

U. S. DEPARTMENT OF AGRICULTURE.

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MISSOURI SECTION

OF THE

**CLIMATE AND CROP SERVICE**

OF THE

**WEATHER BUREAU.**

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REPORT FOR MAY, 1896.

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IN COOPERATION WITH THE

STATE BOARD OF AGRICULTURE,

COLUMBIA, MISSOURI.

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J. R. RIPPEY, *Director.*

A. E. HACKETT, *Observer, Weather Bureau, Asst. Director.*

# CLIMATOLOGY OF MAY, 1896.

The month of May, 1896, was characterized by high temperature, excessive rainfall and an unusual number of severe and very destructive local storms which will long be remembered by the people of the state.

**Atmospheric Pressure.** The average atmospheric pressure (reduced to sea level) was 29.93 inches. The highest pressure recorded was 30.23 inches at St. Louis on the 8th, and the lowest, 29.35 inches, at the same station on the 27th. Absolute range, 0.88 inch.

**Temperature.** The mean temperature for the month was 4.6 degrees above the normal in the southwest section, 6.6 degrees above in the southeast and northwest sections, and 7.1 degrees above in the remaining sections. The mean for the state was 70.1 degrees, 6.4 degrees above the normal. At many stations, where the observations cover periods ranging from 10 to 25 years, it was the warmest May on record. The following table shows the mean temperature for the month of May since 1888:

1888	62.1	1893	61.8
1889	63.5	1894	63.7
1890	62.8	1895	64.6
1891	61.5	1896	70.1
1892	60.7		

The highest monthly mean, 75.8 degrees, occurred at New Haven, Franklin county, and the lowest, 65.0 degrees, at Pickering, Nodaway county. The highest temperature during the month, 96 degrees, occurred at Neosho, Newton county, on the 16th, and the lowest, 32(?) degrees, at the same station on the 2d. Absolute range, 64 degrees. The least local monthly range, 30 degrees, occurred at Edgehill, Reynolds county, and New Haven, Franklin county.

Light frost occurred at Platte River, Buchanan county, on the 2d and 3d, and at Oregon (a), Holt county, on the 2d.

**Precipitation.** At Columbia and Marshall, the rainfall for the month was slightly less than the normal, but over the greater portion of the state it was far in excess, and at many stations exceeded any previous record for the month of May. Over a large area in the southwestern portion of the state, and a considerable area in the northwest, the total precipitation for the month exceeded 12 inches. At Lamar, Barton county, and Nevada, Vernon county, it exceeded 16 inches, and at Osceola, St. Clair county, it exceeded 18 inches. But very few stations report less than 6 inches. (See chart on page 8.) The average rainfall for the state was 9.09 inches, 4.28 inches in excess of the normal. The following table gives the average precipitation for the state for the month of May, since 1888:

1888	5.35 inches.	1893	5.89 inches.
1889	6.56 "	1894	3.99 "
1890	3.47 "	1895	4.08 "
1891	4.26 "	1896	9.09 "
1892	7.80 "		

The greatest monthly precipitation, 18.23 inches, occurred at Osceola, St. Clair county, and the least, 4.08 inches, at Birch Tree, Shannon county.

Excessive precipitation (2.50 inches or more in twenty-four consecutive hours) occurred as follows (station, amount in inches, and date): Conception, 3.48, 31st; Fairport, 4.25, 31st; Kidder, 2.66, 18th; Maryville, 3.33, 31st; Oregon (a), 3.38, 31st, and 2.87, 17th and 18th; Oregon (b), 3.25, 31st; Pickering, 2.63, 31st; Platte River, 2.65, 15th; Tindall, 2.52, 31st; Hannibal, 2.79, 27th; McCune Station, 3.82, 27th; Palmyra, 2.70, 27th; Rhineland, 3.40, 18th and 19th; St. Charles, 3.56, 27th; St. Louis, 3.08,

