

Sterling, Kansas, 15th: A severe hail storm occurred in Rice county, many windows were broken, and crops were damaged. Santa Fé, New Mexico, 14th: At Cerrillos mining camp, about twenty miles from Santa Fé, a heavy hail storm prevailed; windows were broken, and several persons injured. Much damage was done to gardens and crops.

Hail storms of less violence have occurred in the various states and territories, as follows:

Colorado: Fort Garland, 14th.
Dakota: Fort Lincoln, 2d; Fort Hale, 15th; Fort Meade, 18th; Alexandria, 9th; Fort Stevenson, 17th and 25th; Rapid City, 18th.

Illinois: Riley, 13th; Swanwick, 13th.
Idaho: Eagle Rock, 21st.
Kansas: Wellington, 15th; Yates Centre, 11th.
Michigan: Hastings, 4th; Grand Haven, 4th; Port Huron, 18th.
Missouri: Pierce City, 3d; Saint Louis, 13th; Saint Joseph, 18th.

Montana: Helena, 5th and 16th.
Nebraska: Fremont, 27th.
New Mexico: Fort Union, 17th and 28th; Fort Bayard, 27th; Santa Fé, 14th and 24th.

New York: Menand's road, near Albany, 28th; Albany 28th.
Ohio: Westerville, 5th; Cleveland, 18th.
Pennsylvania: Pittsburg, 14th.
South Carolina: Columbia, 1st.
Tennessee: Nashville, 29th.
Texas: Fort McKavett, 19th; Concho, 9th.
Utah: Salt Lake City, 21st.
Wisconsin: Franklin, 21st.
Wyoming territory: Cheyenne, 28th.

SNOW.

Snow is reported to have fallen at the following stations during the month:

Summit of Mount Washington, 2d, 3d.
 Summit of Pike's Peak, 20th, 24th, 25th, 26th.
 Fort Ellis, Montana, 8th.

SLEET.

Mount Washington, 3d; Pike's Peak, 8th, 13th to 16th, 22d, 26th, 27th, 29th, 30th.

COTTON REGION REPORTS.

The following tables give the average rainfall, mean of maximum and mean of minimum temperatures, for the months of July, June, May, and April, in each of the cotton districts as shown on chart vi. issued with the April REVIEW.

Meteorological Record for the Cotton Districts for the month of July 1882.

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	8.80	90.4	71.3
Savannah.....	6.21	91.0	70.3
Charleston.....	7.28	90.9	68.0
Atlanta.....	5.45	87.9	67.6
Wilmington.....	5.90	90.2	67.7
Memphis.....	5.45	88.0	67.1
Galveston.....	3.74	94.0	71.3
Vicksburg.....	10.30	89.4	69.0
Montgomery.....	5.18	88.6	67.1
Augusta.....	4.93	90.0	69.2
Little Rock.....	3.08	89.2	66.0
Mobile.....	6.06	90.5	68.7

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

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	2.43	90.6	72.5
Savannah.....	4.87	89.9	70.4
Charleston.....	4.98	89.9	67.6
Atlanta.....	5.53	88.6	66.8
Wilmington.....	1.97	90.0	66.2
Memphis.....	2.89	90.4	67.0
Galveston.....	0.90	93.7	70.0
Vicksburg.....	1.44	91.2	68.5
Montgomery.....	3.49	91.5	69.4
Augusta.....	4.06	90.5	67.6
Little Rock.....	1.58	91.3	64.2
Mobile.....	2.60	94.8	68.8

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.....	5.67	84.4	61.1
Savannah.....	2.59	84.8	60.7
Charleston.....	2.63	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	69.9
Vicksburg.....	7.03	81.9	60.8
Montgomery.....	3.02	81.9	68.2
Augusta.....	2.11	82.2	57.8
Little Rock.....	11.04	78.7	59.8
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.....	6.63	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.....	1.68	82.1	57.9
Vicksburg.....	7.03	78.6	56.8
Montgomery.....	4.92	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 July, 1882, are shown on chart number ii. by arrows, which fly with the wind.

Throughout the country east of the Rocky mountains the prevailing winds were mostly southerly, except along the coast of New England, where they were westerly, and in the northern and middle slopes, where they were westerly and northwesterly; along the immediate California coast they were westerly; in the southern and middle plateau districts they were from southeast to southwest; in the northern plateau and in the north Pacific coast region they were variable.

TOTAL MOVEMENTS OF THE AIR.

