

*High Tides.*—Mobile, 3d, causing serious damage. Smithville, 21st, bath-houses swept away; wind blew at the rate of 84 miles per hour for about five minutes; considerable damage to the engineers' works on Smith's Island. Key West, 16th; Portsmouth, N. C., 25th, 26th; Charleston. 27th.

### TEMPERATURE OF WATER.

*The temperature of water*, as observed in rivers and harbors at signal service stations, with the average depth at which observations were taken, is given in the table on the left hand side of chart No. III. Owing to sickness of observer, observations wanting at Punta Rassa on the 14th.

### ATMOSPHERIC ELECTRICITY.

*Thunder Storms.*—In the various districts they were reported on the following dates: New England, 1st, 2d, 4th to 7th, 9th, 12th, 13th, 19th, 21st, 27th; Middle Atlantic states, 1st, 2d, 6th to 8th, 10th, 12th, 13th, 15th, 21st, 22d; South Atlantic states, 2d, 3d, 6th to 11th, 13th to 15th, 20th to 22d, 30th; Florida peninsula, 1st, 2d, 4th to 10th, 14th, 19th, 22d, 23d to 25th, 29th; Eastern Gulf states, 2d to 7th, 10th to 15th, 20th to 25th, 30th; Western Gulf states, 5th to 7th, 9th, 11th, 12th, 14th to 16th, 20th to 23d, 25th, 27th, 30th, 31st; Ohio valley and Tennessee, 4th to 9th, 11th to 14th, 18th to 21st, 23d to 26th, 29th to 31st; Lower Lake region, 1st, 2d, 6th, 7th, 9th, 10th, 12th, 31st; Upper Lake region, 2d to 6th, 9th, 11th, 12th, 16th, 19th, 25th, 26th, 31st; extreme Northwest, 1st, 4th, 8th, 10th, 16th, 21st, 22d, 26th, 28th, 29th; Upper Mississippi valley, 2d to 6th, 11th to 13th, 16th to 18th, 20th, 23d to 26th, 29th to 31st; Lower Missouri valley, 1st, 2d, 5th to 7th, 9th, 12th, 15th to 19th, 21st to 31st; Northern Slope, 2d, 4th, 7th to 14th, 16th, 19th, 21st, 25th to 31st; Middle Slope, 1st to 7th, 9th, 14th, 19th, 21st to 31st; Southern Slope, 1st to 6th, 8th, 12th, 13th, 14th, 16th, 18th, 20th, 21st to 23d, 28th to 30th, 31st; Rio Grande valley, 1st, 2d, 6th, 7th, 9th, 12th, 13th to 15th, 19th, 20th, 22d, 23d, 30th, 31st; Southern Plateau, 1st to 20th, 22d to 25th, 27th, 28th; Middle Plateau, 4th, 6th, 7th, 9th to 11th, 14th, 16th, 18th; Northern Plateau, 4th, 7th, 13th, 14th, 16th, 18th, 20th, 21st, 24th, 26th, 28th, 29th; North Pacific coast region, 13th, 26th, 30th; South Pacific coast region, 5th to 11th.

*Atmospheric Electricity Interfering with Telegraphic Communication.*—Ft. Missoula, Mont., 18th; Umatilla, 7th; Prescott, 7th; Pike's Peak, 21st, lightning arrester and grounding badly damaged; Jacksboro, Tex., 28th; Stockton, Tex., 22d, 23d; Ft. Sill, 1st, 4th, 5th, 6th, 18th, 28th, 30th; Ft. Bennett, 29th; Mason and Fredericksburg, Tex., 23d.

*Auroras.*—There were no consecutive displays reported between New England and the Northwest during the month. At isolated stations the following observations were reported: Eastport, 24th, 10.30 p. m.; Gardiner, Me., 20th, 9 p. m.; Newport, Vt., 24th; Strafford, Vt., 8th, 9 p. m.; Embarrass, Wis., 20th, 11 p. m.; Duluth, 13th, 11 p. m.; 24th, 9.30 p. m.; Clinton, Ia., 7th, 1.30 a. m.; Clear Creek, Neb., 19th, 24th, 25th, very faint; St. Vincent, 5th, 9.30 p. m., single arch; 12th, 10 p. m., bright arch, altitude 10°, dark segment; 18th, 10 p. m., faint diffuse light; 20th, 10 p. m., a few long streamers, faint, and of short duration; 23d, from 8.30 to 9.40 p. m.; 24th, 9.40 p. m., faint; 26th, 8.30 p. m., bright, without streamers. Bismarck, 20th, 8.30 p. m., faint streamers; Ft. Stevenson, Dak., 20th; Ft. Keogh, Mont., 19th, 11.30 p. m., diffuse light; Springfield, Mass., 20th, 11 p. m., beautiful display, lasting nearly half an hour.

