

MAR 11 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

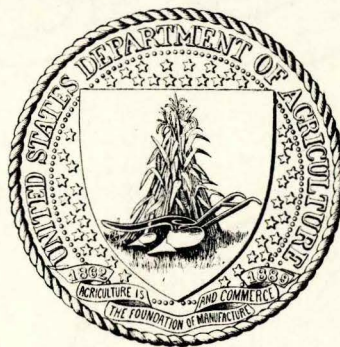
IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

JANUARY, 1918

BY

GEORGE M. CHAPPEL

SECTION DIRECTOR

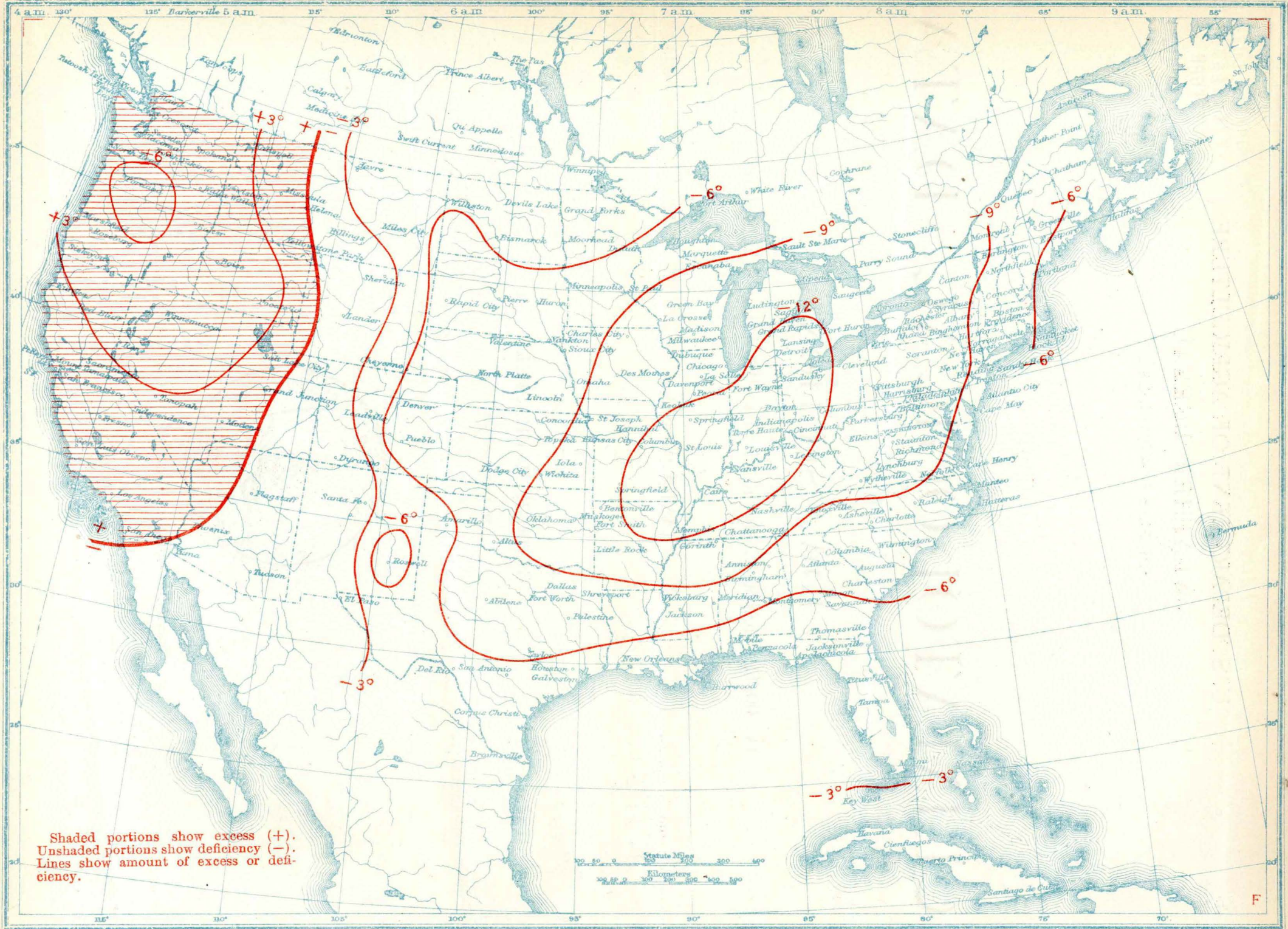


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

12

Departure of the Mean Temperature from the Normal, January, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

PRECIPITATION.

IOWA SECTION.

GEO. M. CHAPPEL, SECTION DIRECTOR.

VOL. XXIX DES MOINES, IOWA, JANUARY, 1918 No. 1

GENERAL SUMMARY.

January, 1918, was severely and almost continuously cold—only January, 1912, being colder. The mean temperature of the 62-day period, December 1, 1917 to January 31, 1918, 11.6°, is the coldest of the 28 similar periods since statewide records began, and 2.5° colder than the former record period, December, 1892-January, 1893. The deficiencies in temperature for January were greatest in the southeastern and west-central counties. Precipitation, mostly snow, averaged about normal for the State, but was excessive in some of the Mississippi River counties and deficient in portions of Boone, Carroll, Dallas and Guthrie counties and southwest to the boundaries of the State. The ground was snow-covered, continuously over about the eastern one-third of the State, less than 20 days in Crawford, Carroll, Greene and Boone counties, and less than 10 days toward the close of the month over most of Boone county.

The condition of winter wheat has not changed much, being fair in the southeastern counties and varying much in small adjacent areas in other sections. With the prevailing methods of culture, wheat fields were generally blown bare of snow by the winds, though the surrounding country remained snow-covered. About 8 per cent of the corn is still unhusked. Cold and snowy weather impeded rail traffic; and because of the car shortage, little corn was shelled. Live stock is generally reported in good condition, though fed to capacity on the soft corn which has little more than half the usual feeding value.

C. D. R.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.03 inches. The highest recorded was 30.82 inches, at Sioux City, on the 31st, and the lowest was 29.34, at Dubuque, on the 12th. The monthly range was 1.48 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 97 stations, was 8.6°, or 9.3° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 5.9°, or 8.7° lower than the normal; Central, 8.9°, or 9.3° lower than the normal; Southern, 11.1°, or 9.8° lower than the normal. The highest monthly mean was 14.2°, at Northboro, and the lowest monthly mean was 2.2° at Estherville. The highest temperature reported was 53°, at Thurman, on the 1st, and at Northboro, on the 24th, and the lowest temperature reported was -35° at Washta on the 31st. The temperature range for the State was 88°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 85 per cent, and at 7 p. m. it was 79 per cent. The mean for the month was 82 per cent, or about 1 per cent more than the normal. The highest monthly mean was 88 per cent at Charles City, and the least was 75 at Omaha, Nebr.

The average precipitation for the State, as shown by the records of 102 stations, was 1.02 inches, or 0.03 inch less than the normal. By divisions the averages were as follows: Northern, 1.04 inches, or 0.20 inch more than the normal; Central, 1.10 inches, or 0.01 inch less than the normal; Southern, 0.91 inch, or 0.28 inch less than the normal. The greatest amount, 2.79 inches, occurred at Le Claire, and the least, 0.26 inch, at Northboro. The greatest amount in any 24 consecutive hours, 1.00 inch, occurred at Fairfield, on the 6th, and at Nora Springs on the 27th.

