WINDS.

Prevailing winds.—These are shown upon chart No. II, the arrows flying with the wind. At Virginia City they were from the SE. The *maximum* hourly velocities have been given in the description of the movements of high and low-pressure areas, with the dates upon which they have occurred.

Total movements of the air.—The following are the largest total movements, as recorded at the Signal Service stations: Cape May, 11,114 miles; Thatcher's Island, 10,828; Sandy Hook, 10,530; Kittyhawk, 10,348; Pike's Peak, 9,376; Cape Lookout, 9,308; Cape Hatteras, 9,305; Barnegat, 8,530; Cape Henry, 8,454. The smallest movements have occurred at the following stations: Virginia City, 1,796 miles; Dubuque, 1,943; Salt Lake City, 2,411; Vicksburg, 2,464; Lynchburg, 2,484; Nashville, 2,497; Augusta, 2,550; Baltimore, 2,841; Shreveport, 2,865; Denver, 2,997.

VERIFICATIONS.

Indications.—As worked up three times daily, and issued to the public at 1 a. m., 10:30 a. m. and 7:30 p. m., they have been carefully compared with the actual conditions during the succeeding twenty-four hours, and the following result obtained, viz: the percentage verified averages 83.8 for New England; 82.0, Middle States; 85.6, South Atlantic States; 82.2, Eastern Gulf States; 82.9, Western Gulf States; 82.1, Tennessee and the Ohio valley; 84.6, Lower Lake region; 89.3, Upper Lake region; 84.9, Upper Miss. valley; 84.5, Lower Missouri valley. For the whole country the average verified is 84.2 per cent. By elements the percentage verified averages 88.1 for the weather; 84.1, wind direction; 80.6, temperature; 83.0, barometric changes. There were 14 omissions to predict, (11 for temperature and 3 for barometer,) out of 3,360, or 0.42 per cent.

Cautionary Signals.—Grand Haven and Milwaukee are the only Lake stations at which signals were displayed, owing to the suspension of navigation. Out of 127 signals ordered to be hoisted along Lake Michigan, the Gulf and Atlantic coasts, 106 were reported justified, but 25 of these were late; 21 not justified; 11 lowered too soon, especially on the morning of the 18th, along the New Jersey and New England coasts; 9 kept up too long. From scattered stations, excepting on the 12th and 18th, 36 cases are reported in which the hourly wind-velocity reached 25 miles and over without the display of signals.

NAVIGATION.

Upon chart No. III is a table giving the highest and lowest water-marks, with the dates upon which they occurred. The *Red* river rose slowly throughout the month. *Missouri:* at Yankton the ice passed out on the 21st; Omaha, ice broke up on 21st; Plattsmouth, Neb., commenced breaking up, but gorged 10th, melting and floating away 17th; Leavenworth, breaking up 8th, gorged 9th, opened 12th. *Mississippi:* at St. Paul the ice disappeared below bridge on the 27th; La Crosse, opened 27th; Dubuque, ferry opened 17th, ice drifting 25th, open earlier than usual; Davenport, ice moved out 21st; Muscatine, 19th; Fort Madison, 17th; Keokuk, channel clear 18th; St. Louis, ice broke up 1st, heavy floating ice 5th, navigation resumed 6th; Chester, Ill., gorge broke 4th, opening navigation below St. Louis; Cairo, a steady decline of 14 ft. 3 in. to the 6th, rise of 4 ft. 1 in. to 13th, then falling to close; below the changes were not important. *Cumberland:* at Nashville, rose 1 ft. 1 in. to 8th, then slowly falling to end. *Tennessee:* changes unimportant, with a slight decline. *Ohio:* at Pittsburgh there was a sudden rise of nearly 8 ft. on the 3rd, gradual decline to the 22nd, then a rise of 1 ft. 2 in. to 26th; Cincinnati, a rise of nearly 14 ft. from 2nd to 8th, then falling to close; Louisville, rose 3 ft. from 2nd to 9th, after which the decline was continuous. *Savannah:* at Augusta, a sudden rise of 13 ft. 7 in. occurred on the 5th, slowly fell to the 16th, and oscillated a few inches daily to end of month. Ice broke up 3rd, at Cleveland, on Cuyahoga river. Northport, Mich., harbor clear of ice 6th. Salem, N. J., navigation opened 8th. Flushing bay, N. Y., clear of ice 22nd. *Hudson* river: navigation resumed on 28th at Wappinger's Falls and West Point. Narragansett bay open at Fall River, Mass., 1st. New Bedford, Mass., harbor clear below bridge 15th.

TEMPERATURE OF WATER.

As heretofore, the maximum and minimum temperatures, with the average depth of the water, are given in the table on chart No. II.

ATMOSPHERIC ELECTRICITY.

