

IV.—First noted to the north of Montana a. m. of 20th; its motion was southeast, and it was last noted off the middle Atlantic Coast p. m. of 23d.

V.—This high was seen first to the north of Lake Superior a. m. of 23d; its motion was the slowest of any high during the month, and this slow motion was partly made up from its hovering near Nova Scotia for three days. It was last noted a. m. of 28th off Nova Scotia.

VI.—Like the last, this high was first seen to the north of Lake Superior a. m. of 28th. It moved east to the north of the St. Lawrence, which it reached p. m. of 30th.

LOW AREAS.

I.—This is the continuation of No. X of March, which was in Iowa p. m. of 31st, and first noted in Wisconsin; its motion was eastward, and it was last seen in the St. Lawrence Valley p. m. of 2d.

II.—First noted p. m. of 1st in eastern Virginia; its motion was northeast, and it disappeared off Nova Scotia p. m. of 5th.

III.—Was first seen off the north Pacific Coast a. m. of 6th; its motion was first southeast, reaching Kansas 7th; thence its track was northeast, being last noted over Lake Huron p. m. of 9th.

IV.—Was first seen off the middle Pacific Coast a. m. of 9th; its motion was a little south of east to Kansas and then northeast. It was last noted north of Lake Superior a. m. of 14th.

V.—First noted to the north of Montana p. m. of 11th; its motion was southeast to Nebraska, thence northeast to the north of Lake Huron, where it was last seen a. m. of 16th.

VI.—This storm was first seen in New Mexico a. m. of 16th; it moved north-northeast, and disappeared in Manitoba p. m. of 19th.

VII.—This storm also originated off the north Pacific coast p. m. of 18th; its motion was nearly due east, and it was last seen off the New England Coast a. m. of 22d. This storm and No. II are the only ones of the month reaching the Atlantic.

VIII.—First noted to the north of Montana p. m. of 20th; its motion was eastward, at the lowest velocity of any storm of the month. It was last seen to the north of Lake Superior p. m. of 24th.

IX.—First seen off the middle Pacific Coast p. m. 23d; its motion was erratic, as it doubled on itself. It was last noted p. m. of 30th in northern Minnesota.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.										
I.....	1, a. m.	43	111	5, p. m.	32	79	3,070	4.5	681	29.2
II.....	3, p. m.	48	118	11, p. m.	32	78	4,180	8.0	522	21.8
III.....	15, a. m.	54	117	17, p. m.	52	105	990	2.5	396	16.5
IV.....	20, a. m.	52	111	23, a. m.	34	76	2,370	3.5	677	28.2
V.....	23, a. m.	50	85	28, a. m.	43	64	1,850	5.0	371	15.5
VI.....	28, a. m.	48	85	30, p. m.	49	66	970	2.5	389	16.2
Sums.....							13,430	36.0	3,036	127.4
Mean of 6 paths.....							2,238	4.33	506	21.2
Mean of 26 days.....									517	21.5
Low areas.										
I.....	1, a. m.	46	89	2, p. m.	48	75	680	1.5	456	19.0
II.....	1, p. m.	37	77	5, p. m.	46	57	1,610	4.0	403	16.8
III.....	6, a. m.	48	127	9, p. m.	43	84	2,030	3.5	867	36.1
IV.....	9, a. m.	43	124	14, a. m.	50	87	2,530	5.0	506	21.1
V.....	11, p. m.	52	116	16, a. m.	47	83	2,360	4.5	503	21.0
VI.....	16, a. m.	32	109	19, p. m.	51	95	1,870	3.5	535	22.3
VII.....	18, p. m.	47	124	23, a. m.	41	69	3,300	3.5	915	38.1
VIII.....	20, p. m.	53	116	24, p. m.	51	86	1,600	4.0	401	16.7
IX.....	23, p. m.	42	126	30, p. m.	48	97	3,550	7.0	507	21.5
Sums.....							20,330	36.5	5,093	212.6
Mean of 9 paths.....							2,259	4.6	566	23.6
Mean of 36.5 days.....									557	23.2

LOCAL STORMS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

2d.—Severe winds were experienced throughout portions of Wisconsin, Michigan, and northern Indiana. In some cases the wind was accompanied by heavy snow and freezing temperatures. Railway train service was much impeded in northern Wisconsin and Michigan.

10th.—Severe winds visited portions of Wapello and Jefferson counties, Iowa, on the morning of the 10th. The damage was confined to barns and outbuildings.

11-12th.—High winds with rain, snow, or sleet prevailed throughout eastern Colorado and western Kansas from near midnight of the 11th until late in the afternoon of the 12th. The area of storm winds also extended southward to northern-central Texas. Traffic was generally suspended on all railway lines in Colorado and there was also more or less minor damage to telegraph and telephone wires, electric light plants, etc. The damage in Texas was mostly caused by high winds. The points at which small losses occurred were Fort Worth, Cresson, Reagin, Annetta, Abilene, and Colorado City. At the last-named place the storm assumed the violence of a tornado (see March REVIEW, p. 82). A tornado also occurred in the vicinity of Cale, Ind. T.; damage small.

