rivers melted rapidly and on the 11th the rivers were high, with a swift current. On the 12th the town was nearly surrounded by the waters of the two rivers. Hundreds of cellars were flooded, and a number of mills and factories were compelled to cease operations.

Vevay, Switzerland Co., Ind.: on the 22d, at 1 a. m., a heavy storm of thunder, lightning, and rain set in and continued without intermission until the early morning of the 23d. The precipitation was large, 1.87 inches of rain falling during the first seven hours of the storm; it continued copious all day, an additional amount of 1.80 inches falling, making a total of 3.67 inches in twenty-six hours; the result was great destruction of crops from washing and overflows, with fences, sheds, and other light buildings carried away. On the 23d the Ohio River rose at the rate of twelve inches per hour, and in a number of places overflowed its banks. At New Albany, in Floyd county, the storm set in at 2 a. m. and was accompanied by an intense electrical disturbance and the heaviest rainfall that has occurred in this part of Indiana since December, 1882. The streams were at flood height, carrying away bridges, and doing great damage to roads and farms. A great number of reports similar to the above have been received from stations in Kentucky, southern Illinois, Indiana, and Ohio, indicating that an unusually large amount of rain fell over the greater part of the Ohio Valley on the 22d and 23d. In Clermont county, Ohio, the Little Miami River overflowed its banks at noon of the 22d and did considerable damage. In Boyle county, Ky., the precipitation is stated to have been the heaviest that has occurred for years; Clark's Run, a small stream, was rapidly swollen to a flood which did much damage by washing away fences and the soil of recently plowed land.

Jeffersonville, Ind.: during the storm of the 22d a number of houses were flooded, the sewers not being large enough to carry off the water. The rainfall from 9 p. m. of the 21st to 9 p. m. of the 22d, 3.11 inches, was the heaviest since April 5th and 6th, 1883, when 3.14 inches fell in 12 h. and 45 m.

ATMOSPHERIC ELECTRICITY.

AURORAS.

The most extensively observed aurora of the month appeared on the night of the 14–15th, but it was not brilliant and exhibited no unusual characteristics. In New England clear weather prevailed, and the display was visible at stations in this district from about 8.30 to 11.30 p. m.; at 11 p. m. the light assumed the form of a faint auroral arch, with some appearance of streamers. From New England westward over the northern part of the country to the Rocky Mountains the sky was obscured by clouds, except in portions of the upper Mississippi valley and upper lake region; in the latter districts clear or fair weather prevailed, and the aurora was noted at a number of stations. From the one hundred and twelfth meridian westward to the Pacific Ocean the sky was clear or fair, but the display was observed at two stations only, Tatoosh Island and Port Angeles, Wash., where it was quite brilliant, and was visible from 11.20 p. m. until after 2 a. m. The observers describe it as consisting of an arch of yellow light, extending from 40° east to 40° west of the magnetic meridian, the western extremity being hidden by stratus clouds. At 12.15 a. m. quivering streamers extended nearly to the zenith; these were succeeded by "merry dancers," which followed each other in rapid succession from east to west. From 1.30 to 2 a. m. the light was very brilliant, illuminating the entire northern sky.

Below are given the chief features of the more important of the remaining displays of the month:

1st–2d.—A faint light was reported from Duluth, Minn., and Poplar River, Mont.; the sky over the intervening country was obscured by clouds, but clear weather prevailed in all other parts of the country, except along the Atlantic coast. At Duluth it was visible from 9.45 p. m. until after 1 a. m.; a few streamers appeared at 11.45 p. m.

10–11th.—A faint aurora was visible at Escanaba, Mich., from 8.30 p. m. until after 1 a. m., when clouds obscured it. The sky was generally cloudy in the Lake region and westward.

11–12th.—Reported from a number of stations in New England; from thence westward in the northern districts of the country cloudy weather, with rain or snow, prevailed. This display was quite brilliant at Mount Washington, N. H., where it was first noted between 10 and 11 p. m., in the form of an arch. Waves of light moved rapidly from east to west, and streamers rose from the western extremity of the arch to an altitude of 70°; the streamers were very slender but remarkably distinct, the edges being unusually well defined. The lower part of the arch was of a yellow color, gradually becoming light green on the upper side.

