

Meteorological Record for the Cotton Districts for the month of May, 1882.

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	5.57	84.4	61.1
Savannah.....	2.59	84.8	60.7
Charleston.....	2.53	81.9	58.1
Atlanta.....	2.39	78.9	56.2
Wilmington.....	2.52	79.0	54.6
Memphis.....	7.58	77.7	56.3
Galveston.....	5.25	83.9	59.9
Vicksburg.....	7.03	81.9	60.8
Montgomery.....	3.02	81.9	58.2
Augusta.....	2.11	82.2	57.8
Little Rock.....	11.04	78.7	53.6
Mobile.....	4.69	83.4	58.3

Meteorological Record for the Cotton Districts for the month of April, 1882.

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	5.63	81.9	59.9
Savannah.....	3.73	81.1	60.2
Charleston.....	2.66	77.5	54.5
Atlanta.....	4.49	76.3	54.9
Wilmington.....	3.88	74.2	50.0
Memphis.....	5.29	74.9	54.0
Galveston.....	1.58	82.1	57.9
Vicksburg.....	7.03	78.6	56.8
Montgomery.....	4.82	78.5	57.2
Augusta.....	3.05	78.2	54.7
Little Rock.....	4.74	75.9	51.9
Mobile.....	8.80	79.1	57.3

WINDS.

The prevailing winds at Signal Service stations during the month of June, 1882, are shown on chart ii. by arrows, which fly with the wind. In New England, the middle, and southern states, and from the Ohio valley westward to Colorado, the winds were southerly; in Texas, and at stations on the southern slope, south to southeasterly; in the upper lake region and the extreme northwest, northerly to easterly; in the upper Mississippi valley and in the plateau regions, variable; in the Missouri valley, southeasterly, and on the Pacific coast, northwesterly to southwesterly.

TOTAL MOVEMENTS OF THE AIR.

The following are the largest total movements at Signal Service stations: Mount Washington, 28,235 miles; Pike's Peak, 15,023; Hatteras, 12,410; Kittyhawk, 9,969; San Francisco, 9,739; Macon, North Carolina, 9,610; Indianola, 9,351; Sandusky, 9,342; Concho, 9,339; Galveston, 9,329; Delaware Breakwater, 9,303; New Shoreham, Rhode Island, 8,957; Stockton, Texas, 8,910; Fort Elliott, Texas, 8,749; Cape Henry, Virginia, 8,749; Champaign, Illinois, 8,415; Dodge City, 8,249; Milwaukee, 8,178; Sandy Hook, 8,044. The smallest are: Vicksburg, 1,895; La Mesilla, New Mexico, 1,967; Silver City, New Mexico, 2,360; Lynchburg, 2,447; Roseburg, Oregon, 2,591; Nashville, 2,634; Augusta, Georgia, 2,636; Missoula, Montana, 2,733; Olympia, 2,775; Tucson, 2,791; Fort Smith, Arkansas, 2,965.

HIGH WINDS.

The following high velocities were reported from the summit of Mount Washington: 1st, 84 miles, sw.; 2d, 77, nw.; 9th, 75, nw.; 19th, 92, w.; 20th, 80, nw.; 21st, 80 nw.; 25th and 26th, 95, nw., maximum for the month. On all other days during the month, velocities reached or exceeded fifty miles per hour, with the exception of the following: 4th, 6th, 11th to 14th, 23d and 30th. Stations reporting velocities of fifty miles per hour or over, are as follows: Pike's Peak, 64, w., 17th; Fort Benton, Montana, 64, w., 20th; Yankton, 61, nw., 24th; Saint Louis, 61, n., 17th; Fort Elliott, Texas, 60, ne., 12th; Indianapolis, 60, w., 20th; Dodge City, 56, nw., 30th; North Platte, 53, e., 19th; Fort Custer, 52, w., 28th; West Las Animas, Colorado, 52, se., 19th; Henrietta, Texas, 52, nw., 12th; Nashville, 52 w., 18th; Hatteras, 52, sw., 1st; La Crosse, 50, sw., 24th.

