

CLIMATOLOGICAL DATA FOR JUNE, 1912.

DISTRICT No. 6, MISSOURI VALLEY.

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GENERAL SUMMARY.

In most of the district the weather was cool and comparatively dry. These conditions were most pronounced in the Dakotas, Nebraska, and the eastern half of Kansas. Crops, however, appear not to have suffered materially on account of the lack of rain, for light showers came often enough to prevent any serious damage, but at the end of the month general rains were needed in most of the territory to the east of the foothills. Two tornadoes, mentioned hereafter, occurred on the 14th and 15th. Severe thunderstorms seemed to be less frequent than is usual in June and the extreme lower portion of the drainage area appears to have had the greatest number. There was some frost in the western and northern sections during the first of the month, but the resulting damage was light.

TEMPERATURE.

The mean temperatures were somewhat above the normal in localities in the western counties of the Dakotas, northern Wyoming, and Montana. In the remainder of the district they were considerably below the usual June average; the greatest deficiencies were in that part of the district drained by the Missouri River below its confluence with the Platte River. In Kansas and extreme western Missouri there was a warm period of several days duration that culminated on the 4th and 5th. With this exception the month can be divided into three temperature periods of about equal length, the first of which was the coolest and the last the warmest. Several times during the first 20 days the temperatures were unusually low, but not as low as they have been during the same season in other years. Warm weather during the last 10 days was general, but it was most pronounced in Nebraska, the Dakotas, Wyoming, and Montana. The lowest temperature recorded during the month was 11° at Lolabama Ranch, in northwestern Wyoming, and the highest was 108° at Marston, in the central part of South Dakota. For the six months ending on June 30 every station in the district, except those in the foothill country of Montana, had an average daily temperature deficiency ranging from 1° to 3°; the average temperature in the Montana foothills for the first half of the year was slightly above the normal.

PRECIPITATION.

There was an excess of rainfall in central Wyoming, Colorado, western Kansas, and in several localities in Missouri lying south of the Missouri River. With these exceptions there was a general deficiency in precipitation. Despite this deficiency in the greater part of the district

there was about the usual number of rainy days, but the heavy showers that are frequent in June were not general. Most of the rain fell during the 10 days beginning with the 7th; during this period showers occurred in all parts of the drainage area. Over the lower 100 miles of the Missouri Valley, over the Gasconade watershed and the lower half of the Osage watershed (both in Missouri), there were excessive rains from the 13th to the 18th. In other parts of the district where there was a general excess in precipitation, that is, in western Kansas and in Colorado, the showers appear not to have been especially heavy, but more uniformly distributed. The greatest amount of rain for the entire month was 8.88 inches in St. Louis, at the St. Louis University station; the greatest amount in 24 consecutive hours was 5.60 inches at Harrisonville, Mo., on the 16th. There was some snow in the Black Hills of South Dakota and in the higher mountains of Montana, Wyoming, and Colorado.

RIVERS.

Heavy local rains caused rapid rises, that did not, however, reach flood stages, in the Osage and Gasconade Rivers and in the Missouri River below the mouth of the Osage, for a few days after the 17th. The other streams in the drainage area were at normal June stages.

TORNADOES.

On June 14 and 15 a trough of low atmospheric pressure extended northward for 1,000 miles from north-eastern Texas. On either side of it the barometer readings were comparatively high. Thunderstorms and heavy local rains occurred from time to time in almost all the territory covered by the depression, and there were at least two tornadoes in it. The first of the tornadoes occurred late in the afternoon of the 14th, in south-eastern Nebraska, about half way between Lincoln and the Kansas line. Information in regard to it is rather meager and consists chiefly of the facts that one person was killed near Cortland, Gage County, and that property was damaged or destroyed to the amount of \$15,000.

The second occurred in Missouri on the 15th and is described in a special article that follows:

TORNADO IN SOUTHWEST MISSOURI, JUNE 15, 1912.