SNOW

The average snowfall for the state was 11.2 inches, or 4.3 inches above the normal. The greatest amount, 27.8 inches, occurred at Le Claire, and the least, 3.0 inches, at Creston.

WIND.

The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 46 miles an hour from the northwest, at Sioux City, on the 23rd.

SUNSHINE AND CLOUDINESS.

The average percentage of the possible amount of sunshine was 53, or about 3 per cent higher than the normal. The percentage of the possible amount at the several regular Weather Bureau stations was as follows: Charles City, 37; Davenport, 55; Des Moines, 57; Dubuque, 60; Keokuk, 52; Omaha, Nebr., 61; Sioux City, 50. Clear days averaged 13; partly cloudy days, 8; cloudy, 10.

COMPARATIVE DATA FOR THE STATE—JANUARY.

YEAR	Temperature				Precipitation					Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipi- tation .01 in.	Clear	Partly cloudy	Cloudy	
1890	19.7	+1.8	61	-27	2.03	+0.98	3.46	0.35						
1891	26.0	+8.1	58	-4	1.75	+0.70	3.99	0.61			4	13	7	11
1892	15.3	-2.6	76	-38	1.09	+0.04	3.13	0.10	6.9	5	16	9	6	
1893	9.3	-8.6	54	-34	0.74	-0.31	3.20	0.13	6.9	6	11	9	11	
1894	19.3	+1.4	69	-37	1.09	+0.04	2.24	0.31	6.0	5	14	9	8	
1895	13.6	-4.3	68	-31	0.85	-0.20	2.65	0.09	8.7	4	15	7	9	
1896	23.4	+5.5	68	-20	0.48	-0.57	2.10	T.	2.8	3	10	10	11	
1897	17.2	-0.7	66	-30	2.01	+0.96	6.16	0.15	8.2	7	12	7	12	
1898	23.4	+5.5	52	-11	1.60	+0.55	5.32	T.	12.6	5	15	6	10	
1899	19.8	+1.9	68	-34	0.28	-0.77	1.15	T.	1.5	3	15	10	6	
1900	25.6	+7.7	66	-20	0.53	-0.52	2.47	T.	2.3	3	16	7	8	
1901	23.7	+5.8	60	-21	0.74	-0.31	2.34	0.04	6.2	4	14	9	8	
1902	22.4	+4.5	63	-31	0.88	-0.17	2.83	0.19	9.4	4	17	8	6	
1903	23.0	+5.1	60	-12	0.28	-0.77	1.46	T.	2.0	4	13	7	11	
1904	14.0	-3.9	57	-32	1.18	+0.13	3.68	0.02	6.1	6	12	8	11	
1905	11.2	-6.7	56	-30	0.9L	-0.14	1.82	0.12	11.1	7	14	7	10	
1906	24.6	+6.7	69	-19	1.52	+0.47	4.71	0.28	11.3	5	14	6	11	
1907	18.8	+0.9	68	-22	1.52	+0.47	5.30	0.10	6.0	7	8	7	16	
1908	24.9	+7.0	60	-18	0.44	-0.61	1.50	0.06	4.6	2	17	8	6	
1909	21.2	+2.3	72	-25	1.66	+0.61	3.74	0.41	7.8	6	9	6	16	
1910	18.1	+0.2	56	-35	1.57	+0.52	3.15	0.55	12.6	6	13	7	11	
1911	20.2	+2.3	66	-35	0.97	-0.08	3.73	0.11	7.3	5	9	8	14	
1912	4.2	-13.7	49	-47	0.53	-0.52	1.90	T.	5.5	5	14	7	10	
1913	20.9	+3.0	62	-25	0.77	-0.28	2.05	0.04	7.2	5	14	9	8	
1914	27.8	+9.9	64	-10	0.88	-0.17	2.34	0.27	5.1	5	11	8	12	
1915	17.5	-0.4	59	-32	1.63	+0.58	3.15	0.10	7.3	8	13	8	10	
1916	17.8	-0.1	63	-34	2.62	+1.57	6.07	0.85	7.2	10	12	6	13	
1917	17.0	-0.9	60	-28	0.83	-0.22	2.07	0.17	7.2	4	17	8	6	
1918	8.6	-9.3	53	-35	1.02	-0.03	2.79	0.26	11.2	7	13	8	10	

T indicates an amount too small to measure, or less than .005 inch precipitation, and less than .05 inch snowfall.