13th.—Severe local winds were felt at Burlington and Clinton, Vt., but no serious damage was done.

15th.—Severe thunderstorms, at times approaching the violence of a tornado, occurred in Faulk and Edmund counties, S. Dak., during the early morning of this date.

19th.—A destructive hailstorm visited the towns of New Marlboro, Sandisfield, and Tolland, Mass., destroying many panes of glass and damaging the interiors of a number of residences at those places.

20th.—A tornado occurred on the afternoon of this date near Fremont, Sandusky County, Ohio, and many destructive thunderstorms were experienced in other portions of northern Ohio, Indiana, and Pennsylvania. The path of greatest severity extended from the Indiana line across the State of Ohio and into the northwestern portion of Pennsylvania. Roofs and chimneys were damaged by the high winds; crops and fences were blown down; cellars flooded and considerable loss was entailed upon electric light companies by the blowing down of their wires and poles. Damages by severe thunderstorms were also reported from various points in Nebraska, Iowa, Illinois, and Indiana.

22d.—Severe wind and hailstorms passed over small portions of Nevada, Vernon, and Stoddard counties, Mo., on this date. The damage was confined to fruit trees and crops.

24th.—Two houses were demolished by a severe windstorm at Salem, Va.

25th.—The most severe storm of the month, measured by the number of lives lost and the value of property destroyed, occurred shortly after 7 o'clock of this date. The storm was first observed near the little town of St. Joseph, in the eastern part of Cloud County, Kans., thence it passed in a northeasterly direction through the northern part of Clay County, and into the southern edge of Washington County. Its path was about 400 feet wide and 20 miles long; 8 people were killed and about 20 injured; loss about \$15,000.

26th.—A severe wind and hail storm passed over parts of Conway and Faulkner counties, Ark., blowing down some timber and fences and a few houses.

The following is from the report of the North Dakota Climate and Crop Service, April, 1896:

A severe cyclone [tornado] occurred at 5 o'clock p. m., Sunday, April 26, in the western portion of Barnes County, the most destruction to property occurring near Hobart, and one person was injured at that place. The tornado formed near the foot of Lake Eckelson and moved in a zig-zag course in a northeasterly direction, barns and a schoolhouse in its path being wrecked and all of the buildings belonging to Nels Monson, a farmer, were destroyed. Monson was carried away

with the house and was afterward found in an unconscious condition, lying in a slough, about fifty yards from where the house had stood. His injuries consisted of bruises and a broken arm, but were not fatal. The storm extended about 20 miles in length and was only about 30 rods in width.

27th.—Two tornadoes occurred in Hanson and McCook counties, S. Dak.; 2 persons were injured and the property loss was about \$15,000.

28th.—The following is from the report of the Iowa Climate and Crop Service, April 1896:

On the night of the 28th a severe windstorm, having some of the characteristics of a tornado, passed through Poweshiek County, Iowa, in a northeasterly direction, the line of greatest force being about 4 miles east of Grinnell. One house, belonging to Mr. C. Ingerman, was turned on its foundation and badly wrecked. A number of other buildings were unroofed or badly damaged, and the general destruction of property was considerable, but happily no person was seriously injured. The storm appears to have been a heavy squall, with occasional gyratory movement of the wind. It was probably the nearest approach to a tornado that was noted within the State during that month of frequent storms.

A destructive windstorm was reported as having occurred in the vicinity of Centralia, Mo., but inquiry fails to elicit any of the details.

High winds and unusually heavy rains were also reported from points in northeastern Iowa, western Kansas, eastern Colorado, Nebraska, South Dakota, Minnesota, and Wisconsin.

TEMPERATURE OF THE AIR.

[In degrees Fahrenheit.]

The mean temperature is given for each station in Table II, for voluntary observers. Both the mean temperatures and the departures from the normal are given in Table I for the regular stations of the Weather Bureau.

The *monthly mean temperatures* published in Table I, for the regular stations of the Weather Bureau, are the simple means of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The *regular diurnal period* in temperature is shown by the hourly means given in Table V for 29 stations selected out of 82 that maintain continuous thermograph records.

The *distribution of the observed monthly mean temperature of the air over the United States and Canada* is shown by the dotted isotherms on Chart IV; the lines are drawn over the Rocky Mountain Plateau Region, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *highest mean temperatures* were: Key West, 75.0; Jupiter, 72.0; Tampa, 71.2; Corpus Christi, 70.8; Montgomery, 70.2.

The *lowest mean temperatures* were: In the United States: Duluth, 38.1; Havre, Helena, and Lander, 39.4; Eastport, 39.6; Sault Ste. Marie, 40.0. In Canada: St. Johns, N. F., 32.0; Minnedosa, 32.4; Prince Albert, 32.6.

