observations were made; and the mean temperature of the air at the stations:

Temperature of water for January, 1886.

Station.	Temperature at bottom. Max.	Temperature at bottom. Min.	Range.	Average depth, feet and tenths.	Mean temperature of the air at station.
	°	°	°		°
Atlantic City, New Jersey	40.0	28.5	11.5	6.6	29.7
Alpena, Michigan*	52.5	30.7	1.8	12.5	15.3
Augusta, Georgia	53.3	32.8	20.5	14.6	40.2
Baltimore, Maryland	39.5	32.1	7.4	10.3	29.1
Boston, Massachusetts	38.1	29.5	8.6	19.6	25.9
Buffalo, New York	37.6	32.0	5.6	10.3	22.1
Canby, Fort, Washington Territory	49.8	38.3	11.5	15.5	40.1
Cedar Keys, Florida	58.8	34.7	24.1	7.6	49.2
Charleston, South Carolina	51.6	28.5	23.1	39.1	42.8
Chicago, Illinois *	37.3	33.1	4.2	9.0	21.4
Chincoteague, Virginia *	41.8	28.4	13.4	2.7	32.7
Cleveland, Ohio*	34.3	31.9	2.4	14.0	23.1
Detroit, Michigan *	37.2	35.4	1.8	24.7	24.7
Duluth, Minnesota *	34.5	33.1	1.4	10.3	5.7
Eastport, Maine	40.9	36.3	4.6	15.9	22.9
Escanaba, Michigan*	.....	.....	.....	.....	.....
Galveston, Texas	60.6	31.0	29.0	12.2	47.3
Grand Haven, Michigan *	33.6	32.3	1.3	19.0	20.2
Indianola, Texas	63.4	33.7	29.7	7.2	46.3
Jacksonville, Florida	57.6	42.0	15.6	18.0	50.7
Key West, Florida	70.9	60.2	10.7	17.8	63.8
Mackinaw City, Michigan*	33.4	31.8	1.6	10.0	15.0
Macon, Fort, North Carolina	56.2	35.0	21.2	11.1	39.7
Marquette, Michigan*	34.4	32.2	2.2	12.8	13.8
Milwaukee, Wisconsin *	.....	.....	.....	.....	.....
Mobile, Alabama	52.6	40.5	12.1	15.9	44.1
New Haven, Connecticut	41.0	30.6	10.4	15.6	25.4
New London, Connecticut	38.8	32.4	6.4	12.2	27.8
New York City	40.0	32.0	8.0	18.3	28.5
Norfolk, Virginia	44.6	31.2	13.4	15.9	34.3
Pensacola, Florida	55.4	39.8	15.6	16.6	46.3
Portland, Maine	37.2	30.7	6.5	16.6	21.3
Portland, Oregon	45.0	33.4	11.6	52.1	36.1
Sandusky, Ohio*	36.6	33.4	3.2	11.2	22.7
Sandy Hook, New Jersey	41.0	30.9	10.1	2.2	28.8
San Francisco, California	54.6	49.7	4.9	38.0	50.9
Savannah, Georgia†	51.1	34.1	17.0	9.7	45.9
Smithville, North Carolina	55.1	34.9	20.2	10.5	40.0
Toledo, Ohio*	39.5	33.2	6.3	13.6	20.7
Wilmington, North Carolina	.....	.....	.....	.....	.....

* Observations interrupted by ice; see text. † Observations interrupted from the 16th to the 31st.

Observations were interrupted by ice during the month, as follows:

Grand Haven, Michigan, 9th to 31st; Cleveland, Ohio, 9th to 31st; Sandusky, Ohio, 7th to 31st; Alpena, Michigan, 7th to 31st; Mackinaw City, Michigan, 6th to 31st; Marquette, Michigan, 8th to 31st; Duluth, Minnesota, 6th, 7th, 10th, 15th, 19th to 31st; Escanaba, Michigan, 1st to 31st; Detroit, Michigan, 7th to 31st; Chicago, Illinois, 7th to 31st; Milwaukee, Wisconsin, 1st to 31st; Chincoteague, Virginia, 12th to 17th; Toledo, Ohio, 8th to 31st.