LOCAL STORMS.

There have been in the month of June many tornadoes and severe storms which have resulted in great loss of life and

destruction to property. By far the most disastrous was the tornado which swept through eastern Iowa on the 17th of the month.

The following accounts of storms have been arranged in states and in successive dates as nearly as possible:

Arkansas: Osceola, 17th, a severe wind storm, accompanied by hail, unroofed several houses and totally demolished one. Much damage was done to crops.

Dakota: Wicklow, 24th, a severe storm occurred, accompanied by rain and hail. Considerable injury was done to farm property and crops, the wind reaching a velocity of sixty miles per hour, from the south-southwest. At Forestburg, twenty-five miles northwest of Alexandria, 24th, a severe storm occurred, several buildings were blown down. Yankton, 24th, severe storm, several buildings in the country blown down. The steamer "Tompkins" was blown from her moorings.

Georgia: Atlanta, 17th, severe thunder and rain storm, accompanied by hail; the wind attained a velocity of forty-nine miles per hour. Many trees in the suburbs were blown down. Forsyth, 18th, a violent wind and rain storm occurred west of this place, doing much damage to crops and fences.

Illinois: Geneseo, 17th, during a heavy storm, the spires of two churches were blown down and several buildings were more or less damaged. At Oregon, the storm was equally severe, many barns and out-buildings were blown down by the wind or carried off by the flood. Clinton, 17th, a heavy wind and rain storm passed over DeWitt county, doing a large amount of damage to farm property and crops. The storm passed from nw. to se., and is described as being a whirlwind; in Wilson township it demolished a barn and injured much stock, and the rye crop, which was nearly ready to harvest, was greatly injured and numbers of fruit trees were uprooted. Vandalia, 17th, the storm was accompanied by rain and vivid lightning; much of the wheat crop was blown down and also a considerable amount of timber. The Okaw bottom-lands were submerged and several hundred acres of corn were under water. Carmi, 17th, during a severe wind storm, the opera house was unroofed and several buildings sustained severe damage. Many fruit and shade trees were destroyed. At Lebanon, Salem, and Edwardsville, the storm was more or less severe, some damage was done to wheat, but not so much as in other districts.

Cairo, 17th, 3.10 p. m., the wind suddenly veered from northwest to southwest, when a tornado appeared, which lasted from 3.10 to 3.35 p. m. The storm-cloud advanced from the northwest and was of a dense black color in front, while the northwestern edge of the cloud presented a smooth surface, having a greenish hue. A roaring noise, and a rotating cloud of dust, which enveloped every object in its path, preceded the storm. Several houses were unroofed, including the U. S. custom house, and twenty empty freight cars were derailed, and overthrown by the wind. The track of the storm was from from west to east, passing through Alexander, Pulaski and Massac counties, and was from eight to ten miles wide. In the centre of the track, large hail fell, but none was observed at this station; trains were delayed by the fallen trees across the track, and one man was killed and others were more or less injured. Steamers had their smoke-stacks blown down, others broke adrift and sank, or sustained great damage. The total damage caused by this storm, in southern Illinois, is estimated at \$16,000. Morrison, 24th, a severe storm of thunder, lightning and rain occurred at this place, several buildings were damaged by lightning and many hundreds of fruit trees were destroyed.

Rockford, 24th, a tornado and heavy hail-storm occurred; hail-stones were as large as hen's eggs, and nearly every window in the town was broken. The storm caused great damage to fruit and other crops.

Champaign, 25th, from 2.45 to 4.45 p. m., a severe gale caused much damage, especially in the northwestern part of the city; a large barn was blown down, fruit trees uprooted or broken off, and great damage resulted to corn and other crops.

Charleston, 25th, heavy storm during the evening, many orchards were destroyed and forest trees blown down.

Oregon, 30th, a heavy storm of wind and rain, accompanied by thunder and lightning, caused great damage. Fifteen houses were damaged by lightning, and one person was killed; bridges were swept away, and hundreds of acres of grain were entirely ruined. The damage in the town and vicinity is estimated at \$50,000.