15–16th.—The auroral light was noted at several stations on the night of the 15–16th, through breaks in the clouds which covered the sky from Dakota eastward; at Fort Totten, Dak., it appeared in the form of a faint arch, and was visible from 11 p. m. to 12.30 a. m.

18th.—An aurora of moderate brilliancy was noted at stations in northern Michigan. Clear weather prevailed in the Lake region, but rain or snow in districts to the east and west. The light was visible from 9.25 to 10.20 p. m., and consisted of an arch of white light extending 10° above the horizon and from azimuth 140° to 210°. A few streamers appeared.

19–20th.—On this date a faint display was visible at Marquette, Mich., Fort Totten, Dak., Saint Vincent, Minn., and Poplar River, Mont., from 11 p. m. until after midnight; the sky was clear or fair in all districts except the upper Mississippi valley. The observer at Marquette, Mich., describes this aurora as being quite brilliant and in the form of an arch extending from azimuth 130° to 220°. The display was accompanied by "merry dancers" and streamers of various lengths, some reaching to within 15° of the zenith.

23d–24th.—This display was of moderate brilliancy but was generally obscured by the clouds which covered the sky over the northern districts. It was reported from Eastport, Me., Lyons, N. Y., Cresco, Iowa, Alpena, Mich., and Poplar River, Mont. At Alpena, Mich., it was visible from 8.30 p. m. until after midnight, and consisted of a diffused light resting on a dark segment, and extending about 35° east and west of north. At 9 p. m. faint streamers were noticed shooting up from all points of the aurora, having an apparent motion from east to west. The display reached its maximum brilliancy at 10 p. m.

25th.—Reported from Moorhead, Minn., only, although clear or fair weather prevailed over the Lakes, Missouri Valley, and upper Mississippi valley. The aurora was visible from 1 a. m. until dawn; it first appeared as a long, white arch extending from east to west across the northern horizon. At 1.30 a. m. numerous streamers appeared at its western edge.

28th.—On this date a faint auroral arch was noted at Marquette, Mich., and Duluth, Minn.; at the same time rain or snow was falling over all districts toward the east; in the northwestern districts the sky was clear or fair.

THUNDER-STORMS.

Thunder-storms were reported from some part of the various states and territories on the following dates:

Alabama.—7th, 18th, 21st, 22d, 23d.
Arizona.—8th, 14th.
Arkansas.—4th, 6th, 14th, 17th, 21st, 22d, 26th, 27th, 30th.
California.—10th, 29th.
Colorado.—10th, 11th, 13th, 16th, 17th, 20th.
Connecticut.—18th, 23d, 29th.
Dakota.—1st, 8th to 11th, 13th, 28th, 29th, 30th.
Delaware.—15th, 18th, 26th.

Florida.—1st, 3d, 6th, 7th, 8th, 11th, 13th, 14th, 15th, 18th, 19th, 23d, 24th, 25th.
Georgia.—1st, 8th, 15th, 18th, 22d to 25th.
Idaho.—17th, 24th, 28th.
Illinois.—13th, 14th, 15th, 17th, 20th, 21st, 22d, 26th, 27th, 28th, 30th.
Indiana.—13th to 17th, 21st, 22d, 23d, 26th, 27th, 28th.
Indian Territory.—11th, 16th, 17th, 21st, 25th, 29th.
Iowa.—3d, 6th, 10th, 12th-14th, 17th, 21st, 22d, 26th, 27th, 30th.
Kansas.—9th to 13th, 16th, 17th, 19th to 22d, 27th, 29th, 30th.
Kentucky.—7th, 14th, 17th, 18th, 21st, 22d, 23d, 26th, 28th.
Louisiana.—8th, 17th, 22d, 23d, 24th.
Maryland.—14th, 15th, 18th.
Massachusetts.—18th, 29th.
Michigan.—3d, 4th, 8th, 9th, 10th, 12th to 15th, 22d, 27th, 28th.
Minnesota.—9th, 10th, 11th, 29th, 30th.
Mississippi.—22d.
Missouri.—16th, 21st, 22d, 25th to 28th, 30th.
Montana.—29th.
Nebraska.—3d, 10th, 11th, 21st, 29th, 30th.
Nevada.—28th.
New Hampshire.—29th.
New Jersey.—11th, 15th, 18th, 22d, 23d, 25th, 26th.
New Mexico.—8th, 12th, 15th, 16th, 24th.
New York.—9th, 10th, 13th, 15th, 21st, 23d, 27th.
North Carolina.—15th, 18th, 20th, 21st, 22d, 26th to 29th.
Ohio.—14th, 15th, 21st, 22d, 23d, 27th, 28th.
Oregon.—28th.
Pennsylvania.—14th, 15th, 27th.
South Carolina.—14th, 15th, 16th, 18th, 20th, 22d, 23d, 25th, 27th, 28th.
Tennessee.—4th, 7th, 15th, 17th, 18th, 21st, 22d, 23d, 26th, 27th, 28th.
Texas.—7th, 8th, 9th, 11th to 17th, 20th, 22d, 28th, 29th, 30th.
Vermont.—9th.
Virginia.—14th, 15th, 16th, 18th, 19th, 23d, 26th to 29th.
Washington Territory.—24th, 29th.
West Virginia.—15th, 18th, 22d, 28th, 29th.
Wisconsin.—3d, 10th, 11th, 12th, 14th, 15th, 21st, 22d, 26th, 27th, 28th, 30th.
Wyoming.—16th, 18th.