As compared with the normal for April the mean temperatures for the current month were above the normal in all regions except the northern Slope, the southern, middle, and northern plateaus, and the Pacific Coast. The greatest excesses were: Lexington and Cleveland, 8.5; Port Stanley, 8.2; St. Louis, 8.1; Saugeen and Port Huron, 8.0. The greatest deficits were: Redbluff, 8.3; Fresno, 7.3; Winnemucca, 7.2; Edmonton, 6.6; Walla Walla and Carson City, 6.3; Portland, Me., Roseburg, and Sacramento, 6.2.

Considered by districts the mean temperatures for the current month show departures from the normal as given in Table I. The greatest positive departures were: Middle Slope, 16.5; Missouri Valley, 14.6. The greatest negative departures were: Florida Peninsula, 9.7; east Gulf, 4.8.

The years of highest and lowest mean temperatures for April

are shown in Table I of the REVIEW for April, 1894. The mean temperature for the current month was the highest on record at: Harrisburg, 54.4; Pittsburg, 57.2; Cleveland, 53.4; Columbus, 58.6; Parkersburg, 59.7; Cincinnati, 61.6; Indianapolis, 60.0; Chicago, 53.4; Greenbay, 47.7; Dubuque, 55.0; Davenport, 57.1; Springfield, Ill., and Keokuk, 60.0; Des Moines, 56.0; Concordia, 61.0; Topeka, 62.8; Dodge City, 59.9; Wichita, 63.7; Kansas City, 61.4; Columbia, Mo., 63.6; Springfield, Mo., 62.8; St. Louis, 64.8; Cairo, 65.8; Louisville, 64.6; Lexington, 61.8; Raleigh, 63.6; Charlotte, 64.8; Knoxville, 63.8; Chattanooga, 65.0; Nashville, 65.1; Meridian, 69.0; Fort Smith, 68.0; Little Rock, 68.4; Vicksburg, 70.4; Montgomery, 70.2; Atlanta, 65.7. It was the lowest on record at: Neahbay, 44.8; Roseburg, 46.3; Redbluff, 52.2; Winnemucca, 40.6; Carson City, 42.6; Sacramento, 53.3; San Francisco, 51.6; Fresno, 54.7; Los Angeles, 56.2; Yuma, 65.8.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: 96, Cape Henry (19th), Columbia, S. C. (18th); 95, Lynchburg, Norfolk, and Raleigh (18th); 94, Baltimore (18th), Charlotte (17th); 93, Philadelphia, Washington, Parkersburg (18th), Augusta (17th). The lowest maxima were: 59, Port Angeles (20th); 60, Duluth (19th), Tatoosh Island (24th); 61, Fort Canby (4th); 62, Neahbay (24th), Eureka (4th). The highest minima were: 66, Key West (3d); 53, Port Eads (frequently), Corpus Christi (2d); 51, Jupiter (14th). The lowest minima were: 5, Lander (1st); 6, Helena (16th), Havre (17th); 8, Cheyenne (1st); 9, Denver (2d); 10, Williston (16th).

The *years of highest maximum and lowest minimum temperatures* are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at: Northfield, 81; Albany, 88; New Haven, 85; Block Island, 71; Nantucket, 70; Woods Hole, 69; Vineyard Haven, 79; New York, 90; Philadelphia, 93; Harrisburg, 92; Pittsburg, 90; Columbus, Ohio, 89; Sandusky, 88; Toledo, 86; Detroit, 85; Port Huron, 84; Greenbay, 84; Milwaukee, 85; Toledo, 86; Indianapolis, 87; Cincinnati, 87; Parkersburg, 93; Baltimore, 94; Washington, 93; Cape Henry, 96; Norfolk, 95; Lynchburg, 95; Lexington, 88; Knoxville, 90; Chattanooga, 90; Atlanta, 89; Charlotte, 94; Raleigh, 95; Columbia, S. C., 96; Savannah, 90; Jacksonville, 92. The minimum temperatures were the lowest on record at: Harrisburg, 24; Greenbay, 11; Minneapolis, 15; Havre and Helena, 6; Neahbay, 27; Fort Canby, 34; Astoria, 32; Idaho Falls, 13; Salt Lake City, 18; Redbluff, 34; Sacramento, 36; Fresno, 34; Los Angeles, 38; Pueblo, 15; Amarillo, 24; Columbia, Mo., 21.

The *greatest daily range of temperature and the extreme monthly ranges* are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values of the greatest daily ranges were: Pueblo, 47; Northfield and Dodge City, 46; El Paso, 45; Portland, Me., and Sandusky, 44. The smallest values were: Port Eads, 10; Key West, 12; Galveston, 16; Corpus Christi and Tatoosh Island, 17; San Francisco, 18; Hatteras, 19; Jupiter and New Orleans, 20. Among the extreme monthly ranges the largest values were: Dodge City, 76; Greenbay, 73; Milwaukee and Denver, 71; Concordia, 70. The smallest values were: Key West, 17; San Francisco, 25; Point Reyes Light, 26; Tatoosh Island, Fort Canby, and Eureka, 27.

The *accumulated monthly departures* from normal temperatures from January 1 to the end of the current month are given in the second column of the following table, and the average departures are given in the third column for comparison with the departures of current conditions of vegetation from the normal condition.