27th; Shelbina, 3.20, 27th; Sublett, 3.00, 18th, and 2.65, 31st; Arlington, 3.04, 16th, and 2.80, 22d; Bagnell, 2.75, 22d; Brunswick, 3.31, 19th; Columbia, 2.50, 15th and 16th; Eldon, 3.63, 19th; Grovedale, 2.60, 20th; Hastain, 3.30, 22d and 23d; Jefferson City, 2.80, 19th, and 2.50, 21st; Lamonte, 3.88, 15th and 16th; Lebanon, 5.60, 15th, and 2.70, 19th; Montreal, 2.96, 21st and 22d, and 2.54, 15th and 16th; Phillipsburg, 4.25, 15th and 16th, and 3.53, 19th; Rolla, 2.55, 15th and 16th; Wheatland, 3.68, 19th and 20th, and 3.11, 21st and 22d; Gayoso, 2.95, 19th and 20th; Marble Hill, 4.26, 26th and 27th; New Madrid, 4.01, 19th and 20th; Oakfield, 3.38, 18th and 19th, and 2.72, 27th; St. Louis (b) 3.83, 27th and 28th; Appleton City, 3.40, 30th; Arthur, 3.10, 29th, and 2.60, 19th; Cedar Gap, 3.40, 19th and 20th; Eight Mile, 3.00, 29th and 30th; Half Way, 4.66, 16th, and 2.66, 20th; Harrisonville, 2.72, 15th; Lamar, 3.68, 30th, and 2.89, 19th; Mansfield, 2.57, 20th and 21st; Mineral Spring, 4.61, 30th and 31st; Neosho, 4.40, 29th and 30th; Nevada, 3.62, 30th, 3.45, 15th and 16th, and 2.70, 23d; Osceola, 3.43, 19th, and 3.10, 14th and 15th; Springfield, 2.55, 15th and 16th, and 2.54, 19th and 20th; Virgil City, 3.03, 15th and 16th; Windsor, 2.56, 16th. Other heavy rains occurred as follows: Conception, 1.89 inches in one hour on the 20th; Fairport, 2.15 inches in two hours on the 17th; Kidder, 1.25 inches in 22 minutes on the 18th; Montreal, 1.84 inches in one hour on the 21st; Ironton, 1.04 inches in one hour on the 27th; Gordonville, 3.08 inches in one hour on the 27th; New Madrid, 1.00 inch in one hour on the 27th and 28th; Cedar Gap, 1.60 inches in one hour and thirty minutes on the 19th; Osceola, 1.00 in one hour on the 18th, 1.83 inches in one hour on the 21st, and 1.58 inches in one hour on the 22d; Lamonte, 1.12 inches in twenty-five minutes on the 31st; St. Louis, 1.33 inches in one hour and 0.62 inch in ten minutes on the 27th.

In many counties the heavy rains, in some instances amounting to cloudbursts, resulted in floods which did immense damage to property and crops and caused the loss of a number of lives. The Osage river and its tributaries were nearly as high as during the memorable flood of last December; and many other streams, in different sections of the state, were as high, or higher, than ever before known.

Except in a few favored counties little or no farm work was done after the 15th. Thousands of acres of growing crops on bottom lands were ruined by the overflowing of the streams, and much corn on flat land was also drowned out. In all sections more or less damage was done on rolling land by the washing away of soil, and, in some instances, considerable corn was washed up.

**Miscellaneous.** The average number of clear, partly cloudy, and cloudy days during the month, throughout the state, were 12, 12 and 7, respectively. The average number of days on which .01 of an inch or more of precipitation occurred was as follows: Northwest section, 14; northeast section, 12; central section, 12; southeast section, 11; southwest section, 12; and for the state, 12.

The prevailing winds were from the south, and the highest velocity recorded was 80 miles per hour from the northwest at St. Louis on the 27th.

## Northwest Section:—

**AURORAS.** Kidder, 2d; Oregon (a), 2d and 20th.

**DISTANT LIGHTNING.** Gallatin, 21st, 25th, 29th, and 30th; Platte River, 27th.

**HAIL.** Akron and Princeton, 27th; Carrollton, 24th; Conception, 11th, 12th, 20th, and 23d; Cowgill, 13th, 18th, 19th, and 26th; Fairport, 17th and 26th; Farmersville, 16th and 27th; Gallatin, 17th; Kansas City, 12th and 31st; Kidder, 12th, 16th, 17th, 18th, 20th, and 26th; Liberty, 31st; Maryville, 12th, 15th, 16th, 17th, and 27th; Oregon (a), 17th and 20th; Oregon (b), 11th, 12th, 16th, 17th, and 20th; Pickering, 15th, 16th, 17th, and 27th; Platte River, 11th, 12th, and 16th; Tindall, 16th, 17th, and 28th.

SOLAR HALOS. Platte River, 6th, 12th, and 21st.

