

of Jersey City were damaged to the extent of \$10,000. At Plainfield a substantial stone bridge over Green brook was washed away.

At Elizabeth, on the 23d, the water in the streets was knee-deep, flooding many of the houses. Barns and small buildings in some localities were floated away.

Moorestown: From the 21st to 24th, nearly all of the mill-dams in this vicinity were washed away; numerous and extensive washouts occurred on the railroad.

New York: New York City, 23d, six brick buildings in course of construction were undermined and fell, causing a loss of \$10,000. Many basements and cellars were flooded, causing great damage.

Sing Sing, 23d, washouts occurred along the railroad and travel was considerably delayed. The station was surrounded by water and many cellars were flooded.

Poughkeepsie, 23d, reports from the interior of the counties along the Hudson river state that roads were badly washed; the lowlands flooded and bridges were swept away.

Newburgh, 27th, many bridges have been swept away or damaged in this vicinity, and the new railroad station at this place was considerably damaged. Many cellars were flooded, causing much damage to merchandise.

At Cornwall, eight bridges were washed away, entailing a loss of \$12,000.

At Mountainville, a barn and dam were carried away, and a flour mill was damaged.

Port Jervis, 23d, trains have been delayed by washouts in the Ramapo valley; the tracks are submerged in places.

Pennsylvania: Philadelphia, 22d, damage to the extent of several thousand dollars has been done in and about the city; bridges, drains, and culverts were badly damaged. On the 23d, the Schuylkill river rose six feet. Much damage is reported to have been done at various points along the railroads. Reading, 23d, many cellars were flooded and the country roads are rendered impassable. Many hay-stacks have been swept away and some stock has been drowned. Newtown, 23d, several buildings were washed away and others were injured. Washouts occurred on the railroads in this vicinity.

Virginia: Fredericksburg, 23d, in Essex county four mills were washed away and great damage was done to crops and other property.

North Carolina: Tarboro, 22d, the heaviest rainstorm since 1842 occurred last night, sweeping away many bridges. The track of the Tarboro branch of the Wilmington and Weldon railroad was much damaged. Charlotte, 14th, serious washouts have occurred on the various railroads in this vicinity.

Texas: San Antonio, 6th, during a heavy rainstorm the streets were flooded. The San Antonio river rose eight feet, causing much damage to houses in the lower part of the city. The San Pedro creek, passing through the western part of the city, rose rapidly washing away all the bridges and houses on its banks. Several bridges were washed away on the International railroad and the track was much damaged.

Austin, 6th, Barons creek, south of this city has overflowed the farms on its banks, and fences and crops have been washed away. A flouring mill on the creek was destroyed, and another was badly damaged. The damage caused will amount to several thousand dollars.

TEMPERATURE OF WATER.

The temperature of water, as observed in rivers and harbors at the Signal Service stations, with the average depth at which observations were taken, is given in the table on the right-hand of chart number ii. In the first column of the table is given the maximum temperature observed during the month; and in the second column the minimum temperature observed during the same period.

The following table gives the highest and lowest temperatures of water at the several stations, with the range of water temperature, and the mean temperature of the air at the station, and the depth of water at which the observations were taken.

The greatest ranges occurred as follows: 22° at Provincetown; 18° at Chincoteague and Galveston; and 17.6° at Alpena. The smallest are: 2.07° at Eastport; 3° at San Francisco; 3.02° at Key West; and 5° at Marquette and Punta Rassa.

Temperature of Water for September, 1882.