ELECTROMETER READINGS.

Observations of the value of the electrical potential of the atmosphere have been made during the month of April, 1887, at Washington City, Baltimore, Md., New Haven, Conn., Ithaca, N. Y., Boston, Mass., Columbus, Ohio, and Terre Haute, Ind. In addition to the regular series at Washington City a series of simultaneous observations were taken at the top of the Washington Monument and at the Signal Office on April 7th. The following table gives briefly the results:

Time.	Monument.	Signal Office.	Difference.	Time.	Monument.	Signal Office.	Difference.
	Volts.	*Volts.*	*Volts.*		*Volts.*	*Volts.*	*Volts.*
9 a. m	.....	18	.....	12.06 p. m	275	0	275
11.00 a. m	1000	36	964	12.07 p. m	0	— 6	.....
11.05 a. m	1225	30	995		1250		
11.10 a. m	1150	36	1114	12.08 p. m	a	0	.....
11.15 a. m	1125	36	1089	12.09 p. m	0	0	.....
11.20 a. m	1750	42	1708		2000		
11.25 p. m	1375	54	1321	12.10 p. m	1125	— 18	1143
11.30 a. m	875	42	833	12.15 p. m	1125	0	1125
11.35 a. m	1175	24	951	12.20 p. m	0	— 12	.....
11.40 a. m	1450	36	1414		2500		
11.45 a. m	1075	0	1075	12.25 p. m	1000	— 18	1018
11.50 a. m	1000	— 6	1006	12.30 p. m	1000	— 6	.....
11.55 a. m	1100	— 30	1130		1100		
12.00 m	1100	— 12	1112	12.35 p. m	900	6	906
12.01 p. m	1200	— 6	1206	12.40 p. m	800	18	818
12.02 p. m	750	— 12	.....	12.45 p. m	950	0	950
	1200			12.50 p. m	900	12	912
12.03 p. m	1075	— 12	1087	12.55 p. m	850	0	850
12.04 p. m	1000	— 12	1012	1 p. m	900	0	900
12.05 p. m	750	— 6	.....				
	1250						

a Very variable.

This was a cloudy day, with fresh easterly winds. At the top of the Monument sparks could be obtained, about 2 mm. in length and about thirty per minute. The most interesting fact in this series of observations is the appearance of negative values at the lower station, while positive values were obtained at the upper. This is, perhaps, due to the inductive action of the heavy layers of stratus clouds, the electrification of which induced so strong an opposite electrification on the earth surface that the equi-potential surface represented by zero extended, at times, as high as fifty feet above the ground. The collector at the lower station is, however, exposed from the window of a building, and by no means well shielded against the influence of surrounding walls and roofs. But it may be considered interesting to know that this equi-potential surface does fluctuate to such (and doubtless larger) extent.

Of the regular series of observations, light snow on the 1st was accompanied by positive values; cloudy weather on the morning of the 13th also attended with negative values; cloudy weather and light rain on the 15th, with positive values; heavy rain on the 18th, with large negative values; heavy rain on the 22d, preceded by falling positive and accompanied by high negative values; cloudy weather and rain on the 25th, with positive values; on the 28th, a light thunderstorm, accompanied with the usual fluctuations; and on the 29th, light rain, accompanied with positive values. For purposes of predictions the observations for this month are not very satisfactory, there being few examples of change in the value of the potential previous to, during, and succeeding changes in the weather. It might be noted, however, that the potential values at this season of the year are less certain in character, more unstable, and of shorter duration than during those seasons when the weather itself is more settled.