THUNDERSTORMS. Atchison, Kan., 1st, 3d, 4th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th; Carrollton, 9th, 11th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 26th, 27th, and 31st; Conception, 3d, 4th, 11th, 12th, 20th, and 28th; Cowgill, 13th, 18th, 19th, and 26th; Elmira, 18th; Fairport, 17th; Farmersville, 13th, 18th, and 27th; Gallatin, 1st, 3d, 11th, 12th, 13th, 15th, 16th, 17th, 18th, 19th, 20th, 23d, 24th, 26th, 27th, and 31st; Irena, 12th, 13th, 16th, 20th, 27th, and 28th; Kansas City, 3d, 12th, 13th, 15th, 16th, 18th, 19th, 21st, 23d, 26th, 27th, 30th, and 31st; Kidder, 11th, 12th, 15th, 16th, 17th, 18th, 19th, 20th, 23d, 26th, and 31st; Liberty, 3d, 11th, 12th, 15th, 19th, 23d, 26th, and 31st; Oregon (a), 3d, 4th, 9th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 22d, and 31st; Oregon (b), 3d, 4th, 9th, 11th, 12th, 13th, 15th, 16th, 17th, 19th, 20th, 22d, 26th, 27th, and 31st; Platte River, 3d, 4th, 10th, 11th, 12th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 26th, and 31st; Tindall, 15th and 16th.

#### Northeast Section:—

AURORAS. Sublett, 3d.

HAIL. Downing, 16th and 17th; Hannibal, 19th and 27th; Marceline, 13th, 20th, and 27th; McCune Station, 27th; Mexico, 20th and 27th; Rhineland, 19th and 20th; St. Charles, 21st and 27th; Steffenville, 27th; Sublett, 1st, 16th, and 27th.

SOLAR HALOS. Hannibal, 7th, 8th, 12th, 13th, and 26th.

THUNDERSTORMS. Hannibal, 13th, 16th, 18th, 19th, 20th, 21st, 24th, and 27th; Keokuk, Iowa, 12th, 13th, 16th, 17th, 18th, 19th, 20th, 21st, 24th, and 27th; Marceline, 15th, 16th, 18th, 20th, 27th, and 31st; McCune Station, 21st, 27th, 30th, and 31st; Mexico, 15th, 16th, 18th, 19th, 20th, 21st, 27th, and 31st; Palmyra, 27th; St. Charles, 1st, 13th, 15th, 16th, 18th, 19th, 21st, 24th, 26th, 27th, and 30th; Shelbina, 1st, 15th, 16th, 18th, 19th, 20th, 27th, and 31st; Steffenville, 11th, 12th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 27th, and 31st.

#### Central Section:—

AURORAS. Montreal, 19th; Rolla, 31st.

FOG. Wheatland, 27th.

HAIL. Eldon, 19th and 21st; Grovedale, 28th and 31st; Hastain, 23d and 26th; Jefferson City, 27th; Lebanon, 15th, 19th, and 21st; Miami, 15th and 27th; Montreal, 19th and 21st; Phillipsburg, 19th; Rolla, 21st; Wheatland, 19th, 21st, and 27th.

LUNAR HALOS. Phillipsburg, 18th.

SOLAR HALOS. Fayette, 8th; Phillipsburg, 2d.

THUNDERSTORMS. Boonville, 16th, 17th, 19th, and 24th; Columbia, 15th, 16th, 18th, 19th, 21st, 22d, 24th, 27th, 29th, 30th, and 31st; Emma, 21st, 27th, and 30th; Fayette, 1st, 13th, 15th, 16th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 26th, 27th, 29th, 30th, and 31st; Grovedale, 13th, 14th, 15th, 16th, 19th, 20th, 21st, 22d, 23d, 24th, 26th, 27th, 28th, 29th, 30th, and 31st; Hastain, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, and 30th; Houstonia, 13th, 16th, 17th, 20th, and 24th; Lamonte, 15th, 16th, 19th, and 31st; Montreal, 21st and 27th; Rolla, 15th, 16th, 19th, 20th, 21st, 22d, 23d, 25th, 26th, 27th, 29th, 30th, and 31st; Wheatland, 1st, 12th, 15th, 16th, 19th, 20th, 21st, 22d, 23d, 26th, 27th, 29th, 30th, and 31st; New Palestine, 15th, 24th, 27th, and 31st.

#### Southeast Section:—

DISTANT LIGHTNING. Ironton, 18th, 26th, and 27th; Zeitonia, 9th, 10th, 15th, 18th, 23d, 28th, and 30th.

FOG. Potosi, 10th, 22d, 23d, 30th, and 31st.

HAIL. Cairo, Ill., 11th; Gordonville, 25th; Ironton, 2d, 16th, and 27th; Mine La Motte, 22d; New Haven and Oakfield, 27th; New Madrid, 1st and 20th; Oak Ridge, 1st; St. Louis, 11th, 19th, and 21st; Willow Springs, 20.

