

Highest Winds.—Among the maximum velocities of winds, reported at the Signal Service stations, are the following: Bismarck, 56 miles; Breckenridge, on the 9th, 63; Cheyenne, on the 15th, NW., 56; Eastport, on the 5th, NE., 58; Long Branch, 21st, NW., 60; Milwaukee, on the 5th, W., 52; Mt. Washington, 70; New York, on the 7th, SW., 58; Manhattan, on the 19th, 50; St. Paul, on the 9th, SE., 52; Sandy Hook, on the 7th, NW., 60; Thatcher's Island, on the 4th, NE., 73; Boston, on the 5th, NE., 54; Port Huron on the 14th, SW., 50 miles.

VERIFICATIONS.

Cautionary Signals.—154 Cautionary Signals have been displayed at the U. S. Signal stations, of which 29 were not justified and 5 were too late, and 120, or 78 per cent., justified, by high winds known to have occurred within 100 miles of the stations.

Probabilities.—The comparison of the published tri-daily Probabilities with the weather of the succeeding 24 hours gives a general average of the percentage of verifications of 83.6. The averages for the sections are as follows: New England, 80; Middle States, 83; South Atlantic States, 79; East Gulf States, 86; West Gulf States, 88; Tennessee and Ohio valley, 85; Lower Missouri valley, 80; Upper Mississippi valley, 86; Upper Lake region, 85; Lower Lake region, 84.

NAVIGATION.

Stage of Water.—From the table on Chart No. III, showing the highest and lowest waters, it will be seen that the Red River fell from 29 to 20 feet, and the Missouri varied irregularly between 6 and 13 feet at stations above Leavenworth; between that point and St. Louis it was above the "danger line" during a considerable portion of the month. In the Ohio a moderate flood wave descended the river during the first half of the month, after which the river fell steadily. The principal feature in regard to the upper Mississippi was the slow rise during the first half of the month. At Keokuk the river was above the "danger line" for several days; at St. Louis the river was 9 inches below the "danger line" on the 20th; between Cairo and Vicksburg the river remained above the "danger line," with slight intermissions throughout the greater part of the month. An important change in the river channel has been made at Vicksburg by the completion of the cut-off, and a formation of a new channel about 3 miles west of Vicksburg, by which the distances on the river channel are shortened by about 8 miles. This cut-off, which has been anticipated since the year 1828, and whose progress has been carefully observed, was finally accomplished on the 26th of April, and was accompanied by a decided rise of about 9 in. on the Signal Service gauge at Vicksburg.

Freshets in Rivers.—The volunteer observer at Havana, Ill., reports that the maximum height of the Illinois river was 16 feet above low-water mark, and Guttenberg, Iowa, reports on the 12th and 13th, in consequence of the heavy rains elsewhere mentioned, destructive freshets in the neighboring rivers. At Moorhead, Minn., the Red River of the North began to rise on the 8th, reached maximum, 14 feet above low water, on the 19th; Oregon, Mo., on the 11th, creeks higher than ever known before in consequence of sudden rains; Pennville, Penn., high water in the west branch of the Susquehanna on the 14th; Rochester, N. Y., highest water, 35 feet, on the 7th, lowest, 33 feet 6 inches, 30th; Keokuk, Iowa, the Des Moines river rising and destructive floods, 13th to 18th; Shreveport, La., low places overflowed, 8th to 12th. The combination of east wind and high tide produced an unusually high water on the New Jersey coast on the 25th.

Ice in rivers and harbors is reported as follows: Fort Niagara, on the 5th, no ice in river for several days; quantities of floating ice on the 14th, 29th and 30th; Madison Barracks, N. Y., ice in lay, and teams crossing, 1st; Firesteel, Da., ice moving out of James river on the 7th; Nora Springs, Iowa, river clear of ice on the 8th; Standish, Me., ice left Sebago lake on the 30th; Mt. Desert, Me., ice left the harbor on the 5th; a thin skim of ice on river and harbor on the 28th; Traverse City, Mich., ice cleared out of Grand Traverse bay on the night of the 19th; Shelburne, N. H., Androscoggin river opened on the 17th; Auburn, N. H., lake free from ice on the 16th; Cazenovia, N. Y., the lake fully open on 21st; Cooperstown, N. Y., ice left Otsego lake 26th; West Charlotte, Vt., Lake Champlain opened 21st; Lunenburg, Vt., ice cleared out of Connecticut river on the 22d; Bloomfield, Wis.; Geneva lake opened on the 6th; Madison, Wis., Lake Monona clear of ice 8th, and Lake Mendota clear of ice 11th; Buffalo, N. Y., harbor ice-bound during month; Milford, Penn., Delaware river cleared of ice on the 6th; Escanaba, Mich., ice left Green bay on 24; still firm in Escanaba harbor 26th; left the harbor on the 30th; Breckenridge, Minn., river rising and ice breaking away on the 11th; river fell and ice breaking 15th; La Crosse, Wis., ice moving 6th, and river clear 7th; St. Paul, Minn., ice gorge broke 8th; river clear 10th; drift 11th, 12th and 16th; Bangor, Me., harbor clear of ice 11th; Albany, N. Y., river clear 1st; Port Huron, Mich., harbor free on the 6th; floating ice 7th; large ice field 11th; Alpena, Mich., bay clear of ice 20th; Pembina, Minn., river ice moving 19th; free, excepting floating ice, 22d.