Indiana: Indianapolis, 16th, severe thunder-storm, accompanied by high wind and very heavy rain, occurred at 4.30 p. m. Many streets were flooded and several buildings were damaged by lightning; hundreds of shade trees were blown down or broken off. Shelbyville, 16th, severe storm, with torrents of rain; streets were inundated and the southwestern part of the city was under water. North Vernon, 16th, several buildings were damaged by lightning and flood, and growing crops sustained great injury. Saint Meinrad, 17th, during a fierce northwest gale, with heavy thunder and rain, many forest and fruit trees were uprooted. Indianapolis, 25th, at 6 p. m., heavy wind-squall swept over the city. Many houses were unroofed, and fences and trees were blown down. The greatest damage caused by the storm, was the destruction of the steeple of Saint Paul's cathedral. The wind attained a velocity of sixty miles per hour and the duration of the squall did not exceed one minute. The total damage to the city is estimated at \$20,000.

Iowa: Iowa City, 17th, a tornado visited this place, demolishing several houses and other buildings and causing considerable damage to other property. Davenport, 17th, very severe storm; telegraph wires were prostrated and much damage was done to buildings. Ames, 17th, at 7.45 p. m., a tornado passed about three-quarters of a mile south of that place. The width of the track was from thirty to forty rods, and the tornado pursued an easterly course. Grinnell, 17th, the tornado at this place was of unequalled severity, and wrought great destruction to life and property. From reports at hand, the tornado appears to have formed in Green county, in the centre of the western half of the state, and about ninety miles west of Grinnell. The tornado pursued an easterly course through Boone and Story counties, and almost parallel with the Chicago and Northwestern railroad as far as Marshall county, here its course changed to the southeastward toward Poweshiek county. Persons residing at Ogden, fifteen miles east of Jefferson, Green county, saw the tornado pass along, a little to the south of that place, but no damage was done in that vicinity, as the tornado probably did not strike the earth near there. Three persons were killed, and considerable damage was done near Nevada, Story county, and much damage was also done in Jasper county during the passage of the tornado-cloud. At Rock Creek township, Jasper county, fifteen houses were demolished and four persons killed.

The tornado then advanced toward Grinnell, where it proved more destructive than at any point along its track, causing great loss of life; it then passed southeastward, and it is probable that the same tornado caused the destruction at Mount Pleasant, in Henry county. The distance from Jefferson, where the storm was first observed, to Mount Pleasant, is, following the track of the tornado, about two hundred miles, and as it was first observed at 7.30 p. m., at Jefferson, and the damage occurred at Mount Pleasant at about 11 o'clock, it would appear that the tornado travelled at about fifty-five or sixty miles an hour. Respecting the destruction caused by this disastrous storm, the following is given: The storm-cloud, which was of the usual funnel-shaped appearance, and accompanied by a roaring noise, floods of rain, and a vivid electrical display, struck the town about 8.30 p. m. of Saturday, June 17. The width of the track appears to have been comparatively narrow, but within its limits everything was destroyed; it entered the town from the west, and moved a little north of east, laying the entire northwestern part of the town in ruins, nearly all the buildings being crushed to splinters by its terrific force, and the streets flooded to a depth of one foot of water. The

total damage was inflicted in five minutes, not less than one hundred dwellings in the town being reduced to ruins. The tornado then turned toward the southeast and struck Iowa College, a three-story brick building, which was levelled to the ground, some of the students being killed and others injured. A train, consisting of an engine and twenty-one cars, was wrecked about one and a half miles east of the town, fourteen cars being blown from the track by the terrific force of the wind. The number of persons killed amounts to about sixty, and one hundred and fifty persons were more or less seriously injured; the number of houses destroyed and damaged is one hundred and forty, and the loss of property will amount to about \$600,000.