At Baltimore, Md., a continuous record for the month has been obtained by the aid of photography. A discussion of the results will be given later. For the month of March the mean tri-hourly values were determined to be as follows: Midnight, 148 volts; 3 a. m., 140 volts; 6 a. m., 157 volts; 9 a. m., 161 volts; 12 m., 153 volts; 3 p. m., 140 volts; 6 p. m., 130 volts; 9 p. m., 139 volts. There were but few negative readings, all of which, however, are excluded.

Observations were made for the first time at Terre Haute, Ind. The following abstract is from the observer's report. These observations have the personal supervision of Prof. T. C. Mendenhall. The exposure is from the third floor on the north side of the Rose Polytechnic Institute, and fairly free from influencing objects: "The collector is inside the room, 15 inches from the inner wall, and the nozzle is 6½ feet from the outside wall of the building and 42 feet above the ground. The electrometer and adjunct apparatus similar to that employed in the Physical Laboratory at Washington City."

On April 1st, high negative values prevail during light rain and sleet, falling to zero as the rain ended, and half an hour later high positive values. At 11.55 a. m., during the passage of heavy clouds, there is a change in the values of the potential, equivalent to 5,000 volts. At 11.57 light rain began, ending at 12 m., accompanied by high negative values, falling to zero as the rain ended, and becoming afterwards positive. From 12.03 p. m. until 1 p. m. the indications are very variable. The day was generally cloudy and threatening, with occasional calms and shifting winds. The values obtained at the different times are shown on the first diagram of chart vi. On April 3d a single negative value occurs among positive readings, the sky being clear overhead, but with cumulus clouds on the horizon. On April 4th, during threatening weather, negative values appear, and again on the 6th.

Positive values prevail at every observation from the 6th to the 14th, during a spell of dry, pleasant, and at times hazy, weather. Negative values occur on the afternoon of the 14th, during threatening weather, and on the 15th with presence of clouds. Rain on the 18th, changing to snow, accompanied by negative values, changing to high positive. Rain on the morning of the 20th was accompanied with negative values,

becoming positive after the ending of the rain. Very light rain on the evening of the same date was accompanied by a negative value. Threatening weather and light rain on the 21st were preceded by negative indications. The beginning of the rain was marked by high positive values, soon changing to negative and variable values. Exceedingly high values on both sides were obtained, and frequent and continued sparking noticed in the electrometer. A thunder-storm on the 22d was attended by the usual fluctuations, the deflections being too extensive and rapid, at many times, for record.

Of the observations made at New Haven, Conn., the following are noteworthy; on the 1st, snow was accompanied by positive values, continuing until the ending of the snow on the 2d. Rain on the night of the 4th was preceded in the afternoon by decreasing positive values. Positive values prevail during the spell of fine weather until April 12th. Negative and low positive values prevail on the 14th during cloudy weather. Rain on the 15th, beginning at 4.18 p. m., was preceded by low positive and negative values, five hours. On the 18th negative values were given at 8 a. m., snow beginning at 9.40 a. m. and accompanied by high positive and negative values, becoming finally positive with the continuance of the snow and a change to sleet. Rain on April 23d was accompained with low positive and negative readings at its beginning, changing to positive; and rain on the 26th was accompanied by high negative values, changing to positive values after the rain ended. Negative readings occur on the 27th, during threatening weather; and on the 28th, during rain, becoming positive after the rain ended, and falling again to low positive in the afternoon, about an hour previous to the beginning of rain. On April 29th the influence of heavy cumulo-stratus clouds is apparent in the readings. Negative values were recorded at times, and a general instability of the potential value. Distant thunder at 1 p. m. was accompanied with negative values.

At Boston, Mass., negative values were obtained on the 1st, at 7 a. m. and 1, 7, and 11 p. m. during threatening and uncertain weather. Positive values were obtained at 11 a. m. and 3 p. m. Light snow began at 9.45 a. m. and ended at 11.50 a. m., beginning again at 3.35 p. m. and ending at 4.05 a. m. Thus positive values prevailed during the occurrence of snow. Snow began again at 2.10 a. m. on April 2d, and was accompanied by a negative value at 7 a. m. and positive values throughout the rest of the day. Light rain, ending at 8 a. m. on the 5th, was accompanied by low positive potential, increasing after the ending of the rain.

