7	1.83	—1.00	9,998	w.	40	w.	15	22	17	11	3
Erie	681	29.35	+.03	30.12	30.65	26	29.32	6	1.32	33.6	+0.9	61.2	31	38.7	5.9	19	26.7	55.3	31.4	31	4.2	13	76.0	26.7	3.84	+0.44	10,465	s.	41	w.	7	20	24	5	3
Buffalo	690	29.33	+.05	30.12	30.71	26	29.34	6	1.37	29.8	+0.5	57.9	30	35.7	— 3.5	19	24.0	61.4	26.9	27	3.5	13	86.4	26.2	3.07	—0.35	10,855	w.	64	sw.	15	18	22	8	2
Rochester	621	29.40	+.02	30.11	30.72	26	29.33	6	1.39	29.1	+1.8	64.9	31	38.2	—10.5	20	22.4	75.4	31.3	31	5.2	13	80.1	23.5	2.62	—0.45	15,388	sw.	54	w.	15	17	26	4	1
Oswego	334	29.72	.00	30.10	30.73	26	29.34	6	1.39	27.5	—2.6	58.4	31	34.7	—17.5	20	20.6	75.9	36.9	27	5.0	1	80.5	22.1	2.61	—1.07	10,638	se.	44	w.	23	17	24	5	1
Upper lake region.																																			
Duluth	644	29.36	+.06	30.18	30.73	25	29.62	3	1.11	10.3	—6.7	47.2	4	16.9	—32.5	18	2.6	79.7	40.1	26	5.2	7	79.0	5.0	1.22	—0.20	5,434	nw.	42	nw.	31	18	13	13	5
Marquette	673	29.29	+.03	30.07	30.65	25	29.57	7	1.08	20.4	—2.0	47.0	3	26.8	—15.9	17	11.4	62.9	30.0	27	4.1	5	76.9	14.0	8.65	+7.06	7,221	w.	28	nw.	9	22	18	11	2
Escanaba	612	29.34	.00	30.06	30.68	25	29.40	6	1.24	19.7	—1.0	45.5	4	26.4	—14.1	20	13.5	59.6	30.0	26	4.1	6	74.9	13.1	4.34	+2.82	6,719	nw.	33	nw.	22	20	17	10	4
Milwaukee	697	29.29	.00	30.10	30.67	25	29.33	6	1.34	22.7	—2.0	49.1	31	29.4	—21.6	19	15.0	70.5	39.8	31	4.5	12	85.4	18.9	2.37	—0.58	9,338	nw.	41	sw.	31	19	14	13	4
Chicago	661	29.36	.00	30.12	30.65	25	29.34	6	1.32	28.4	—0.6	61.2	30	37.8	—11.2	19	22.2	72.4	43.3	31	8.0	28	79.6	22.8	4.21	+2.26	6,574	sw.	29	sw.	31	18	18	9	4
Grand Haven	620	29.37	.00	30.08	30.67	25	29.29	6	1.38	28.4	—1.1	59.0	30	34.6	—12.0	26	23.0	71.0	36.4	31	2.9	6	81.1	23.3	6.80	+1.56	9,749	e.	48	w.	7	19	25	6	0
Mackinaw City	605	29.35	+.01	30.05	30.65	25	29.36	6	1.29	25.1	—0.6	47.5	29	29.7	— 5.0	18	19.1	52.5	34.1	31	3.5	6	80.6	20.0	6.48	.....	8,041	nw.	44	e.	22	20	26	5	0
Alpena	609	29.33	—.01	30.04	30.64	25	29.29	6	1.34	23.2	—0.7	50.1	31	29.4	—10.0	19	16.4	60.1	38.8	31	4.0	30	84.0	19.0	5.58	+3.52	6,102	w.	29	sw.	31	19	15	15	4
Port Huron	633	29.35	+.01	30.08	30.66	26	29.40	7	1.26	25.9	—1.3	56.2	31	32.9	—10.8	19	19.4	67.0	29.3	31	6.5	6	87.0	22.4	3.01	+0.65	8,176	s.	48	w.	31	19	15	12	1

Table of miscellaneous meteorological data for December, 1884—Signal Service observations—Continued.