Before reaching the town, the tornado devastated several farms in its track, killing or seriously injuring the inmates of the dwellings. Some of the houses appear to have been blown outward, while others were lifted up and carried some distance, then deposited in splinters on the ground. The storm then passed eastward, with unabated fury, to Malcolm, a small town of about eight hundred people, eight miles east of Grinnell; it struck this place in its northern half, and wrought destruction as complete as at Grinnell. Houses were blown down and completely demolished, two churches were ruined, seven persons were killed and a number were seriously injured, and much stock was also killed. Leaving Malcolm, the tornado struck Brooklyn, where it inflicted serious damage to life and property; at this point it took a southeasterly course toward Henry county, and finished its work of destruction at Mount Pleasant. The tornado struck that place at about 11 p. m., and in a few minutes had caused great damage to buildings, fences, merchandise, etc. The storm continued to rage with violence for two hours, but the greatest destruction occurred at its beginning. Houses were blown down or unroofed, churches were unroofed and the steeples swept away, and orchards and crops more or less ruined. Nearly all the houses were unroofed and their interiors were deluged by the heavy rain, causing great damage to goods. Some loss of life is also reported from this place, while many persons have been injured. The damage to property and crops in the town and vicinity is estimated at \$500,000.

It is probable that the total number of lives destroyed by this tornado, during its entire path, will amount to more than one hundred, while the damage to property is incalculable.

Dubuque, 22d, at 5.50 p. m., a heavy thunder-storm with violent gusts of wind, burst over the city. Trees were uprooted and fences and out-houses, sheds, &c., were blown down. Considerable damage was done in the northern and western parts of the city. Independence, 22d, a severe storm, of hurricane force, burst over that place between 4.30 and 5.00 p. m. It would appear that this storm was a violent and exceptional wind storm, yet it partook somewhat of the nature of a tornado, having at times, the spiral and twisting motion characteristic of tornadoes, but it was without the funnel-shaped cloud, and only displayed the whirling motion at intervals. Many houses were blown down or unroofed, and a number of outbuildings and large quantities of fencing were carried completely away. A large smoke-stack, one hundred and thirty feet high, was levelled to the ground, two persons were killed and several injured, the loss of property amounts to about \$150,000. The track of the storm was not extended, and was about twenty miles in length. It formed east of Cedar river and visited Jessup at about 4.30 p. m. and was very severe at that place. Rain fell in torrents, flooding the streets, and the wind swept everything before it; maple trees ten inches in diameter were twisted off, several houses were unroofed and a great many barns were totally wrecked. At Pleasantville, Marion county, some damage was also done to buildings, and also in the townships of Walker and Rowley. Emmitsburg, 24th, a tornado passed through Clay county, doing considerable damage, and struck Emmitsburg about 7.30 a. m. The storm raged with terrific violence for twenty-five minutes, during which time many houses were demolished

and others unroofed; barns and fences were carried away. Immense volumes of water from Swan lake were caught up and dashed against the houses left standing. Four persons were killed and several were injured; during the passage of the storm through Clay county, twenty farm houses were blown down and four persons were killed. Patterson, 24th, a heavy wind and rain storm did considerable damage; a store, five dwellings and two stables were blown down, and many farms in the vicinity were more or less damaged. Hoopersville, 24th, a hurricane, which lasted fifteen minutes, caused great damage; a church, school-house and twenty-five dwellings and barns were more or less damaged, and one man was fatally injured. Cedar Rapids, 29th, a furious storm occurred, but did not strike the ground except in a few places, where it caused much damage.