Opening of Navigation.—Fort Ontario, first vessel arrived 6th; Madison Barracks, navigation open and vessels leave 24th; Gardiner, Me., the Kennebec river opened on the 7th. West Charlotte, Vt., regular

steamers resume trips 26th; Neilsville, Wis., a good stage of water in Black river, and logs running out, on the 9th; Detroit, Mich., first boat left on the 4th, and the first boat for Lake Huron on the 8th; Rochester, N. Y., first vessel out on the 4th; Northport, Mich., first schooner arrived 13th, first steamer arrived 24th; Moorhead, Minn., first steamer arrived 21th, 1 ft on the 24th; Plattsmouth, Neb., first steamer went up the river 8th; Toledo, Ohio, first steamer from Canada on the 4th; Escanaba, Mich., steamers crossed channel through the ice 27th; St. Paul, Minn., navigation opened 22d; Bangor, Me., navigation opened 12th; Chicago, Ill., opened 28th; Bismarck, D. T., first boat up river 24th; Erie, Penn., first departure 12th, arrival 14; Cleveland, Ohio, first arrival 4th; Port Huron, Mich., first boat passed up 9th; Alpena, Mich., first steamer arrived 9th; Pembina, Minn., first boat arrived 26th.

WATER TEMPERATURES.

The maximum and minimum temperatures, as observed at the bottom of waters in rivers and harbors, are given in the table on Chart No. II. Minima of 32° or 33° are recorded at Alpena, Buffalo, Detroit, Duluth, Eastport, Milwaukee, Pittsburgh and St. Paul. Maxima are reported from Key West, 83°; Augusta, 73°; Galveston, 79°; Montgomery, 70°; St. Marks, 73°; Shreveport, 75°. Ranges of 20° or more are reported from Grand Haven, Keokuk, St. Paul and Toledo, 20°; Augusta and St. Louis, 21°; Leavenworth, 22; Omaha, 23°; Yankton, 27. At Golden City, Col., the temperature of Clear Creek was 52°, and of well-water, 43°, on the 30th.

ATMOSPHERIC ELECTRICITY.

Thunder and Lightning have been observed in the following States on the given dates: 1st, Ala., Ga., La., Miss., Tenn., Texas; 2d, Ala., Fla., Ill., Ind., Ky., Ohio; 3d, Ala., Ga., Fla., Ind., S. C.; 4th, Ind., La., Mo.; 5th, Ill., Ohio, Penn., Texas; 6th, N. M., Texas; 7th, Ala., Conn., La., Miss., N. Y., R. I., Texas; 8th, Dak.; 9th, Dak., Iowa, Kan., Mo., Neb., Wis.; 10th, Dak., Ill., Iowa, Kan., Neb., Penn., Texas; 11th, Ill., Ind., Iowa, Kan., Ky., La., Miss., Mich., Mo., Neb., Ohio, Tenn., Texas, Va., Wis.; 12th, Ga., Ill., Ind., Iowa, Kan., Ky., La., Md., Mich., Miss., Mo., N. J., Penn., Tenn., Texas, Wis.; 13th, Ill., Ind., Iowa, Ky., La., Miss., Md., Mich., N. J., N. Y., N. C., Ohio, Penn., S. C., Tenn., Texas, Wis., West Va.; 14th, Ala., Ga., N. J., N. Y., N. C., Ohio, Penn., Va., Wis.; 15th, Ill., Ind., Ohio; 16th, Conn., Mass., Ohio, Penn., Tenn., West Va.; 17th, Va.; 18th, Iowa, N. C.; 19th, Iowa, Kan., Minn., Neb.; 20th, Ill., Ind., Kan., Ky., Mich., Mo., N. J., N. Y., Ohio, Penn., Wis., West Va.; 21st, Ga., Ill., Iowa, Kan., Ky., Mo., Neb., N. J., N. Y., N. C., Penn., Tenn.; 22d, Dak., Kan., Mich., Mo., Neb., Tenn., Utah; 23d, Ind., Kan., Ky., Mass., Mo., Neb., N. C., Ohio, Tenn.; 24th, Ala., Ark., Fla., Ga., La., Miss., N. C., S. C., Tenn.; 25th, Dak., Fla., Ind., Iowa, Kan., La., Minn., Neb., N. C., Texas, Va.; 26th, Dak., Ill., Iowa, Kan., La., Mo., Neb., Texas; 27th, Ark., Ill., Ind., Iowa, Kan., Mich., Minn., Mo., Ohio, Tenn., Wis.; 28th, Ala., Del., Ga., La., N. J., N. Y., N. C., Penn., S. C., Tenn., Texas, Va.; 29th, Ill., Ind., Kan., Mo., N. Y., Ohio, Utah; 30th, Ala., Ill., Kan., Minn., Neb., Tenn.