The following record of the 6th, with the observer's note, is of interest:

Time	7 a. m.	11 a. m.	1 p. m.	3 p. m.	7 p. m.	11 p. m.
Volts	+45.8	−159.9	−75°.5	−106.7	+98.9	+151.1
Temperature	23°.6	33°.5	41°.6	39°.5	35°.4	33°.1
Relative humidity	59°.0	47°.0	33°.0	30°.0	38°.0	48°.0
Wind	nw. Brisk	nw. High	nw. Brisk	nw. Brisk	nw. Brisk.	w. Fresh
Clouds	1 Cir-cu. w.	1 Cir. w.	0 0 0	0 0 0	0 0 0	0 0 0

NOTE.—A steady minus potential indicated by the electrometer during the morning and afternoon. With every gust of wind (nw.) the deflections of the needle increased greatly. This, and the negative potential, were undoubtedly due to the positive electrification of the building and the opposite induced charge upon the collector. Deflections were smaller during intervals of no wind.

These remarks apply equally well to April 7th, when negative values are recorded that otherwise are difficult of explanation. On April 11th negative readings at 7 a. m. precede rain, beginning 8.25 a. m., ending 8.50 a. m., with positive values during the rest of the day. On April 12th the effect of cloud-influence is apparent in the observations. On April 15th negative potentials were recorded from 10.50 a. m. until 11.05 a. m., and in the evening from 6.40 until 9.08, rain beginning at 9.35. Low values prevail on the 16th during rain, with, occasional negative readings. On the 18th snow was preceded and accompanied by abnormally high positive values, and on the 21st variable values, high positive and high negative, during showery weather. Negative values on the 23d at 7 a. m., 11 a. m., and 7 p. m., with rain beginning at 10.55 a. m., ending at 11.20 a. m., and beginning again at 8.06 p. m. On the 25th negative values at 3 and 7 p. m. precede rain at 9.50 p. m., while positive values prevail during the continuance of the rain. On April 27th a steady negative potential was indicated from 7 a. m. until 6.20 p. m., the maximum deflection occurring at 10.30 a. m., lasting until 11.20 a. m., from which time there was a steady decrease until 6.20 p. m., when zero was reached and positive values began. On April 28th negative and low positive values occur sufficiently long in advance of the rain to be of practical use.

The observations for this month at Boston, Mass., afford some very interesting and satisfactory results with regard to the value of electrometer indications in weather predictions.

The observations made at Columbus, Ohio, show that positive values prevail during fine, pleasant weather. From the 1st until the 15th no negative values are noticed. At 3 p. m. of the 15th the first negative value is recorded. Rain on the 18th is preceded at least half an hour, and accompanied, by negative values. A negative value is recorded at 3 p. m. of the 20th. On the 22d, at 8.45 a. m., distant thunder was heard, and at 9 a. m. heavy rain began and continued at intervals during the day. The values obtained were as follows: 9 a. m., 990 volts; 11 a. m., 636 volts; 1 p. m., exceeding 1,875 volts, negative; and at 3 p. m., 1,971 volts.

At Ithaca, N. Y., negative values are noticed on the 1st during calm, fair weather, and on the 4th during rain. Snow on the 5th was preceded by low and accompanied by high positive values. On the 6th and 7th negative values are noted, and apparently without relation to the weather. On the 11th negative readings during showery weather, and on the 12th and 13th negative and low positive readings, rain falling during the night. On the 15th low positive in advance of the rain, and negative readings during the rain. On the 16th negative readings all day, rain from 10.45 a. m. to 11.15 a. m. Negative readings on the 17th precede snow beginning 7.30 a. m. on the 18th, while during the snow high positive readings were recorded. On the 19th negative readings, without apparent relation to the weather, and on the 24th, 26th, and 27th negative values with the occurrence of cumulus clouds. On the 28th low positive values in advance of rain.

On chart vi is shown, in the first diagram, the variations in the potential, at Terre Haute, on a spring day marked with showers. It will be noticed that unusually high and very variable readings are obtained. In the second and third diagrams the observations for the month at New Haven and Boston are charted.

ELECTRICAL PHENOMENA.