Kansas: Atchison, 16th, one of the most severe storms ever experienced occurred at Atchison on the above date. Rain fell in torrents, flooding cellars and basements, and the electrical phenomenon was particularly brilliant, the heavens appearing as one blaze of light for two hours. Several houses were struck by lightning and injured, while many others were either completely demolished or unroofed. All telegraph wires were prostrated and railroad travel suspended. No lives were lost during the storm, but many persons were injured. The damage in the town is estimated at \$15,000. On the Santa Fé railroad, twenty miles east of Topeka, fifteen freight cars were blown from, and across the track; growing crops were much injured, corn being flattened and broken, and in some sections the damage is irreparable. Leavenworth, 17th, the heaviest and most destructive wind storm ever known visited this station. The storm began at 12.13 a. m., and for five minutes the wind registered a velocity of seventy-two miles an hour, and during that five minutes, the most of the damage occurred. Many buildings were unroofed and frame structures blown down; the top of the Kansas Central Elevator was blown off and the building twisted off its foundation; trees were uprooted and others broken off close to the ground. The storm struck the Mount St. Mary's Female College, a few miles south of the city and blew down the main tower of the building; the tower fell on the roof and crashed through the dormitories, killing four children and injuring many others. A man is reported to have been blown into the Missouri river and drowned, near the Union depot. Fruit was stripped from the trees, but wheat is reported to be not seriously injured. The total damage to the city is estimated at \$200,000. Topeka, 17th, the storm did considerable damage, unroofing many buildings and uprooting trees; no loss of life or stock is reported. Valley Falls, 17th, a building was blown from its foundation and another unroofed. Hundreds of trees were broken off and the damage to the fruit crop is very great, but field crops did not suffer much injury. 25th, a tornado passed through Phillips county, doing considerable damage at Kirwin; the storm pursued an easterly course and struck the town of Marysville, where it did much damage. Residences, churches and barns were demolished and several persons were more or less injured; the same storm wrecked a train near Talmage and demolished five houses at Avola, about three miles from Talmage. Several persons are reported killed and some injured.

Kentucky: Anchorage, 15th, heavy thunder and rain-storm accompanied by hail. Several buildings were set on fire and completely destroyed by lightning.

Michigan: 8th, a tornado swept through Saint Clair county on the night of this date. It first begun as a wind and rain-storm, which continued for about two hours, when black and heavy clouds formed in the northwest and advanced across the county. The tornado swept away houses, barns, fences, etc., and all farming implements in its path. Objects were lifted upwards and deposited at several rods distant from their starting point. Great destruction occurred to crops and orchards, and in some parts of its track, not a single tree was left standing and several persons were more or less injured. The width

of the track varied from thirty to eighty rods. 18th, a tornado occurred in Saginaw county, and sweeping through a part of Huron county, struck the lake south of Port Austin and formed two distinct water-spouts, which passed rapidly eastward.

In the track of the tornado-cloud, which was funnel-shaped and accompanied by a roaring sound, buildings were lifted from their foundations and demolished, the inmates sustaining, in some cases, serious injury. Many barns were destroyed and much valuable stock was killed; in the townships of Grant, Brookfield and Bad Axe, several buildings were destroyed and standing timber was twisted off and carried away. The storm was accompanied, in some places, by heavy rain and hail. 24th, a severe storm passed through Livingston county, on this day, destroying crops, fruit, fences, etc., and several persons were injured.

Maine: Gardiner, 26th, at 5.45 p. m., a severe northwest storm occurred. Several large trees were blown down and an ice-house was unroofed; the extreme violence of the gale lasted about ten minutes.

Missouri: St. Louis, 16th, a severe storm began on this date and increased in force until the 17th. The wind blew with great violence, reaching a velocity of sixty miles per hour; rain fell in torrents and the storm was accompanied by heavy thunder and a vivid and brilliant display of lightning. In the city, chimneys, signs, windows and trees were blown down and telegraph wires were prostrated. It is estimated that \$10,000 will cover the loss. The greatest damage occurred along the river; steamboats dragged their moorings and were carried down the river, and others collided with irresistible force and sank; a large number of coal flats were more or less damaged. It is estimated that the loss to steamboat property will exceed \$25,000. Kansas City, 17th, a hurricane of wind and rain broke over the city at about 1 a. m. The storm passed through Clay county, blowing down or unroofing houses, leveling fences and uprooting the largest and strongest trees. Fruit trees and corn were prostrated, and irreparable injury was done to the wheat crop. The storm was accompanied by incessant and blinding flashes of lightning, the heavens appearing fairly ablaze. Many large buildings were blown down or unroofed, several blocks being completely destroyed. Several persons were buried in the falling ruins and many valuable horses were killed. The damage to property in this city will probably exceed \$150,000. At Missouri City, many houses, outbuildings and fences were swept away, and growing crops were beaten down by the severe hail which accompanied the storm. No loss of life has been reported at that place, although several persons were more or less injured. Browns-ville, 17th, the storm struck that town at about 2 a. m., and was accompanied by heavy rain and hail. Houses and fences were blown down, and chimneys shattered to pieces. A large frame building was lifted from its foundation and deposited six feet from where it formerly stood, and the Christian church, which escaped the tornado of April, was blown down. Belton, Cass county, 17th, the track of the tornado at this point, was only about forty feet wide, but in its track, orchards were destroyed, fences blown down, and crops, to some extent, were injured. A house was picked up bodily, and dashed to pieces, the inmates, four in number, being more or less seriously injured; a new barn was also blown down. At Marshall, Saline county, the tornado caused great damage to buildings and to the wheat and oat crops.