WINDS.

The most frequent directions of the wind during January, 1866, are shown on chart ii by the arrows flying with the wind; they are also given in the tables of miscellaneous data. Over the eastern slope of the Rocky Mountains, in the extreme northwest, upper Mississippi and Missouri valleys, middle Atlantic and west Gulf states the prevailing winds were, in most cases, from the northwest; in the lower lake region and east Gulf states they were westerly; in New England and on the Pacific coast they were variable.

HIGH WINDS.

[*In miles per hour.*]

Wind-velocities of fifty or more miles per hour were recorded during the month, as follows:

Mount Washington, New Hampshire, 68, nw., 1st; 50, sw., 3d; 93, s., 4th; 72, sw., 5th; 52, s., 6th; 107, nw., 7th; 108, nw., 8th; 108 ne., 9th; 58, nw., 10th; 51, nw., 11th; 88, nw., 12th; 74, nw., 13th; 73, s., 16th; 73, nw., 17th; 96, nw., 18th; 80, se., 19th; 120, nw., 20th; 80, sw., 21st; 122, nw., 23d; 63, nw., 24th; 62, sw., 25th; 60, nw., 26th; 59, nw., 31st.

Pike's Peak, Colorado, 58, nw., 7th; 55, n, 8th; 74, nw., 9th; 80, nw., 10th; 63, nw., 11th; 50, sw., 21st; 88, w., 22d; 70, w., 23d: 70, w., 24th; 54, n., 28th; 64, nw., 29th; 70, nw., 30th.

Cape Mendocino, California, 68, se., 12th; 144, se., 20th; 72, se., 21st; 108, se., 22d; 86, se., 23d; 88, se., 26th.

Sandy Hook, New Jersey, 53, nw., 6th; 50, nw., 7th; 50, e., 8th; 66, ne., 9th; 53, nw., 23d.

Fort Elliott, Texas, 58, nw., 7th; 52, nw., 28th; 59, n., 22d.

Indianola, Texas, 53, n., 3d; 56, n., 7th; 60, n., 8th.

Fort Maginnis, Montana, 50, n., 14th; 62, sw., 9th.

Fort Macon, North Carolina, 53, sw., 8th; 62, sw., 9th.

Valentine, Nebraska, 54, nw., 6th; 66, nw., 7th.

Tatoosh Island, Washington Territory, 50, e., 18th; 54, e., 19th.

Fort Canby, Washington Territory, 60, se., 22d; 68, sw., 24th.

Atlantic City, New Jersey, 53, e., 8th; 52, e., 9th.

Eastport, Maine, 60, ne., 9th.

Sandusky, Ohio, 50, nw., 9th.

Rochester, New York, 60, w. 22d.

Red Bluff, California, 50, se., 20th.

Cheyenne, Wyoming, 52, nw., 21st.

Boston, Massachusetts, 64, ne., 9th.

Cape Henry, Virginia, 60, ne., 8th.

Block Island, Rhode Island, 64, ne., 9th.

LOCAL STORMS.

California.—San Francisco: an unusually severe storm occurred on the 20th, the wind reaching a velocity of forty-two miles per hour, blowing down trees, awnings, telegraph and telephone lines; in the western portion of the city several buildings were blown down, and a number of persons severely injured; in the business portion of the city signs, awnings, etc., were carried away and windows broken by the strong wind; the shipping in the harbor sustained but little damage, owing to the ample warning given.

Grass Valley, Nevada county: a heavy wind and rain storm occurred on the 20th; signs, fences, and telegraph lines were prostrated.

Half Moon Bay, San Mateo county: a heavy rain, and the severest wind storm within the past twenty-five years, occurred on the 20th; fences, buildings, and telegraph lines were blown down, and great damage done.

Chico, Butte county: the heaviest wind and rain storm for years occurred on the 20th, doing considerable damage to property.

Marysville, Yuba county: a terrific southeast gale and heavy rain storm occurred on the 20th, doing considerable damage about the city and in the surrounding country, hundreds of trees were uprooted, fences and telegraph lines blown down.

