

HIGH TIDES.

Atlantic City, N. J., 16th: it has been many years since the tide has been as high here as to-day. The storm which has prevailed on the coast caused the high water, and for a few hours Atlantic City was cut off westward by the flooding of the railroad tracks which cross the meadows. The water on the Camden and Atlantic Railroad this morning was so high that the fires in the railroad engines were extinguished. This afternoon the Five-Mile Beach branch railroad is under water and the Sea Isle City and Ocean City branch is flooded. No trains are running beyond Sea Isle City. Cape May, 16th: the tide is the highest known for years; much damage has been done here.—*Buffalo Express, March 17th.*

Long Branch, N. J., 16th: the severe storm and high tides which have prevailed along the coast for the past twenty-four hours have caused a great amount of damage. The tide in the Shrewsbury River ran higher than in many years. Sea Bright, N. J., 16th: at high tide to-night the heavy sea broke over the beach and is now sweeping through the hollow almost in the center of the town. The piles of lumber from bulkheads have been carried to Ocean avenue, striking the fishermen's huts in the hollow and demolishing them. The water in some streets is three feet deep and running with great force.—*Baltimore Sun, March 17th.*

Asbury Park, N. J., 17th: the high tides of last night and this morning were very destructive along this part of the coast; the great board walk here was severely damaged, and the bluff was washed out in several places. At Elberon several bulkheads were washed out. Point Pleasant, March 17th: at Bay Head bulkheads were washed away. In many places the surf ran over the beaches and did much damage. The railroad tracks from Absecom to Atlantic City were under water, and no train could cross at high tide. All the lowlands are over-

flooded. The railroad from Atlantic City to Egg Harbor Inlet is broken up and trains cannot run. The railroad from Ocean City to the mainland was under water, as was the railroad from Sea Isle to Avelon.—*The New York Sun, March 18th.*

Norfolk, Va.: an unusually high tide occurred on the 15th and 20th, flooding the lower portions of the city; during the first named date all street car travel was interrupted during the day by the high water. Atlantic City, N. J.: an unprecedented high tide occurred here on the 20th; it was very destructive to the board walk, bath-houses, pavilions, and even many of the larger houses. Building after building was quickly undermined by the rushing water and tumbled down into the sea. All along the beach is strewn debris.—*The York World, March 22d.*

New York City: it is reported that the tide at Coney Island on the morning of the 21st was the highest of the season; the whole distance in and about the bulkhead is a wreck, which \$100,000 will not make good.—*The New York World, March 22d.* A big tide prevailed on the 21st in the lower part of Elizabeth, N. J., and several of the lower stories of houses near the meadows were flooded. Communication with the factories along Staten Island Sound was completely cut off at high water. The tracks of the Newark and Elizabeth branch of the Central Railroad were flooded in places to the depth of nearly five inches, as also were the tracks of the Long Branch Railroad. The tide at South Beach, Staten Island, was the highest seen in many years and did considerable damage. The sea at 11 a. m. broke over the embankments and flooded the swamp for several miles.—*New York Daily Tribune, March 22d.*

High tides also occurred as follows: Eastport, Me., 21st; Wood's Holl, Mass., 16th; Cape Henry, Va., 14th, 15th, 19th, 20th.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroral displays were noted on the 5th at stations in Michigan, Illinois, Iowa, Minnesota, Dakota, and Montana; on the 28th in northern Ohio, western New York, Minnesota, and Dakota, and on the 27th in southwestern Michigan, northern Illinois, and eastern Minnesota. No auroras were reported at stations south of the fortieth parallel or east of the seventy-seventh meridian. The following are descriptions of the more notable displays observed:

Bismarck, Dak.: an auroral arch of pale yellow color, with a dark segment beneath, and extending from azimuth 135° to 225° and to altitude 30°, was first observed 9.15 p. m., 5th. Its maximum intensity occurred at 11.30 p. m., and the display ended during the night.

Moorhead, Minn.: an aurora was observed 10.30 p. m., 5th. It consisted of a steady white arch which extended from azimuth 160° to 235°, and rose to altitude 30°. The display continued as described until daylight of the 6th. Another auroral display, consisting of a pale white arch, was observed from 3.30 a. m. until daylight on the 28th.

Fort Buford, Dak.: an auroral display was observed 10.18 p. m., 5th. It consisted of a faint yellowish light in the form of an arch which rose gradually until it attained altitude 40°, at 11.05 p. m. No change in color or brilliancy occurred during its rise, but a second partial arch formed which was only slightly visible at some points; it had an altitude of about 30°. The aurora had entirely disappeared at 1.50 a. m., 6th.

Duluth, Minn.: an aurora was first observed 9.15 p. m., 5th, consisting of an irregular whitish light extending from azimuth 170° to 210° and to altitude about 30°. At 9.50 p. m. it changed to a pale yellow arch, from which occasional streamers moved from east to west, and occupied the same position in azimuth and altitude 10°, beneath which the dark segment was well defined. The sky became obscured 11.15 p. m.