STATION.	Temperature at bottom.		Range.	Average depth, feet and inches.	Mean temperature of the air at station.
	Max.	Min.			
Atlantic City.....	73.9	68.0	5.9	6 10	69.1
Alpena.....	69.8	52.2	17.6	11 8	58.1
Augusta.....	83.5	68.5	15.0	9 10	74.6
Baltimore.....	78.0	68.0	10.0	10 1	69.0
Block Island.....	67.4	59.4	8.0	8 2	64.3
Boston.....	64.5	56.0	8.5	25 0	62.7
Buffalo.....	73.8	63.5	10.3	9 11	62.2
Burlington.....	73.3	60.0	13.3	17 0	60.1
Cedar Keys.....	87.0	80.0	7.0	10 6	79.2
Charleston.....	84.1	73.9	10.2	41 10	78.5
Chicago.....	72.8	62.8	10.0	8 2	65.0
Chincoteague.....	80.0	62.0	18.0	6 6	70.5
Cleveland.....	75.7	59.7	16.0	14 0	64.0
Detroit.....	74.0	62.0	12.0	24 3	64.2
Duluth.....	67.0	58.0	9.0	15 0	68.5
Delaware Breakwater.....	74.3	64.5	9.8	6 6	69.8
Eastport.....	50.4	47.7	2.7	16 3	56.0
Esanaba.....	66.0	61.8	4.2	15 0	68.2
Galveston.....	86.0	68.0	18.0	14 10	78.3
Grand Haven.....	71.5	57.0	14.5	19 0	62.2
Indianola.....	85.4	74.1	11.3	9 9	78.2
Jacksonville.....	87.0	79.0	8.0	15 0	77.8
Key West.....	87.0	83.8	3.2	18 3	82.2
Mackinac City.....	67.0	57.4	9.6	13 0	68.6
Marquette.....	61.8	56.8	5.0	10 6	56.9
Millwaukee.....	71.0	62.0	9.0	8 0	62.7
Mobile.....	81.5	77.0	4.5	15 0	75.7
New Haven.....	74.2	59.2	15.0	15 3	64.5
New London.....	69.0	61.0	8.0	12 6	64.8
Newport.....	68.9	59.7	9.2	10 1	64.6
New York.....	74.5	63.0	11.5	22 6	66.9
Norfolk.....	81.0	67.0	14.0	17 6	72.1
Pensacola.....	84.6	74.3	10.3	18 4	75.3
Portland, Me.....	60.0	53.5	6.5	20 1	61.7
Portland, Oreg.....	66.2	60.3	5.9	65 10	59.4
Port Eads.....	52.8	48.3	4.5	9 5	78.6
Provincetown.....	70.0	48.0	22.0	14 0	62.4
Punta Rassa.....	88.0	88.0	0.0	11 11	79.6
Sandusky.....	74.9	69.1	5.8	10 0	65.6
Sandy Hook.....	72.5	66.0	6.5	1 10	68.6
San Francisco.....	60.5	57.5	3.0	32 1	58.6
Savannah.....	82.8	73.4	9.4	13 5	77.1
Smithville.....	82.0	70.0	12.0	10 0	73.5
Tol-doe.....	73.5	63.5	10.0	11 8	64.2
Wilmington.....	81.5	71.5	10.0	13 0	74.0

*Observation not taken on 14th.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroral displays were of frequent occurrence during September. The display on the evening of the 11th was the most important of the month, and was observed from the lower lake region westward to Dakota and southward to Virginia and southern Illinois. None of the displays noted were remarkable for their brilliancy or extent of observation. On the various dates they were reported as follows:

2d: Halifax, Nova Scotia.

3d: Duluth, Minnesota, faint auroral light from 9:15 to 9:25 p. m. Mackinac City, Michigan, pale auroral light at 9:00 p. m., lasting forty-five minutes.

4th: Deadwood, Dakota, faint auroral light, with occasional beams extending upward to an altitude of from 40° to 60°. It was first observed at 8:00 p. m., and disappeared at 11:00 p. m. Saint Vincent, Minnesota, faint auroral display from 10:00 p. m. to midnight. Marquette, Michigan, faint aurora from 9:10 to 9:40 p. m. Franklin, Wisconsin, faint auroral display from 9:00 to 10:00 p. m. Alpena, Michigan, aurora visible at 9:30 p. m., consisting of a diffuse light in the northern sky, with a few small streamers reaching an altitude of 60°. Cambridge, Massachusetts, distinct aurora observed at 10.15 p. m. Monticello, Iowa, aurora observed at 10:00 p. m. This display was also observed at the following Canadian stations: Toronto, Fredericton, and Halifax.

5th: Moorhead, Minnesota, faint aurora from 9:00 to 10:00 p. m. Franklin, Wisconsin, faint display from 9:00 to 10:00 p. m. Alpena, Michigan, diffuse auroral light with no streamers at 9:50 p. m. Rochester, aurora from 9:45 to 11:45 p. m., consisting of a few short faint beams shooting upward from a