Nebraska: Omaha, 25th, masses of heavy, dark clouds advanced with a rolling motion from the northwest until they reached the city, when they broke in a furious storm of wind, rain and hail. The wind reached a velocity of sixty miles per hour for a few minutes, and then fell to a steady velocity of thirty-four miles per hour. Signs were wrenched off, trees uprooted and some houses unroofed, but the principal damage appears to have resulted from the heavy rains, which swelled the creeks, causing them to overflow; many buildings were flooded and others carried from their foundations. Some damage also resulted from the heavy and continuous hail

which accompanied the storm. 25th, a severe storm formed in Butler county, and swept in a southeasterly direction through Saunders, Lancaster, Cass, Nemaha and Otoe counties, destroying nearly all small grain and beating down the corn. The storm was accompanied by hail, which caused much destruction; at Wahoo, several dwellings were unroofed and all windows facing the west were demolished; a herd of ponies was blown eight miles southward; at Clear Creek, a school-house was demolished, and severe damage was done at Brainard. At Lincoln, the storm was also very severe, most of the orchards and crops being ruined by the large hail-stones. Several persons were injured during the storm, some fatally.

New York: Amsterdam, 17th, a tornado struck the town and did considerable damage to buildings of light construction. The storm-path was sixty feet wide.

New Jersey: Freehold, 4th, 9.20 to 10.15 p. m., a destructive storm occurred over a strip of country south of this place. Hail fell to a depth of two inches, causing damage to the amount of more than one thousand dollars to crops in the immediate vicinity, and several houses were injured. 27th, severe thunder-storm, accompanied by hail, which was mostly jagged, broken ice, some pieces of which measured one and three-eighths inches long and half an inch thick. From 5.50 to 5.57 p. m., the wind reached a velocity of sixty miles per hour. Reports from localities southwest of Freehold state that much damage was done to crops.

North Carolina: Weldon, 4th, a destructive tornado, originating in Southampton county, Virginia, swept through Northhampton and Halifax counties; many houses were blown down and crops were completely ruined. The storm was accompanied by heavy hail-stones of unusual size, which covered the ground to a depth of several inches. At Weldon, several buildings were blown down, and two children were killed by falling timbers. At Garysburg, the "Fetter" academy was blown down. The damage to property by this storm, will amount to several thousand dollars. Kittyhawk, 28th, severe wind storm, telegraph poles were prostrated, and one house was blown down.

Ohio: Sandusky, 18th, severe wind storm, many telegraph poles and trees blown down. 30th, a heavy wind storm occurred over southern Ohio, telegraph wires and trees were prostrated, and growing crops were blown down, corn and oats being broken off by the heavy rain, and several houses were unroofed.

South Carolina: Stateburg, 22d, about three miles north of station, a storm of considerable energy occurred. Much damage was done and several large trees were uprooted.

Tennessee: Nashville, 18th, a severe wind storm, reaching a velocity of fifty-two miles an hour; trees, fences, and awnings were destroyed, and several houses were unroofed. Spring City, Rhea county, a tornado occurred on the 25th; several buildings were blown down.