LUNAR CORONÆ. Potosi, 17th and 22d.

LUNAR HALOS. Oakfield and St. Louis, 22d.

PARHELIA. Oakfield, 5th.

SOLAR HALOS. Oakfield, 5th, 7th, 8th, 10th, 23d, and 25th; St. Louis, 8th and 30th; Zeitonia, 8th.

THUNDERSTORMS. Cairo, Ill., 1st, 11th, 13th, 16th, 17th, 19th, 20th, 22d, 26th, 27th, 28th, and 31st; Gordonville, 11th, 13th, 16th, 19th, 21st, 25th, 26th, 27th, and 30th; Ironton, 1st, 13th, 15th, 19th, 20th, 21st, 22d, 26th, 27th, 30th, and 31st; Mine La Motte, 1st, 11th, 13th, 16th, 19th, 21st, 22d, 26th, 27th, 28th, and 30th; New Haven, 17th, 18th, 19th, 20th, 22d, 23d, and 27th; New Madrid, 20th; Oakfield, 1st, 13th, 15th, 16th, 18th, 19th, 20th, 21st, 26th, 27th, 30th, and 31st; Olden, 13th, 14th, 20th, 26th, and 27th; Potosi, 13th, 15th, 16th, 19th, 20th, 21st, 24th, 26th, 27th, 30th, and 31st; St. Louis, 1st, 11th, 13th, 15th, 16th, 18th, 19th, 21st, and 26th; Sikeston, 26th; Zeitonia, 13th, 16th, 19th, 20th, 22d, 26th, 27th, and 31st.

#### Southwest Section:—

AURORA. Arthur, 27th.

DISTANT LIGHTNING. Mineral Spring, 4th, 21st, and 25th; Sarcoxie, 4th.

FOG. Eight Mile, 19th.

HAIL. Arthur, 24th and 29th; East Lynne and Eight Mile, 15th, 19th, 20th, and 31st; Half Way and Harrisonville, 15th and 19th; Macomb, 19th; Mineral Spring, 20th; Neosho, 16th; Nevada, 1st, 3d, 23d, 28th, and 30th; Sarcoxie, 16th, 19th, and 27th; Springfield, 20th, 26th, 28th, and 30th; Windsor, 16th, and 31st.

LUNAR HALOS. Mineral Spring, 23d.

PARHELIA. Sarcoxie, 20th.

SOLAR HALOS. Neosho, 25th.

THUNDERSTORMS. Arthur, 11th, 12th, 13th, 15th, 16th, 18th, 19th, 20th, 21st, 22d, 23d, 26th, 27th, 29th, and 30th; Cedar Gap, 1st, 13th, 15th, 16th, 19th, 20th, 21st, 22d, 26th, 27th, and 31st; East Lynne, 1st, 3d, 12th, 15th, 16th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 30th, and 31st; Eight Mile, 12th, 13th, 14th, 15th, 16th, 18th, 20th, 21st, 22d, 23d, 26th, 27th, and 30th; Half Way, 12th, 15th, 19th, 21st, 26th, and 27th; Harrisonville, 15th and 19th; Keesee's Ferry, Ark., 12th, 13th, 15th, 16th, 19th, 20th, 21st, 22d, 25th, 26th, 27th, 28th, 30th, and 31st; Mineral Spring, 3d, 11th, 13th, 14th, 15th, 16th, 20th, 22d, 23d, 26th, and 31st; Mt. Vernon, 19th, 25th, 27th, and 31st; Neosho, 3d, 16th, 19th, 21st, 23d, 26th, 29th, 30th, and 31st; Sarcoxie, 3d, 11th, 12th, 13th, 15th, 16th, 19th, 20th, 21st, 22d, 23d, 25th, 26th, 27th, and 29th; Springfield, 3d, 12th, 13th, 15th, 16th, 19th, 20th, 21st, 22d, 23d, 25th, 26th, 27th, 29th, 30th, and 31st; Virgil City, 1st, 3d, 4th, 13th, 14th, 15th, 16th, 19th, 20th, 21st, 22d, 23d, 26th, 27th, 28th, and 30th; Windsor, 13th, 14th, 15th, 16th, 19th, 22d, 23d, 26th, 27th, 30th, and 31st.

The following table shows the normal temperature and precipitation for the month of May and the mean temperature and average precipitation for May, 1896.