Fort Thomas, Ariz.: the 8th was characterized by clear weather, strong southwest winds, and a remarkable display of atmospheric electricity. At times the telegraph wires carried a strong current from the batteries which in a few seconds became weaker, being balanced and completely overcome by electricity of an opposite polarity, and the wires could be worked for a few minutes by atmospheric electricity alone. At intervals violent snapping discharges occurred on the lightning arrester.

Fort Apache, Ariz.: on the afternoon of the 8th, during a gale which attained a maximum velocity of forty-two miles per hour, the atmosphere was highly charged with electricity, as indicated by the working of the telegraph line; no thunder nor lightning occurred.

Fort Grant, Ariz.: on the afternoon of the 8th a heavy westerly gale set in, maximum velocity, thirty-two miles per hour; at the same time the air was charged with electricity, which greatly interfered with the working of the telegraph. Sparks several inches long were drawn from the key.

The observer at Fort Bowie, Ariz., makes a similar report. This occurred while Arizona was under the influence of low area number vi, producing in this part of the territory high winds but no rain, and very little cloud. Near both Prescott and Fort Verde a thunder-storm, with rain and hail, occurred.

OPTICAL PHENOMENA.

HALOS.

The following are brief descriptions of the weather conditions attending or succeeding the occurrence of the most extensively observed halos of the month:

1st.—Both solar and lunar halos were reported from numerous stations in the Missouri Valley, upper Mississippi valley, and upper lake region, with lunar halos, only, in New England. They were followed on the 2d by lower pressure, and in New England by a heavy snow storm with high winds.

2d.—Lunar halos were observed at a large number, and solar halos, at a few stations in the Mississippi and Missouri valleys, Arizona, and California; they were accompanied in the valley districts by cirro-stratus clouds with haze, and followed on the 3d by rapidly falling pressure and cloudy weather.

3d-6th.—On the 3d rain or snow fell over the greater part of the northeastern quarter of the country, with clear or fair weather in all other sections; the area of cloudiness was surrounded on all sides by a strip of country in which halos appeared. They were also reported from stations in California, Arizona, and southern Texas. The 4th, 5th, and 6th were similar to the 3d, the area of cloudiness being surrounded by stations reporting halos.

7-8th.—Haze and cirro-stratus clouds partially covered the sky in the northern sections and were accompanied by solar and lunar halos with high, rising pressure. On the 8th the maximum pressure of the month in these districts occurred, and a number of stations reported halos.

9-30th.—From the 9th to 26th solar halos were noted at widely separated stations, and not generally in any district. The storm of the 27th, 28th, and 29th was preceded and followed over the central and eastern sections of the United States by solar and lunar halos which were reported from a large number of stations. On the night of April 30th and May 1st an area of heavy stratus clouds covered northern New England, the lower lake region, and the northern plateau and slope of the Rocky Mountains, in other districts light haze or fair weather prevailed, and the majority of the stations in the Mississippi Valley and eastern districts, except where the sky was entirely covered, reported lunar halos.

The phases of the moon, Washington mean time, during April, as given in "The American Ephemeris and Nautical Almanac" for 1887, are as follows: New moon, 22d, 15 h. 45.0 m.; first quarter, 30th, 5 h. 52.1 m.; full moon, 7th, 12 h. 30.8 m.; last quarter, 14th, 10 h. 55.6 m.; perigee, 6th, 18.6 h.; apogee, 19th, 9.4 h.

MIRAGE.

Mirages were observed at the following places:

California.—San Francisco, 24th.

Dakota.—Parkston, 1st, 2d, 5th, 6th, 12th, 18th, 25th; Webster, 16th, 18th, 20th, 25th.

Kansas.—Salina, 2d, 6th, 7th, 23d, 29th.

New York.—Palmyra, 12th.

North Carolina.—Reidsville, 17th.

Illinois.—Lake Forest, 2d.

MISCELLANEOUS PHENOMENA.

FOREST AND PRAIRIE FIRES.

Huron, Dak.: on the morning of the 8th prairie fires were seen toward the north and south. A steady gale from the south and southeast prevailed throughout the day, attaining for twenty minutes between 6 and 7 p. m. a velocity of forty-eight miles per hour. The observer states that during this gale the fires were driven with incredible speed, and great masses of burning grass were blown miles ahead of the main body of flame; ordinary fire breaks or guards were useless. The heat was felt two and a half miles in advance of the flames. Much property was burned, and several lives were lost. Eighteen miles west of Sioux Falls a fire started and swept over miles of prairie, burning several farm houses, with barns, stock, and machinery. Several other large areas of country in the southeastern part of Dakota were burned over during the prevalence of this gale.

