

## P R E C I P I T A T I O N .

The general distribution of the rain-fall for the month is illustrated as accurately as possible by returns from about 500 stations upon chart No. III. In the lower left-hand corner of the chart is a table giving, by districts, the average precipitation for June. The excess of rainfall over the average for a number of years has been greatest in the St. Lawrence valley, New England and the Lower Mississippi valley. The greatest deficiency occurs in Tennessee, the Gulf and South Atlantic States over which region numerous cases of drought are reported, which will be noticed under the appropriate heading.

*Heavy Rains.*—2nd and 3rd, Hulmeville, Pa., 3.10 in.; Fall River, Mass., 1.92 in. in 1 hour. 3rd, Mystic, Conn., 2.50 in.; New London, 2.50 in. 3rd and 4th, Dover, Del., 2.80 in.; Auburn, N. H., 3 in. 4th, Trenton, N. J., 2.80 in.; Atco, N. J., 3.23 in.; Fall River, Mass., 2.80 in. 5th, Trenton, N. J., 2 in. in 1 hour and 30 minutes. 8th, Savannah, 3.22 in., (2 in. in 50 minutes.) 9th, St. Marks, Fla., 5.24 in.; Leavenworth, 2.49 in.; Independence, Iowa, 3.06 in. 9th and 10th, Gainesville, Ga., 3.50 in. 10th, Vevay, Ind., 1.35 in. in 1 hour and 30 minutes; Kansas City, Mo., 1.56 in. in 45 minutes; St. Joseph, Mo., 4.30 in. 12th and 13th, Bismarck, Dak., 3.43 in.; Waterville, Kan., 2.80 in.; Taber, Iowa, 2.90 in.; Clear Creek, Neb., 3.01 in., (2 in. in 25 minutes.) 15th, Lynchburg, Va., 1.02 in. in 20 minutes. 19th and 20th, Central City, Neb., 2.50 in. 21st, Fort Griffin, Tex., 10.24 in.; Fort Concho, 2.60 in. 24th, Des Moines, Iowa, 4.80 in., (2.50 in. in 20 minutes.) 26th, Boonville, Mo., 2.80 in.; Brunswick, Mo., 2.50 in.; Dodge City, Kan., 1.91 in. in 90 minutes. 27th, Leavenworth, 3.43 in.; Lexington, Mo., 3.30 in. in about 9 hours; Cresswell, Kan., 3.50 in. 27th and 28th, Cairo, Ill., 4.97 in., (3 in. in 90 minutes;) Anna, Ill., 3.28 in.; Kansas City, 2.62 in. 28th and 29th, Clinton, Mass., 2.99 in. 28th, Norwalk, Ohio, 2.45 in.; Little Rock, Ark., 7.40 in. 29th, Atlanta, Ga., 2.23 in.; Boston, 2 in., in 30 minutes; Southington, Conn., 1.45 in. in 15 minutes. 28th and 29th, Fort Barrancas, Fla., 4.82 in.

*Largest Monthly Rainfalls.*—Ft. Barrancas, Fla., 10.49 inches; Kansas City, Mo., 9.02; Cairo, Ill., 8.70; St. Marks, Fla., 8.60; Trenton, N. J., 8.58; Manhattan, Kan., 8.48; Dunbarton, N. H., 8.45; Auburn, N. H., 8.41; Holton, Kan., 8.25; Rome, Mass., 7.90; New Corydon, Ind., 7.33; Anna, Ill., 7.02; In Iowa, at Jefferson City, Madison Co., 8.78 inches; near Corydon, Wayne County, 8.43 inches; and Mt. Pleasant, Henry Co., 8.18 inches.

*Smallest Monthly Rainfalls.*—Burkes and Florence, Ariz., Yuma, Cal., Emory Grove, Md., Yorktown, Tex., Coalville, Utah, none; Calistoga, Cal., Albuquerque, N. M., Ft. Lyon, Col., trace; Port San Jose, Cal., 0.02 in.; Los Angeles, Cal., 0.03 in.; Pilot Point, Tex., 0.04 in.; Hermosa, Cal., 0.06 in.; Cheyenne, Wyoming, 0.07 in.; Salinas City, Cal., 0.15 in.; Umatilla, Or., 0.28 in.; Denver, Col., 0.32 in.; Olympia, W. T., 0.44 in.

*Rainy Days.*—The number of days on which rain or snow has fallen varies as follows: New England, 11 to 20; Middle Atlantic States, 7 to 17; South Atlantic States, 5 to 14; Gulf States, 5 to 15; Lower Lakes, 12 to 18; Upper Lakes, 6 to 15; Ohio valley and Tennessee, 9 to 15; Upper Mississippi valley, 11 to 17; Lower Missouri valley, 12 to 13; Eastern Slope, from 7 in Indian Territory, to 18 in Western Dakota; Rocky Mountains, from 3 at Denver to 19 at Virginia City; Western Plateau, 5 to 13; Pacific Coast, 1 to 7.