Thunder-storms.—1st, Martinsville, Ill.; Baxter Springs, Kan.; Indianapolis, Ind. 7th, Daytona, Fla.; Indianola, Tex. 9th, Gainesville, Ga.; Murphy, N. C.; St. Marks, Fla. 11th, Austin, Tex. 15th, Brownsville, Tex. 16th, Cape Hatteras, N. C. 19th, Aiken, S. C. 20th, Tybee Island, Ga. 22nd, Monterey Co., Cal. 23rd, Milford, Del.; Salem and Cape May, N. J.; Capeville and Hampton, Va. 24th, Fort Craig, N. M. 25th, Monterey Co., Cal. 27th, Austin, Tex. 28th, New Ulm, Austin, Boerne and Indianola, Tex.

Distant Lightning.—1st, Decatur, Ill. 9th, Tybee Island and Forsyth, Ga. 10th, Cape Hatteras. 17th, Golden, Col. 19th, Atlanta, Ga., (with heavy rain.) 23rd, Atlantic City, N. J. 28th, New Orleans.

Auroras.—1st, Geneseo, Ill.; Pembina. 2nd, Geneseo, Ill; Independence and Cresco, Iowa; Duluth. 3rd, Nora Springs, Iowa; Escanaba; Pembina. 4th, Escanaba. 8th, Duluth. 9th, Manitowoc, Wis.; Rochester. 10th, Waltham, Mass.; Duluth; Rochester. 11th, Duluth; Eastport; Pembina. 12th, Cornish and Gardiner, Me. 13th and 15th, Gardiner, Me. 16th, Monticello and Davenport, Iowa; Contoocookville, N. H. 17th, Waltham and Cambridge, Mass.; Davenport; Pembina. 20th, Waltham, Mass; Pembina. 24th, Fort Brady, Mich. 28th, Boonsboro, Iowa.

OPTICAL PHENOMENA.

Solar-Halos.—1st, Ind., Iowa, Kan., Mich., Neb., N. H., N. Y., Wis. 2nd, Ga., Ill., Mass., N. H., N. Y., R. I., S. C. 5th, Conn., Me., Mass., N. H., N. J., N. Y. 6th, Ala., La., Miss., S. C. 7th, D. C., Ill., Iowa, N. C., Tenn., Va., W. Va. 8th, Ala., Ill., Minn., N. Y., N. C., S. C., Tenn. 9th, N. Y., N. C., Tenn. 10th, Col., Kan., Minn., S. C., Tenn. 11th, Dak., Ill., Ind., Mich., Minn., N. Y., Ohio. 12th, Conn., Dak., Ga., Ill., Neb., R. I., S. C. 13th, Ill., Iowa, Wis. 14th, Ill., Md., Ohio, Penn. 15th, Ind., Iowa, Me., Nev., N. H., N. Mex., R. I. 16th, Me., Mo., Ohio. 17th, Ohio. 18th, La., Penn. 19th, Me., N. H., Ohio, S. C., Tenn. 20th, D. C., Iowa, Mich., N. Y., Tenn., Tex. 21st, Tenn. 22nd, Ga., Mass., Mich., N. H., N. Mex., N. Y., Ohio, Penn., Vt., Wis. 23rd, Ga., Me., N. H., N. Mex., N. Y., R. I., Vt. 24th, Mich., N. Mex. 25th, Kan., Mich., Wis. 26th, Iowa, S. C. 27th, Dak., Minn., Ohio, Tenn. 28th, Col., Conn., Me., N. Y., Tenn., Va.

Lunar Halos.—1st, Ga., Kan., N. Y., N. C., Ohio, Utah. 2nd, Dak., Kan., Mass., N. J., N. Y., N. C., Penn. 3rd, Iowa. 4th, Mich. 5th, N. H., N. Y. 16th, Mo., Neb. 17th, La., Tenn., Tex. 18th, Ala., Conn., Fla., N. Y., Tenn., Tex. 19th, N. Y., Fla., Dakota. 20th, Dak., Kan., Me., Md., Mass., N. J., N. Mex., N. Y., N. C., Ohio, Penn., Tenn., Tex., Va., W. Va. 21st, Ala., Cal., Fla., Ill., Ind., Iowa, Ky., Mich., Minn., Miss., Mo., N. H., N. J., N. C., Ohio, Penn., Tenn., Vt. 22nd, Cal., Conn., D. C., Fla., Md., Mich., Minn., N. H., N. J., N. Mex., N. Y., N. C., Ohio, Penn., Tex., Utah, Vt., Va., W. Va., Wis. 23rd, Ala., Col., La., Mass., N. H., N. J., N. Y., N. C., Tex., Wyoming. 24th, Col., Fla., Ga., Ind., Kan., La., Mich., Miss., Mo., Neb., N. J., N. Y., N. C., Tex., Utah, Wis., Wyo. 25th, Ala., Fla., Ill., Ind., Kan., La., Mich., Minn., Mo., N. J., N. Y., N. C., Ohio, Tenn., Tex., Wis. 26th, Ala., Fla., Ill., Iowa, Kan., Minn., Mo., N. J., N. Mex., N. C., Ohio, Tenn., Tex., Vt. 27th, Ind., Miss., Mo., N. Y., N. C., Ohio, Tenn., Vt. 28th, Ill., Ind., Iowa, Ky., Mo., N. C., Ohio, Tenn., Wis.