Climatological Data for January, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years	Temperature, in Degrees Fahrenheit						Precipitation, in inches				Number of Days.				Prevailing direction of wind.	Observers	
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Precipitation in in. or more.	Clear.	Partly cloudy.			Cloudy.
Webster City ††	Hamilton	1,044	13	-----	-----	42	1	-28	31	45	0.85	-0.25	0.40	8.5	4	12	9	16	nw	C. D. Carpenter
Whitten	Hardin	1,036	21	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	nw	Dr. F. P. Butler
Williamsburg	Iowa	765	2	8.6	-----	38	1	-22	31	50	0.80	-----	0.37	7.3	7	14	8	9	nw	Dr. F. C. Schadt
Means and extremes.				8.9	-9.3	51	1	-32	31	50	1.16	-0.01	0.56	12.3	8	13	7	11	nw	
<i>Southern Division</i>																				
Afton	Union	1,212	24	12.0	-9.0	45	1	-22	11†	39	0.62	-0.22	0.30	6.2	4	13	19	8	n	J. E. Deitrick
Albia	Monroe	959	20	10.0	-9.4	43	4	-22	12	33	0.55	-0.73	0.20	13.3	4	8	2	21	nw	F. H. Holmes
Allerton	Wayne	1,122	16	11.0	-11.0	45	4	-21	12	38	0.86	-0.45	0.50	11.0	5	9	17	5	nw	Noel C. Huston
Atlantic	Cass	1,161	27	8.2	-11.2	47	4	-24	31	32	0.74	-0.04	0.25	7.3	9	7	13	11	nw	Thos. H. Whitney
Bedford	Taylor	-----	15	11.8	-9.4	50	24	-23	12	44	0.73	-0.27	0.30	7.5	8	11	12	8	nw	E. E. Healy
Bloomfield	Davis	881	11	11.8	-----	42	4	-22	12	38	1.66	-0.27	0.61	17.0	11	5	19	7	nw	V. G. Warner
Bonaparte	Van Buren	565	27	10.2	-11.8	39	2†	-21	12	49	0.74	-0.86	0.22	12.5	6	14	8	9	nw	Bruce R. Vale
Burlington	Des Moines	544	22	10.0	-12.4	36	1†	-21	12	29	1.63	-0.10	0.50	16.3	6	11	9	11	nw	Mrs. J. A. Donnelly
Centerville	Appanoose	1,013	13	12.2	-----	44	2†	-21	12	37	0.92	-----	0.28	12.6	9	13	8	10	nw	S. A. Martin
Chanton	Lucas	1,042	23	9.8	-10.9	46	4	-24	12	46	0.74	-0.42	0.44	8.0	4	8	16	7	nw	C. C. Burr
Clarinda	Page	1,009	28	11.5	-8.2	52	24	-20	12	33	0.52	-0.43	0.20	4.8	7	9	12	13	nw	A. S. Van Sandt
Columbus Jet.	Lacusa	595	17	11.0	-11.0	37	1†	-21	12	37	1.05	-0.18	0.42	11.8	6	20	3	5	nw	J. B. Johnston
Corning	Adams	1,117	26	10.8	-8.9	49	4†	-23	11	48	0.47	-0.42	0.30	4.8	3	18	4	9	nw	Jerome Smith
Corydon	Wayne	1,101	25	11.1	-10.7	46	4	-24	12	38	0.99	-0.34	0.37	15.3	8	13	7	11	nw	May C. Miller
Creston ††	Union	1,312	13	9.8	-8.2	48	4	-23	12†	31	0.45	-----	0.22	3.0	6	11	10	10	nw	Mrs. Tillie E. McConnell
Cumberland	Cass	-----	19	-----	-----	-----	-----	-----	-----	-----	0.60	-0.25	0.30	6.0	3	24	1	6	nw	J. H. Reppert
Earlham	Madison	1,126	16	9.8	-9.3	50	4	-25	29†	46	1.03	-0.22	0.31	13.0	7	18	3	10	nw	George Phillips
Fairfield	Jefferson	780	34	9.3	-12.1	40	4	-18	11†	49	2.05	+0.50	1.00	20.7	6	15	7	9	nw	R. Monroe McKenzie
Fort Madison	Lee	516	69	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	nw	F. M. Myers
Glenwood	Mills	1,100	21	13.6	-----	52	1†	-20	11	42	0.70	-----	0.40	7.0	3	4	6	21	nw	Dr. Geo. Mogridge
Greenfield	Adair	-----	26	9.7 ^a	-9.5	45 ^a	5	-33 ^a	12	35 ^b	0.92	+0.02	0.20	9.0	7	-----	-----	-----	nw	Frank A. Ward
Indianola	Warren	969	26	11.8	-8.6	43	1	-21	31	38	0.65	-0.56	0.20	6.5	6	13	4	14	nw	Prof. J. L. Tilton
Keokuk	Lee	614	47	12.4	-11.3	41	4	-21	12	33	0.70	-0.99	0.27	8.0	6	10	13	8	nw	U. S. Weather Bureau
Keosauqua	Van Buren	644	26	10.2	-10.7	40	1†	-21	12	45	1.72	+0.38	0.65	16.7	8	4	7	20	nw	J. H. Landes
Knoxville	Marion	920	23	11.4	-9.6	44	4	-21	12†	44	0.85	-0.35	0.25	8.5	7	14	5	12	nw	W. J. Casey
Lacena	Warren	-----	19	-----	-----	-----	-----	-----	-----	-----	1.45	-0.27	0.40	14.5	8	7	18	6	-----	J. B. Alter
Lamoni	Decatur	-----	11	10.6 ^a	-10.9	48	4	-23	12	33	1.15	-----	0.57	10.8	6	14	8	9	nw	Chas. B. Woodstock
Lenox	Taylor	1,250	23	11.6	-8.8	47	1†	-24	31	38	0.32	-0.38	0.63	3.2	10	14	4	13	nw	J. L. Hurley
Mount Ayr	Ringgold	1,236	25	12.7	-9.1	49	24	-22	12	37	0.76	-0.31	0.40	7.6	6	11	9	11	nw	Alex Maxwell
Mt. Pleasant	Henry	729	37	10.6	-11.5	39	1†	-20	12	38	1.57	+0.06	0.71	15.7	7	11	11	9	nw	J. W. Edwards
Murray	Clarke	1,216	27	11.4	-9.0	49	4	-22	11†	38	0.42	-0.46	0.11	5.4	8	7	14	10	nw	M. T. Ashley
Northboro	Page	1,046	6	14.2	-----	53	24	-21	11	41	0.26	-----	0.18	4.0	2	14	7	10	nw	J. M. Darby
Oskaloosa ††	Mahaska	843	42	11.0	-9.0	41	23	-20	29†	50	-----	-----	-----	-----	-----	-----	-----	-----	nw	Jos. Boyd
Ottumwa	Wapello	849	23	10.2	-----	42	4	-21	12	32	1.51	-0.58	0.51	15.0	4	10	11	10	nw	Thomas Ray
Pella	Marion	877	15	10.4 ^a	-10.0	40 ^a	1†	-22 ^a	29	49 ^a	1.01	-0.01	0.54	11.4	6	-----	-----	-----	nw	John H. Ver Steeg
St. Charles	Madison	1,070	17	12.6	-8.9	48	4	-21	14†	37	0.46	-0.32	0.22	5.9	4	13	8	10	nw	R. D. Minard
Sigourney	Keokuk	877	22	10.3	-10.5	38	2†	-22	12	43	1.22	-0.10	0.53	14.5	7	14	5	8	nw	W. E. Utterback
Stockport	Van Buren	754	16	9.0	-13.0	40	4	-22	12	49	1.40	+0.03	0.56	15.5	8	10	5	16	nw	C. L. Beswick
Thurman	Fremont	-----	21	13.0	-7.9	53	1	-21	12†	50	0.45	-0.17	0.30	6.6	2	3	20	8	nw	C. R. Paul
Washington	Washington	769	36	10.3	-10.3	38	1	-21	12	40	0.91	-0.39	0.34	12.0	8	12	7	12	nw	Wm. A. Cook
Winterset	Madison	1,129	27	12.4	-8.5	50	4	-23	31	39	0.42	-0.54	0.15	9.5	4	14	14	3	nw	H. S. Ely
Omaha, Neb.	-----	1,040	47	12.7	-7.8	51	1	-22	11	30	0.65	0.00	0.24	7.0	7	11	10	10	nw	U. S. Weather Bureau
Means and extremes.				11.1	-9.8	53	1†	-33	12	50	0.91	-0.28	1.00	10.4	6	12	9	10	nw	
State means and extremes.				8.6	-9.3	53	1†	-35	31	50	1.02	-0.63	1.00	11.2	7	13	8	10	nw	

The departures from normal temperatures and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining division means.
 Reference letters a, b, c, appearing in the table indicate the number of days missing, for example, b represents two days, etc.
 †Also other dates. ††Received too late to be included in means and summaries.
 T. Precipitation is less than 0.01 inch rain or melted snow.

MISCELLANEOUS PHENOMENA.

Aurora: Observed at Allison and Nora Springs on 30th.
Fog: 1st, 3d, 5th, 8th, 10th, 11th, 20th, 22d, 29th, 30th.
Hail: 23d, 24th.
Halos (lunar or solar): 1st, 4th, 9th, 11th, 12th, 15th, 17th, 18th, 22d, 25th, 29th, 30th, 31st.
Haze: 2d, 3d, 4th.
Meteor (brilliant): Observed at Atlantic, Corning, Corydon, Des Moines, Earlham, Glenwood, Indianola, Lamoni, Mason City, Mt. Ayr, Washta and Winterset on the 22d, (See article on page 7 relative thereto).
Parhelia: 8th, 9th, 11th, 12th, 16th, 17th, 18th, 26th
Sleet: 1st, 2d, 5th, 23d, 24th, 26th 30th; at scattered stations.