The following are the largest total movements of the air at Signal Service stations: Mount Washington, New Hampshire, 25,082 miles; Hatteras, North Carolina, 11,318; San Francisco, California, 9,550; Fort Macon, North Carolina, 9,083; Galveston, Texas, 8,946; Dodge City, Kansas, 8,845; Indianola, Texas, 8,703; Eagle Rock, Idaho, 8,555; Delaware Breakwater, 8,452; Kitty Hawk, North Carolina, 8,437; Sandusky, Ohio, 8,143.

The smallest are: La Mesilla, New Mexico, 1,423; Lynchburg, Virginia, 1,910; Nashville, Tennessee, 2,217; Roseburg, Oregon, 2,258; Olympia, Washington territory, 2,269; Uvalde, Texas, 2,377; Silver City, New Mexico, 2,458; Morgantown, West Virginia, 2,571; Augusta, Georgia, 2,577; Vicksburg, Mississippi, 2,627; Tucson, Arizona, 2,776; Dayton, Washington territory, 2,877; Washington, District of Columbia, 2,903.

HIGH WINDS.

The highest velocity reported during the month (92 miles per hour, from the nw.) occurred on the summit of Mount Washington on the 2d. Other days on which high velocities were recorded, at this station, are as follows: 52 miles, s., 1st; 68, nw., 3d; 70, ne., 5th; 64, nw., 6th; 68, nw., 7th; 52, nw., 8th; 62, nw., 9th; 53, w., 10th; 68, nw., 11th; 71, nw., 12th; 70, nw., 13th; 50, w., 17th; 51, nw., 19th; 52, nw., 21st; 52, nw., 22d; 58, nw., 23d; 60, nw., 24th; 56, nw., 25th; 60, nw., 26th; 62, nw, 27th; 52, nw., 28th; 51, nw., 29th.

Velocities of fifty miles per hour, or more, were also reported from the following stations: Little Rock, Arkansas, 54, n., 4th; Fort Bennett, Dakota, 52, nw., 15th; Fort Stevenson, Dakota, 50, se., 24th.

LOCAL STORMS.

Arkansas: 3d, a tornado occurred in Crawford county, caus-

ing loss of three lives and much valuable stock, near Van Buren. Little Rock, 3d, a severe storm burst over the city; many houses were blown down and unroofed; the wind reached a velocity of fifty-four miles per hour, and for ten minutes, it blew at the rate of sixty-six miles per hour. On the 12th, a storm of short duration occurred, several buildings in the suburbs were unroofed and otherwise damaged. Texarkana, 12th, a severe hurricane passed over this place about 7 p. m. A large three story building was blown over, falling upon a frame building in which a number of persons had congregated; more than twenty persons were buried in the ruins. Several sheds and out-buildings were destroyed, and considerable damage was done to other property in the town.

Colorado: A severe storm occurred at Manitou, El Paso county, on the 1st. The storm was accompanied by hail and torrents of rain; bridges, fences, and trees were carried away, and houses standing on the banks of the streams were flooded, or swept away. Many houses in Manitou were more or less damaged, and the loss of horses and cattle amounted to several thousand dollars.

Delaware: During a heavy gale at Delaware Breakwater on the 4th, the schooner "Eden" lost mainmast.

Dakota: On the 14th, a violent storm of wind, hail, and rain, swept over the Redwater and Spearfish valleys, in Lawrence county. The path of the storm was about four miles wide, and moved in a northerly direction for a distance of about thirty miles. All the crops in the track of the storm, were destroyed; it is estimated that crops covering an area of 2,000 acres were entirely destroyed.

Iowa: A tornado appeared near Nora springs about 5.30 p. m. of the 17th. The tornado cloud was funnel-shaped, and appeared to be several hundred feet high. It first struck the earth near Shell Rock river, and took a northeasterly path through an adjoining farm, tearing up crops and fences, and injuring barns and other property. The width of the storm-path was about two rods. After leaving Nora Springs the tornado passed into Mitchell county.