*Cloudy Days.*—For New England the number varies from 6 to 17; Middle Atlantic States, 3 to 11; South Atlantic States, 1 to 9; Gulf States, 0 to 10; Lower Lakes, 6 to 12; Upper Lakes, 5 to 13; Ohio valley and Tennessee, 7 to 10; Upper Mississippi valley, 6 to 13; Lower Missouri valley, 5 to 8; Eastern Slope, 2 to 9; Rocky Mountains, 0 at Denver and Santa Fé to 15 at Virginia City; Western Plateau, 2 to 9; Pacific coast, 0 to 8.

*Hail.*—Ft. Hale, Dak., 5th; Ft. Wallace, Kan., 7th, 19th, 29th; Ft. Snelling, Minn., 9th; Ft. McPherson, Neb., 7th, 13th, 25th; Ft. Union, N. M., 1st; Dover Mines, Va., 19th, 3.30 p. m., terrific storm moved from NNW. to SSE., lasting 3 minutes, covering ground to the depth of 3 in.; diameter of stones one-half inch; area over which hail fell, 3 miles; gardens and fruit trees greatly damaged; Leavenworth, Kan., 9th, very heavy; 5th, terrific at West Newton, McKeesport, Library, Parker and other neighboring places in Pa.; Yankton, Dak., 5th, fell on prairie a few miles west of this place; reached an average depth of one foot, while on opposite side of river from there it was 9 inches deep; the path was from SW. to NE., about two miles wide; all crops in its track destroyed; largest stones one-half inch in diameter; Pioche, Nev., 12th; Santa Fe, N. M., 1st; Omaha, Neb., 8th, 10th, 14th; North Platte, Neb., 7th, 25th; Salt Lake City, Utah, 12th; Leavenworth, Kan., 8th, 9th, 11th, 14th; Deadwood, Dak., 30th; Yankton, Dak., 5th; Davenport, Ia., 2nd; Burlington, Ia., 14th; Pembina, Dak., 23rd; St. Paul, Minn., 9th; Breckenridge, Minn., 24th; Cleveland, O., 5th; Cincinnati, O., 10th; Philadelphia, 5th; Baltimore, 11th; Burlington, Vt., 4th, 10th; Boston, 29th; Springfield, Mass., 10th, 29th; Ft. Lyon, Col., 26th; Southington, Conn., 29th; Elmira, Ill., 2nd; Vevay, Ind., 10th; Spiceland, Ind., 3rd, 10th; St. Meinrad, Ind., 10th; Monticello, Ia., 3rd; Independence, Ia., 9th; Holton, Kan., 11th; Creswell, Kan., 9th; Woodstock, Md., 11th; Owings Mills, Md., 6th; Waltham, Mass., 5th; Hudson, Mich., 5th; Oregon, Mo., 13th; Kansas City, Mo., 10th; Clear Creek, Neb., 12th, 25th; Genoa, Neb., 10th; Contoocookville, N. H., 30th; Atco, N. J., 5th; Vineland, N. J., 5th; Somerville, N. J., 11th; Argyle, N. Y., 30th; Palermo, N. Y., 4th; Nile, N.

Y., 26th; Bellefontaine, O., 3rd; Cincinnati, 10th; Ringgold, O., 10th; North Lewisburg, O., 5th, 27th; Norwalk, O., 5th; Herman, Mo., 14th, severe hail storm, course from W. to E., about a mile in width, destroying three-fourths of the crops, uprooting trees, and blowing over a large log barn, stones  $1\frac{1}{2}$  inch in diameter fell, some vineyards entirely destroyed; 7th, the hail storm throughout northeastern and central Ohio was more severe than ever known in Delaware county, a perfect torrent of hail, breaking windows and doing other damages, hail was as large as hens eggs; 6th, New Market, Frederick Co., Md., "this neighborhood has again been visited by a most disastrous hail-storm, commencing this afternoon about  $1\frac{1}{2}$  o'clock. The wheat crop, in a belt at least half a mile in width and extending four or five miles in length, is nearly all destroyed."

*Snow from Cloudless Sky.*—Summit, Col., 16th.

*Snow fell as follows:* Winnemucca, Nev., 16th, heavy. Pike's Peak, 1st, 2nd, 13th, 14th, 15th, 16th, 27th and 28th. Fort Douglass, Utah, 7th, on Wasatch and Ogwoh ranges this a. m. Summit Station, Central Pacific R. R., 14th and 16th.