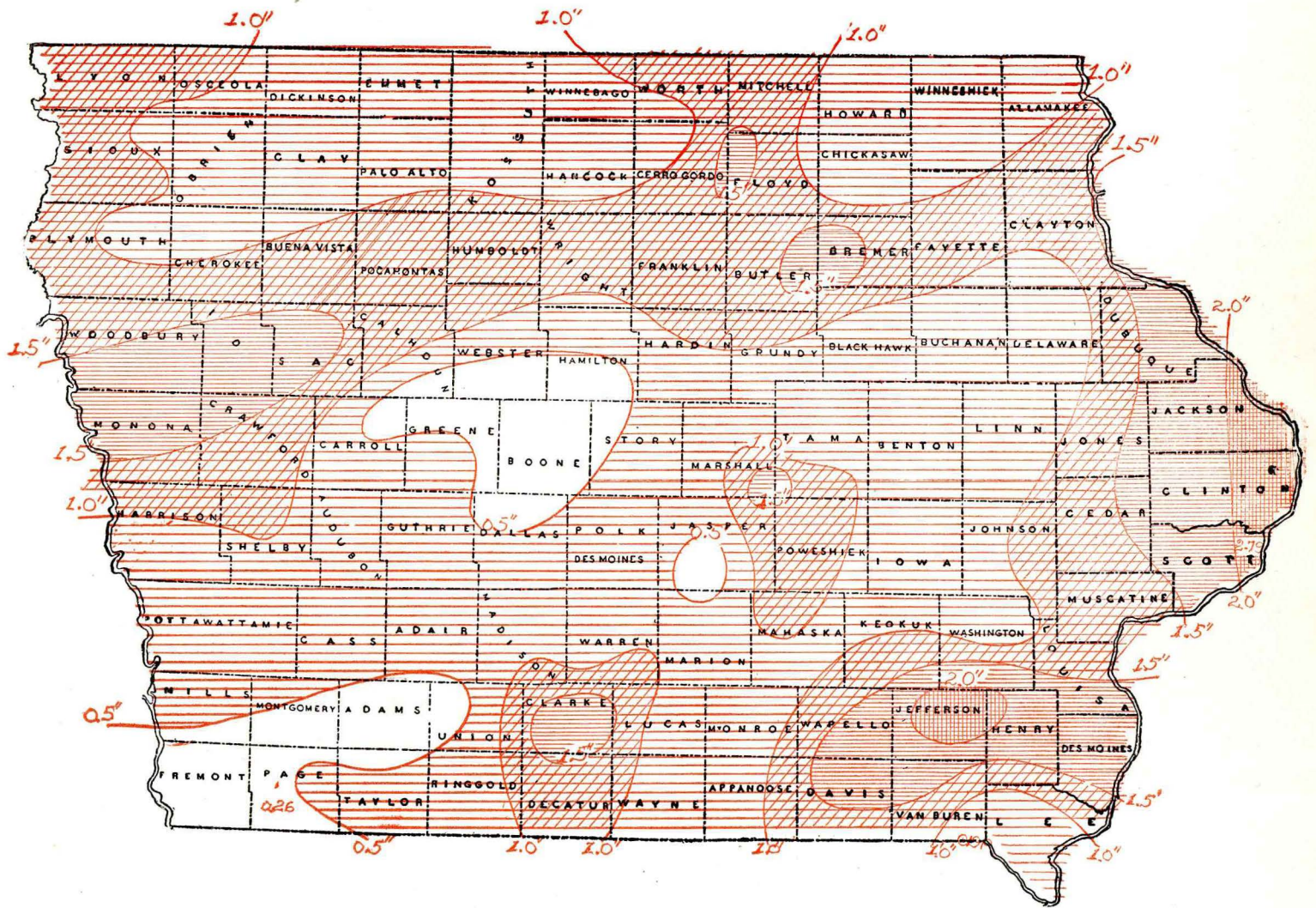
ERRATA.

Report for December, 1917; page 138; Le Mars; total precipitation published 0.43, should be 0.46; departure from the normal published -0.50, should be -0.47; Logan; mean temperature published 16.0°, should be 16.1°; departure from the normal published -9.2, should be -9.1. Page 139; Whitten, total precipitation published 0.62, should be 0.60; departure from the normal published -0.43, should be -0.45. Page 140; Le Mars; total precipitation published 0.43, should be 0.46.

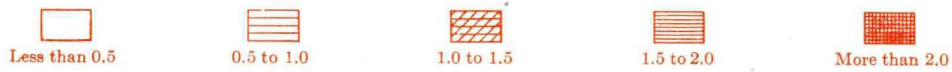
Daily Maximum and Minimum Temperatures for the Month of January, 1918.

Table with columns for Stations, days 1-31, and Mean. Rows are categorized by Northern Division, Central Division, and Southern Division, listing various Iowa cities and their daily temperature ranges.

TOTAL PRECIPITATION, JANUARY, 1918.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, January, 1918.