DATA.	SECTIONS.					STATE.
	N. W.	N. E.	C.	S. E.	S. W.	
Temperature	61.8	63.3	63.8	64.8	64.6	63.7
May, 1896.	68.4	70.4	70.9	71.4	69.2	70.1
Precipitation	5.04	4.10	5.03	4.44	5.37	4.81
May, 1896.	9.41	8.28	9.15	7.74	10.86	9.09

## WIND MOVEMENT.

STATIONS.	Total Wind Movement.....	Average Hourly Velocity.....	MAXIMUM WINDS.		
			Velocity (Miles per hr.)	Direction.....	Date.....
	(Miles)	(Miles)			
Cairo, Ill.....	5426	7.3	60	NW	26
Columbia.....	6431	8.6	39	SW	15
Hannibal.....	7826	10.5	46	S	27
Kansas City.....	7070	9.0	32	NW	27
Keokuk, Iowa.....	6423	9.8	38	SW	16
Springfield.....	8669	11.7	55	NW	26
St. Louis.....	7891	10.6	50	NW	27
Average.....	7105	9.5			

## NOTES BY OBSERVERS.

## Northwest Section:—

**Akron.** Hail did much damage to fruit and growing crops in Madison and Marion townships on the 27th.

L. P. RILEY.

**Bethany.** First half of month too dry. Last half wet and much cloudy weather. Month was free from damaging storms and, on the whole, was a good month for farm crops.

THEO. NEWBURN.

**Cowgill.** Destructive hailstorm occurred about four and one half miles west of this station on the night of the 26th.

W. F. TUCKER.

**Elmira.** This has been a month of severe storms and much damage has been done to orchards.

S. H. VAN TRUMP.

**Fairport.** Hail on the 26th did some damage to corn and fruit. Too wet for corn; other crops doing well.

H. C. BURNHAM.

**Kidder.** The month is noted for heavy precipitation, frequency of hailstorms, thunderstorms and damage from lightning.

M. G. ALLEN.

**Lexington.** The climatic conditions for May, with the exception of a few days near the middle of the month, were favorable to the farming interests. The month began warm and dry and ended cool and wet.

JOHN W. KEITHLY.

**Maryville.** Hail on 17th did considerable damage to fruit. Farm work retarded by excessive rains.

J. R. BRINK.

**Oregon (a).** Hail on 17th and 20th did much damage to crops. Storm on 17th washed away six bridges on Mill creek. This was a hurricane from Oregon north and south along Mill creek. Southwest to northeast a tornado. The first prostrated many buildings and orchard trees, and the second destroyed a number of dwellings and barns and twisted off many large forest trees. No lives lost. Mean temperature for May, for 41 years, 63 degrees. Mean temperature for May, 1896, 68.4 degrees. Highest temperature recorded in May, 98.5 degrees in 1875; lowest, 26 degrees in the same year. Average rainfall for May for 41 years, 4.78 inches. Total rainfall for May, 1896, 15.02 inches—the heaviest on record. Greatest amount of rainfall previously recorded for May, 11.65 inches in 1859. Least rainfall recorded for May, 1.90 inches in 1885.

WILLIAM KAUCHER.

**Princeton.** Hail on the 27th stripped nearly all the fruit off the trees. The hail was the largest we have any record of in this county.

DR. WM. HIRONS.

**Tindall.** Heavy winds on the 31st did considerable damage to orchards.

JAS. H. BROKAW.

## Northeast Section:—

**Downing.** Highest waters for years, but no severe storms.

MAT. COFFEY.

**Palmyra.** Very severe thunderstorm on the 27th, also a strong wind, from the southeast at first, then changing to east and northeast—a very unusual direction here for such a wind. Nothing seriously damaged.

H. C. SCHEETZ.

**St. Charles.** This month is memorable for its high temperature and heavy precipitation. A very dangerous looking cloud accompanied by high wind, hail, and heavy rain passed over station at 5 p. m. of the 26th. Damage was done to outbuildings and trees, and some damage was done to corn and gardens by hail. On the 27th dark clouds began to form at 11 a. m. with a brisk wind from the southeast. Although the wind continued to blow from the southeast until 4:30 p. m., the clouds moved steadily up from the west against the wind. At 4 p. m., the sky became overspread with heavy clouds and had a scaly appearance as though it represented a huge fish. At 5 p. m., the wind set in from the northwest and a dangerous looking cloud appeared showing a tendency to form a funnel. The storm passed over, however, without doing much damage and moved toward St. Louis. The barometer during the day had fallen .50 of an inch. At about 6 p. m., a second storm formed in the north which looked even more threatening, but proved not so severe.

LOUIS C. SAEGER.

**Steffenville.** Drouth prevailed until the 13th, but since then everything has been flooded. Much stock has been killed by lightning, but only one house struck near this station. Cumulo-stratus clouds in reverse positions observed at 5:35 p. m. on the 27th.