*Depth of Snow on Ground at end of Month.*—Pikes Peak, Col., the old snow is melting rapidly and the trail is open for horses to within 100 yards of the station.

*Drought.*—Summit, Col., 14th, first rainfall of 1879. Gulf Hammock, Fla., 30th, still suffering for rain; ground parched; corn crop injured very much. Forsyth, Ga., 30th, water-courses very low; springs and wells failing; corn and cotton seriously damaged by drought. Thomasville, Ga., 30th, corn injured by drought. Okalooska, La., 30th, corn crop seriously injured by drought. Fallston, Md., 30th, gardens and crops suffering from drought. Emory Grove, Md., no rain during month. Northport, Mich., month very dry, injuring vegetation. Brookhaven, Miss., 26th, very dry; corn suffering. Fayette, Miss., 30th, early corn injured by drought. Fayetteville, N. C., 30th, everything suffering, and in many places vegetables and plants dying. Ringgold, Ohio, 30th, potatoes injured by drought. North Lewisburg, Ohio, very dry month. Chambersburg, Pa., 30th, oats and hay injured by drought. Clarksville, Tex., no rain from May 5th to June 15th; corn and oats suffered considerably. Melissa, Tex., 14th, long drought of six weeks, doing much damage to crops. Coalville, Utah, no rain during month; 6th, "terribly drying wind giving us notice of no crops this year; dust everywhere." Ft. Gibson, Ind. Ter., 19th, drought, vegetation checked, wells drying up. Chattanooga, Tenn., 1st, much damage done to garden products by drought. Augusta, Ga., 25th, "drought is beginning to tell fearfully on crops, especially corn, cotton and fruit; water melon vines drying by the acre—crop reported ruined." Sloop Point, N. C., 16th, drought continues, very severe. Graham, Tex., 8th, corn suffering greatly; 17th, corn crop an entire failure. Corsicana, Tex., 25th, farmers report very dry weather in adjoining counties; stock suffering. Portsmouth, N. C., 12th, 20th, water for stock very scarce. Kanab, Utah, 3rd to 19th; cattle dying; very dusty.

*Floods.*—New Corydon, Ind., 11th, violent rain; low lands flooded.

## RELATIVE HUMIDITY.

The average percentages of Relative Humidity for the month ranges as follows: New England, 68 to 84; Middle Atlantic States, 60 to 79; South Atlantic States, 56 to 75; Eastern Gulf States, 71 to 76; Western Gulf States, 60 to 72; Ohio valley and Tennessee, 55 to 69; Lower Lakes, 54 to 72; Upper Lakes, 63 to 71; Upper Mississippi valley, 62 to 71; Lower Missouri valley, 65 to 67; Red River of the North valley, 68 to 73; Eastern Slope, 49 to 68; Western Plateau, 21 to 50; California, 30 to 72. *High stations* report the following averages, not corrected for altitude: Cheyenne, 33; Mt. Washington, 88; Denver, 38.5; Pike's Peak, 48; Santa Fé, 20.5; Virginia City, 48.

## WINDS.

The prevailing winds, at the Signal Corps stations, are shown by the arrows flying with the wind on chart No. II. The *maximum velocities* per hour have been given in the descriptions of movements of areas of low pressure. On Mt. Washington the highest velocity, 120 miles, was recorded from the SW. on the 4th and also from the NW. on the 6th. The seven daily observations give the following results as to direction during the month: N., 18 times; NW., 92; W., 45; SW., 32; S., 15; SE., 5; E., 1; NE., 0; calm, 2

*Total Movements of the Air.*—The following are the *largest* monthly movements of the air recorded at the Signal Corps stations: North Platte, 12,786; Cape Lookout, 11,777; Portsmouth, N. C., 11,422; Dodge City, 11,319; Pike's Peak, 10,955; Kittyhawk, 10,577; Breckenridge, 10,297; Cape Hatteras, 10,293; Wood's Holl, 9,270; Umatilla, 8,919; Fort Sill, 8,753; San Francisco, 8,038. The *smallest* are: Florence, Ariz., 2,212; Nashville, 2,278; Silver City, N. M., 2,389; Tucson, 2,520; Lynchburg, 2,525; Visalia, 2,676; Roseburg, 2,836; Uvalde, Tex., 2,947 Indianapolis, 3,077.

*Local Storms.*—Salt Lake City, 6th, severe wind storm; three cars blown from track of Western Utah Railway. Violent storm in Dubuque, Ia., night of 9th; anemometer registered 60 miles when electric circuit was broken; estimated velocity, 80 miles; great damage to property; over 20 buildings unroofed. Cloud burst on Beaver Creek, near Buffalo Gap station, 92 miles south of Deadwood, Dakota, on the 12th, drown-