VERIFICATIONS.

Indications.—The detailed comparison of the tri-daily indications for September, with the telegraphic reports for the succeeding twenty-four hours, shows the general percentage of verifications to be 85.1 per cent. The percentages for the four elements are: Weather, 85.8; Direction of the Wind, 84.1; Temperature, 86.4; Barometer, 84.0 per cent. By geographical districts they are: for New England, 83.4; Middle States, 86.3; South Atlantic States, 86.9; Eastern Gulf States, 80.8; Western Gulf States, 88.0; Lower Lake region, 86.1; Upper Lake region, 85.6; Tennessee and the Ohio valley, 85.6; Upper Mississippi valley, 83.6; Lower Missouri valley, 82.8; Northern Pacific coast region, 80.6; Central Pacific coast region, 96.6; Southern Pacific coast region, 100.0. There were 23 omissions to predict out of 3,690, or 0.62 per cent. Of the 3,667 predictions that have been made, 99, or 2.70 per cent. are considered to have entirely failed; 135, or 3.68 per cent. were one-fourth verified; 459, or 12.52 per cent. were one-half verified; 467, or 12.73 per cent. were three-fourths verified; 2,507, or 68.37 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

Cautionary Signals—94 Cautionary Signals were displayed during the month, of which 73, or 77.7 per cent., were justified by winds of 25 miles per hour or over at, or within a radius of 100 miles of, the station. 28 Off-shore Signals were displayed, of which 22 or 78.5 per cent, were fully justified, and 27 or 96.4 per cent, justified as to direction. Seven of the Off-Shore were changed from Cautionary. 122 Signals of both kinds were displayed, of which 95 or 77.9 per cent, were fully justified. 76 cases of winds of 25 miles and over per hour, from scattered stations, were reported, for which signals had not been ordered. The above does not include signals ordered for 49 display stations, where the velocity is only estimated. Fourteen signals were ordered late.

NAVIGATION.

In the table on the right-hand side of chart No. III are given the highest and lowest stages of water, as recorded on the Signal Service river gauges, during September, 1880. The *Mississippi* above the mouth of the Missouri fell steadily to the 18th, after which date a rise occurred at Davenport and Keokuk, but above the former station the fall continued till near the end of the month. From St. Louis to Vicksburg in the early part of the month a rise prevailed, ending on the 10th at the former station and on the 19th at the latter. This rise was followed by a steady fall to the 30th. At New Orleans the river fell to the 19th and then rose to the 30th. Excepting very slight rises in the early part, the *Missouri* fell steadily throughout the month, except at Yankton where it rose one inch during the 29th. The *Tennessee* at Chattanooga remained nearly stationary with a falling tendency until the 25th, when it was at its lowest point, 1 ft. 11 in.; it then rose steadily to 4 ft. on the 30th. On the 22nd all but the smallest steamers stopped running. The *Ohio* remained at a low stage of water during the month, the steady fall from the 1st being broken only by slight rises which reached their highest point at Pittsburgh, on the 13th, 4 ft. 1 in., and at Cincinnati on the 15th, 9 ft. 2 in. Excepting a slight rise on the 27th and 28th the *Red River* at Shreveport fell steadily throughout the month. The *Arkansas* at Little Rock fell from the 5th to the 30th. The *Cumberland* at Nashville was at its highest point on the 7th, after which, except a slight rise on the 27th, it fell steadily. At Morgantown the *Monongahela* fell till the 27th, when it stood at 4 ft. 5 in.; by the 29th it had risen to 8 ft. 9 in.; on the 26th the river fell to 3 in. below low water mark owing to the opening of the locks below.

High Tides.—Ft. Macon, N. C., 20th, very high; Portsmouth, N. C., 19th.

Low Tides.—Cedar Keys, Fla., 24th, 27th.

TEMPERATURE OF WATER.

The temperature of water, as observed in rivers and harbors at Signal Service Stations, with the average depth at which observations were taken, is given in the table on the left hand side of chart No. II. At the following stations observations were not made on the dates indicated: Charleston, 3rd to 11th, inclusive; Key West, 1st to 8th; Milwaukee, 21st to 30th; Mobile, 21st to 26th.

ATMOSPHERIC ELECTRICITY.

Thunder storms have occurred with the greatest frequency as follows: *Illinois:* 3rd, 18th and 19th. *Indiana:* 3rd, 5th, 6th, 15th, 18th, 25th. *Iowa:* 3rd, 6th, 19th, 25th. *Kansas:* 3rd, 18th, 25th. *Michigan:* 1st, 19th. *Nebraska:* 6th, 18th, 25th. *Missouri:* 19th, *New York:* 4th. *Ohio:* 4th, 28th. *Virginia:* 5th and 6th. *Tennesse:* 4th, 5th. *Texas:* 3rd, 4th, 6th, 7th, 12th, 22nd to 26th. In other States they have occurred with comparative infrequency. At Santa Barbara, Cal., a thunder-storm occurred the 7th.

Atmospheric Electricity Interfering with Telegraph Lines.—New Mexico—Silver City, on the 9th, 10th, 21st; Santa Fe, 6th, 26th; Socorro, 12th, 16th, 20th, 26th, 28th, 29th; La Mesilla, 10th, 20th.

Zodiacal Light.—Indiana: New Corydon, 4th, 5th, 8th, 9th, 10th, 11th, 14th, 15th. *Iowa:* Yates Centre, 27th. *Minnesota:* St. Vincent, 26th, 30th. *Tennessee:* Nashville, 14th, 2 a. m.; 15th, 2:30 a. m.; 16th, 2 a. m.; 24th, 6:50 p. m.; 28th, 9 p. m. The following is a brief summary of observations on the zodiacal light, by Mr. Chas. Hasselbrink, at Havana, which have been received