Stations.	Elevation above sea-level.	Atmospheric pressure. Mean actual barometer.	Departure from normal.	Mean reduced barometer.	Extremes. Highest barometer	Date.	Lowest barometer.	Date.	Monthly range of barometer.	Temperature of the air (in degrees Fahrenheit). Monthly mean.	Departure from normal.	Extremes. Max.	Date.	Mean max	Min.	Date.	Mean min.	Monthly range.	Daily ranges. Greatest.	Date.	Least.	Date.	Mean rel. humidity.	Mean dew-point.	Precipitation.	Departure from normal.	Winds. Total movement.	Prevailing direction.	Max. velocity. Miles p.hr	Direction.	Date.	No. of rainy days.	No. of cloudy days.	No. of fair days.	No. of clear days.
Extreme northwest.																																			
Fort Buford	1,930	28.05	+.01	30.32	30.76	31	29.77	3	0.99	1.7	— 7.3	56.8	1	10.8	—39.8	22	—6.7	96.6	43.4	25	7.8	12	74.9	—4.4	0.40	—0.69	6,062	w.	34	w.	9	7	7	19	5
Bismarck	1,694	.....	.....	.....	.....	...	.....	...	.....	.....	.....	.....	...	.....	.....	...	.....	.....	.....	...	.....	...	.....	.....	.....	.....	.....	...	...	...	...	...	...	...	...
Fort Totten	.....	28.45	.....	.....	.....	...	.....	...	1.00	2.0	.....	43.0	2	9.1	—35.0	31	—7.4	78.0	28.5	9	6.0	12	77.4	—3.5	0.48	.....	9,157	nw.	38	nw.	20	11	8	13	10
Moorhead	923	29.12	+.06	30.22	30.77	25	29.59	3	1.17	6.0	— 3.8	49.0	2	13.5	—31.0	25	—2.1	80.0	24.8	9	5.5	6	84.9	2.8	0.76	+0.06	5,104	n.	43	s.	25	12	12	13	6
Saint Vincent	804	29.23	+.05	30.22	30.71	18	29.57	3	1.15	0.7	— 4.6	44.8	2	10.4	—47.8	23	—9.2	92.6	30.7	24	8.2	6	85.3	—2.9	0.85	+0.20	6,550	nw.	30	nw.	8	11	7	11	13
Upper Mississippi valley.																																			
Saint Paul	807	29.21	+.03	30.16	30.78	25	29.62	3	1.15	14.9	— 4.1	49.2	3	22.7	—27.0	25	7.0	76.2	28.0	31	6.2	7	72.3	7.3	1.98	+0.79	5,522	nw.	30	w.	8	13	15	7	9
La Crosse	725	29.30	+.02	30.15	30.78	25	29.51	6	1.27	17.2	— 5.9	46.0	4	23.9	—26.0	25	11.1	72.0	38.5	26	3.5	7	74.3	10.4	2.25	+1.05	5,225	n.	28	nw.	8	15	15	9	7
Dubuque	665	29.38	.....	30.15	30.75	25	29.43	6	1.32	21.3	— 4.9	53.3	3	29.2	—17.1	19	13.7	70.4	36.6	31	3.7	6	71.1	13.2	4.08	+2.48	3,071	nw.	20	w.	31	18	18	8	5
Davenport	615	29.44	+.02	30.16	30.70	18	29.38	6	1.31	25.1	— 2.1	56.7	4	33.0	— 9.8	18	19.0	66.5	33.5	31	4.9	29	76.3	18.6	3.68	+2.15	6,034	nw.	35	w.	31	16	14	13	4
Des Moines	849	29.22	+.02	30.20	30.75	24	29.59	6	1.16	18.4	— 6.2	50.4	3	25.1	—18.2	19	11.8	68.6	23.8	26	3.2	6	72.7	11.2	1.93	+0.46	4,241	n.	18	n.	31	14	16	12	3
Keokuk	618	29.45	+.01	30.16	30.70	18	29.45	6	1.25	23.0	— 5.6	58.7	4	30.3	—12.7	19	17.2	71.4	30.8	31	4.1	13	82.0	18.3	3.91	+1.79	5,215	nw.	24	nw.	22	15	14	13	4
Springfield	644	29.44	+.01	30.17	30.70	19	29.41	6	1.28	29.1	— 3.3	60.0	5	30.8	— 8.8	19	22.4	68.8	42.9	31	5.8	7	76.4	22.4	5.19	+2.17	7,060	s.	32	w.	31	15	19	7	5