Kansas: A tornado swept through Cherokee and Crawford counties about 5.30 p. m. of the 5th, and was accompanied by large hail and heavy rain, and caused great damage to crops and property. Trees were uprooted and stacked grain was scattered in all directions. Near Columbus several houses and barns were completely demolished, and many others were unroofed or otherwise damaged; several persons were injured, some severely. In Crawford county houses, barns, fences and crops were laid low, and several persons were severely injured. A very heavy wind storm passed over Marysville, Marshall county, at 10 a. m. of the 11th; telegraph wires were prostrated, and much damage resulted to the town. At Waterville several barns and dwellings were blown down, and stacked grain was scattered. The storm passed eastward into Nemaha county and was accompanied by heavy hail; at Centralia a school house was unroofed and a church steeple badly damaged; two large barns were blown down, and several houses were more or less damaged. The fruit crop suffered severely. Atchison, 11th, a tornado visited this place at about 11 a. m., and was probably a continuation of the storm above referred to. Houses and barns were blown down, and trees, fences and signs were carried away; at Farmington, fruit and corn were cut down and several buildings were leveled. At Effingham, chimneys, out-houses, fences and trees were generally leveled, and in the surrounding country several farm houses were more or less damaged, the inmates receiving, in some cases, severe injury. A tornado occurred in Pratt county on the night of the 12th. Five houses were blown down at Iuka, and several other buildings were badly damaged; in the country many barns were blown down, several persons were injured—some fatally—and the crops were destroyed in a belt of country four miles wide. A tornado also appeared in Rice county on the 16th; the storm struck Eureka township, where it did much damage, carrying away wheat stacks and unroofing dwellings. Near Kansas Centre the storm was very severe, several farm

houses being demolished, and the crops entirely destroyed. The loss in the county amounted to several thousands of dollars.

Missouri: A destructive wind and rain storm visited Saint Joseph at noon of the 11th. Many buildings were damaged and trees uprooted and broken, and several workmen were injured by being blown off the buildings in course of construction. The storm lasted twenty minutes, being followed by heavy rain. Independence, 11th, a tornado cloud, accompanied by strong wind and heavy thunder and lightning, passed over the town; it was followed by heavy rain, but no damage was done. At Protem, a severe storm occurred at 11.35 p. m. of the 11th, fields of corn were leveled to the ground, and much damage was done to orchards, many trees being uprooted. A heavy rain and thunder storm occurred at Springfield on the 11th, the wind reaching a velocity of forty-eight miles per hour. The damage to the city was slight.

Minnesota: During the evening of the 25th, a severe storm accompanied by loud thunder and vivid lightning, occurred at Saint Paul. Two unfinished buildings in the city were demolished, and a portion of the railing of the bridge spanning the Mississippi river was blown off, and many trees were uprooted. Reports from the surrounding country stated that the storm was very severe.

Nebraska: A destructive storm passed over southwestern Nebraska on the morning of the 11th, and was accompanied by heavy hail, which caused great damage to crops. The wind in some places attained the force of a hurricane, and at Hastings, Adams county, many buildings were unroofed, and a large number of windows were broken by the large hail-stones. At Glenville, Clay county, several houses were blown down, and the depot of the Saint Joseph and Western railroad was demolished.

North Carolina: 28th, a tornado occurred at Nag's Head, ten miles south of Kittyhawk; the hotel was partially unroofed; heavy timbers were taken up and carried some distance.

Ohio: Cincinnati, 4th, during a heavy wind storm, several houses in the suburbs were unroofed and chimneys blown down, but no damage occurred in the city. A wind and rain storm passed over Marietta on the night of the 10th; corn was broken down, and more or less damage resulted to property.

Pennsylvania: 15th, a storm occurred during the evening, in Allegheny county; fences and trees were blown down, and a tow-boat was capsized. On the afternoon of the 19th, a heavy wind and rain storm passed over the northern section of Lancaster county. In Columbia, trees and signs were blown down and the streets were obstructed by debris. Much damage was done to boats on the canal, and several persons were injured by flying debris.

Texas: A severe storm occurred at Jacksboro, about midnight of the 17th. Four buildings were unroofed, and the iron roof of the jail was blown off. The wind reached a velocity of fifty-four miles per hour. A violent storm of wind and rain occurred in Travis county, about ten miles north of Austin, on the afternoon of the 20th. Houses and barns were unroofed, and the corn and cotton crops in the track of the storm were destroyed. On the 21st, a heavy wind storm also occurred in Shackelford county, damaging one building and uprooting hundreds of trees.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for July, 1882, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 90.5 per cent. The percentages for the four elements are: Weather, 92.6; Direction of the Wind, 89.2; Temperature, 90.6; Barometer, 89.8 per cent. By geographical districts they are: For New England, 91.0; middle Atlantic states, 91.8; south Atlantic states, 91.4; east Gulf states, 92.2; west Gulf states, 92.5; lower lake region, 91.1;