Dakota, and III and IV seem to have come down from the north of Montana. These highs, with the exception of I and VI, moved to the Gulf of St. Lawrence, and were absorbed there by a rather permanent high pressure area.

The storms, with the exception of I, III, and VI, originated or were first noted to the north of Montana, and almost all the tracks were to the north of the region of observation.

During the month the pressure was permanently high over the Gulf of Mexico; the lows were fairly well marked and generally without precipitation, while the areas of high pressure were of very slight magnitude.

The accompanying table gives the principal characteristics as regards the origin and disappearance of each high and low; also the velocity and duration:

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.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, a.m.	44	100	5, p.m.	32	76	1,790	4.5	398	16.6
II	8, p.m.	48	128	16, a.m.	44	58	3,560	7.5	474	19.8
III	14, a.m.	53	116	24, a.m.	47	55	4,090	10.0	409	17.0
IV	21, a.m.	53	120	27, p.m.	46	60	4,570	6.5	705	29.4
V	24, a.m.	46	123	31, a.m.	48	55	5,140	7.0	734	30.6
VI	28, a.m.	49	126	31, p.m.	42	95	1,800	3.5	514	21.4
Sums							20,950	39.0	3,234	
Mean of 6 paths									539	22.5
Mean of 39 days									537	22.4
Low areas.										
I	1, a.m.	42	89	3, a.m.	48	60	1,630	2.0	815	34.0
II	1, a.m.	53	109	4, a.m.	49	76	2,080	3.0	693	28.9
III	3, p.m.	39	104	8, a.m.	50	64	2,420	4.5	537	23.4
IV	6, p.m.	49	106	10, a.m.	48	64	2,440	3.5	698	29.1
V	8, a.m.	51	112	12, p.m.	45	70	3,260	4.5	725	30.2
VI	15, a.m.	50	87	17, p.m.	49	60	1,430	2.5	574	23.9
VII	19, p.m.	49	111	25, a.m.	46	59	3,670	5.5	667	27.8
VIII	23, p.m.	50	115	27, a.m.	48	72	2,310	3.5	660	27.5
IX	26, a.m.	51	120	28, p.m.	45	101	1,120	2.5	446	18.6
X	28, p.m.	52	113	31, a.m.	51	67	2,000	2.5	802	33.4
Sums							22,360	34.0	6,617	
Mean of 10 paths									662	27.6
Mean of 34 days									658	27.4

LOCAL STORMS.

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

1st.—*Ohio:* A series (four in number) of the most violent thunderstorms in the history of the local station visited Cincinnati and neighboring towns on the afternoon of this date. Hail, high winds, and heavy rain accompanied these storms. The second storm was almost tornadic in character. Damage to houses, trees and telegraph wires was great and widespread in the city and suburbs. *Iowa:* A severe thunderstorm passed over Keokuk during the night of July 31 and August 1. The wind reached an extreme velocity for one minute of 60 miles. Trees were broken, chimneys demolished, and several buildings injured. At the Fair Grounds, one and a half miles west, considerable damage was done to the buildings. All debris was carried from the northwest to the southeast.

1st–2d.—*Tennessee:* A severe storm occurred a few miles west of Nashville, where the high wind blew down fences, outbuildings and trees. It was accompanied by a heavy fall of rain, badly damaging crops; the path of the storm was marked by great destruction.

2d.—*North Dakota:* A destructive tornado visited Walsh County about midnight of this date. Several houses, barns, and granaries were leveled to the ground. One child was killed and several persons were severely injured.

3d.—*Wyoming:* A wind storm with a maximum velocity of 40 miles per hour, accompanied by light rain, occurred at Lander. Telegraph lines were badly damaged.

3d–4th.—*Minnesota:* A thunderstorm with very high wind occurred at Minneapolis during the night. A velocity of 90 miles per hour for a single minute was registered at 12.07 a. m. of the 4th. A few frail outhouses were unroofed, some trees blown down and basements flooded.

4th.—*Vermont:* It is reported that the most severe hailstorm in 43 years struck the town of Bradford, Merrimack County, at 2.30 in the afternoon, and in twenty minutes did a great deal of damage to buildings, trees, and fields of grain and corn. *Indiana:* The southern part of Wells County in the vicinity of Nottingham and Montpelier was visited by a hailstorm at 5 p. m. Much damage was done to oil derricks and buildings.