Rocklin, Placer county: the severe storm of the 20th blew down fences, trees, wind-mills, etc.

Sacramento: the heaviest wind storm in the past eight years occurred on the 20th; considerable damage was done in the city; fences, gates, small buildings, etc., were blown down, houses unroofed, trees and shrubbery destroyed or seriously injured.

Hydesville, Humboldt county: the heaviest wind storm for years occurred on the 20th; fences were scattered in every direction.

NAVIGATION.

STAGE OF WATER IN RIVERS.

The Mississippi River was frozen for the entire month at Saint Paul, Minnesota; from the 5th to 31st at La Crosse, Wisconsin; and from the 1st to 31st at Dubuque, Iowa. On the 28th a solid mass of ice blockaded the river from the mouth of the Illinois River as far south as Ste. Genevieve, Missouri, a distance of sixty-five miles; the ice was sixteen inches thick, and resembled in many respects the ice gorge which blockaded the river in 1875.

The Missouri River was frozen throughout the month at all stations, except at Leavenworth, Kansas, at which place it froze on the 4th.

The Arkansas River, at Fort Smith, was frozen from the 9th to 31st, and at Little Rock from the 9th to 26th.

The Ohio at Pittsburg reached its highest stage on the 6th, at which time it was within 0.8 inch of the danger-line.

In the following table are shown the danger-points at the various river stations; the highest and lowest depths for January, 1886, with the dates of occurrence, and the monthly ranges:

Heights of rivers above low-water mark, January, 1886.

[*Expressed in feet and tenths*]

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River:						
Shreveport, Louisiana	29.9	29	13.7	1	4.6	9.1
Arkansas River:						
Fort Smith, Arkansas*	22.0	5	4.7	17	3.7	1.0
Little Rock, Arkansas*	23.0	5, 6, 7	5.3	1	3.8	1.5
Missouri River:						
Yankton, Dakota *	24.0	.....	.....	.....	.....	.....
Omaha, Nebraska *	18.0	.....	.....	.....	.....	.....
Leavenworth, Kansas *	20.0	1	7.0	2, 3	6.9	0.1
Mississippi River:						
Saint Paul, Minnesota *	14.5	.....	.....	.....	.....	.....
La Crosse, Wisconsin *	24.0	1	5.0	3	4.8	0.2
Dubuque, Iowa *	16.0	.....	.....	.....	.....	.....
Davenport, Iowa *	15.0	2, 16	7.1	3	5.2	1.9
Keokuk, Iowa *	14.0	6, 9	8.7	15	3.0	5.7
Saint Louis, Missouri *	32.0	31	13.3	12	8.4	8.9
Cairo, Illinois	40.0	11	30.2	2	18.0	12.2
Memphis, Tennessee	34.0	13, 14, 15	21.2	3, 4	11.8	9.4
Vicksburg, Mississippi	41.0	19	28.1	7	16.9	11.2
New Orleans, Louisiana	13.0	23	9.3	9	4.6	4.7
Ohio River:						
Pittsburg, Pennsylvania *	22.0	6	21.2	14	4.5	16.7
Cincinnati, Ohio	50.0	9	38.9	3	14.2	24.7
Louisville, Kentucky	25.0	10	14.1	4	7.3	6.8
Cumberland River:						
Nashville, Tennessee	40.0	22	22.3	15	6.3	16.0
Tennessee River:						
Knoxville, Tennessee	.....	6	11.8	12	1.5	10.3
Chattanooga, Tennessee *	33.0	5	22.1	1	5.1	17.0
Monongahela River:						
Pittsburg, Pennsylvania *	29.0	6	21.2	14	4.5	16.7
Savannah River:						
Augusta, Georgia	32.0	5	29.8	1	8.5	21.3
Mobile River:						
Mobile, Alabama	.....	3	17.2	11	14.5	2.7
Sacramento River:						
Red Bluff, California	.....	24	19.0	17, 18	2.8	16.2
Sacramento, California	.....	28	25.6	18	17.1	8.5
Willamette River:						
Portland, Oregon	.....	30	14.8	20	2.2	12.5
Colorado River:						
Yuma, Arizona	.....	24	20.0	19	14.5	5.5

* Observations interrupted by ice; see text.

