

known here for years. Thirteen barns and houses were damaged by lightning, and about one hundred cellars and basements were flooded. Growing crops throughout the country were seriously damaged.—*Union and Advertiser, Rochester, N. Y., 28.*

27th. New York.—Watertown, Jefferson Co.: rain fell in torrents in several parts of this county and northern New York during yesterday and last night. There were no trains on the Cape Vincent branch of the Rome, Watertown, and Ogdensburgh Railroad this morning, on account of a serious washout two miles west of Chaumont. Redwood and Sacket's Harbor, both in this county, are flooded. The midnight freight on the Utica and Black River division of the Rome, Watertown, and Ogdensburgh Railroad, ran into a washout at Redwood last night and was wrecked.—*Union and Advertiser, Rochester, N. Y., June 27.* Wisconsin.—Waukesha, Waukesha Co.: a very severe rain and thunder-storm occurred during the night. The rainfall was unusually heavy and caused considerable damage to growing crops.—*Milwaukee, Wis., Journal, June 27.*

28th. New York.—Schenectady, Schenectady Co.: during

a terrific thunder-storm in the afternoon a cloud-burst occurred over the town of Princetown, about six miles southwest of this city, doing great damage. Acres of crops were washed away and a number of head of stock were drowned. The roads at Rotterdam, an adjoining town, were covered with a foot and a half of water, and many bridges were carried away.—*Union and Advertiser, Rochester, N. Y., June 29.* Ohio.—Akron, Summit Co.: between 12.15 p. m. and 1 p. m. this city was deluged by a cloud-burst; two inches of rain fell in forty-five minutes, as indicated by the Buchtel College observatory gauge. The railroad tracks were heaped with earth several feet deep and trains were delayed. At Tallmadge, this county, a large section of the New York, Pennsylvania, and Ohio tracks was washed out, and trains were blockaded. The stores in the lower portion of the city were flooded and the streets were running streams. In South Akron a house floated off its foundation, telegraph poles were shattered by lightning, and reports from the country show that the recent excessive rains caused great damage to crops.—*Pittsburgh, Pa., Post, June 29.*

INLAND NAVIGATION.

STAGE OF WATER IN RIVERS AND HARBORS.

The following table shows the danger-points at the various stations; the highest and lowest water for June, 1889, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark, June, 1889 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River:</i>						
Shreveport, La.....	29.9	22, 23	16.0	12	8.7	7.3
<i>Arkansas River:</i>						
Fort Smith, Ark....	22.0	23	14.8	13	5.4	9.4
Little Rock, Ark....	23.0	25, 26	15.9	15	7.2	8.7
<i>Missouri River:</i>						
Fort Buford, Dak....	19	9.4	1	7.0	2.4
Omaha, Nebr.....	18.0	12, 21	9.6	2, 3	7.0	2.6
Leavenworth, Kans...	20.0	24	11.8	9	7.2	4.6
Kansas City, Mo....	21.0	20, 21	12.0	4, 5, 6	9.8	2.2
<i>Mississippi River:</i>						
Saint Paul, Minn....	14.5	1	3.5	16	2.2	1.3
La Crosse, Wis....	24.0	1	5.8	18, 19	3.9	1.9
Dubuque, Iowa....	16.0	1	7.1	26, 27, 28	4.3	2.8
Davenport, Iowa....	15.0	1, 2	5.1	28, 29, 30	3.1	2.0
Keokuk, Iowa....	14.0	8	6.8	30	3.5	3.3
Saint Louis, Mo....	32.0	1	24.4	8	13.7	10.7
Cairo, Ill.....	40.0	24	34.5	1	20.5	14.0
Memphis, Tenn....	34.0	27	27.7	2	14.4	13.3
Vicksburg, Miss....	41.0	30	33.4	5	19.2	14.2
New Orleans, La....	13.0	30	10.5	1	4.9	5.6
<i>Ohio River:</i>						
Pittsburgh, Pa....	22.0	1	24.0	27	5.4	18.6
Parkersburg, W. Va.	38.0	3	23.8	29	7.6	16.2
Cincinnati, Ohio....	50.0	6	33.6	1	15.4	18.2
Louisville, Ky....	25.0	6, 7	11.8	2	7.7	4.1
<i>Cumberland River:</i>						
Nashville, Tenn....	40.0	21	25.9	1	4.8	21.1
<i>Tennessee River:</i>						
Chattanooga, Tenn..	33.0	3	12.4	29	3.9	8.5
<i>Monongahela River:</i>						
Pittsburgh, Pa....	29.0	1	24.0	27	5.4	18.6
<i>Savannah River:</i>						
Augusta, Ga.....	32.0	30	14.5	27, 28	6.7	7.8
<i>Willamette River:</i>						
Portland, Oregon..	15.0	3, 4	8.7	24, 28	5.8	2.9

Tennessee River.—Chattanooga, Tenn.: driftwood in river, 2d to 5th, 16th, 17th, 18th.