Valentine, Nebr.: on the 6th, 7th, and 8th prairie fires could be seen in all directions; these fires did great damage to settlers, many of whom lost all they possessed.

Atchison, Kans.: on the 11th a prairie fire started near Nicodemus, Graham Co., and moved rapidly toward the northwest before a high wind which was blowing at the time, burning a path two and a half to seven miles in width and about sixty miles in length. It is reported that large numbers of stock of all kinds were burned, and thousands of tons of hay, corn, wheat, as well as dwelling houses and barns, were destroyed by the flames. Large areas of land in Sheridan, Gove, and other counties in northwestern Kansas, and in Furnas county, Nebr., were burned over.

Forest or prairie fires occurred also at the following places: North Platte, Nebr., prairie fires, 1st, 2d, 7th, 28th; Yankton, Dak., prairie fires, 1st, 17th to 20th, 23d, 24th, 25th; Fort Reno, Ind. T., prairie fires, 3d; Fort Supply, Ind. T., prairie fires, 4th; Concordia, Kans., prairie fires, 4th, 28th; Stateburg, S. C., forest fires in various directions, 5th, 12th; Moorhead, Minn., prairie fires, 6th, 8th, 15th to 18th, 29th; Bismarck, Dak,, prairie fires, 19th, 29th; Poplar River, Mont., prairie fires, 26th, 27th; Fort Buford, Dak., 29th.

METEORS.

Meteors were reported as follows:

Yuma, Ariz., 1st; Fort Grant, Ariz., and Delavan, Wis., 18th; Willcox, Ariz., and Dover, N. J., 19th; New Haven Conn., 20th; Manatee, Fla., 12th, 17th; Sanford, Fla., 15th; Archer, Fla., 20th; Windsor, Ill., 14th, 22d; Charleston, Ill., 22d; Midway, Ky., 10th; Woodstock, Md, 13th; Cambridge, Mass., 8th; Kalamazoo, Mich., 1st, 2d, 10th; Raleigh, N. C., 24th; Stateburg, S. C., and University of Va., 11th; Rappahannock, Va., 9th; La Crosse, Wis., 21st, 25th.

MIGRATION OF BIRDS.

Geese flying northward.—Wakefield and Manhattan, Kans., 1st; Bismarck, Dak., 1st, 4th; Poplar River, Mont., 1st, 5th, 6th, 7th; Fort Meade, Dak., and Dubuque, Iowa, 2d; Moorhead, Minn., 2d, 9th; Kitty Hawk, N. C., 4th; Fall River, Mass., 5th; Albany, Oregon, 6th, 7th, 10th, 12th, 13th, 16th to 19th, 23d to 27th; Readington, N. J., and Oswego, N. Y., 7th; Embarras, Wis., 11th; East Portland, Oregon, 12th, 26th; Charleston, Ill., and Fort Assinaboine, Mont., 13th; Archer, Fla., and Mackinaw City. Mich., 14th; Saint Vincent, Minn., 14th, 19th, 20th, 25th; Traverse City, Mich., 15th; Astoria, Oregon, 16th, 18th, 19th; Hay Springs, Nebr., and Bird's Nest, Va., 18th; Linkville, Oregon, 25th, 26th, 27th; Grand Haven, Mich., and Fort Bidwell, Cal., 26th; Fort Custer, Mont., 28th; Tatoosh Island, Wash, ducks and geese flying towards the north in great numbers nearly every day of the month.

Geese flying southward.—East Portland, Oregon, 4th.

Geese flying westward.—Kalamazoo, Mich., 3d; Yuma, Ariz.; 10th.

Ducks flying northward.—Moorhead, Minn., 2d; Kitty Hawk, N. C., 4th; La Crosse, Wis., 9th; Saint Vincent, Minn, 19th.

Ducks flying southward.—Grand Haven, Mich., 2d; Saint Vincent, Minn., 9th.

Cranes flying northward.—Brownville, Nebr., 1st.

POLAR BANDS.

Polar bands were reported from the following stations:

North Colebrook, Conn., 9th; Archer, Fla., 4th, 15th, 17th,