Saint Louis	583	29.51	—.02	30.16	30.67	18	29.49	6	1.18	32.8	— 1.6	66.3	4	41.2	— 7.0	19	26.1	73.3	46.2	31	6.0	10	74.3	25.4	6.18	+3.99	9,294	se.	40	w.	31	17	18	9	4
Cairo	377	29.75	—.04	30.17	30.66	19	29.56	6	1.10	30.2	— 2.3	63.6	4	43.1	— 2.2	19	29.7	65.8	37.3	31	3.0	13	78.0	29.9	8.99	+5.65	7,095	n.	33	w.	31	15	17	11	3
Missouri valley.																																			
Fort Bennett	1,510	28.53	.....	30.29	30.84	24	29.74	5	1.10	9.4	—10.1	58.0	1	19.3	—41.3	25	—0.9	99.3	45.7	25	4.4	30	82.0	4.4	0.46	+0.02	5,094	nw.	28	nw.	10	9	9	15	7
Fort Sully	.....	.....	.....	.....	.....	...	.....	...	.....	8.8	.....	59.1	1	19.7	—30.5	25	—0.2	89.0	.....	...	.....	...	.....	.....	0.89	.....	.....	...	...	...	...	12	...	...	...
Yankton	1,228	28.82	+.04	30.26	30.83	24	29.67	3	1.16	11.8	—10.2	57.4	3	19.4	—23.3	18	4.2	80.7	33.8	3	3.6	30	75.6	5.2	0.80	+0.05	5,574	n.	31	n.	30	11	9	14	8
Huron	1,305	28.72	+.06	30.26	30.80	24	29.71	3	1.09	8.6	—12.3	53.8	2	18.7	—34.2	25	0.7	88.0	32.8	25	5.9	30	73.0	1.5	0.62	+0.52	6,671	nw.	31	se.	25	9	6	15	10
Omaha	1,113	28.96	+.02	30.25	30.81	24	29.71	3	1.09	17.3	— 7.9	54.0	1	25.4	—17.0	22	9.6	71.0	23.5	13	7.0	6	77.5	11.2	0.72	—0.15	6,662	n.	29	n.	30	12	11	15	5
Leavenworth	842	29.21	—.03	30.17	30.70	24	29.00	6	1.10	24.1	— 0.7	60.0	4	31.9	— 6.0	24	18.1	66.0	25.0	20	5.0	9	83.3	19.5	1.48	—0.26	4,862	n.	22	nw.	22	14	14	12	5
Northern slope.																																			
Fort Assinaboine	2,710	27.22	+.07	30.26	30.67	9	29.77	3	0.90	3.5	—16.3	63.8	1	11.2	—50.0	25	—7.9	≈	42.2	25	8.6	13	62.3	—8.0	0.72	—0.12	8,440	sw.	42	sw.	8	13	7	15	9
Fort Benton	2,700	27.29	.....	30.28	30.71	9	29.82	5	0.88	1.5	—20.4	69.2	1	12.2	—56.5	24	—9.0	≈	43.1	25	7.0	12	77.3	—4.8	1.01	+0.45	4,457	sw.	28	sw.	2	13	12	9	10
Fort Shaw	3,550	26.35	.....	30.18	30.66	9	29.74	26	0.92	2.9	—23.3	62.2	1	11.1	—44.5	24	—6.1	≈	54.5	25	4.0	19	64.9	—7.6	2.47	+1.91	5,457	w.	40	sw.	3	15	8	11	12
Helena	4,044	25.78	—.07	30.10	30.57	9	29.64	26	0.93	7.0	—10.7	47.5	3	14.5	—23.0	24	0.5	75.5	34.4	25	7.5	30	67.0	—1.9	1.56	—0.07	2,696	nw.	24	w.	5	11	3	20	8
Fort Custer	3,040	26.87	+.02	30.27	30.65	24	29.82	27	0.83	5.6	—15.0	58.0	2	15.2	—47.5	24	—3.5	.....	34.8	8	5.2	27	77.1	—0.8	0.27	—1.15	.....	n.	10	e.	29	11	13	14	4
Fort Maginnis	4,340	25.50	.....	30.14	30.52	9	29.69	19	0.84	5.7	.....	68.4	1	13.0	—30.0	22	—0.6	98.4	37.5	25	5.7	23	53.6	—7.5	0.82	.....	7,230	w.	48	w.	2	17	12	12	7
Deadwood	4,600	25.25	—.06	30.24	30.58	9	29.78	19	0.80	11.0	—11.4	53.0	1	21.0	—28.0	24	3.3	81.0	48.5	25	7.0	7	72.8	4.1	1.79	+0.28	1,495	ne.	16	ne.	26	17	8	13	10
Cheyenne	6,089	23.82	—.14	30.12	30.50	8	29.60	21	0.90	18.8	— 8.4	61.2	1	31.1	—13.4	16	0.5	74.6	54.5	23	6.4	11	74.1	9.9	0.67	+0.49	7,533	w.	44	w.	19	13	12	9	10
North Platte	2,841	27.08	—.03	30.24	30.72	24	29.78	21	0.94	16.5	— 9.2	65.0	1	25.3	—18.0	22	7.3	83.0	41.0	1	4.4	10	71.6	8.1	0.27	—0.53	5,095	w.	37	se.	19	12	13	11	7