APR 13 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

FEBRUARY, 1918

BY
GEORGE M. CHAPPEL
SECTION DIRECTOR

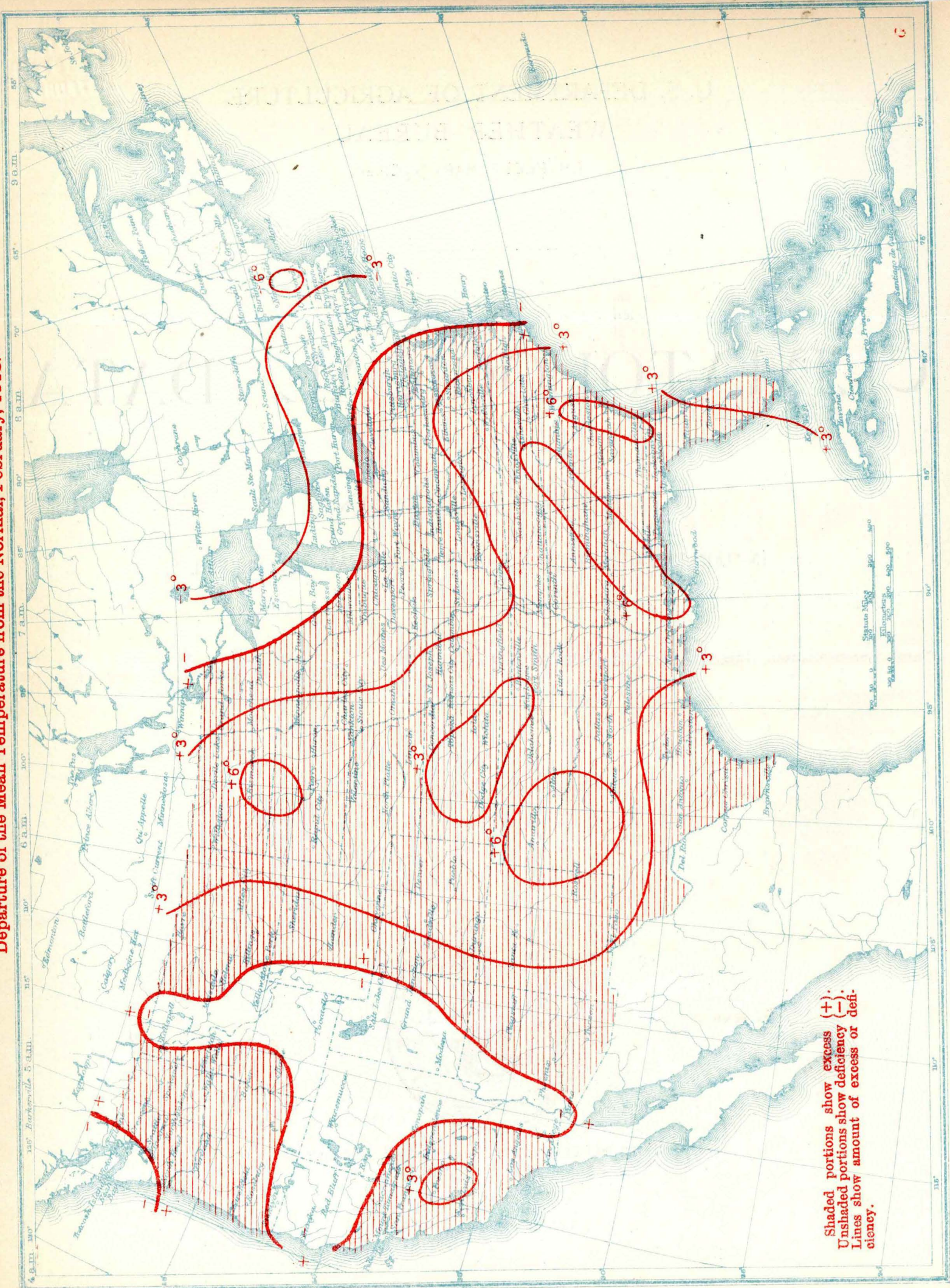


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

A

Departure of the Mean Temperature from the Normal, February, 1918.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

GEO. M. CHAPPEL, SECTION DIRECTOR.

VOL. XXIX DES MOINES, IOWA, FEBRUARY, 1918 No. 2

GENERAL SUMMARY.

February opened severely cold with the ground heavily snow-covered. Most stations reported their lowest temperatures of the winter on either the 1st or the 4th. Temperatures began to moderate on the 5th; the snow disappeared, except in some northern counties by the 10th; and the remainder of the month was mild, except cold waves, 16th-17th and 19th-21st, with occasional moderate snows that soon disappeared. Temperatures averaged above normal, except in Cass, Black Hawk and Clayton counties. Average daily excesses of 4° or more were reported from Buena Vista, Kossuth, Taylor and Van Buren counties.

On the 8th, a sleet storm, attended by lightning and thunder, covered a belt 100 or more miles wide, extending from southwest to northeast across the State. In portions of this belt a glaze formed, the central and southwestern portions being without snow covering. On the 14th, glaze covered Guthrie, Greene and Dallas counties and northeast nearly to the boundaries of the State, mostly without prior snow covering. The ground was snow-covered 25 or more days in the extreme north-central and northeast portions, and less than 10 days generally in the southern tier of counties and northward over Clarke, Lucas, Madison, Guthrie, Dallas and Greene counties. Snow covering was general at the close of the month.

Deficiencies of 1 inch or more in precipitation occurred in Kossuth and Fayette counties; while excesses, mostly snow, extended from the southwest to the east-central counties.

Mild weather toward the close of the month improved fuel and transportation conditions and corn began to move. Some corn remains unhusked in the fields. Winter wheat is reported as small but promising in the southeastern and uncertain in the southwestern portions of the State. Large areas that remained ungerminated because of drought last fall, are being watched with great interest.

C. D. R.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.06 inches. The highest recorded was 31.07 inches, at Sioux City, on the 21st, and the lowest was 29.02 at Charles City on the 14th. The monthly range was 2.05 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 103 stations, was 23.0°, or 2.5° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 19.3°, or 2.2° higher than the normal; Central, 23.1°, or 2.4° higher than the normal; Southern, 26.7°, or 3.1° higher than the normal. The highest monthly mean was 29.8° at Keokuk, and the lowest monthly mean was 15.2° at Estherville. The highest temperature reported was 70°, at Clarinda, on the 23d, and the lowest temperature reported was -36°, at Washta, on the 4th. The temperature range for the State was 106°.

HUMIDITY.

The average relative humidity for the State at 7:00 a. m. was 82 per cent, and at 7:00 p. m. it was 73 per cent. The mean for the month was 78 per cent, or about 1 per cent lower than the normal. The highest monthly mean was 84 per cent, at Charles City, and the lowest was 71 at Omaha, Nebr.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 111 stations, was 0.95 inch, or 0.20 inch less than the normal. By divisions, the averages were as follows: Northern, 0.52 inch, or 0.39 inch less than the normal; Central, 1.13 inches, or 0.07 inch less than the normal; Southern, 1.20 inches, or 0.15 inch less than the normal. The greatest amount, 2.10 inches, occurred at Olin, and the least, 0.09 inch, at Algona. The greatest amount in any 24 consecutive hours, 1.22 inches, occurred at Monroe on the 8th.

SNOW

The average snowfall for the State was 6.0 inches, or 1.4 inches less than the normal. The greatest amount, 14.5 inches, occurred at Glenwood, and the least, 0.5 inch at Keokuk.

WIND.

The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was 51 miles an hour from the northwest at Sioux City on the 25th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 62, or about 7 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 49; Davenport, 63; Des Moines, 59; Dubuque, 64; Keokuk, 61; Sioux City, 73; Omaha, Neb., 64.

COMPARATIVE DATA FOR THE STATE--FEBRUARY.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	26.0	+5.5	67	-24	0.83	-0.22	2.18	0.11					
1891	19.4	-1.1	70	-31	1.16	+0.11	2.41	0.55					
1892	28.1	+7.6	68	-20	1.20	+0.15	2.18	0.12	5.0	6	6	7	8
1893	16.4	-4.1	60	-28	1.39	+0.34	2.91	0.06	8.1	6	10	8	10
1894	19.7	-0.8	60	-19	0.89	-0.16	2.41	T	8.4	3	16	8	4
1895	16.4	-4.1	73	-33	0.49	-0.56	1.34	0.02	3.3	4	13	9	6
1896	27.4	+6.9	78	-13	0.71	-0.34	2.40	0.04	5.4	4	12	9	8
1897	24.7	+4.2	61	-24	0.89	-0.16	1.81	0.22	8.0	5	6	10	12
1898	24.2	+3.7	62	-18	1.20	+0.15	3.65	0.10	7.8	5	10	9	9
1899	12.2	-8.3	75	-40	0.89	-0.16	4.32	0.12	7.1	5	11	10	7
1900	14.8	-5.7	60	-27	1.30	+0.25	4.57	0.18	9.9	6	10	8	10
1901	17.5	-3.0	49	-21	1.01	-0.04	3.00	0.12	9.7	4	15	7	6
1902	17.6	-2.9	62	-21	0.73	-0.32	2.39	0.02	2.6	4	13	8	7
1903	19.8	-0.7	56	-21	1.18	+0.13	3.25	0.30	7.9	4	13	7	8
1904	14.8	-5.7	70	-26	0.41	-0.64	1.99	T	4.5	4	10	9	10
1905	12.8	-7.7	69	-41	1.57	+0.52	2.97	0.44	15.5	7	14	6	8
1906	23.6	+3.1	66	-32	1.29	+0.24	2.91	0.20	6.1	5	14	7	7
1907	25.0	+4.5	65	-31	0.71	-0.34	1.95	0.06	4.6	4	14	6	8
1908	24.3	+3.8	59	-16	1.69	+0.64	3.95	0.23	8.9	6	12	6	11
1909	26.2	+5.7	62	-26	1.54	+0.49	4.72	0.30	7.7	5	11	6	11
1910	17.8	-2.7	58	-21	0.46	-0.59	2.09	T	4.0	3	14	8	6
1911	27.3	+6.8	71	-13	2.76	+1.71	5.46	0.50	7.0	6	12	6	10
1912	18.1	-2.4	57	-30	1.21	+0.16	3.25	0.04	11.2	5	10	9	10
1913	20.2	-0.3	70	-24	0.82	-0.23	2.39	0.07	7.3	4	14	7	7
1914	16.8	-3.7	59	-29	0.87	-0.18	1.99	0.32	9.2	6	10	9	9
1915	29.1	+8.6	62	-8	2.93	+1.88	5.39	0.43	9.4	9	9	5	14
1916	19.0	-1.5	62	-32	0.55	-0.60	1.38	0.05	6.0	4	14	8	7
1917	15.2	-5.3	68	-37	0.36	-0.79	1.19	T	3.5	3	14	8	6
1918	23.0	+2.5	70	-36	0.95	-0.20	2.10	0.09	6.0	5	14	7	7

T indicates an amount too small to measure, or less than .005 inch precipitation, and less than .05 inch snowfall.