E. L. HALL.

**Sublett.** Heavy damage by hail on the 27th.

LEWIS SPRIGGS.

## Central Section:—

**Eldon.** The first of the month everything was very flourishing, but at the close all crops were in a very bad condition—all in mud and water. Great damage was done to fruit and crops by hail, and many fruit trees were blown down.

S. NEWTON.

**Grovedale.** No farm work after the 16th. Much damage to ground by washing. Many not yet done planting corn. Wheat, oats, and corn on low land drowned out.

LINDON MARTS.

**Houstonia.** Some damage to fruit trees and some sheds unroofed by wind on the 19th. Wind blew a hurricane from the northeast lasting over thirty minutes.

S. J. SPURGEON.

**Jefferson City.** Hail storm on the 27th did considerable damage to crops.

J. J. HENDERSON.

**Lebanon.** The precipitation for the month exceeds any previous record. A severe hailstorm occurred on the 15th, and was very destructive as it was driven by a furious gale from the northwest.

M. W. SERL.

**Miami.** On the 27th at 4 p. m., we had hailstones measuring three by five inches in diameter.

A. H. W. SULLIVAN, M. D.

**Rolla.** On the 19th a cow was killed by lightning and on the 21st a house was struck but not damaged much.

A. H. TIMMERMAN.

## Southeast Section:—

**Gordonville.** Destructive hailstorm on the 25th injuring crops fifty per cent in places. On the 25th and 27th storms did considerable damage.

L. M. BEAN.

**New Haven.** Heavy storm and large hail on the 27th. Some hailstones as large as goose eggs, weight from 6 to 16 ounces, but not much damage in the near vicinity.

MAX EIMBECK.

**Oakfield.** The first half of May was very dry but during the remainder of the month too much rain fell. Corn is not all planted yet. The early planting is very weedy and the ground is too wet for cultivation.

E. E. STEINES.

**Potosi.** On the 16th at 6:30 a. m. a severe windstorm passed through here blowing down trees and fences in every direction. Path about 100 yards wide, duration about 50 seconds. Storm moved from southwest to northeast.

C. V. F. HOCHSTATTER.

**Willow Springs.** Last half of month stormy and hard on gathering small fruits. Hailstorm on the 21st; largest stones measured four inches in circumference. But little damage.

GEO. COMLEY.

#### Southwest Section:—

**Arthur.** The month has been remarkable for the amount of precipitation and high winds. Great damage has been done to growing crops.

J. T. ARMSTRONG.

**Eight Mile.** A heavy rain and wind storm did some damage to fruit and fruit trees on the 19th.

J. H. SHARP.

**Half Way.** No farming done since the 15th. Some corn drowned out and ruined by floods.

I. C. SUMMERS.

**Keesee's Ferry, Ark.** (near Protom, Taney county). The month was 4.9 degrees warmer than the average for the past fourteen years. The warmest May during that period was that of 1886 with a mean of 74.4 degrees, and the coldest was that of 1882, with a mean of 63.0 degrees. The monthly rainfall is 2.11 inches below the normal. The greatest rainfall for May was 10.56 inches in 1882, and the least, 1.97 inches in 1891.

S. C. TURNER.

**Mineral Spring.** Very high wind with much damage to timber on the 16th. Heavy thunderstorm and hail doing much damage to crops and fruit in north part of this (Barry) county on the 20th.

MRS. CARRIE M. SMITH.

**Mount Vernon.** Crops have been damaged by high water. Wheat on low land is dying and corn is drowned out. One half the corn crop is lost.

E. S. ALLEN.

**Neosho.** On the night of the 29-30th 4.40 inches of rain fell in three hours, the bulk of it in two hours. One man was drowned during the storm.

WM. F. PAGE.

**Sarcoxie.** A stormy, warm, wet month. The month ends with corn in bad shape for the want of plowing. Much damage to fruit by wind and hail.

THOS. MCNALLIE.

**Virgil City.** Severe hailstorm two miles south of this station on the 15th, injuring all kinds of fruit.

GEO. H. HUFF.

**Windsor.** Severe wind storm on the 19th at 3 p. m., lasting 16 minutes at this station and 30 minutes in Windsor. Felled trees and fences, blew down one house and blew the belfry off the M. E. church, South. No lives lost.