Middle slope.																																			
Denver	5,294	24.59	—.14	30.11	30.49	10	29.58	21	0.91	24.6	— 5.6	68.2	1	36.6	— 8.0	16	12.7	76.2	55.0	23	7.0	10	62.8	11.9	0.76	+0.05	5,089	n.	35	sw.	19	13	4	19	7
Pike's Peak	14,134	17.48	.....	30.14	30.63	1	29.89	21	0.74	5.4	— 1.1	24.5	2	10.3	—20.0	31	0.1	44.5	18.4	15	3.5	11	86.8	2.2	1.50	+0.20	10,099	w.	73	w.	15	10	8	11	12
Dodge City	2,517	27.41	—.05	30.21	30.69	24	29.70	4	1.00	21.0	—16.4	67.2	2	29.9	—11.8	25	13.0	79.0	35.0	1	4.5	12	79.0	14.2	1.10	+0.42	8,882	nw.	47	se.	20	9	9	11	11
West Las Animas	3,905	25.94	—.11	30.09	30.53	31	29.58	21	0.95	19.5	—12.6	69.7	1	34.6	—21.5	31	8.1	91.2	61.3	23	7.1	11	70.6	11.6	0.72	+0.12	4,557	w.	38	n.	4	5	7	14	10
Fort Elliott	2,650	27.22	—.08	30.18	30.64	31	29.61	24	1.03	20.2	— 9.1	67.8	2	30.3	— 2.0	24	16.8	69.8	36.3	3	3.0	17	78.0	19.1	3.05	+2.66	9,453	nw.	60	n.	4	7	9	9	13
Southern slope.																																			
Fort Concho	1,900	28.08	—.11	30.10	30.59	31	29.71	4	0.89	41.2	— 4.8	74.9	2	55.8	8.4	25	31.0	66.5	43.8	23	6.6	9	75.0	32.1	3.57	+2.40	7,183	ne.	34	w.	4	5	9	10	12
Fort Stockton	3,010	26.96	—.10	30.10	30.56	31	29.78	27	0.77	45.2	— 0.3	80.0	3	58.8	13.8	25	33.9	66.2	41.8	19	5.7	12	65.8	31.5	1.27	—0.65	4,987	sw.	44	nw.	4	10	6	15	10
Fort Davis	4,928	25.18	.....	30.11	30.35	1	29.82	27	0.52	45.9	+ 1.6	74.0	2	58.8	18.0	11	32.2	56.0	39.1	1	10.0	8	65.2	30.0	0.48	+0.08	6,085	sw.	36	sw.	20	4	9	7	15
Fort Stanton	.....	.....	.....	.....	.....	...	.....	...	.....	29.9	.....	59.0	1	40.0	— 1.3	30	19.8	60.3	.....	...	.....	...	.....	.....	1.44	.....	.....	...	...	...	...	6	...	...	...
Southern plateau.																																			
Prescott	5,389	24.62	—.17	30.04	30.40	1	29.68	27	0.72	33.6	+ 0.1	64.0	2	45.0	— 4.5	31	22.7	68.5	41.2	3	6.4	27	69.7	22.7	5.58	+3.81	4,920	sw.	31	se.	7	12	8	9	14
Wickenburg	.....	.....	.....	.....	.....	...	.....	...	.....	40.7	+ 0.4	82.0	1	60.3	22.0	31	33.0	60.0	.....	...	.....	...	.....	.....	5.27	+3.85	.....	...	...	...	...	12	...	...	...
Phœnix	.....	.....	.....	.....	.....	...	.....	...	.....	51.6	+ 1.3	83.2	1	67.8	24.8	31	39.1	54.4	.....	...	.....	...	.....	.....	2.74	+1.90	.....	...	...	...	...	8	...	...	...
Fort Grant	4,856	25.16	.....	30.04	30.32	1	29.21	27	0.61	44.4	— 0.7	70.5	19	50.0	18.7	31	35.8	51.8	34.4	24	5.4	29	59.2	29.1	5.93	+4.83	4,869	n;ne.	37	se.	8	12	10	7	14
Fort Thomas	2,710	27.23	.....	30.05	30.35	1	29.68	27	0.68	41.7	.....	63.3	7	53.9	17.0	6	29.1	46.3	42.4	7	11.4	29	72.1	32.8	5.10	.....	.....	s.	...	...	...	10	7	9	15
Fort Apache	5,050	24.96	—.10	30.04	30.37	1	29.67	27	0.69	33.9	— 2.6	63.6	2	47.3	— 8.0	15	21.9	71.0	42.8	2	8.0	27	75.2	25.7	5.52	+3.81	3,684	ne.	33	ne.	4	11	10	7	14