Mississippi River.—Keokuk, Iowa: driftwood in river, 8th.

FLOODS.

The destructive floods which occurred in sections of the Middle States at the beginning of the month have been made the subject of a special report in this and the preceding issue of the REVIEW. These floods were the immediate result of the excessive rainfall in those sections of the last two days of May, which found the rivers and streams of the Middle States with high stages of water, and the land of the drainage areas saturated, as a result of the abnormally heavy and persistent

rains of the preceding two months, which in the middle Atlantic states averaged 70 per cent. above the normal amount for April and May. The destructive features of the flood at Johnstown, Pa., were due almost entirely to the water liberated by the breaking of the dam on the South Fork.

Tuscola, Douglas Co., Ill., 8th: there is a heavy flood in central Illinois, and streams are higher than ever known before. While the damage to crops in this vicinity is not great, reports from Chrisman and Hume, Edgar Co., and other points along the Indianapolis, Decatur and Springfield Railway, are to the effect that thousands of acres of corn, oats, and wheat are under water. A serious washout occurred on the Chicago and Eastern Illinois Railway at Grape Creek, Vermillion Co., and all freight trains are temporarily abandoned.—*Chicago, Ill., Tribune, June 9.*

Newaygo, Newaygo Co., Mich., 11th: the village of Croton, this county, eight miles from this city, is completely inundated by the back water from the jam of logs in the Muskegon River. The pressure against the piers is so great that the bridge is unsafe, and communication is cut off.—*Union and Advertiser, Rochester, N. Y., June 11.*

Indianapolis, Ind., 11th: although no rain has fallen during the last twenty-four hours, White River and other Indiana streams continue to rise. Thousands of acres of farm land are under water and the damage to crops and property is high in the thousands. Several bridges have been carried away in the southern part of the state. The Vandalia line is transferring its passengers near Plainfield, and trains over other lines west and south are running irregularly. In Owen county 2,500 acres of crops are under water, and in Morgan, Bartholomew, Clay, and Greene counties it is estimated that over 10,000 acres are inundated.—*The Oswego, N. Y., Palladium, June 11.*

Decatur, Macon Co., Ill., 12th: the sudden high water in the Sangamon River has done great damage to bottom land crops, and has broken through four levees and overflowed bottoms for miles.—*The Oswego, N. Y., Palladium, June 12.*

Vincennes, Knox Co., Ind., 15th: the June floods have worked disaster to the farmers of southern Indiana who have crops in the bottom lands. The White River has washed out thousands of acres of corn and wheat, and farmers have been compelled to move their families and live stock to high ground. The damage to southern Indiana and Illinois, along White and Wabash rivers, will amount to many thousands of dollars.—*The Oswego, N. Y., Palladium, June 15.*

Erie, Pa.: the heavy rain which began 3.55 p. m., 16th, ended at 10 a. m. the following day, during which time 3.13 inches of rain fell, causing the streams in this section to rise higher than ever known before. Several washouts occurred

in this city, a large number of cellars were flooded, considerable lumber washed away, and crops on low ground destroyed.

El Dorado, Butler Co., Kans., 17th: extensive rains have caused a flood in the valley of the Walnut. Part of the Missouri Pacific track has been washed away. Iola, Allen Co., 17th: this county has suffered severely from floods in the Neosho River and its tributaries. Crops have been badly

damaged. There is a serious washout on the Saint Louis, Wichita, and Western Railroad.—*Buffalo, N. Y., Express*, 18.

HIGH TIDES.

Manatee, Manatee Co., Fla.: the high southeast wind on the 16th and 17th caused the tide to rise higher than it has been since 1848; all wharves on the river were submerged, entailing slight damage.—*Report of Mrs. Mary W. Broberg*.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were noted at Saint Vincent, Minn., 14th; Parkston, Dak., 15th; and Orono, Me., 20th. The display at Saint Vincent was first observed at about midnight of the 14th, and consisted of an arch extending from azimuth 160° to 205° and to altitude 12°, and had much the appearance of a rainbow, though somewhat broader. The display remained materially unchanged until daybreak of the 15th.

THUNDER-STORMS.

The more severe thunder-storms are described under "Local storms." Thunder-storms were reported in the greatest number of states and territories, thirty-six, on the 15th; in thirty-one on the 14th; in thirty on the 17th; in twenty-eight on the 16th, 20th, and 28th; in twenty-seven on the 29th; in twenty-six on the 21st; in from twenty to twenty-five, inclusive, on the 4th to 6th, 8th to 11th, 13th, 18th, 19th, 26th, 27th, and 30th; in from fifteen to nineteen, inclusive, on the 3d, 7th, 12th, and 25th; in from ten to fourteen, inclusive, on the 22d

to 24th; in eight on the 1st; and in seven on the 2d. There were no dates for which thunder-storms were reported in less than seven states and territories.

