

# MONTHLY WEATHER REVIEW,

## MAY, 1875.

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WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

### INTRODUCTION.

The Weather Review for the current month is based upon the regular tri-daily telegraphic Weather Maps, and upon regular Monthly Reports from 92 Signal Service stations, 12 Canadian stations, 52 Army Surgeons, 1 Naval Hospital, 301 Volunteer Observers, and upon miscellaneous sources of information.

The principal features of the month have been (1) the low temperature in the eastern portions of the country, attending an extensive area of high barometer. The temperature has been generally below the average for the month, and especially so in the St. Lawrence valley. It has been above the average from the Gulf States to the Lower Lake region. (2) The tornadoes in Iowa, Illinois, Indiana and Ohio. (3) The excess of rain on the south Atlantic coast and from Missouri to Indiana, the deficiency in Tennessee, the Gulf and Middle Atlantic States. (4) The absence of auroras and thunder-storms. (5) The continuance of extensive ice-fields and large ice-bergs in the Gulf of St. Lawrence and to the south and east of Newfoundland.

### BAROMETRIC PRESSURE.

The general distribution of barometric pressure during the month is easily seen from the isobars on Map No. II. The highest pressure, as usual, is on the south Atlantic coast. The lowest pressure is in the Northwest, where the barometer is apparently lower by 0.05 than in May, 1874. On the Pacific coast the pressures have been lower in California and higher in Oregon than in the preceding year.

1. *Areas of high barometer.*—The prevailing high barometer off the south Atlantic coast was especially marked on the 14th and 19th. The great southward flow of dry, cold air that took place on the 14th, 15th, 16th and 17th, reaching from British America to Florida and prevailing over the entire country east of the Mississippi until the 18th, was the most remarkable feature of the month.

I. Passed eastward on the 2d over the Southwest, and on the 3d over the Ohio valley to the Atlantic coast.

II. Passed from the Southwest on the 4th eastward to the south Atlantic coast on the 5th.

III. Passed from Texas on the 10th eastward to the south Atlantic coast on the 11th.

IV. Extended on the 11th from Dakota to Texas; continued on the 12th in the lower Mississippi valley, and moved eastward on the 13th over Kentucky and Virginia, with clear, cold weather from Tennessee to Michigan and Maine. On the 14th it remained off the middle and east Atlantic coasts.

V. The slight depression following the preceding area was immediately succeeded on the 14th by one of the most extensive regions of dry, cold air and high pressure. Its southward advance over Lake Superior began on the night of the 13th-14th. The highest pressures were: on the morning of the 14th over Lake Superior, 30.20; on the morning of the 15th, Lake Superior, 30.56; on the morning of the 16th, Lake Superior, 30.67; on the morning of the 17th, Michigan and Ohio, 30.40; on the morning of the 18th, northern New England, 30.33. The low temperature, prevailing during these days throughout the northern and eastern portion of the country, contributed materially to reduce the average temperature of the month. The average pressure off the south Atlantic coast seems to have received a decided increase during the week following the passage of this area of high pressure.

VI. This, also, flowed southward over the Lake region on the 25th and 26th, and the St. Lawrence valley on the 27th, being off the New England coast on the 28th, whence it apparently flowed southward to Cape Hatteras.

VII. Appears to have extended from Texas to Minnesota on the 29th, whence it moved eastward, was central on the Lower Lakes on the 30th, and disappeared in the St. Lawrence valley on the 31st.

2. *Areas of low barometer.*—Eleven areas of low barometer are traced on the accompanying Map No. I, of which four are well-marked, severe storms. With one exception, these have probably originated north of the Platte river, under the influence of the increasing temperature in the interior of British America. Their paths have, west of the 92d meridian, been almost entirely confined between the parallels of 42 and 45 degrees, and the majority of them have crossed the 72d meridian, between the parallels of 45 and 47 degrees. Their paths, therefore, have differed greatly from those of the storms of May, 1871 and 1873, but agreed more nearly with those of May, 1872 and 1874, excepting only that they lie three degrees to the southward of those of the latter month. Severe hurricanes occurred on the Atlantic to the eastward of our stations on several dates, but the marine reports do not suffice to show the positions and paths of the storms.

I. This, which was the severest storm of the month, began in April in the Southwest, and was, on the morning of May 1st, central in southern Illinois, whence it passed northeastward over Lakes Erie, Ontario and the St. Lawrence valley. The rain area was quite evenly distributed on all sides, and heavy snows occurred in its rear over the Upper Lakes.

Brisk and high winds from all directions prevailed in succession over the Ohio valley, Lakes, Middle and Eastern States. At midnight, May 1st, a small secondary depression had formed in the Middle Atlantic States, but whose further progress could not be traced. Local tornadoes were reported from Georgia, South Carolina, Tennessee, Indian Territory, the Lower Lakes, and destructive squalls on the Middle Atlantic coasts.

II. Area No. I was followed by an area of high barometer in the lower Mississippi valley, west of which appears to have formed during the 2d of May over Kansas low barometer No. II, which was but a slight depression, but can be somewhat hypothetically traced eastward and southward into the South Atlantic States, until it appears as a well-defined storm-centre on the morning of the 4th off the coast of North Carolina, followed in that region by brisk and high northeast winds.

III. Area No. III appears on the afternoon of the 4th, central in southern Dakota, and, after extending in a northeast direction, with rain and snow and local tornadoes on the Upper Lakes, may be considered to have turned southeastward into Missouri, while a branch area moved southeastward over the Lake region and central New York to the Middle Atlantic coast, where it developed during the sixth into a severe storm, and moved thence northeastward over southern New England, with a heavy rain during the 7th in eastern Massachusetts. A remarkable hailstorm occurred on the 6th off Cape Hatteras.