San Carlos	.....	.....	.....	.....	.....	...	.....	...	.....	44.0	.....	67.0	1	54.1	20.0	6	35.1	47.0	.....	...	.....	...	.....	.....	5.48	.....	.....	...	...	...	...	10	...	...	...
Fort Bowie	.....	.....	.....	.....	.....	...	.....	...	.....	45.0	.....	71.0	3	56.0	17.0	31	34.0	54.0	.....	...	.....	...	.....	.....	6.41	.....	.....	...	...	...	...	12	...	...	...
Willcox	.....	.....	.....	.....	.....	...	.....	...	.....	45.0	.....	79.5	19	62.4	15.5	5	28.9	64.0	.....	...	.....	...	.....	.....	3.49	.....	.....	...	...	...	...	11	...	...	...
El Paso	3,764	26.22	—.10	30.08	30.41	31	29.77	27	0.64	49.9	+ 0.7	72.3	19	61.0	27.4	31	36.5	44.9	40.3	19	9.5	8	51.9	26.8	2.07	+1.48	3,666	w.	24	w.	21	8	7	13	11
Santa Fé	.....	23.15	.....	.....	.....	...	.....	...	0.71	30.9	+ 1.6	54.5	2	41.6	— 2.0	31	21.4	50.5	30.0	18	9.0	20	66.2	19.7	1.77	+1.12	4,499	sw.	27	n.	4	13	11	8	12
Middle plateau.																																			
Salt Lake City	4,348	25.50	—.22	30.04	30.52	31	29.64	21	0.89	35.5	+ 3.3	52.8	18	41.7	6.6	31	28.7	46.2	22.5	3	5.5	29	60.4	23.0	2.12	+0.71	5,410	nw.	32	s.	19	11	16	7	8
Fort Bidwell	.....	.....	.....	.....	.....	...	.....	...	.....	32.0	.....	54.0	1	43.3	2.0	13	20.6	52.0	.....	...	.....	...	.....	.....	6.81	.....	.....	...	...	...	...	19	...	...	...
Fort Bridger	.....	.....	.....	.....	.....	...	.....	...	.....	24.9	.....	59.7	2	35.1	— 5.6	11	14.8	65.3	.....	...	.....	...	.....	.....	0.95	.....	.....	...	...	...	...	3	...	...	...
Winnemucca	4,332	25.51	.....	.....	.....	...	.....	...	0.83	33.2	+ 2.8	56.2	18	43.9	0.0	31	22.7	56.2	40.0	1	6.5	19	60.0	19.9	3.29	+2.43	7,737	sw.	46	sw.	22	11	9	9	13
Northern plateau.																																			
Dayton	1,667	28.28	.....	30.12	30.66	9	29.51	19	1.15	15.8	—18.4	48.2	3	23.7	—26.0	31	7.2	74.2	30.6	15	3.4	10	82.5	10.9	5.10	+0.15	2,385	sw.	24	sw.	20	19	17	9	5
Lewiston	780	29.28	.....	30.16	30.73	9	29.44	19	1.28	18.5	—15.3	52.6	3	25.1	—16.0	31	11.8	68.6	24.5	15	3.5	17	79.7	13.2	2.79	—0.61	339	sw.	23	nw.	5	10	16	9	6
Spokane Falls	1,910?	27.99	—.06	30.12	30.67	9	29.44	19	1.23	15.5	—16.1	44.3	3	23.5	—17.8	31	8.5	62.1	24.3	31	7.8	8	82.1	10.8	3.28	+0.29	1,874	w.	23	w.	5	19	16	13	2
Cœur d'Alene	.....	.....	.....	.....	.....	...	.....	...	.....	10.0	.....	41.0	4	23.4	—21.0	24	8.8	62.0	.....	...	.....	...	.....	.....	3.22	.....	.....	...	...	...	...	17	...	...	...
Boisé City	2,750	27.11	.....	30.09	30.65	31	29.53	26	1.12	28.1	— 4.0	47.7	19	37.3	— 7.3	31	21.1	55.0	25.6	30	6.6	19	80.3	22.7	5.67	+3.79	2,529	se.	19	w.	23	16	15	7	9
Linkville	.....	.....	.....	.....	.....	...	.....	...	.....	29.4	.....	56.0	19	36.5	3.0	30	22.4	53.0	.....	...	.....	...	.....	.....	2.97	.....	.....	...	...	...	...	16	...	...	...
Ashland	.....	.....	.....	.....	.....	...	.....	...	.....	32.1	.....	58.0	4	48.3	10.0	12	25.8	48.0	.....	...	.....	...	.....	.....	5.97	.....	.....	...	...	...	...	19	...	...	...