Another auroral display was observed 10.15 p. m., 27th, consisting of a pale light extending over the northern sky from about azimuth 180° to 220°, and rising to altitude 20°. At 11.30 p. m. it assumed a pale yellow tint, and rested upon an irregular arch, from which bright streamers rose to altitude 45°. The display continued until after midnight but no new features were observed.

Saint Vincent, Minn.: an auroral light was observed 9.15 p. m., 6th, and ended during the night. It consisted of a confused mass of whitish light, at times developing into a more or less distinct arch, which covered 130° of the horizon, and reached altitude 15°. Its maximum brilliancy occurred 12.30 a. m., 7th, at which time several "needles" appeared rising from the arch to altitude 40°.

Fort Buford, Dak.: an aurora was first observed 12.22 a. m., 28th. It consisted of an arch of whitish color which extended over 90° of the horizon between northwest and northeast, and rising gradually to altitude about 40°, when it became stationary, and slightly increased in brilliancy. A second arch formed about the time the first one reached its maximum intensity; this arch rose to altitude 60°, and its most brilliant part was the centre. The display ended 2.45 p. m.

Auroras were observed during the month as follows: 1st, Bismarck, Dak.; Gillett, Iowa. 2d, Dunkerton, Iowa. 3d, Saint Vincent, Minn. 5th, Bismarck, Fort Buford, Fort Sully, Kimball, Webster, Wolsey, and Woonsocket, Dak.; Cedarville, and Riley, Ill.; Ames, Amasa, Cresco, Dysart, Gillett, Independence, Monticello, and Osage, Iowa; Pontiac and Traverse City, Mich.; Duluth and Moorhead, Minn.; Fort Assinaboine, Mont.; Embarrass, Wis. 6th, Saint Vincent, Minn.; Fort Assinaboine, Mont. 14th, Hess Road Station, Mich. 19th, Fort Sully, Dak.; Saint Vincent, Minn. 21st, Milwaukee, Wis. 24th, Saint Vincent, Minn. 27th, Mount Morris, Ill.; Berrien Springs, Mich.; Duluth, Minn. 28th,

Fort Buford and Leech Farm, Dak.; Moorhead and Saint Vincent, Minn.; South Canisteo, N. Y.; Garrettsville, Ohio.

THUNDER-STORMS.

Thunder-storms were noted in the greatest number of states and territories (13) on the 18th, 27th, 30th, and 31st; in nine on the 15th, 16th, and 19th; in eight on the 14th and 24th; in seven on the 17th and 28th; in five, or less, on the 1st, 5th, 8th to 13th, 20th to 23d, 25th, 26th, and 29th. On the 2d, 3d, 4th, 6th, and 7th no thunder-storms were reported.

Thunder-storms occurred on the greatest number of days (12) in Tennessee; in California on eleven; in Kansas on ten; in Ariz., Ark., Fla., Ind. T., La., Miss., N. C., S. C., and Tex. on five to nine, inclusive; in Ala., Col., Conn., Ga., Idaho, Ill., Ind., Iowa, Ky., Me., Md., Mass., Mich., Mo., Mont., Nebr., N. H., N. J., N. M., N. Y., Ohio, Oregon, Pa., Utah, Va., and Wis. on less than five; in Dak., D. C., Minn., Nev., R. I., Wash., W. Va., and Wyo. none were reported.

MISCELLANEOUS PHENOMENA.

PRAIRIE FIRES.

Poplar River, Mont.: large prairie fires were burning on the plains north of this place on the 4th and 21st.

Yankton, Dak.: large prairie fires were observed in the east and south on the 7th and 28th. Prairie fires, very destructive to farm property, occurred two miles west of this city on 28th.

Fort Sully, Dak.: prairie fires were burning south of station on the 18th, and all around the station on the 19th, 25th, and 27th. Prairie fires were also observed from the 28th to 31st.

Bismarck, Dak.: extensive prairie fires were raging south of this city, on the west side of the Missouri, on the 25th and 26th; on the latter date slight fires were observed to northward.

Fort Yates, Dak.: prairie fires were observed to the north and west of this place at 1.20 p. m., 26th.

Huron, Dak.: prairie fires, which were driven by the high wind on the 28th, were very destructive in this section; many barns, houses, and hay-stacks were destroyed.

Prairie fires were also reported as follows: Fort Reno, Ind. T., 27th; Fort Sill, Ind. T., 2d to 8th, 10th to 15th, 17th to 20th, 26th to 31st.

HALOS.