ICE IN RIVERS AND HARBORS.

Mississippi River.—Davenport, Iowa: floating ice in the river from 1st to 8th; river frozen, 9th to 13th, 17th to 31st.

Keokuk, Iowa: floating ice in the river, 1st, 2d, 3d, 6th to 21st; navigation was temporarily resumed on the 4th, when the steamer "White Eagle" arrived and departed for Saint Louis; the river was frozen from the 22d to 31st, the ice being fourteen inches thick at the close of the month.

Saint Louis, Missouri: floating ice in the river, 7th to 12th; an ice gorge formed on the 13th, the river remaining frozen from that date to the close of the month.

Cairo, Illinois: floating ice in the river, 8th, 9th, 12th, 14th; navigation between Cairo and Saint Louis was closed on the 9th, owing to the heavy floating ice; river frozen, 10th, 11th, 20th, 21st; an ice gorge formed on the 13th, and again on the 22d.

Memphis, Tennessee: floating ice, 8th to 15th, 23d to 27th.

Vicksburg, Mississippi: the heavy floating ice in the river on the 16th and 17th caused the suspension of navigation.

Missouri River.—Leavenworth, Kansas: ice formed along the shore of the river from the 4th to 7th; the river was completely frozen on the 8th, ice being sufficiently thick on the 9th for the passage of teams.

Arkansas River.—Fort Smith, Arkansas: river frozen from the 9th to 30th, but the ice was breaking up very rapidly on the evening of the 31st.

Ohio and Allegheny Rivers.—Pittsburg, Pennsylvania: floating ice in the rivers from the 8th to 31st. The Monongahela River was frozen from the 10th to 13th, causing the suspension of navigation.

Ohio River.—Cincinnati, Ohio: floating ice in river, 14th, 15th, 18th to 22d.

Cairo, Illinois: floating ice, 8th to 14th, 18th to 21st, 23d to 27th, 30th, 31st; the river was clear of ice on the 28th.

Louisville, Kentucky: heavy floating ice in the river from the 13th to 27th caused a partial suspension of navigation; river clear of ice, 28th to 31st.

Tennessee River.—Chattanooga, Tennessee: floating ice in river, 12th to 18th.

Knoxville, Tennessee: floating ice in the river, 10th to 14th, 17th, 18th, 22d to 31st.

Cumberland River.—Nashville, Tennessee: heavy ice-floes in the river caused the suspension of navigation on the 13th and 14th.

Duluth Bay.—Duluth, Minnesota: bay frozen, 9th to 31st; Lake Michigan remained free of ice up to the 6th, when ice formed which increased in extent until the 8th, when it was broken up by a heavy northwest wind; ice again formed from the 10th to 14th, but broke up on the 15th; ice rapidly formed on the 19th, the lake freezing as far as the eye could see, in which condition it remained until the close of the month.

Thunder Bay River.—Alpena, Michigan: river froze on the 7th.

Saint Clair River.—Port Huron, Michigan: large quantities of floating ice in the river, 5th, 7th, 8th; river frozen, 12th.

Grand River.—Grand Haven, Michigan: floating ice, 8th; river frozen, 9th.

Lake Michigan.—Chicago, Illinois: ice in the harbor, 7th; harbor frozen, 13th; on the 31st the lake was frozen as far as the eye could see.

Detroit River.—Detroit, Michigan: ice in river from the 7th to 31st.

Maumee River.—Toledo, Ohio: river froze on the 8th.

Sandusky Bay.—Sandusky, Ohio: bay frozen on the 7th.

Presque Isle Bay.—Erie, Pennsylvania: ice formed on the bay on the 7th, two inches thick.

Lake Erie.—Buffalo, New York: the lake froze as far as the eye could see on the 9th.

Niagara River.—Buffalo, New York: river froze on the 8th.

