The observer at Yreka, Cal., reports the following heavy local storms near that place:—July 5th, from 3:30 to 7 p. m., a violent storm passed from S. to N., about 4 miles wide, deluging the country with water; it then seemed to turn and pass to the S., and when about 4 miles east of this place the precipitation was so great that the water seemed to roll along, through, otherwise dry and nearly level gulches, to the depth of 4 or 5 feet, washing everything before it. The storm seemed to extend about 10 miles in length. Shasta river rose two feet in a few minutes; July 16th, heavy storm 15 miles northeast of this place, "cloud bust," moving rocks weighing over one thousand pounds; and on 17th, another heavy fall of water in the same place.

On the 18th a severe thunder-storm passed eastward from northeastern Oregon into Idaho, during the progress of which a destructive "cloud burst" occurred on west Butter (or Bitter) creek, near Pendleton, which will be found noted under *Floods*. The observers at the surrounding Signal Service stations report as follows: Umatilla, Or., "sand-storm set in from the southwest at 3:50 p. m., and for 15 minutes the wind velocity reached 52 miles per hour; rain fell from 3:58 to 4:25 p. m., and several flashes of lightning were observed." Dayton, Wash. Ty., light rain from 3:30 to 5 p. m., "a heavy thunder-storm passed over the mountains about 15 miles south of station at 5 p. m." Pomeroy, Wash. Ty., "sudden heavy wind from 5:30 to 6 p. m." Boise City, Idaho, "light rain from 4:10 to 4:15 p. m., accompanied by zigzag lightning and loud thunder."

Waterspouts.—Key West, 12th, at 6 p. m., a waterspout formed to the southeast of station, in connection with a very heavy thunder-storm then prevailing. Kittyhawk, N. C., 18th, at 8:30 a. m., a waterspout formed over Albemarle Sound, four miles from station. It remained stationary until 8:55 a. m., and no rotary motion could be discerned. During this time two smaller ones partly formed near to the main one, reaching nearly to the clouds, and, after swaying backwards and forwards for a short time, finally disappeared. Portsmouth, N. C., 28th, at 5:15 p. m., three waterspouts formed in Ocracoke Inlet, making a complete column of spray, extending from sea to cloud, and moving slowly from SW. to NE. New Bedford, Mass., 29th, 5 p. m., a waterspout formed in the cove between Sconticut Neck and Mattapoisett Neck. Was at first very regular and straight, and connected with the western edge of a cloud, which was the scene of a thunder shower of moderate extent and force. Diameter 30 to 40 feet, and altitude about 3,000 feet, composed of spray which strongly contrasted with the dark cloud. It moved slowly to the southeast, and the portion midway from cloud to bay advanced faster than either the bottom or top, causing the column to bend forward and to drag the lower portion. It disappeared in about 20 minutes, being apparently drawn upward into the clouds.

Sand-storms.—Visalia, Cal., 25th; Burkes, Ariz., 7th, 10th, 15th, 17th, 24th.

VERIFICATIONS.

Indications.—The detailed comparison of the tri-daily indications for July, with the telegraphic reports for the succeeding twenty-four hours, shows the general percentage of verifications to be 87.2 per cent. The percentages for the four elements are: Weather, 87.0; Direction of the Wind, 77.8; Temperature, 87.3; Barometer, 88.6 per cent. By geographical districts they are: for New England, 81.8; Middle States, 82.6; South Atlantic States, 90.2; Eastern Gulf States, 88.1; Western Gulf States, 91.8; Lower Lake region, 84.5; Upper Lake region, 81.2; Tennessee and the Ohio valley, 89.4; Upper Mississippi valley, 83.0; Lower Missouri valley, 76.8; Northern Pacific coast region, 88.4; Central Pacific coast region, 100.0; Southern Pacific coast region, 96.0. There were 24 omissions to predict out of 3,713, or 0.65 per cent. Of the 3,689 predictions that have been made, 27, or 0.74 per cent. are considered to have entirely failed; 138, or 3.75 per cent. were one-fourth verified; 445, or 12.06 per cent. were one-half verified; 435, or 11.79 per cent. were three-fourths verified; 2,644, or 71.67 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

Cautionary Signals—68 Cautionary Signals were displayed during the month, of which 56, or 82.4 per cent., were justified by winds of 25 miles per hour or over at, or within a radius of 100 miles of the station. No Off-shore Signals were displayed. The above does not include signals ordered for 49 display stations, where the display is only estimated.

NAVIGATION.

In the table on the right-hand side of chart No. III are given the highest and lowest stages of water in the various rivers, as recorded on the Signal Service river gauges, during July, 1880. From an examination of this table it will be seen that the highest waters were generally recorded during the first half of the month, while in a majority of cases they occurred during the first few days. The lowest readings, with one or two exceptions, occurred during the last days of the month. The only cases in which the water exceeded the danger-point on gauge were at Omaha, Davenport, Keokuk and Portland, Or. At Davenport and Keokuk the highest water occurred on the 1st; this freshet was fully noted in the June *Review*. At Omaha the highest water occurred on the 9th, and submerged the railroad tracks in the vicinity. At Portland, Or., the highest water in the Willamette river occurred on the 1st and 2nd, and the damage resulting therefrom will be found noted under the head of "Floods."