Thunder-storms were reported on the greatest number of dates, twenty-eight, in Texas; on twenty-five in Kansas; on twenty-three in Florida, Louisiana, Michigan, and Tennessee; on twenty-two in Dakota; on from fifteen to twenty, inclusive, in Alabama, Arizona, Georgia, Illinois, Indiana, Indian Territory, Iowa, Mississippi, Missouri, Nebraska, New York, North Carolina, Ohio, Pennsylvania, South Carolina, and Virginia; on from ten to fourteen, inclusive, in Arkansas, Connecticut, Maine, Minnesota, Nevada, New Jersey, New Mexico, Vermont, Wisconsin, and Wyoming; on from five to nine, inclusive, in California, Colorado, Kentucky, Maryland, Massachusetts, Montana, New Hampshire, Utah, and West Virginia; on from one to four, inclusive, in Delaware, District of Columbia, Idaho, Oregon, and Rhode Island. There was but one state or territory, Washington, in which no thunder-storms were reported.

MISCELLANEOUS PHENOMENA.

FOREST FIRES.

Two Harbors, Lake Co., Minn., 12th: forest fires are raging along the Iron Range Railroad. This city is enveloped in smoke. A strong wind has been blowing all day, and every thing is dry as tinder, which renders the conditions very favorable for the progress of the fires. Ely, Emmet Co., Mich., 12th: the most destructive fires of the season are burning in this section; twelve to fifteen houses have been destroyed, and much damage has been done to railroad property.—*The Palladium, Oswego, N. Y., June 14*.

Superior, Douglas Co., Wis., 13th: a destructive fire is sweeping the forests south and west of here. Already over \$500,000 worth of pine has been destroyed. The districts tributary to Nemadji and Saint Louis rivers, in Wisconsin and Minnesota, are suffering terribly. The smoke from the burning districts obscures the sun and renders it difficult for vessels to enter the harbor. A strong wind is blowing from the southwest and several villages are threatened. The fires are raging from Saint Croix to the Northern Pacific Junction.—*Union and Advertiser, Rochester, N. Y., June 13*.

Ellensburg, Kittitas Co., Wash., 17th: severe forest fires prevail on the east side of the Cascade Mountains. The roar of the flames are heard for miles, and during the night the sky is illuminated with a glow. High wind prevails and the fires are extending.—*Union and Advertiser, Rochester, N. Y., June 17*.

Fort Apache, Ariz., 24th: the heavy rain during the last three days, it is believed, has extinguished the extensive fires which have prevailed near the headwaters of the White Mountain River since the 13th.

Forest fires were also reported as follows: Red Bluff, Cal., 1st, 4th to 7th; Linkville, Oregon, 10th; Fort Klamath, Oregon, 19th to 22d; Los Angeles, Cal., brush fires, 9th.

HALOS.

Solar halos were most frequently reported in Illinois, where they were noted on fifteen days; in Texas on thirteen days;

in Washington on twelve days; in Dakota on eleven days; in California, Idaho, Kansas, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, and Virginia, on from five to ten days, inclusive; in Alabama, Arizona, Arkansas, Indiana, Indian Territory, Iowa, Louisiana, Maine, Missouri, Nebraska, New Hampshire, and Wisconsin, on from one to four, inclusive. In Colorado, Connecticut, District of Columbia, Florida, Georgia, Kentucky, Mississippi, Montana, New Mexico, Rhode Island, Utah, West Virginia, and Wyoming no solar halos were reported during the month. They were reported in the greatest number of states and territories, fourteen, on the 1st and 3d; in twelve on the 2d; in eleven on the 6th and 17th; in from five to ten, inclusive, on the 4th, 5th, 7th to 9th, 11th, 13th to 16th, 18th, 20th, 24th, 25th, and 29th; and in from one to four, inclusive, on the 10th, 19th, 21st to 23d, 27th, 28th, and 30th. For dates other than those named no solar halos were reported.

Lampasas, Lampasas Co., Tex.: the solar halo observed at noon on the 6th was a remarkably beautiful one; it was very brilliant, and formed a complete circle. All the colors were distinct, the red being next to the sun. The phenomenon lasted about one hour, and the prismatic colors faded some time before the disappearance of the halo. Very light cirrus clouds, seemingly stationary, were evenly distributed in the zenith during the time of the halo, although a moderate southeast wind was blowing below. Rain fell every day during the six days following; that on the sixth day being the heaviest known here for many years, 4.26 inches falling in about twelve hours.—*Report of Dr. C. M. Ramsdell*.

Lunar halos were most frequently reported in South Carolina, where they were noted on eight dates; in Illinois, New Jersey, Ohio, and Tennessee on seven dates; in Dakota and Minnesota on six dates; in Alabama, Arkansas, California, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, North Carolina,