Oswego River.—Oswego, New York: river and harbor froze on the 12th.

Burlington Bay.—Burlington, Vermont: the bay froze on the 9th, closing navigation; Lake Champlain froze on the 24th.

Hudson River.—Albany, New York: floating ice in the river, 5th, 7th, 8th, 9th; an ice-dam formed near Coeyman's, Albany county on the 8th, causing a rapid rise in the water; river frozen on the 10th.

Newburg, Orange county, New York: the river was frozen over above and below this point on the 9th; ferry-boats were still running, but greatly impeded by heavy ice.

New York City: heavy ice in the river greatly interfered with navigation on the 10th and 11th.

Casco Bay.—Portland, Maine: ice formed in the harbor on the 8th.

Narragansett Bay.—Fall River, Massachusetts: on account of the heavy ice in the harbor on the 12th, no vessel could arrive or depart without the aid of steam.

New Haven Harbor.—New Haven, Connecticut: the harbor froze half way to its mouth on the 12th.

Delaware River.—Philadelphia, Pennsylvania: heavy ice was reported in sections of the river on the 12th; ice-boats were required to keep the channel open; the Gloucester ferry-boats were laid up for the winter on the 13th; numerous casualties were reported to shipping by the heavy ice in Delaware Bay.

Delaware Bay.—Cape Henlopen, Delaware: the harbor was entirely filled with ice on the 12th, 13th, and 14th, interfering with navigation and causing several casualties to shipping; large quantities of floating ice in the bay on the 17th.

Chesapeake Bay.—Baltimore, Maryland: navigation was partially suspended and rendered extremely hazardous from the 11th to 27th, on account of the heavy ice; vessels could only move with the assistance of ice-boats or powerful tugs; the s. s. "Raleigh" was sunk by ice near Seven Foot Knoll on the

19th, at which place the ice was unusually thick; great damage was done to shipping in all parts of the bay.

Salisbury, Wicomico county: the blockade of all the rivers by ice caused the entire suspension of the oyster business.

Havre de Grace, Harford county, Maryland: on the 13th the river bed was filled with large hummocks of ice and snow from ten to fifteen feet thick, and which, at many points, were jammed to the bottom, the river being completely closed.

Norfolk, Virginia: Elizabeth River, in the vicinity of this station, was frozen from the 12th to 19th, and navigation was suspended, except for the most powerful steamers.

James River.—Richmond, Virginia: the steamers "Old Dominion," for New York City, and "Ashland," for Philadelphia, left their wharves and were ice-bound about a mile below the city on the 12th. For several hundred rods from the "Old Dominion" wharf the ice was packed from six to ten feet on the 23d, and the screw dock of the James River Improvement Company was considerably damaged by gorging ice.

Chincoteague Bay.—Chincoteague, Virginia: the bay was frozen from the 10th to 17th.

Albemarle Sound.—Kitty Hawk, North Carolina: navigation was closed by ice from the 11th to 21st, a large number of steamers and sailing vessels being caught in the ice below Roanoke Island.

Savannah River.—Augusta, Georgia: floating ice, 11th to 14th; river partially frozen, 12th, 13th, 14th.

FLOODS.

California.—Brighton, Sacramento county: considerable damage was done by the high water in the American River on the 24th; several ranches were inundated.

Fresno, Fresno county: the levee that held back the water from the overflow of the dry arroyos which empty on the plains, broke at 2 a. m. of the 25th, submerging three-fourths of the town, and causing a loss of $20,000.

Stockton, San Joaquin county: the San Joaquin River, which had been gradually rising for a week, overflowed a portion of the city on the 24th. Later, the Mass tract, comprising about three thousand acres of wheat, was flooded by the giving away of a flood-gate. The damage is estimated at about $75,000. The water about Roberts' Island, which is protected by levees, rose nine feet above the level of the land. The pressure was too great for the levees to withstand, and a break occurred, through which the water rushed and soon converted thirteen thousand acres of wheat and orchards into a lake. The damage here is estimated at $350,000.