Fort Spokane	.....	.....	.....	.....	.....	...	.....	...	.....	10.6	.....	40.0	7	21.9	—27.0	31	—0.5	67.0	.....	...	.....	...	.....	.....	0.42	.....	.....	...	...	...	...	7	...	...	...
North Pacific coast region.																																			
Astoria	.....	.....	.....	.....	.....	...	.....	...	.....	35.2	.....	52.0	5	41.3	10.0	10	29.1	42.0	.....	...	.....	...	.....	.....	6.55	.....	.....	...	...	...	...	21	...	...	...
Olympia	36	29.93	—.04	29.97	30.49	6	29.21	19	1.28	32.7	— 8.0	54.0	3	39.5	8.0	21	28.0	40.0	22.0	29	3.0	17	82.0	28.0	5.82	—4.34	1,870	s.	20	ne.	26	16	14	14	3
Portland	67	29.91	.....	29.98	30.45	7	29.18	19	1.27	31.0	—10.4	54.8	3	37.5	12.0	16	25.5	42.8	20.5	15	6.5	2	78.5	25.0	7.52	—0.77	3,437	e.	24	e.	6	21	15	11	5
Roseburg	.....	29.39	.....	.....	.....	...	.....	...	1.10	37.4	— 4.2	61.7	18	45.7	19.2	10	31.1	42.5	27.8	22	7.3	15	87.5	33.8	9.20	+3.15	1,531	sw.	...	.....	..	19	17	12	8
Fort Canby	179	29.70	.....	29.90	30.41	7	29.05	18	1.36	30.5	.....	54.0	3	41.7	21.0	24	32.0	33.0	22.3	18	5.2	26	87.0	32.6	5.91	.....	10,348	n	‖	e.	16	17	11	10	8
Port Angeles	.....	.....	.....	.....	.....	...	.....	...	.....	30.4	.....	54.2	4	36.5	5.3	23	24.3	48.9	.....	...	.....	...	.....	.....	3.53	.....	.....	...	...	...	...	18	...	...	...
Pysht	.....	.....	.....	.....	.....	...	.....	...	.....	31.5	.....	51.0	4	36.0	15.0	23	27.0	36.0	.....	...	.....	...	.....	.....	5.35	.....	.....	...	...	...	...	17	...	...	...
Middle Pacific coast region.																																			
Cape Mendocino	637	29.21	.....	29.91	30.30	5	29.25	25	1.05	48.7	.....	64.6	18	54.0	34.0	29	44.5	30.6	14.1	1	4.6	21	76.6	40.8	2.58	.....	16,870	s.	¶	se.	16	18	15	11	5
Red Bluff	332	29.61	—.15	29.98	30.33	31	29.44	25	0.89	47.5	+ 1.0	69.5	2	56.0	25.0	13	39.7	44.5	30.0	2	7.0	23	65.6	34.0	7.73	+2.71	7,782	n.	48	s.	22	12	10	7	14
Sacramento	65	29.89	—.18	29.96	30.30	31	29.49	25	0.81	48.8	+ 2.1	65.1	1	56.2	27.0	12	41.6	38.0	27.5	2	5.0	18	71.1	38.9	10.45	+7.38	7,817	se.	36	nw.	0	11	10	8	13
San Francisco	60	29.90	—.17	29.97	30.29	41	29.51	25	0.79	52.5	+ 0.9	63.5	1	56.8	40.0	30	48.9	22.5	14.2	4	3.0	22	73.7	43.5	7.68	+2.96	7,206	se.	45	n.	7	14	13	8	10
South Pacific coast region.																																			
Los Angeles	371	29.62	—.09	30.02	30.30	31	29.64	12	0.07	52.4	— 2.3	75.6	1	61.4	35.5	2	44.2	40.1	31.7	2	5.6	19	77.9	44.8	4.65	+0.83	4,335	ne.	34	ne.	8	12	6	10	14
San Diego	67	29.91	—.10	29.98	30.22	31	29.65	12	0.57	54.4	— 0.8	68.3	5	60.5	36.0	15	46.9	32.3	26.5	1	4.0	29	77.6	46.9	5.12	+3.00	4,939	w.	26	sw.	11	13	8	15	8
Yuma	141	29.78	—.10	29.93	30.34	31	29.59	27	0.75	53.0	— 2.9	78.5	1	63.3	36.4	11	43.5	42.1	33.3	4	9.3	29	72.3	43.3	1.96	+1.19	4,014	ne.	25	sw.	27	9	5	9	17