5th.—*Vermont:* A severe wind and rain storm passed over the city of Rutland, Rutland County, causing a great deal of damage along its track to shade trees, chimneys, and roofs of houses. *Illinois:* A thunderstorm with heavy rain occurred at Belvidere, Boone County. Six inches of rain fell in four hours, damaging crops and flooding bottom lands. The damage done to buildings by lightning will probably amount to many thousands of dollars. *Michigan:* A heavy rainstorm did considerable damage throughout Genesee County in the vicinity of Flint. Lightning damaged barns; crops were more or less injured. *Indiana:* A storm swept over Wells County. The greatest destruction was at Liberty Center. A church was partly wrecked; other buildings were damaged, trees and fruit destroyed, and fields of corn leveled.

5th–6th.—*North Dakota:* Hail in the northeastern part of Logan County destroyed over 1,000 acres of standing grain.

6th.—*New York:* Warrensburg was visited by a heavy rainstorm, accompanied by a gale and destructive lightning. Several persons were shocked by the electric wires of a hotel. The storm was the most violent ever known in that section. A heavy rainstorm accompanied by severe winds and some hail swept over the vicinity of Springville, Erie Co., and did considerable damage. Two persons were injured. *Ohio:* A heavy rainstorm visited Springfield, Clark Co. The violence of the storm caused the suspension of all business for over an hour. A large number of trees, chimneys, and signs were blown down. A severe thunderstorm was reported from Hamilton, Butler Co. Lightning did much damage, and crops suffered severely from the heavy rainfall. In Wayne, Summit, Stark, Cuyahoga, and Ashtabula counties, thunderstorms were reported. *Michigan:* A severe storm passed over the southern part of Branch County. One person was killed by a falling tree.

6th–7th.—*Indiana:* Richmond, Wayne Co., was visited by a storm of lightning, thunder, and rain. The rainfall was excessive, amounting almost to a cloudburst. The damage resulting is estimated at between $75,000 and $100,000. In the counties of Shelby, Union, and Randolph much damage was done to property and crops by lightning and floods.

8th.—*Michigan:* An unusually severe storm traveling from the west, struck Detroit at 8.30 a. m. It was characterized by high wind, intense and incessant lightning, and heavy thunder. Little damage was done in the city.

9th.—*Arkansas:* Following is a newspaper account of a storm which visited Berea, Ashley Co., on this date:

> Storm indications were not very threatening at the time, and the wind was blowing with apparently little force, when, suddenly, without a moment's warning, an electric cloudburst or whirlwind wrenched the building from its foundation, leveled it to the ground, and disappeared without doing any other damage in the community except twisting the top from a large tree standing near the church, and destroying a few panels in an adjoining fence. One person, the minister, was killed, and several others injured.

Wisconsin: A thunderstorm passed over Milwaukee at 11.50 p. m. The force of the wind for a period of ten minutes was

sufficient to break windows, blow down signs and awnings, and to damage frail structures.

9th–10th.—*Michigan:* The 9th and 10th were periods of very great thunderstorm activity. One person was killed by lightning, and two were drowned by the capsizing of a boat during a squall at Detroit about 7.30 p. m. of the 9th. The greatest destruction by wind appears to have been at Saginaw, where the loss to structures was probably over $30,000. A large number of barns throughout the State were struck by lightning and consumed.

10th.—Portions of *Indiana* and *Ohio* were visited by severe thunderstorms. In Rockcreek township, Wells County, Ind., a funnel cloud was seen moving to the southeast. Trees and small buildings were blown down over a path about 660 feet wide. *South Dakota:* Brown County, a storm of wind, rain, and hail moved southeast over a path 3½ to 4 miles wide. It is said there was a funnel cloud high in the air.

11th.—Thunderstorms occurred in *Michigan*, western *Missouri*, and northern *Ohio;* also on the night of the 11–12th in northwestern *Indiana*.

13th.—*Minnesota:* Corn and live stock were damaged by hail south of Marshall, Lyon Co. *Iowa:* There was some damage to orchards and corn in Dallas and Hamilton counties. *Pennsylvania:* Heavy rains in western Pennsylvania caused creeks and smaller streams to rise very rapidly. At Dehaven four persons were drowned in the flood waters.

15th.—Thunderstorms were general throughout *Iowa*, and portions of *Illinois*, *Nebraska*, and *Minnesota*.

16th.—*California:* Heavy rains fell in the southern part of the State; railroad property and bridges damaged. *Missouri:* Severe thunderstorms occurred in the vicinity of St. Louis.