Solar halos were most frequently reported in New York and California, where they were noted on sixteen days. In Michigan they were reported on fourteen days; in Oregon on thirteen; in Massachusetts and Tennessee on eleven; and in Illinois and Ohio on ten days. None were reported in Arkansas, Indian Territory, Nevada, New Mexico, Rhode Island, West Virginia, and Wyoming. They were noted in the greatest number of states and territories, fourteen, on the 23d and 27th; in thirteen on the 14th, 15th, and 22d; in eleven on the 11th; and in ten on the 2d, 13th, 21st, 24th, and 30th. There were no days for which solar halos were not reported in one or more states or territories.

Lunar halos were most frequently reported in Michigan, where they were noted on thirteen dates. In South Carolina they were reported on eleven, and in Tennessee on ten dates. In Utah no lunar halos were reported. They were reported in the greatest number of states and territories, twenty-four, on the 10th and 14th; in twenty-one on the 11th; in seventeen on the 13th and 15th; in thirteen on the 7th, 8th, 12th, and 16th, and in ten on the 9th. On the 1st, 3d, 20th, 25th, 27th, 28th, and 29th no lunar halos were reported.

Leavenworth, Kans.—A lunar halo of 22° radius was observed forming at about 8.30 p. m., 13th. It was very distinct and perfectly formed, and the prismatic colors were clearly defined from 10 to 11 p. m. The halo lasted in perfect form for over four hours. As it began to disappear the colors first began to grow dim and indistinct; the diameters commenced to slowly contract, and the halo became smaller.

METEORS.

The distribution of meteors, by dates, was as follows: 1st, Hay Springs, Nebr. 4th, Riddleton, Tenn. 5th, Oregon, Mo. 6th, Fort Sully, Dak. 9th, Lead Hill, Ark.; Statesburgh, S. C. 20th, Riddleton, Tenn. 22d, Cedar Springs, S. C. 25th, Amherst, Leominster, and Newburyport, Mass.; Fremont, Mich. 26th Cedar Springs, S. C. 27th, Mesquite, Tex. 28th, Lead Hill, Ark.; Cleburne, Tex. 29th, Mantanzas, Fla.; Oregon,

Mo.; Wauseon, Ohio; Queensbury, N. Y. 30th, Wedgewood, N. Y. 31st, The Dalles, East Portland, and Portland, Oregon.

The following are descriptions of the more notable meteoric displays reported:

Newburyport, Mass.: a brilliant meteor was observed on the 25th, at 7.26 p. m. It fell from northwest of the zenith toward the northern horizon, and when about ten degrees above the horizon was seen to burst. The sound of the explosion was plainly heard about forty seconds later. It was brilliant enough to cast a plainly visible shadow.—*Report of F. V. Pike, voluntary observer.*

Portland, Oregon: at 9.08 p. m., 31st, local time, a brilliant meteor, about one-fourth the apparent size of the moon, was observed in the northeastern sky at an altitude of about 20°. It traveled in a northwesterly direction, passed through the dipper, and was last seen about 10° above the northwestern horizon, when it burst, leaving two clouds, seemingly of a light film of smoke, which gradually disappeared. Three minutes after a sound was heard, resembling the explosion of a rocket. A large number of shooting stars were seen immediately before and after its passage. The meteor was of an electric hue tinged with bluish purple toward the forward point, and the light was so intense that the shadow of trees and houses were clearly defined. From various sources it is learned that this meteor was observed for hundreds of miles around Portland. Its brilliancy and size were especially marked at all places.—*Report of Signal Service observer.*

The Dalles, Wasco Co., Oregon: a very large and brilliant meteor was observed at 9 p. m., 31st. It was first seen about 30° from the zenith, moving slowly in a direction about north 30° west. The stars were visible in the zenith, but clouds were more and more dense toward the horizon, and when the meteor entered the clouded part it grew redder as it descended, and like the sun at certain seasons, resembled a large red ball. The meteor remained visible until within 6° or 8° of the horizon, but possibly was only shut out from sight by passing behind the mountains. During its course a small part seemed to become separated from the rest but followed in a path parallel with the large body until lost to sight. The time of flight was about four or five seconds. It cast a plainly visible shadow until obscured by clouds.—*Report of Prof. D. Torbet.*

MIRAGE.

Mirage were reported as follows: Webster, Dak., 9th, 22d, 27th, 29th; Woonsocket, Dak., 10th; Hampton, Iowa, 5th. San Diego, Cal.: a mirage was observed in the southwest at 5 p. m., 25th; houses, trees, and other objects seemed to be setting on a vast lake, and a steamship appeared in an inverted position. The mirage was visible for nearly one hour.

SAND STORMS.

Keeler, Cal.: the high northwest wind which began 11.15 a. m., 20th, attained a maximum velocity of forty-five miles per hour at 11.45 a. m., raising blinding clouds of sand which made it almost impossible to venture out of doors without covering the face. A sand storm also occurred at this place on the 12th, and at San Carlos, Ariz., from the 1st to 4th.

POLLEN.

Sergeant F. H. Clarke, Signal Corps, Vicksburg, Miss., for-