NOTE.—The total movements of the air on Mount Washington, New Hampshire, and Pike's Peak, Colorado, are insufficient on account of frost work.

* +13.40. † +10.91. ‡ Record for 16⅔ days. § See text under "Ranges of temperature." ‖ 104 miles. ¶ 108 miles.

Delaware.—Delaware Breakwater, 15th, 22d.
Florida.—Archer, 5th, 6th; Tallahassee, 5th, 14th, 22d; Jacksonville, 22d; Pensacola, 21st, 22d; Sanford, 23d.
Georgia.—Athens, 14th; Atlanta, Milledgeville and Savannah, 22d; Augusta and Forsyth, 21st, 22d.
Illinois.—Swanwick, 27th.
Indiana.—Laconia, 28th; Greencastle, 30th.
Kansas.—Emporia, Independence, Wellington, and Yates Centre, 4th.
Louisiana.—Grand Coteau, 4th, 5th, 11th, 17th, 28th; New Orleans, 11th, 17th; Point Pleasant, 20th, 21st; Liberty Hill, 27th to 30th; Shreveport, 29th, 30th.
Maine.—Eastport, 15th; three flashes of lightning were observed at 5.30 a. m.
Maryland.—Baltimore, 31st.
Massachusetts.—Fall River and Taunton, 23d.
Michigan.—Hillsdale, 21st.
Mississippi.—Vicksburg, 14th, 21st.
Missouri.—Pierce City, 4th, 5th; Springfield, 29th.
Nebraska.—Genoa, 4th.
New Jersey.—Moorestown, 15th; Vineland, Cape May, Little Egg Harbor, Barnegat City, and Atlantic City, 22d.
North Carolina.—Kitty Hawk, 12th, 15th, 22d; Hatteras, 14th, 21st; Kelly's (near Raleigh), 15th; Smithville, 15th, 21st, 22d; Fort Macon, 21st; New River Inlet and Wilmington, 21st, 22d; Weldon, 22d; Charlotte, 28th.
Pennsylvania.—Pittsburg, 6th.
Rhode Island.—Narragansett Pier, 22d; heavy thunder-storm from 4.30 to 4.40 a. m.
South Carolina.—Pacolett, 14th, 22d; Aiken and Stateburg, 22d.
Tennessee.—Chattanooga, 21st; Knoxville, 22d; Memphis and Milan, 28th, 30th.
Texas.—Clarksville, 4th, 26th; Galveston, 4th, 5th, 27th, 28th, 29th; Palestine, 4th, 10th, 11th, 26th, 28th, 29th, 30th; Fort Davis, 10th; Fort Concho, 10th, 11th, 30th; Indianola, 10th, 22d, 28th; Cleburne, 11th, 12th, 27th, 28th; Brownsville, 31st.
Virginia.—Dale Enterprise, 6th; Wytheville, 6th, 15th; Cape Henry, Chincoteague, and Fort Myer, 15th.
Washington Territory.—Port Angeles, 5th.
West Virginia.—Helvetia, 6th.