Auroras have been feeble, except that of the 19th. They have been reported as follows: 6th, Gattensburg, Iowa; 12th, Havana, Ill.; 14th, Malone, N. Y.; 16th, Waltham, Mass.; 17th, Decatur, Ill.; 18th, Escanaba, Alpena and Marquette, Mich.; 19th, Buffalo, N. Y., Springfield, Mass., Malone, N. Y., Boston, Mass., Cornish, Eastport, West Waterville, Gardiner, Standish, Orono and Acton, Me., Hinsdale and Florida, Mass., Shelburne and Contoocookville, N. H., Ardenia, Waterburgh, North Argyle, Wappinger's Falls and Canton, N. Y., Woodstock, West Charlotte and Lunenburg, Vt.; 22d, Escanaba, Mich., and Indianapolis, Ind.; 23d, Escanaba, Mich., and Woodstock, Vt.; 24th, Breckenridge, Minn., and Malone, N. Y.; 27th, Malone, N. Y.

Telegraphic Ground Currents.—Electrical disturbances reported on telegraph lines at Milwaukee 11th and 20th; at Santa Fe, N. M., 5th; at Philadelphia, 28th; and at Pike's Peak, 24th.

OPTICAL PHENOMENA.

Mirage was observed at Evanston, Ill., on the following dates; 8th, 9th, 21st, 22d and 24th; New London, 2d, 8th, 11th, 13th, 22d and 27th; Breckenridge, 6th, 10th, 17th, 19th and 30th; Fort Ontario, N. Y., 16th, 26th; Atlanta, Kan., 3d, 9th, 12th, 13th, 17th, 18th, 19th, 22d, 24th, 25th, 26th, 27th; Ellenwood, Kan., 7th; Moorhead, Minn., 1st.

Solar Halos.—1st, Ill., Ind., Ky., Ohio, Va., W. Va., Wis., Ga.; 2d, Ark., N. C., Ohio, N. Y., Kan., Penn., Me.; 3d, Mo., Neb., Ohio, Wis.; 4th, Ill., Iowa, Minn., Ohio, Wis., N. Y.; 5th, Kan., N. J., N. Y., Vt., Ill., Wis., Col.; 6th, Mich., W. Va., Ga., Ill., Minn., Dak.; 7th, Conn., Me., Mass., N. H., N. Y., Ohio, Tenn., Vt., Ga., Va.; 8th, Me., Tenn.; 9th, Ill., Ind., Mich., Ohio, Tenn., Wis., Kan., Fla.; 10th, Md., Mich., Neb., N. Y., Ohio, Penn.; 11th, Conn., Mass., Mich., N. C., N. H., N. J., N. Y., Penn.; 12th, Conn., Me., Mass., Mich., N. Y.; 13th, Me., N. H., N. Y., Ohio, Vt., Ga., Minn., Neb.; 14th, N. H., N. Y., Ga.; 15th, Iowa, Neb., Tenn.; 16th, Mich., Me., N. H., N. Y., Tenn.; 17th, Neb.; 18th, Dak.; 19th, Ill., Ohio, Tenn., Mich.; 20th, Del., Ill., Me., Neb., Ohio, Penn., Tenn., Va., N. C.; 21st, Conn., Del., Ill., Ind., Ky., Mass., Minn.; Mich., N. Y., Neb., N. J., Ohio, Tenn., Wis.; 22d, Ill., Me., Mich., N. C., N. Y., N. J., Ohio, Kan., Conn.; 23d, Md., Penn., N. Y., N. J.; 24th, Mass., Me., N. H., N. Y.; 25th, Conn., Ill., Iowa, Me., N. Y., Vt., Wis.