Watsonville, Santa Cruz county: the Pajaro River overflowed its banks on the 25th, damaging the bridge of the Santa Cruz Railroad, and flooding the farms in the lower part of the valley.

Los Angeles: the heavy rain of the 18th and 19th caused a rise in the Los Angeles River, which overflowed its banks and submerged a vast area of the city and county; every railroad bridge on the river was more or less damaged, railroads were washed out in several places, telegraph lines prostrated, several hundred people made homeless, four lives lost, and hundreds of acres of vineyards and orchards destroyed.

The following is a summary of the destruction caused by this flood, as taken from the Los Angeles "Daily Herald":

About 1,000 feet of railroad track were wrecked, and every bridge on the river more or less demoralized; the river bank in many places was washed away, notably below the East Los Angeles bridge and on the Aliso tract; thousands of acres of vineyards and orchards washed or overflowed; many streets, notably Centre, Vignes, Turner, Banning, First, and Almeda were torn to ruin by deep and dangerous floods; possibly half a hundred houses were wrecked beyond recognition, and several hundred were soaked with water; a large portion of the city was rendered unhealthy for the coming summer by reason of the soil being soaked with water; miles of fences went down the stream; hundreds of lots before considered valuable were washed to the sea; traffic and trade was stopped and freight delayed; tourists were storm-bound, and people away from home were unable to return; four or more lives were lost, and property to the amount of half a million dollars destroyed.

Connecticut.—Hartford, Hartford county: the Connecticut River rose rapidly on the 3d, and on the 4th reached a height of 18.5 feet above low-water mark, submerging the docks.

New Haven, Connecticut: the Connecticut River at Hartford, on the 7th, rose to 18.5 feet above low-water mark, and was the highest point of the freshet that began on the 4th; the high water submerged the docks at this place.

Georgia.—Augusta: the heavy rain of the 3d–4th caused a rapid rise in the Savannah River, which reached a height of 30.2 feet on the 5th, or within 1.8 feet of the danger-line: several of the streets in the western portion of the city were submerged; mills in the flooded portion were compelled to suspend work.

Maryland.—Baltimore: owing to the heavy rain and high water in the harbor on the 4th several streets were flooded, causing damage to the amount of $2,000.

Port Deposit, Cecil county: the Susquehanna River was three feet above high-water mark on the 5th; many lumber yards were submerged, and large quantities of logs floated down the river.

Salisbury, Wicomico county: a heavy rain, accompanied by a northeast gale, backed the waters of the Wicomico River up on the 8th and 9th, which flooded the entire business portion of the town, causing the suspension of business. The river was several inches higher than at any previous time; piers and bridges were washed away and considerable lumber lost.

New York.—Albany: a rapid rise in the river on the 5th, 6th, and 7th submerged the docks and caused considerable damage to the merchants along Quay street.

Mountainville, Orange county: the "Awessima" rose to a dangerous height on the 5th, and was higher than at any time since September, 1882; meadows and roads were badly washed.

Elmira, Chemung county: the Chemung River rose over ten feet on the 5th, flooding basements and cellars in the business streets. At Owego, the Erie railroad bridge was carried away and the Tioga branch of the Erie Railway was abandoned. Considerable damage was done on the Northern Central Railway, a bridge having been carried away at Trout Run.

Rondout, Ulster county: the snow on the Catskill Mountains, together with the heavy rain of the 5th, caused a flood in Esopus Creek, imprisoning a number of families on the flats in Kingston; one man was drowned.

Lowville, Lewis county: the water in Black River and the streams tributary thereto was higher on the 7th than for a number of years, rendering travel by road between this place and the towns on the east side of the river impossible; no serious damage was done in this vicinity, but great damage was done in other parts of the county.

Ithaca, Tomkins county: Fall Creek, flowing through the northern part of this city, was gorged with ice on the 10th, flooding a large portion of the surrounding territory to the depth of several feet, filling cellars and doing considerable damage.

Oswego: ice gorge formed at the mouth of the Oswego River on the 9th, which caused a rapid rise in the river during the night, overflowing docks and filling the adjoining cellars, causing great damage to goods stored therein.