Climatological Data for February, 1918

Stations.	Counties.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.				Number of Days.			Prevaling direction of wind.	Observers.			
				Mean.	Departure from normal.	Highest.	Date	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in. or more.			Clear.	Partly cloudy.	Cloudy.
Northern Division																				
Algona	Kossuth	1,213	45	21.8	+4.2	53	24	-24	4	48	0.09	-1.00	0.05	2.5	3	16	5	7	sw.	W. E. Laird
Allison	Butler	1,045	6	20.6	-----	55	24	-25	1	32	1.10	-----	0.70	3.0	5	12	6	10	nw.	J. A. Bell
Alta	Buena Vista	1,513	27	18.4	+2.3	53	10	-26	1	45	0.65	-0.27	0.46	6.3	4	11	13	4	sw.	David E. Hadden
Alta (near)	Buena Vista	-----	23	-----	-----	-----	-----	-----	-----	-----	0.75	-0.20	0.52	6.0	3	-----	-----	-----	sw.	Warren Minard
Alton	Sioux	1,305	13	18.4	+0.7	50	24	-34	4	40	0.65	-----	0.40	6.5	3	7	17	4	nw.	W. S. Slagle
Britt	Wright	1,205	8	20.0	-----	55	24	-28	1	32	0.63	-----	0.25	4.7	5	6	19	3	sw.	Geo. P. Hardwick
Belmond	Hancock	4,236	21	18.5	+1.8	52	24	-28	1	38	0.17	-0.64	0.07	1.5	4	20	6	2	s.	L. M. Goodman
Charles City	Floyd	1,015	27	19.0	+3.9	54	24	-27	1	36	0.24	-0.73	0.13	2.2	4	6	15	7	nw.	U. S. Weather Bureau
Decorah	Winneshiek	875	25	17.8	+0.2	52	24	-31	1	41	0.25	-0.78	0.08	2.4	6	15	2	11	nw.	Wm. F. Baker
Elkader	Clayton	727	39	18.1	-1.2	50	24	-35	1	35	0.53	-0.54	0.35	6.0	4	12	6	10	nw.	Chas. Reinecke
Estherville	Emmet	1,298	23	15.2 ^b	+0.2	50	24	-29 ¹	1	39 ¹	0.80	+0.02	0.60	5.0	2	18	9	1	nw.	A. O. Peterson
Fayette	Fayette	1,003	28	19.6	+2.2	51	24	-35	1	36	0.54	-1.22	0.28	2.0	5	15	8	5	sw.	R. Z. Latimer
Forest City	Plymouth	1,226	24	18.2	+3.1	52 ^a	24	-29	1	32 ^a	0.34	-0.54	0.10	3.5	4	11	15	2	se.	Eugene Secor
Humboldt	Humboldt	1,095	30	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	E. A. Selby
Inwood	Lyon	1,474	14	16.0	-0.2	51	24	-32	1	41	0.33	-0.42	0.15	3.1	7	21	2	5	sw.	F. B. Hanson
Lake Park	Dickinson	1,479	5	19.8	-----	55	24	-27	1	36	0.75	-----	0.75	6.0	1	17	3	8	w.	A. E. Woodruff
Lansing	Allamakee	632	12	-----	-----	-----	-----	-----	-----	-----	0.38	-0.90	0.13	1.0	8	-----	-----	-----	-----	Chas. R. Scrace
L. Mars	Plymouth	1,224	22	20.8	+2.5	53	24	-24	1	34	0.84	+0.07	0.55	8.2	4	15	9	4	nw.	G. A. C. Clarke
Mason City	Cerro Gordo	1,133	21	20.0	+2.7	58	24	-25	1	33	0.60	-0.21	0.20	5.0	4	12	16	-----	nw.	Dr. Roy De Sart
Matlock	Sioux	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	H. O. Tuttle
New Hampton	Chickasaw	1,169	21	19.8	+3.2	54	24	-26	1	40	0.31	-0.61	0.12	2.0	4	13	7	8	sw.	A. F. Kemman
Nora Springs	Floyd	1,064	5	22.2	-----	58	24	-33	1	38	0.42	-----	0.17	0.9	5	11	11	6	s.	Arthur Betts
Northwood	Worth	1,222	22	16.6	+0.3	50	24	-29	1	33	0.55	-0.77	0.20	4.0	5	12	11	5	sw.	Chas. Dwelle
Pocahontas	Pocahontas	1,248	14	21.2	+3.6	55	24	-25	4	37	0.54	-0.31	0.25	5.3	5	15	7	6	sw.	F. E. Hronsek
Postville	Clayton	1,180	19	19.4	+1.7	52	24	-24	1	29	0.60	-0.54	0.12	4.2	8	12	7	9	sw.	F. L. Williams
Rock Rapids	Lyon	1,358	19	18.6	+3.0	50	24	-30	4	40	0.40	0.00	0.15	2.5	3	16	8	4	sw.	J. K. Medberry
Sanborn	O'Brien	1,553	4	19.2	-----	48	24	-26	4	32	0.85	-----	0.75	5.0	2	14	11	3	sw.	Jas. W. Dow
Sibley	Oscola	1,212	25	17.0	+2.4	50	24	-34	4	36	0.34	-0.21	0.18	3.5	3	20	5	3	sw.	H. F. Olds
Sioux Center	Sioux	1,426	19	18.8	+1.1	50	24	-27	1	35	0.55	-0.15	0.40	5.5	3	17	4	7	s.	J. De Ruyter
Storm Lake	Buena Vista	1,440	29	21.1	+4.0	52	24	-22	1	34	0.53	-0.22	0.37	4.5	2	18	5	5	sw.	Geo. H. Fraeker
Washta	Cherokee	1,137	20	20.8	+2.1	54	24	-36	4	46	0.65	-0.17	0.35	5.5	4	17	7	4	s.	H. L. Felter