By GEORGE REEDER, Section Director, United States Weather Bureau.

A destructive tornado passed over parts of Bates, Cass, Henry, and Johnson Counties, in the southwestern portion of Missouri, during the evening of June 15, 1912. It is reported to have entered Bates County, from Kansas, near the town of Merwin, at about 7 p. m. Thence it

moved almost due east to Adrian, about 13 miles, by 7.15 p. m. From Adrian it traveled northeastward to Creighton, about 16 miles distant, passed near the village of Norris, 6 miles farther along, about 8.05 p. m., and reached Leeton, in Johnson County, about 13½ miles from Norris, about 9 p. m. Beyond Leeton high winds occurred but no damage was done. The path of the storm was about 40 miles long, and apparently did not vary much from one-fourth to three-fourths of a mile wide. The movement of translation for the entire route of 40 miles was about 20 miles an hour, but from the time it entered Bates County until it passed Adrian the movement eastward was at the rate of almost a mile a minute, and along this route, that is from Merwin to some distance past Adrian, the greatest destruction to life and property occurred. The tornado moved due east after entering Missouri probably because of the more hilly country farther northward, near Drexel, Burdet, and Main City.

The cloud was funnel shaped, and it is said to have gyrated violently; after Adrian was passed its rate of progression appeared to be comparatively slow; in the opinion of observers it might have been outrun easily if seen in time.

Reports from reliable sources show the loss of life and damage to property to have been heavy. At or near Merwin 19 persons were killed; at Adrian 3; at Creighton 4, and at Leeton 3, making a total of 29. The more or less seriously injured number three score or more. A conservative estimate places the property loss at \$250,000.

Débris was thrown in every direction, although a close examination of reports received shows that most of the trees on the north side of the track were thrown to the south or southwest, while in the center and on the south side they were thrown to the north and northeast.

The following excerpt is from a report made by Mr. W. D. Whinery, cooperative observer of the Weather Bureau, who visited the devastated district near Merwin:

The storm occurred about 11 miles north of Amoret, but I visited the devastated district near Merwin the following day, June 16. From what I could learn the storm started east of Lacygne, Kans., taking a northeasterly direction, and crossing the State line into Missouri. It passed between Merwin and Drexel, Mo., causing considerable loss of life and property, and then to the neighborhood of Warrensburg. In regard to the direction of fallen trees, it was hard to ascertain the exact facts, as trees were twisted and blown in every direction. On the south side of the storm's path Kansas City Southern box cars were blown to the southeast, while in the center of the path trees were blown in every direction, and on the northwest side they apparently were blown to the northwest.

The following is from the Bates County Record (weekly):

At Merwin the wind blew from the Kansas City Southern tracks a work train with 50 workmen aboard, more than half the number being badly injured. A brick house containing two families of seven persons was scattered over 2 acres, but no one was injured. Twelve houses were destroyed at Prairieview Church. A baby's body was blown 3 miles, and the bodies of two men were found half a mile from where their homes stood. Just before the storm left Bates County it destroyed the Gallaway home and left the father, mother and three children, stripped of clothing, 100 yards away. Near Adrian the desolation was even more appalling. Where once homes, barns, haysheds and granaries stood, nothing was left but heaps of ruins. The loss in live stock alone will amount to thousands of dollars. In one space not more than one-fourth of a mile wide there were 150 dead animals, while many others were crippled. Hogs were found dead, with timbers driven through their bodies; a cow was found still alive with a scantling through her. All along the route dead fowls were found, many devoid of feathers. A large draft stallion was picked up by the wind and carried 250 yards from the barn, and on another farm a horse was blown from the barn, and later found dead one-fourth of a mile away. Wheat straws were driven into pine boards an inch in thickness. In several places along the track of the storm corrugated iron roofing was wrapped completely around telephone poles, and on one farm a burr oak plank was planted upright in the ground so firmly that it was impossible for a strong man to loosen it.