G. W. GOODLETT.

#### LOCAL STORMS.

**Fifteenth.** Heavy hail, rain, and wind storm at Lebanon. It is estimated that nearly 3000 window panes were broken by the hail, and thousands of dollars of damage done to gardens, fruit and field crops. The rainfall dur-

ing the storm was 5.60 inches. Wind and hail storm in Cass county. Several houses blown down at Raymore. Severe wind, hail, and rain storm in Ozark county.

**Sixteenth.** Severe wind storm at Neosho. About \$2,000 damage to buildings, and considerable damage done to fruit and shade trees. Severe wind and rain storm at Monroe City. The electric light plant was badly damaged, two horses were killed by lightning and considerable damage done to fences and fruit trees. Mrs. Louisa Foster killed by lightning near Marshall. Heavy rain and hail at Carthage. Much damage by wash-outs. Heavy rain at Joplin, doing damage estimated at \$20,000. Sixteen head of cattle valued at \$1,000 killed by lightning near Golden City. Terrific rain and hail storm at Webb City. Several buildings unroofed. Severe wind storm at Paris. One house struck by lightning.

**Seventeenth.** Severe wind, hail, and rain storm at Filmore, Andrew county. Eight houses and barns blown down and much damage done to timber. Also much damage by rain and hail.

**Eighteenth.** A house near St. Joseph struck by lightning and totally destroyed. Heavy rain storm at Bosworth, Carroll county. Streets were flooded and in the surrounding country many fields were inundated. A rain, wind, and hail storm did much damage to orchards and growing crops in Grundy county. Several buildings were also damaged.

**Nineteenth.** Heavy rain and wind storm at Chilhowee, Johnson county. Several buildings were blown down and a number of others were moved from their foundations. Floods caused by the heavy rain carried out a number of bridges and did much damage to growing crops. Severe wind, rain, and hail storm at Versailles, Morgan county. The roof of the court house, the school building, and several dwellings and stores were badly damaged. Considerable damage was also done to shade and fruit trees. Mr. James Anthony was drowned in twelve feet of water while attempting to cross what is usually a small branch. Much damage to buildings and crops is reported from many other points in Morgan county. Wind, rain, and hail storm in Pulaski county doing great damage to property, timber, and crops. In some places growing crops were practically ruined. Severe thunderstorm at Bonne Terre, St. Francois county, at 4 a. m. Lightning struck the residence of S. A. Rudy, and also killed two horses near town. "A remarkable feature at the Rudy house was that, notwithstanding the deadly fluid struck the bed in which Mrs. Rudy and her grown daughter were sleeping, and passed diagonally through the length and breadth of the bed, setting the shuck mattress in a blaze, both at the point where it entered and also where it passed out, neither of the women were injured. The building was badly wrecked, both at the point of entrance and egress, and it is believed that the women owe their escape from instant death and possible cremation to the insulating quality of the feather bed that overlaid the mattress on which they were sleeping". Wind storm, accompanied by heavy rain, at Sedalia. Several buildings damaged by wind. Severe wind and rain storm at Windsor, Henry county. Two buildings were unroofed and several others more or less damaged, and many trees were blown down. Heavy rain, hail, and wind storm at Clinton, Henry county. Heavy rain and hail storm at Richland, Pulaski county. Much damage to gardens, fruit, and growing crops. The house of Thomas Wasson, near Sedalia, was struck by lightning. The bolt went down the stove pipe, striking Mrs. Wasson

in the foot, tearing her shoe into shreds and badly crippling her. The stove was wrecked, but no other damage was done. . . . A terrific rain, wind and hail storm at Eldon, Miller county. Many buildings blown down or badly damaged and a number of people severely injured. Also great damage to crops and fruit. Damage at Eldon estimated at \$50,000.

**Twentieth.** House struck by lightning near Hale, Carroll county, and one person killed. . . . Rain and wind storm at Belton, Cass county. A number of chimneys blown down and many trees twisted off. . . . Cloudburst near Forbes, Mo., destroying a mile of the roadbed and washing away the track of the Kansas City, St. Joseph and Council Bluffs railroad.

**Twenty-seventh.** Tornado at St. Louis. The following information relative to the storm, furnished by the Weather Bureau office at St. Louis, is from Storm Bulletin No. 4, 1896, of the Weather Bureau:

"Wednesday morning the weather map showed low pressure still overlying the west with its center of depression extending in an irregular oval from the Texas Panhandle northward through western Kansas into western Nebraska. Throughout the state of Missouri high temperatures and humidity prevailed with southerly winds. The popular term warm and muggy will apply up to 4 p. m. The storm center moved slowly eastward during the day, and at 7 p. m. was central in northeastern Illinois, bringing the state of Missouri in the southeast quadrant about 4 p. m., the usual condition for developments of severe local storms. The barometer commenced to fall at noon, and by 3 p. m. had fallen 0.13. About this time the sky became thickly covered with cumulo-stratus clouds, but in reverse position, the rounder portions being underneath. By 3:30 p. m. these clouds had settled into a uniform mass of stratus clouds, which commenced to assume a light green color in the northwest. The green colored cloud continued to advance from the northwest, spreading more toward the west and north, and at the same time the temperature commenced to fall.