Waverly	Bremer	948	22	20.4	+1.8	62	24	-33	1	41	0.47	-0.65	0.10	2.9	7	15	6	7	nw.	H. Arnold
West Bend	Palo Alto	1,197	25	21.4	+3.9	56	23	-29	4	36	0.31	-0.58	0.17	2.0	2	14	7	7	sw.	Jos. Dorweiler
Means and extremes	-----	-----	-----	19.3	+2.2	62	24	-36	4	48	0.52	-0.39	0.75	4.0	4	14	8	6	sw.	-----
Central Division																				
Ames	Story	926	42	22.8	+2.1	58	24	-26	1	43	0.88	-0.03	0.34	11.0	6	21	5	2	s.	Iowa State College
Audubon	Audubon	1,301	24	22.4	+1.7	59	24	-24	1	43	1.53	-0.57	0.60	13.7	10	11	6	11	sw.	Geo. E. Kellogg
Baxter	Jasper	998	18	23.8	+2.7	61	23	-21	4	35	1.57	+0.65	0.66	9.5	10	17	4	7	sw.	W. R. Vandike
Belle Plaine	Benton	886	28	23.5	+2.7	58	23	-24	1	55	2.09	+0.47	1.18	12.1	8	17	5	6	sw.	O. C. Burrows
Boone	Boone	1,134	13	20.8	+1.8	58	24	-25	1	30	0.38	-0.52	0.18	7.2	4	15	10	3	s.	Herbert A. Grabau
Carroll	Carroll	1,265	28	20.1	+1.1	58	24	-20	1	37	0.49	-0.58	0.20	4.3	4	16	6	6	sw.	Mrs. Jos. J. Wolfe
Cedar Rapids	Linn	733	36	21.3	+1.5	58	23	-22	2	41	1.94	+0.52	0.97	9.7	5	17	2	9	w.	R. S. Toogood
Clinton	Clinton	593	45	24.8	+1.9	60	14	-21	1	36	1.64	-0.43	0.46	11.8	12	14	8	6	sw.	H. Burde
Davenport	Scott	580	47	26.8	+3.0	63	14	-14	4	40	1.17	-0.39	0.51	6.1	11	7	11	10	sw.	U. S. Weather Bureau
Delaware	Delaware	1,083	27	20.4	+1.7	53	23	-26	1	42	0.85	-0.04	0.35	3.5	7	14	8	6	nw.	Nettie E. Ball
Denison	Crawford	1,180	24	23.6	+3.5	68	24	-29	4	47	0.30	-0.62	0.20	5.0	2	13	8	7	sw.	Prof. Webb Stump
Des Moines	Polk	861	39	26.4	+2.3	61	23	-17	4	39	1.45	+0.37	0.81	8.8	8	10	10	8	sw.	U. S. Weather Bureau
Dubuque	Dubuque	639	45	23.0	+1.4	56	23	-21	1	33	1.37	-0.01	0.62	5.3	9	8	9	11	nw.	U. S. Weather Bureau
Fort Dodge	Webster	1,126	18	20.5	+2.9	60	24	-27	1	31	0.55	-0.07	0.20	3.0	5	16	6	6	nw.	J. F. Monk
Gilman	Marshall	1,052	19	-----	-----	-----	-----	-----	-----	-----	1.69	+0.35	0.91	7.0	6	-----	-----	-----	-----	Jas. L. Wyle
Grinnell	Poweshiek	1,023	24	25.0	+2.9	62	23	-20	1	34	1.95	+0.84	0.75	8.0	5	15	6	7	nw.	D. W. Brainard
Grundy Center	Grundy	976	27	-----	-----	-----	-----	-----	-----	-----	0.48	-0.41	0.18	7.5	4	10	13	5	nw.	M. G. Heiberger
Guthrie Center	Guthrie	1,077	23	24.2	+2.6	67	23	-27	1	46	1.16	+0.14	0.40	7.2	9	15	7	6	sw.	C. T. Harney
Harlan	Shelby	1,182	19	22.6	+2.0	58	24	-25	1	41	1.70	+0.66	0.80	11.0	4	19	0	9	s.	E. L. Tilton
Independence	Buchanan	921	54	21.6	+2.3	53	23	-27	1	53	0.51	-0.55	0.14	5.0	5	12	5	11	sw.	Dr. H. A. Lindsay
Iowa City	Johnson	683	57	22.1	+1.6	61	23	-23	1	43	1.46	-0.07	0.48	8.0	6	12	6	10	nw.	Prof. John F. Reilly
Iowa Falls	Hardin	1,107	25	19.7	+2.9	53	24	-29	1	32	0.83	-0.81	0.20	6.5	7	14	6	8	nw.	J. B. Parnelee
Jefferson	Greene	1,052	19	23.6	+2.4	59	24	-24	1	58	0.58	-----	0.28	5.0	4	13	5	10	sw.	Will I. Lyon
Le Claire	Scott	576	18	-----	-----	-----	-----	-----	-----	-----	2.09	+0.42	0.55	6.2	8	-----	-----	-----	-----	Margaret T. Disney
Little Sioux	Harrison	1,040	13	23.8	+1.7	62	23	-21	1	46	1.02	-----	0.79	9.5	6	14	5	9	se.	Geo. H. Gibson
Logan	Harrison	928	51	24.8	+2.8	61	23	-27	1	43	0.90	-0.32	0.35	10.0	5	14	5	9	sw.	Ted. Stern
Maquoketa	Jackson	688	17	23.9	+2.4	58 ^a	24	-24	1	35 ^a	-----	-----	-----	8.2	-----	-----	-----	-----	-----	Ira H. Stephens
Marshalltown	Marshall	947	26	21.6	+2.5	59	23	-25	1	35	1.13	-0.01	0.31	9.5	7	23	1	4	sw.	Ed F. Duntman
Monroe	Jasper	922	6	25.2	-----	64	24	-23	4	34	1.95	-----	1.22	7.2	4	15	4	9	nw.	J. A. Dibel
Muscatine	Muscatine	554	58	-----	-----	-----	-----	-----	-----	-----	1.57	-0.37	0.60	7.5	7	-----	-----	-----	-----	Wm. P. Molis
Olin	Jones	760	20	21.9	0.0	53	14	-27	1	36	2.10</									