Fulton, Oswego county: an ice gorge in the Oswego River on the 9th caused the most destructive flood that has ever visited this place during the 10th, 11th, and 12th; at least seventy-five families were rendered homeless; several buildings and a great amount of property were swept away; business was entirely suspended and 1,500 employés of the mills and factories remained idle.

Pennsylvania.—Emporium, Cameron county: the heavy rain of the 3d and 4th, together with the large quantity of snow on the timbered hills, produced the most violent flood known for many years in the Sinnemahong and Driftwood Creeks; thousands of logs from the mills broke from their fastenings and went down the swollen streams with terrific speed; it is estimated that the loss at Emporium will approach $3,000,000. At Bradford there was two feet of water in many of the streets, and at Cameron the greater portion of the town was under water.

Shenandoah, Schuylkill county: the rain storm throughout this section on the 4th was the most severe for a number of years; no less than twelve collieries in Mason Valley were flooded; railroad trains were delayed and great damage done. Three washouts occurred between Delano and Ashland on the Lehigh Valley Railway.

Lock Haven, Clinton county: the flood on the Susquehana River reached its height on the 5th and submerged three-fourths of the city; no lives were lost, but the damage was very great.

Lock Haven, Clinton county: the greater part of the city was flooded on the 5th, the water in the Susquehanna River being within two feet as high as it was in the great flood of 1865; large quantities of saw-logs broke loose and were lost.

Williamsport, Lycoming county; great damage was done by the high water in the Susquehanna River on the 5th; the track of the Philadelphia and Reading Railroad was covered, preventing the running of trains. All streams were high, and heavy land slides have occurred near Montgomery and other points east of this city; bridges were washed away, and travel on public roads wholly interrupted; over a million feet of valuable lumber was washed away.

Easton, Northampton county; on the afternoon of the 5th the Lehigh River was sixteen feet high and in the Delaware River eighteen feet; several mills and factories were inundated, causing the suspension of business; railroad trains were delayed by washouts and land slides.

Mauch Chunk, Carbon county; the Lehigh River was higher on the 5th than at any time since the disastrous freshet of 1862; cellars were flooded and great damage done.

HIGH TIDES.

Salisbury, Wicomico county, Maryland: an unusually high tide occurred on the 8th; the water rose three feet above high-water mark, submerging portions of the city and sweeping away large quantities of lumber.

Westover, Somerset county, Maryland: a very high tide occurred on the 9th, which caused a heavy destruction of property in the lower part of Fairmount district; the water covered a number of farms to the depth of several feet.

New Bedford, Bristol county, Massachusetts: the heaviest tide for several years occurred on the 9th; wharves were overflowed, and Fish Island was completely covered.

High tides also occurred, as follows:

Eastport, Maine, 21st, 22d, 23d.
Newport, Rhode Island, 9th.
New London, Connecticut, 9th.
Sandy Hook, New Jersey, 9th.
Cedar Keys, Florida, 8th.
San Francisco, California, 20th.
Bird's Nest, Virginia, 9th.

LOW TIDES.

Indianola, Texas, 8th to 11th.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for districts east of the Rocky Mountains for January 1886, with the telegraphic reports for the succeeding thirty-two hours, shows the general average percentage of verifications to be 80.78 per cent. The percentages for the four elements are: Weather, 82.81; direction of the wind, 83.41; temperature, 77.41; barometer, 78.14 per cent. By geographical districts, they are: For New England, 85.95; middle Atlantic states, 86.80; south Atlantic states, 84.37; eastern Gulf states, 86.44; western Gulf states, 80.91; lower lake region, 78.84; upper lake region, 79.41; Ohio Valley and Tennessee, 81.04; upper Mississippi valley, 72.41; Missouri Valley, 71.11. There were eleven omissions to predict, out of 3,252, or 0.31 per cent. Of the 3,241 predictions that have been made, one hundred and twenty-eight, or 3.95 per cent., are considered to have entirely failed; one hundred and sixty-one, or 4.97 per cent., were one-fourth verified; four hundred and fifty-seven, or 14.10 per cent., were one-half verified; five hundred and eighty-three, or 17.99 per cent., were three-fourths verified; 1,912, or 58.99 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