"The normal cyclonic circulation thus brought winds of unlike temperature and humidity into superposition, with the result that a decided instability of the atmosphere was produced, and a violent secondary storm center was created, as indicated by the continued falling of the barometer. At 5 o'clock the barometer indicated a fall of 0.25 inch since noon, and the winds were becoming variable with a tendency toward the north. Thunder and lightning had commenced at 4:06 p. m., and rain in the form of large scattered drops at 4:43 p. m. At 5:04 p. m., the storm broke forth in all its fury. The wind changed suddenly to northwest with rapidly increasing velocity. Rain fell in torrents; the green clouds still remained in the west and north, but the storm moved from northwest toward southeast, and large, angry looking detached masses of cumulo-stratus clouds moved from almost every point of the compass, crossing each other with great rapidity. At 5:15 p. m., the wind reached a velocity of 80 miles per hour from the northwest the greatest velocity ever reached in the history of the St. Louis station. From 5:20 to 5:30 p. m., the barometer fell 0.30 inch, reading at the latter time 29.35 inches. It rose almost instantly 0.39 inch to 29.74 inches, and then

continued in a series of irregular and decided oscillations until 10 p. m. At 5:30 p. m., the wind had fallen to about 12 miles per hour, and shortly after changed direction to the southeast. The rain fell in torrents; from 5:04 p. m., to 7 p. m., 2.15 inches fell and at 9:05, when it ceased, 3.04 inches in all had fallen. From 5:04 to 6:04 p. m., 1.33 inch fell, and from 6:25 to 6:35 p. m., 0.62 inch fell. Investigation shows path of storm diagonally through city from southwest to northeast and about three miles in width. Evidence of tornadic whirl in portions of South St. Louis. Greatest damage through Mill Creek Valley to river, then along east end of Eads bridge to inland portion of East St. Louis, where destruction was complete. The direction of the wind was from northwest to southeast during the high wind, and remained so until 5:50 p. m., when it shifted to east-southeast. The velocity decreased very rapidly after 5:25 p. m., so that during the second rainstorm it did not reach a velocity higher than twenty miles. The electrical display during the storm was of exceeding brilliancy. The whole west and northwest sky was an almost continual blaze of light, and the reflection could be seen beyond the clouds, extending far into the southern sky. Intensely vivid flashes of forked lightning were present, being vividly outlined in green, blue and bright yellow colors against the dull-colored background of the never-ceasing sheet lightning. This display lasted as long as did the rain, but occasional flashes continued to be seen after 10 p. m. The thunder ceased at 9:50 p. m. Estimated damage over \$25,000,000. Loss of life thus far found over 300. Over 700 found injured. Many steamboats destroyed. River loss, \$500,000." . . . A terrific wind storm occurred in the eastern portion of Audrain and western portion of Pike county at about 2:45 p. m. Six children were killed at a schoolhouse in Audrain county and one woman was killed at Curryville, Pike county. Many other persons were seriously injured. The property loss at Curryville is estimated to be \$90,000 and at Vandalia, \$40,000. Many farm houses and farm buildings in the country were also destroyed and great damage done to crops. The path of the storm was from one fourth to one and one fourth miles in width, and the direction of the wind was from the northwest. Until a few minutes before the storm there was a brisk wind from the southeast. The storm was accompanied by a heavy downpour of rain. . . . Wind storm near Renick, Randolph county. A number of buildings were destroyed and several people severely injured. . . . Severe wind storm in the north part of Osage county. Several buildings destroyed and two children killed. . . . Severe wind storm near Washington, Franklin county. One man killed and several injured. A number of buildings destroyed.

**Thirtieth.**—A cloudburst near Seneca, Newton county, at 3:45 a. m., caused a flood in Lost Creek which destroyed or greatly damaged a large part of the town of Seneca. Eighteen persons were drowned and \$100,000 worth of property was wrecked or washed away.

**Thirty-first.**—A heavy rain, amounting almost to a cloudburst, occurred at Mound City, Holt county, causing a disastrous flood. Total damage to property estimated at \$40,000.







CHART SHOWING TOTAL PRECIPITATION FOR MAY, 1896.