ELECTRICAL PHENOMENA.

The observer on the summit of Mount Washington, New Hampshire, reports the following:

"During the 19th everything on the summit was highly charged with electricity. A brass tube held against the stove discharged perceptible sparks; by touching the ears of the cat electric sparks were emitted, producing a snapping noise resembling that caused by lighting a match."

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos were observed in the various states and territories as follows:

Arkansas.—1st, 7th, 8th, 24th, 26th, 31st.
California.—14th, 15th.
Connecticut.—23d, 24th.
Dakota.—10th, 19th, 21st, 22d, 26th, 30th, 31st.
Delaware.—5th.
Florida.—1st, 4th, 6th, 8th, 12th, 16th.
Idaho.—10th, 11th, 31st.
Illinois.—22d.
Iowa.—4th, 8th, 9th, 16th, 18th, 22d, 24th, 31st.
Kansas.—1st, 8th, 24th, 30th, 31st.
Louisiana.—24th.
Michigan.—19th, 21st, 23d, 24th.
Minnesota.—15th, 22d, 24th, 31st.
Missouri.—31st.
Nebraska.—22d, 24th, 31st.
New York.—1st, 17th, 25th, 27th, 29th, 30th.
North Carolina.—12th, 14th, 22d, 23d.
Ohio.—1st.
Tennessee.—23d, 24th.
Texas.—12th, 15th, 30th, 31st.
Utah.—7th.
Virginia.—5th, 8th, 16th, 23d, 25th, 28th, 29th.
Wisconsin.—22d, 24th.

LUNAR HALOS.

Lunar halos were observed in the various states and territories as follows:

Arizona.—7th, 24th, 25th.
Arkansas.—24th.
California.—24th, 25th, 29th, 30th.
Colorado.—2d.
Connecticut.—4th, 23d, 29th.
Dakota.—24th, 26th, 29th, 31st.
Delaware.—1st, 22d, 23d, 25th, 29th, 30th, 31st.
District of Columbia.—29th, 31st.
Florida.—2d, 3d, 7th, 25th, 30th.
Georgia.—1st, 4th, 5th, 31st.
Idaho.—1st, 31st.
Illinois.—3d, 8th, 25th.
Indiana.—4th, 5th, 28th.
Indian Territory.—24th, 26th, 28th to 31st.
Iowa.—4th, 5th, 9th, 24th, 31st.
Kansas.—1st, 3d, 10th, 23d to 26th, 30th.
Kentucky.—27th to 30th.
Louisiana.—25th, 29th, 30th.
Maine.—29th.
Maryland.—30th.
Massachusetts.—23d, 25th, 29th.
Michigan.—3d, 4th, 24th, 25th, 26th.
Minnesota.—4th, 23d, 25th, 26th, 29th, 30th.
Missouri.—9th, 31st.
Montana.—29th.
Nebraska.—3d, 4th, 5th, 8th, 10th, 30th.
Nevada.—1st, 30th.
New Hampshire.—25th, 29th.
New Jersey.—4th, 5th, 23d.
New Mexico.—3d.
New York.—1st, 4th, 6th, 23d, 25th, 27th to 31st.
North Carolina.—4th, 22d, 26th, 27th, 28th.
Ohio.—5th, 6th, 22d, 24th, 26th, 28th, 29th, 30th.
Oregon.—30th.
Pennsylvania.—23d, 27th, 30th, 31st.
Rhode Island.—23d, 29th.
Tennessee.—1st, 2d, 9th, 10th, 24th, 26th, 28th to 31st.
Texas.—1st, 2d, 7th, 12th, 24th, 25th, 26th, 28th, 30th.
Utah.—6th, 24th, 28th, 31st.
Vermont.—25th.
Virginia.—1st, 4th, 5th, 7th, 8th, 9th, 24th, 27th to 31st.
Washington Territory.—8th, 28th, 30th.
Wisconsin.—3d, 4th, 22d, 24th, 26th, 29th, 31st.
Wyoming.—6th, 25th, 26th.

The phases of the moon during December were: full moon, 2d, 1.53 p. m.; last quarter, 9th, 6.24 a. m.; new moon, 17th, 8.18 a. m.; first quarter, 25th, 8.15 a. m.; perigee, 2d, 10 p. m.; apogee, 16th, 11 p. m.

MIRAGE.

Delaware Breakwater, Delaware, 24th: Cape May was plainly visible all day, and appeared to be only a few miles distant. The images of vessels appeared doubly reflected, the first image being inverted and the second above the first in an upright position; all the images appeared much flattened and elongated; the horizon appeared much elevated and vessels at great distances were seen, all appearing with distinctness. An unusually high temperature for the season and a hazy atmosphere prevailed all day.

Fort Grant, Arizona, 3d: a beautiful mirage was observed this a. m. in the south. The shapes of the mountains were