18th.—*Massachusetts:* A small whirlwind struck a big wooden freight shed which was being constructed by the railroad company in Boston and caused it to collapse, burying 35 men among the timbers. One man was killed and nine badly injured.

20th.—*South Dakota:* Violent wind and hail storm occurred near Chamberlain and Kimball, in Brule County. It extended from northwest to southeast leveling all the vegetation in its path in a strip about 2 miles wide; lasted about 20 minutes. Property loss to buildings $4,000 or $5,000. White River Valley also suffered from a hail and wind storm, which destroyed the crops.

22d.—*Missouri:* On the 22d severe local storms occurred in many of the northern and a few of the southern counties, doing a great deal of damage to corn, orchards, and hay and grain stacks. The severest storms reported in Daviess, Linn, Pulaski, and Knox counties, where considerable damage was done to buildings. Severe local storms and torrential rains also occurred in *Illinois*, *Iowa*, and *Indiana* on the same date.

23d.—*Tennessee:* Newport and Fayetteville, Tenn., were visited by severe thunderstorms on the afternoon of this date.

27th.—*Texas:* Galveston was visited by a high wind from the northeast on the evening of this date. Property loss $5,000.

Total casualties by wind, 16; casualties by lightning, 80.

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: Yuma, 90.0; Phœnix, 88.6; San Antonio, 84.8; Palestine, 84.3; Abilene, Galveston, Key West, 84.0; Oklahoma, 83.2; New Orleans, 83.0. The lowest mean temperatures were: Point Reyes Light, 56.0; Tatoosh Island, 57.4; Port Angeles, 58.2; San Francisco, 59.5; Eastport, 59.6; Eureka, 59.9. Among the Canadian stations the highest were: Kingston, 68.4; Toronto, 66.3; Montreal, 66.1. The lowest were: Banff, 54.0; Father Point, 55.2; Edmonton, 56.4; White River, 56.8.

As compared with the normal for August the mean temperature for the current month was in excess throughout the United States east of the Rocky Mountains and in Washington and Oregon; it was deficient in California, the Central Plateau, and northern Slope, and Canada. The greatest excesses were: Fort Smith, 5.9; Topeka, 4.4; Meridian, 4.2; Dodge City, 4.1; Eureka, 4.0; Atlanta and Chattanooga, 3.9; Memphis, Oklahoma, and Wichita, 3.8; Mobile, Knoxville, Green Bay, and Milwaukee, 3.5.

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: West Gulf, 2.7; middle Slope, 3.1; southern Slope (Abilene), 3.3. The greatest negative departure was: Middle Plateau, 1.2.

The *years of highest and lowest mean temperatures* for August are shown in Table I of the REVIEW for August, 1894. The mean temperature for the current month was the highest on record at: Fort Smith, 84.6; Palestine, 84.3; Abilene, 84.0; Oklahoma, 83.2; Pensacola, 82.7; Jupiter, 82.2; Wichita, 81.6; Columbia, 81.2; Chattanooga and Atlanta, 80.4; Hatteras and Dodge City, 79.4; Cape Henry, 78.8; Raleigh, 78.7; Milwaukee, 71.6; Green Bay, 69.9; Eureka, 59.9; Tatoosh Island, 57.4; Point Reyes Light, 56.0. The mean temperature for the current month was not the lowest on record at any regular station of the Weather Bureau.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: 113, Yuma (13th); 108, Phœnix (13th); 107, Fort Smith, (3d); 106, Shreveport (6th), Wichita, (20th). The lowest maxima were: 69, Point Reyes Light (29th); 72, Tatoosh Island (23d), Eureka (31st), and San Francisco (18th); 77, Port Angeles (23d); 78, Eastport (11th). The highest minima were: 71, Yuma (6th), Key West (31st), and Jupiter (frequently); 70, Corpus Christi (30th), Galveston (27th), New Orleans (9th), and Pensacola (1st). The lowest minima were: 34, Moorhead (31st); 37, Northfield (29th); 38, Havre (11th) and Williston (26th).

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: Fort Smith, 107; Wichita and Shreveport, 106; Topeka and Little Rock, 105; Oklahoma, 104; Kansas City and Concordia, 103; Palestine and Pueblo, 102; Columbia, 101; St. Paul, Vicksburg, and Meridian, 100; Minneapolis and Raleigh, 99; Milwaukee and Baltimore, 98; Parkersburg and Pensacola, 97; Albany and Jupiter, 95; New Haven, 94; Alpena, 93; Vineyard Haven, 92; Woods Hole, 87; Block Island and Nantucket, 86. The