Mirage.—Neb.: Geneva, 1st. Kan.: Ellinwood, 1st, 2nd, 3rd, 4th, 5th, 6th; Dodge City, 17th. Minn.: Breckinridge, 2nd, 9th, 12th, 24th, 25th, 26th, 27th; Moorhead, 2nd, 5th, 6th, 7th, 8th, 12th, 27th, 28th; Duluth, 17th. Ga.: Tybee Island, 18th, 25th. Mass.: New Bedford, 20th.

MISCELLANEOUS PHENOMENA.

Zoological—(1) *Birds.*—*Wild Geese* were observed at Hennepin, Ill., flying S., 1st; Decatur, Ill., N., 8th; Belvidere, Ill., E., 8th; Oregon, Mo., 1st; Emerson, Neb., SE., 1st and 3rd; Plattsmouth, Neb., SW., 2nd; Clear Creek, Neb., N., 5th, 6th, 7th, 8th and 26th; Fort Madison, Iowa, N., 1st, 2nd and 6th; Muscatine, Iowa, 2nd; Boonsboro, Iowa, SW., 5th, N., 17th; Nora Springs, Iowa, S., 10th; Rockford, Iowa, N., 10th and 15th; Davenport, S., 20th; Monticello, Iowa, NW., 21st, N., 22nd; Vail, Iowa, S., 22nd, N., 25th; Council Grove, Kan., N., 2nd; Creswell, Kan., N., 5th; Bellefontaine and Carthagena, Ohio, N., 4th; Flushing, N. Y., N., 5th; Starkey, N. Y., 28th; Fort Macon, N. C., S., 7th, 10th, 15th, and N., 18th; Galveston, N., 8th; Melissa, Texas, W., 10th; Bloomfield, Wis., N., 10th; Accotink, Va., N., 21st; Fall River, Mass., N., 2nd; Jackson, Tenn., N., 23rd and 28th; Santa Fe, N. M., N., 23rd; Fort Gibson, N., 24th; Breckenridge, N., 26th. *Wild Ducks*, at Milford, Ind., 1st; Louisville, Ill., N., 2nd; Decatur, Ill., N., 8th; Dodge City, 4th; Golden, Col., N., 6th; Vail and Monticello, Iowa, N., 7th; Rockford, Iowa, N., 15th; Guttenburg, Iowa, 23rd; Bloomfield, Wis., N., 10th; Emerson, Neb., N., 14th; Carthagena, Ohio, N., 14th; Corsicana, N., 17th; Plattsmouth, Neb., N., 24th and 26th; Creswell, Kan., W., 19th. *Robins*, Oregon, Mo., 1st; Bethel and Bellefontaine, Ohio, 2nd; Vevay, Ind., Plattsmouth, Neb., and Melissa, Texas, 3rd; Brownsville, Penn., and Salem, W. Va., 4th; Ringgold, Ohio, 1[illegible] Merom, Ind., 12th; Jacksonsburg, Ohio, 19th; Tabor, Iowa, 20th; Owing's Mills, Md., and New London, Conn., 22nd; Baxter Springs, Kan., and Urbana, O., 24th; Accotink, Va., 25th; Havana, Ill., and Bridgetown, Va., 26th; New Bedford, Mass., 28th. *Phebe birds*, Waltham, Mass., 2rd; Somerset, Mass., 4th. *Bluejays*, Monticello, Iowa, 5th; Jackson, Tenn., 12th. *Killdeer*, Melissa, Tex., 12th; Ft. Madison, Iowa, 25th; Baxter Springs, Kan., 18th. *Sparrows*, Monticello, Iowa, 6th; Embarrass, Wis., 16th; Waupaca, Wis., 26th. *Meadow Larks*, Kenton, Ohio, 12th. *Mocking birds*, Macon, Ga., 6th; Melissa, Tex., 12th. *Red birds*, Jackson, Tenn., 6th; Louisville, Ill., 10th; Melissa, Tex., 12th; Urbana, Ohio, 17th. *Blackbirds*, Louisville, Ill., 10th; Sedgewick, Kan., 26th. *Woodpeckers*, Decatur, Ill., 8th; Louisville, Ill., 10th. *Blue birds*, Ft. Madison, Iowa, 1st; Bethel, Ohio, 2nd; Plattsmouth, Neb., and Melissa, Tex., 3rd; Fall River, Mass., and Brownsville, Pa., 4th; West Chester, Pa., 5th and 10th; Decatur, Ill., 7th; Macon, Ga., 9th; Louisville, Ill., 10th; Vevay, Ind., Muscatine, Iowa,