*Zodiacal Light.*—Mobile, 15th; Nashville, 1st, 14th, 16th, 17th, 22d, 24th, 25th, 26th, 27th; Monticello, Ia., 21st, 22d.

### OPTICAL PHENOMENA.

*Lunar halos* have been observed in the various districts on the following dates: New England, 8th, 10th, 12th, 14th; Middle Atlantic states, 8th, 11th, 12th, 31st; South Atlantic states, 3d, 8th, 11th, 12th, 13th, 26th; Florida peninsula, 2d, 3d, 5th, 10th; Eastern Gulf states, 1st, 2d, 4th, 6th, 9th; Western Gulf states, Indianola, 10th, 11th; Ohio valley and Tennessee, 5th, 8th, 9th, 10th, 11th, 14th; Lower Lake region, Sandusky, 8th, 11th; Upper Mississippi valley, La Crosse, 12th; extreme Northwest, Moorehead, 28th; Middle Slope, 2d, 10th; Southern Plateau, 1st, 3d, 5th; Middle Plateau, Salt Lake City, 8th; California, Poway, 5th.

*Solar halos* have been observed in the various districts on the following dates: New England, 1st, 7th, 26th, 28th; Middle Atlantic states, 1st, 8th, 12th, 13th, 26th; South Atlantic states, 2d, 16th; Florida Peninsula, 9th, 15th; Eastern Gulf states, 14th, 18th; Ohio valley and Tennessee, 1st, 3d, 8th, 10th, 19th, 24th, 27th; Lower Lake region, 8th, 24th, 26th; Upper Lake region, Alpena, 25th; Upper Mississippi valley, 9th, 10th, 11th, 12th, 13th, 16th, 17th,

23d, 24th, 26th, 28th, 29th; Missouri valley, Huron, Dak., 29th; Middle Slope, 2d, 25th, 29th; Southern Slope, Ft. Davis, Tex., 20th; Rio Grande valley, 5th, 7th; Northern Plateau, Umatilla, 1st; North Pacific coast region, Portland, 3d.

*Mirage*.—Indianola, 14th to 18th, 22d to 29th. Grand Haven, 20th, having the appearance of a city on the opposite side of the lake, outlines very distinct; the roofs of houses and church steeples were plainly discernable; phenomenon lasted about fifteen minutes. New Haven, 8th, 16th, 17th, on Faulkner's Island; spars and rigging of passing vessels towered to an unusual height.

### MISCELLANEOUS PHENOMENA.

*Polar Bands*.—Portland, Or., 5th, 6th, 8th; New Corydon, Ind., 1st, 4th, 10th, 15th, 16th, 23d, 24th; Clinton, Ia., 17th; Fayette, Miss., 12th, 17th, 24th; Clear Creek, Neb., 3d, 23d; Freehold, N. J., 14th, 25th; Albany, N. H., 4th.

