WINDS.

Prevailing Winds.—Are shown by the arrows upon Chart No. II. A somewhat unusual prevalence of NE. winds is reported from most stations east of the Rocky Mountains, in which respect the past April offers a striking contrast to April of 1875 and 1876, and accords more nearly with April 1874. Westerly winds have prevailed as usual at the Rocky Mountain and Pacific coast stations, but east of the Rocky Mountains, they are reported only from Pembina, Fort Sully, Yankton and Memphis, NW., Wilmington, SW., at Pike's Peak, SW., and at Mt. Washington, N.

Total Movements.—The largest total movements for the month are: Breckenridge, 10.080 miles; Cape May, 11,175; Cape Lookout, 12,734; Dodge City, 12,733; Indianola, 11,117; Kittyhawk, 12,118; Pike's Peak 14,341; Sandy Hook, 10,029. The smallest movements are: Augusta, 3.817; Lynchburg, 3,006; Nashville, 3,376; Baltimore, 4,264; Burlington, 4,361; Montgomery, 4,391; Shreveport, 4,327; Springfield, 4,375.

Highest Winds.—Wind-velocities of 50 miles or over are reported from Signal Service stations as follows: Atlantic City, 9th, NE., 50; Breckenridge, 21st, N., 57; Cape Henry, —— — 75; Cape Lookout, 10th, N., 68, 14th, N., 80. (the total movement was about 2,500 miles in 48 hours,) 28th, SW., 56; Charleston, —— — 55; Denver, 18th, — 60; Dodge City, 21st and 27th, — 60; Galveston, 24th, N., 72; Pike's Peak, 21st and 22nd, — 84; Smithville, 13th and 28th, — 50; Toledo, —— — 58; Yankton, 1st, — 56; Mt. Washington, 6th, — 96; San Diego, W., 75.

Local Storms, Tornadoes, &c.—Local storms are reported as follows: On the 1st, at Pembina, Dak., a severe "blizzard" occurred, consisting of a northerly gale, with drifting snow and very low temperature, followed by clear, cold weather. On the 10th, at Santa Fe, a NE. gale occurred, and a severe snow-storm, impeding travel. On the 18th a tornado was reported in southern Kansas, while at the Signal Service station at Leavenworth the barometer fell to 29.11, with high winds and heavy rains. On the same date tornadoes were reported in Missouri and central Tennessee. It is probable that these tornadoes were distinct from each other—their connection with storm No. VII is mentioned on a preceding page. At Fort Lyon, Col., there prevailed, during the day, a violent wind-storm from the N. On the 22nd the observer at Dodge City reports that, at 5:30 p. m., a strong whirlwind was seen approaching from the SW.; the clouds above had also a rapid whirling motion; on reaching the river a waterspout was immediately formed, shooting rapidly upwards, with a sinuous motion, estimated to be about 600 feet high, with a diameter at base of 8 feet. At 5:45 p. m. the wind chopped around to the N., with heavy hail. On the 24th Galveston was visited, at 5:40 a. m., by a terrific thunder and wind-storm, accompanied by heavy hail, attending low barometer No. IX. The wind which was from the N. attained a velocity of 72 miles within 5 minutes of the commencement of the blow. A series of gales and local storms occurred in this neighborhood from the 23rd to the 29th. On the 26th a violent rain-storm occurred at Memphis, and severe local storms in Indian Territory and Texas.

VERIFICATIONS.

Indications.—The detailed comparison of the tri daily weather "Indications" with the telegraphic weather reports for the succeeding twenty-four hours shows a percentage of omissions 0.6. The general average percentage is 85.7 per cent. Out of 3,580 predictions, 2,640, or 73.7 per cent, have been fully verified; 236, or 6.6 per cent, have been three-fourths verified; 459, or 12.8 per cent, have been half verified; 86, or 2.4 per cent, have been one-fourth verified; 159, or 4 4 per cent, have failed. The percentages for the four elements have been: Weather, 91.6; Wind, 85.3; Temperature, 82.6; Barometer, 83.3. The percentages by geographical districts have been: New England, 82.3; Middle Atlantic States, 84.8; South Atlantic States, 86.1; East Gulf States, 86.4; West Gulf States, 88.0; Lower Lakes, 85.8; Upper Lakes, 86.1; Tennessee and Ohio valley, 88.1; Upper Mississippi valley, 84 9; Lower Missouri valley, 85.0.

Cautionary Signals.—During the month 156 Cautionary Signals have been ordered for stations on the Gulf and Atlantic coasts and the Lakes. Of these, 117, or 75 per cent, were justified by subsequent high winds within one hundred miles of the station where they were displayed, and 39, or 25 per cent, were not justified so far as known. Seventy-one instances of high winds, when no signals were displayed, have also been reported from these stations during the month. Telegraphic communication with Cape Lookout was interrupted during the entire month.

NAVIGATION.

Stage of Water.—In the table on chart No. III is shown the highest and lowest readings of river-gauges, with the respective dates. At the close of the month the Red river and the lower Mississippi were from 8 to 11 feet higher than at the beginning. The upper Mississippi was 3 feet higher. The upper Missouri was several feet lower. At other river stations the water has fluctuated irregularly during the month.

Opening of Navigation.—The following reports have been received relative to ice in rivers and harbors