Texas: Henrietta, 12th, at 7.20 p. m., a severe storm burst over the city, doing considerable damage to buildings. The storm cloud had a whirling motion, and dipped occasionally toward the earth, each dip being attended with great destruction. A house was twisted off its foundation, and many barns and outbuildings were blown away. As the storm cloud only struck the ground at intervals, many houses in its close proximity, were left untouched. The total damage is estimated at \$6,000.

Vermont: Woodstock and Strafford, 19th, a severe wind storm passed through these places; many buildings and fences were blown down and trees uprooted. The track of the storm was about fifteen miles in length and from one to five miles in width.

Wisconsin: 27th, a tornado formed near the village of Onalaska and passed through that place at 10.45 a. m.; it then passed in a northeasterly direction through La Crosse, Monroe, and part of Vernon counties. The whole distance traveled was about forty miles, and the width of the

track was about eighty rods. Several buildings were unroofed, but the principal damage was done to the crops, which were in some cases completely carried away; great numbers of fruit trees were twisted and broken. The towns of Bangor, Washington, Jefferson and Sheldon were also visited by the storm and sustained more or less damage. One person was seriously injured; the damage to buildings is estimated at \$20,000, and the damage to crops cannot be estimated. The observer at La Crosse reports the appearance of the storm cloud, as follows: The storm cloud appeared of a dark blue or nearly black color, followed immediately by a cloud which appeared to be highly illumined and of a yellow color, changing at times to green. After the cloud passed the station the wind changed to north, with moderate breeze and light rain. Five miles from station, rain is reported to have fallen in torrents, many streams were swollen and bridges washed away. At Cashton the storm destroyed five houses and caused great damage to crops. Several persons were injured but none fatally.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for June, 1882, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 86.7 per cent. The percentages for the four elements are: Weather, 88.9; Direction of the Wind, 80.9; Temperature, 88.3; Barometer, 88.9 per cent. By geographical districts they are: For New England, 88.4; middle Atlantic states, 90.1; south Atlantic states, 86.7; east Gulf states, 85.7; west Gulf states, 91.9; lower lake region, 85.7; upper lake region, 81.5; Tennessee and the Ohio valley, 88.5; upper Mississippi valley, 84.8; lower Missouri valley, 82.9; northern Pacific coast region, 94.4; middle Pacific coast region, 98.9; southern Pacific coast region, 97.8

There were 160 omissions to predict (37 being due to the absence of reports from the Pacific coast) out of 3,690, or 4.33 per cent. Of the 3,530 predictions that have been made, 109, or 3.08 per cent., are considered to have entirely failed; 92, or 2.60 per cent., were one-fourth verified; 398, or 11.30 per cent., were one-half verified; 365, or 10.33 per cent., were three-fourths verified; 2,566, or 72.69 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

CAUTIONARY SIGNALS.

One hundred cautionary signals were displayed during the month of June, of which eighty-two, or 82 per cent were justified by winds of twenty-five miles per hour, at or within one hundred miles of the station. Eight "off-shore" signals were displayed, all of which were fully justified as to direction and velocity. One hundred and eight signals of all kinds were displayed, of which ninety, or 83.3 per cent., were justified. The above does not include signals ordered at sixty-nine display stations, where the velocity is only estimated.

Ninety-five winds of twenty-five miles per hour or over, were reported, for which no signals were ordered.

Fifteen signals were reported late.

NAVIGATION.

STAGE OF WATER IN RIVERS.

In the table on the right-hand of chart iii., are given the highest and lowest stages of water observed at Signal Service stations during the month of June, 1882. In the first column of this table are given the heights of water on the gauge, which have been found dangerous to property at stations:

The Mississippi reached its highest stage at Keokuk on the last of the month, when it was one foot, three inches above the danger-line. At Cairo it was two feet above the danger-line on the 6th of the month, and, on the 17th, it had fallen to thirty-two feet, four inches, the lowest point reached during the month. At Vicksburg, it remained above the danger-line