IV. During May 5th, the barometer continued to fall in Dakota, and, on the 6th, area No. IV was apparently central in that territory, with brisk and high southeast winds, warm, cloudy and rainy weather from Kansas and Illinois to Manitoba. The depression moved rapidly in a south-southeast direction during the 7th, and was, at midnight, probably central in Iowa, over which entire State prevailed the area of lowest pressure. During the 8th, this area moved more rapidly northeastward over Lake Superior, and thence apparently more nearly eastward toward the valley of the Saginaw.

V. While the preceding depression was moving over the Lake region, area No. V originated, on the 8th, in the Southwest, apparently in the region where the warm, southerly winds of the Gulf States were met by the cold, northerly winds following in the rear of storm No. IV, probably in the region of the Red river in Texas. It passed northeastward over Arkansas and Missouri, and, on the afternoon of the 9th, was central in Indiana, and severe storms and rains prevailed during that day in the Ohio valley. The storm-centre continued moving rapidly northeastward over western Pennsylvania and New York and down the St. Lawrence valley. Southwest gales, following this depression, prevailed on the 9th and 10th at Cape Hatteras. Local tornadoes were reported in Iowa, Illinois and Indiana on the 8th, and northern Ohio, Michigan and Lake Erie on the 9th.

VI. On the afternoon of the 10th, a disturbance was evidently central over northern Nebraska, and the severest westerly gale of the month was simultaneously reported from Cheyenne. Our reports do not allow us to decide whether this disturbance may not possibly have, during the preceding twenty-four hours, moved toward the region indicated from some point to the northwest or southwest thereof. The movement of the central low pressure was first southeast, thence directly eastward to a point just north of Chicago on the afternoon of May 11th, at which time heavy winds prevailed from Ohio to Kansas and northward to Lake Superior, and heavy rains in southern Wisconsin. Passing east-northeastward, the storm was central north of Montreal on the afternoon of the 12th, and was followed by brisk southwest to northwest winds over the Lake region and the Middle Atlantic States.

No. VII. The high barometer that followed the storm No. VI, and was central in Missouri on the morning of the 12th, was immediately followed on the afternoon of that day by the origin of a new storm-centre near the northern border of Nebraska. On the morning of the 13th, cold westerly winds prevailed at Cheyenne, and southeast winds, with rain, in the upper Mississippi valley. The lowest pressure being apparently central

near Yankton, subsequently moved east-southeastward into northern Illinois, and was central a little to the south of Grand Haven on the morning of the 14th. During that day, increasing winds and light rains prevailed over the Lake region, while the storm-centre moved eastward between Buffalo and Kingston, and was, on the morning of the 15th, central near Lake Champlain, whence it moved northeastward beyond our stations, and was followed by the remarkable area of cold air and high barometer No. V.

Nos. VIII and IX. On the 14th, an area of cold air, with dry, clear weather, began moving southward over the Lake region, and its influence prevailed over the entire country east of the Rocky Mountains until the 19th, during which interval southerly winds, occasionally increasing to gales, prevailed from Kansas to Manitoba, with cloudy weather, and, on the 17th and 18th, light rains. Northerly winds, gradually diminishing in force and shifting to southeast, prevailed east of the Mississippi. Local depressions appeared on the 19th, in New England, and a general fall of pressure occurred over the Lake region, probably in connection with a central low barometer, between Lake Huron and Hudson's Bay, on the morning of the 20th, which depression may be considered central in northern New England on the afternoon of the 20th, at which time, also, a slight depression existed in Iowa. The latter, which is marked as area No. IX, continued nearly stationary until the afternoon of the 21st, a tornado being reported in Indian Territory on the 20th, while the area of cloudy weather and light rain extended slowly to Arkansas, the Ohio valley and New York. The depression itself seems to have moved eastward into Michigan, where it disappeared at midnight, and a general area of cloud and rain extended eastward over the Middle and Eastern States.

No. X. From the 21st to the 24th, no well-marked depression is presented, except the continued formation and disappearance of slight depressions and numerous light rains. On that day areas of low barometer existed in the South Atlantic States and the Upper Lake region, but did not develop further. The steady diminution, of pressure in the extreme Northwest and probably in British America, seems to have exceeded its normal rate, and finally to have culminated in the formation, on the 26th, of an area of low barometer in Nebraska and Dakota, and increasing northerly winds continued, with light rains during the 27th, from Nebraska to Manitoba. The central lowest pressure moved from Iowa northeastward over Lake Superior on the 28th, and thence southeastward to Lake Ontario on the morning of the 29th, accompanied by very general rains over the Lake region. During the 29th colder, northerly winds and rain, followed by clear weather, prevailed over the Lower Lakes, while the storm-centre turned again northeastward down the St. Lawrence valley.

No. XI. May be approximately located in western Dakota in the afternoon of the 29th, and in western Minnesota on the afternoon of the 30th, but apparently oscillated about in this region until midnight of the 31st. It was near St. Paul on the morning of June 1st, and its subsequent history belongs to that month. During the nights of the 31st of May and 1st of June, unusually heavy rain-storms prevailed in western Iowa and southern Minnesota.

### TEMPERATURE OF THE AIR.

The average temperature of the air is shown by the isotherms on Map No. II, and by the table in the lower left-hand corner, from which it will be seen that the general average for the whole country is about  $0.5^{\circ}$  below its normal value, the greatest depression being in the St. Lawrence valley, and the greatest excess in the Lower Lake region.