*Meteors*.—Campo, Cal., 1st, 11th, Los Angeles; 23d, 8 p. m., seemingly about half the size of the full moon; passed slowly across the sky from SE. to SW., and bursted into a thousand brilliant particles resembling the explosion of a huge rocket. The sky was brightly illuminated during its passage. Boise City, 10th, 15th, 26th. Yuma, 24th, 26th. Fort Cummings, 22d. Deadwood, 13th, very brilliant. Fort Shaw, 5th. Fort Keogh, 5th. Fort Assinaboine, 11th. Uvalde, 28th. Huron, Dak., 18th. Davenport, 13th, 14th, 21st, 22d, 23d. Buffalo, 9th. Columbus, 11th, 14th. Life Saving Station No. 6, N. C., 2d, 8th, 11th. New London, 10th, 11th. Fort Union, N. M., 26th. Princeton, Cal., 6th, very large and brilliant. Rio Vista, Cal., 9th, 19th, illuminating the heavens like a flash of lightning. Anna, Ill., 21st. Charleston, Ill., 12th, 15th, 17th, 18th, 25th, 28th. Swanwick, Ill., 4th, 5th, 6th, 16th, 28th. New Corydon, Ind., 5th. Vevay, Ind., 1st, 3d, 10th. Monticello, Ia., 1st, 20th. Muscatine, Ia., 24th. Topeka, Kan., 6th, 7th, 14th, 20th. Point Pleasant, La., 12th, 14th, 16th, 24th. Woodstock, Md., 8th, 24th, 25th, 26th. Rowe, Mass., 16th, 22d. Fall River, Mass., 11th, 22d. Fayette, Miss., 2d, 3d, 10th. Clear Creek, Neb., 1st. Genoa, Neb., 16th, 17th. Freehold, N. J., 11th, 14th. Vineland, N. J., 9th. Waterburg, N. Y., 22d. Ellsworth, N. C., 13th. Jacksonburgh, O., 9th to 15th, 30th. Wooster, O., 9th. Fallsington, Pa., 6th. Statesburg, S. C., 2d, 3d, 6th, 8th, 10th, 11th, 12th, 15th, 17th, 20th, 22d, 23d, 24th, 29th, 30th, 31st. Austin, Tenn., 14th, 16th, 28th. Beloit, Wis., 4th, 11th, 21st, 28th.

*Prairie and Forest Fires*.—From Flint to Port Huron, Mich., 31st, fires raging in fields, forests and swamps; in nearly every section of the state more or less damage has been done; along the lake shore north of Fort Gratiot the smoke was almost stifling, and in Port Huron for the past three days it has been so thick as to seriously interfere with business. Independence, Kan., 13th to 31st, raged with great fierceness. Fayette, Miss., 29th. Freehold, N. J., 21st to 31st; air filled with smoke for many miles. Atco, N. J., 26th, very extensive. Carson City, Nev., 13th to 16th. New Corydon, Ind., 22d, 23d. Fort Missoula, Mont., 21st to 24th. Dayton, Wash. Ter., 19th, 25th. Salt Lake City, 3d, in mountains southeast of city. Fort Custer, 18th to 28th. Fort Keogh, 10th to 24th. Fort Assinaboine, 22d to 28th. Superior City, Mont., 19th to 22d. Fort Gibson, 13th to 29th. Fort Griffin, 20th. Stockton, 25th, 26th, 27th. Fort Sill, 27th. Jacksboro, 22d to 28th. Clarksville, Tenn., 12th, heavy fires along the south side of the Cumberland river; large loss to fences, timber and crops. Petoskey, Mich., 4th, woods along the C. and G. T. R. R. burning fearfully; city filled with offensive smoke. West Branch, Mich., 5th, forests on fire along the line of the Mackinaw division of the Michigan Central R. R.; 3,000 telegraph poles and 8,000 fence posts burned; all railroad communication cut off and thousands of dollars' worth of standing timber destroyed. Tuscola county, Mich., 11th, the damage by fires will reach many thousands of dollars; timber and fences met with wholesale destruction; in several instances farm buildings were destroyed, entailing heavy loss; in the northern townships several lives were lost. Emmet, Mich., 31st, heavy fires raging without abatement; farmers obliged to leave work and fight for the preservation of their homes. Pana, Ill., 31st, grass and fencing destroyed, incurring a large loss. Tuscola, Ill., 31st, extensive, loss to grain stacks and fencing, \$3,000. Province of Ontario, Can., 31st, bush fires widely prevalent and causing great damage. Bay City, Mich., 5th, raging about the city in every direction; for a hundred miles to the north, fences, buildings and timber destroyed in vast quantities; railroad travel stopped; city enveloped in dense smoke and the air filled with burned leaves and ashes. Clinton Co., Ohio, 31st, much fencing and many hay and grain stacks destroyed. Eagle Pass, 19th. Brackettville, 26th. Little Rock, 17th. Escanaba, 1st. Oswego, 31st, very numerous. Morgantown, 28th, dense smoke from forest fires.