The percentages of verifications of special predictions for certain localities are, as follows:

Baltimore, Maryland (twenty-seven days), 80.09; Washington City (twenty-seven days), 77.32; Erie, Pennsylvania, 75.81; Boston, Massachusetts, and New Haven, Connecticut, 86.47; Portland, Maine (thirty days), 77.50; Albany, New York, 74.60; Pittsburg, Pennsylvania, 80.24; Cincinnati, Ohio, 76.61; Louisville, Kentucky, 76.61; Sandusky, Ohio (thirty days), 75.83; Cairo, Illinois, 76.23; Saint Louis, Missouri, 69.35; Kansas, Indian Territory, and western Missouri, 66.94; Memphis, Tennessee, 73.39; Shreveport, Louisiana, 75.81; Iowa, 67.74; Tennessee, 79.10; northern Florida, 77.82; Lynchburg, Virginia (twenty-seven days), 65.74; Columbus, Ohio (twenty-six days), 70.19; Cleveland, Ohio (twenty-nine days), 78.45; Indianapolis, Indiana, 75.40; Oswego, New York, 76.61; Rochester, New York, 77.42; Buffalo, New York, 76.61; Milwaukee, Wisconsin, 76.61; Chicago, Illinois, 72.58; Detroit, Michigan, 70.96; Toledo, Ohio, 70.96; Omaha, Nebraska (twenty-six days), 74.04; Arkansas (twenty-six days), 87.99; Georgia (twenty-four days), 88.02; Saint Paul, Minnesota (twenty-three days), 65.22; Augusta, Atlanta, and Savannah, Georgia (three days), 70.83; New York City, 88.71; Philadelphia, Pennsylvania, 84.68; Colorado (thirty days), 77.08.

CAUTIONARY SIGNALS.

During January, 1886, one hundred and thirty-six cautionary signals were ordered. Of these, one hundred and fourteen, or 83.82 per cent., were justified by winds of twenty-five miles or more per hour at or within one hundred miles of the station. Fifty-four cautionary off-shore signals were ordered, of which number, forty-one, or 75.93 per cent., were fully justified, both as to direction and velocity; fifty-three, or 98.15 per cent., were justified as to direction; and forty-one, or 75.93 per cent., were justified as to velocity. One hundred and ninety signals of all kinds were ordered, one hundred and fifty-five, or 81.58 per cent., being fully justified. These do not include signals ordered at display stations where the velocity of the wind is only estimated. Of the above cautionary off-shore signals, forty-eight were changed from cautionary. Five signals were ordered late. In twenty-five cases, winds of twenty-five miles or more per hour were reported for which no signals were ordered.

COLD-WAVE SIGNALS.

During January, 1886, three hundred and twenty-six cold-wave signals were ordered, of which number, two hundred and sixty-eight, or 82.21 per cent., were justified.

RAILWAY WEATHER SIGNALS.

Prof. P. H. Mell, jr., director of the "Alabama Weather Service," in the report for January, 1886, states:

The verifications of predictions for the whole area was 94 per cent. for temperature, and 94 per cent. for weather.

The following roads comprise this system: Western of Alabama; South and North; Montgomery and Mobile; Mobile and Girard; Georgia Pacific; East Tennessee, Virginia and Georgia system in Alabama; Memphis and Charleston; Columbus Western; Alabama Great Southern; Atlanta and West Point of Georgia; Northeastern of Georgia; Atlanta and Charlotte Air Line; Western and Atlantic; Georgia; East Tennessee, Virginia and Georgia system in Georgia; and Montgomery and Eufaula.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroral displays occurred during January, as follows:

Saint Vincent, Minnesota: an aurora was observed at 9.20 p. m. of the 1st, extending from 125° to 200° azimuth, consisting of an irregular whitish light of about 15° altitude from which occasional streamers shot up to an altitude of 30°; the display lasted until after midnight.