Climatological Data for February, 1918-Continued.

Stations	Counties	Elevation-feet.	Length of record - years.	Temperature, in Degrees Fahrenheit							Precipitation, in Inches				Number of Days				Prevaling direction of wind.	Observers
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in. or more.	Clear.	Partly cloudy.	Cloudy.		
Webster City	Hamilton	1,044	13	22.5	+2.2	57	24	-30	1	35	0.40	-0.76	0.30	4.0	2	13	7	8	nw.	C. D. Carpenter
Whitten	Hardin	1,933	21	23.9		60	23	-27	1	41	1.28		0.63	6.0	5	16	5	7	se.	B. B. Butler
Williamsburg	Iowa	765	2																	Dr. F. C. Schadt
Means and extremes				23.1	+2.4	68	24	-30	1	47	1.13	-0.97	1.22	7.4	6	14	7	7	sw.	
<i>Southern Division</i>																				
Afton	Union	1,212	24	27.2	+3.8	64	24	-20	1	39	0.82	-0.33	0.40	8.2	4	19	15	4	sw.	J. E. Deitrick
Albia	Monroe	959	20	25.2	+3.1	65	11†	-20	1	45	0.96	-0.60	0.51	5.0	4	7	10	11	sw.	F. H. Holmes
Allerton	Wayne	1,122	16	27.2	+2.5	64	24	-22	1	45	0.76	-0.83	0.52	4.8	5	11	14	3	sw.	Noel C. Huston
Atlantic	Cass	1,164	27	21.6	-0.1	69	23	-18	1†	41	1.00	-0.14	0.25	10.6	7	10	5	13	sw.	Thos. H. Whitney
Bedford	Taylor		18	27.8	+3.2	67	23	-27	1	40	1.18	-0.20	0.28	6.8	7	15	5	8	nw.	E. E. Healy
Bloomfield	Davis	881	11	28.6		66	24	-20	1	48	1.49	+0.07	1.05	5.2	7	12	14	2	sw.	V. G. Warner
Bonaparte	Van Buren	565	27	28.0	+3.3	65	11†	-20	1	48	1.02	-0.39	0.63	3.4	6	16	4	8	sw.	Bruce R. Yale
Burlington	Des Moines	514	22	26.8	+1.9	66	14	-14	4	49	1.85	-0.13	1.00	4.0	6	12	10	6	sw.	Mrs. J. A. Donnelly
Centerville	Appanoose	1,013	13	28.6		64	11	-22	1	47	1.18		0.86	8.2	5	14	8	6	sw.	S. A. Martin
Chariton	Lucas	1,042	23	26.3	+2.0	65	24	-24	1	47	0.86	-0.34	0.36	5.0	3	14	7	7	sw.	C. C. Burr
Clarinda	Page	1,000	28	25.2	+3.4	70	23	-22	1†	42	0.95	-0.12	0.61	6.9	6	19	3	6	nw	A. S. Van Sandt
Columbus Junction	Louisa	595	17	27.6	+2.8	61	14†	-17	4	40	1.53	-0.03	0.73	6.5	6	18	5	5	sw.	J. B. Johnston
Corning	Adams	1,117	26	25.0 ^b	+3.4	67 ^b	23	-27 ^c	1	42 ^c	1.30	+0.14	0.64	7.0	4	18	2	8	nw.	Jerome Smith
Corydon	Wayne	1,101	25	27.5	+3.1	65	11†	-22	1	43	1.16	-0.80	0.75	6.1	6	14	7	7	nw.	May C. Miller
Creston	Union	1,312	13	23.9	+3.1	64	23	-21	1	37	1.53		0.62	7.5	7	12	6	10	sw.	Mrs. Tillie E. McConnell
Cumberland	Cass		19								2.00	+0.89	1.00	12.0	4	20	1	7	sw.	J. H. Reppert
Earlham	Madison	1,126	16	24.9	+3.1	63	23 ^b	-30	4	44	1.57	+0.15	0.77	10.9	5	14	5	9	sw.	George Phillips
Fairfield	Jefferson	780	54	26.8	+2.0	65	23†	-16	4	61	0.73	-0.95	0.40	5.5	3	15	6	7	sw.	R. Monroe McKenzie
Fort Madison	Lee	516	69								1.62	-0.32	1.16	2.5	6	14	5	9	sw.	F. M. Myers
Glenwood	Mills	1,100	21	27.2		67	23	-19	1	40	1.45		0.40	14.5	7	15	1	12	sw.	Dr. Geo. Mogridge
Greenfield	Adair		26	25.2	+3.7	60	23†	-19	1	35	1.15	+0.01	0.40	11.5	4	15	10	3	sw.	Frank A. Ward
Indianola	Warren	969	26	26.5	+3.4	63	23	-17	1	36	1.19	0.00	0.56	10.6	6	13	3	12	sw.	Prof. J. L. Tilton
Keokuk	Lee	614	47	29.8	+3.2	65	23	-13	4	45	1.15	-0.47	0.75	9.5	8	11	10	7	nw.	U. S. Weather Bureau
Keosauqua	Van Buren	644	26	27.8	+4.5	64	11†	-24	1	52	0.82	-0.78	0.64	4.0	4	11	6	11	nw.	J. H. Landes
Knoxville	Marion	920	23	26.6	+2.2	65	24	-22	1†	43	1.80	+0.60	0.75	5.0	5	17	3	8	sw.	W. J. Casey
Lacona	Warren		19								1.67	+0.02	0.94	13.0	6	7	13	8		J. B. Alter
Lamoni	Decatur		11	26.6	+1.6	65	11†	-21	1	44	1.50		0.88	4.8	6	19	3	6	sw.	Chas. B. Woodstock
Lenox	Taylor	1,250	23	27.0	+4.2	64	23	-20	1	38	0.62	-0.44	0.30	5.5	6	21	1	6	nw.	J. L. Hurley
Mount Ayr	Ringgold	1,236	25	27.8	+3.2	67	23	-21	1	39	0.71	-0.67	0.32	5.4	7	14	5	9	s.	Alex Maxwell
Mount Pleasant	Henry	729	37	27.8	+2.9	64	23	-17	4	44	1.00	-0.51	0.69	3.5	7	14	5	9	sw.	J. W. Edwards
Murray	Clarke	1,216	27	27.0	+3.7	65	23	-17	1	40	0.80	-0.22	0.38	4.5	4	13	7	8	sw.	M. T. Ashley
Northboro	Page	1,046	6	29.0		69	23	-20	1	41	1.44		0.50	6.0	6	15	5	10	sw.	J. M. Darby
Oskaloosa	Mahaska	843	42	26.4	+3.0	61	23†	-25	1	43	1.06	-0.07	0.64	4.2	3	14	3	11	nw.	Jos. Boyd
Ottumwa	Wapello	849	23	27.3		67 ^a	11	-21	1	41 ^a	0.86	-0.65	0.71	6.3	2	15	6	7	se.	Thomas Ray
Pella	Marion	877	15	25.0	+1.3	64	23	-28	1	48	0.92	-0.38	0.45	5.9	4	14	3	11	nw.	J. H. Ver Steeg
St. Charles	Madison	1,070	17	27.3	+3.2	64	23	-17	1	38	1.20	-0.07	0.67	5.5	3	15	4	9	sw.	R. D. Minard
Sigourney	Keokuk	877	22	25.8	+1.9	61	23†	-21	1	41	0.89	-0.71	0.31	4.2	6	16	5	7	sw.	W. E. Utterback
Stockport	Van Buren	754	16	26.8	+1.7	64	11†	-26	1	55	1.32	-0.31	0.72	3.0	6	15	3	10	s.	C. L. Beswick
Thurman	Fremont		21	26.6	+3.5	67	23	-30	1	46	1.53	+0.27	0.60	11.5	5	10	10	8	sw.	C. R. Paul
Washington	Washington	769	36	27.0	+3.2	63	23	-19	1	38	1.35	+0.04	0.72	9.5	6	12	11	5	sw.	Wm. A. Cook
Winterset	Madison	1,129	27	27.1	-4.0	63	23 ^b	-19	4	37	1.52	+0.49	0.66	7.5	4	18	6	4	sw.	H. S. Ely
Omaha, Neb.		1,040	47	27.5	+3.8	67	23	-11	20	33	1.05	+0.29	0.48	10.5	8	13	5	10	nw.	U. S. Weather Bureau
Means and extremes				26.7	+3.1	70	23	-30	1†	61	1.20	-0.15	1.16	6.7	5	14	6	8	sw.	
State means and extremes				23.0	+2.5	70	23	-36	4	61	0.95	-0.20	1.22	6.0	5	14	7	7	sw.	

The departures from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.

Reference letters a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.

†Also other dates. ††Received too late to be included in means and summaries.

T. Precipitation is less than 0.01 inch rain or melted snow.

Daily Precipitation for February, 1918—Continued.

Stations.	Watersheds	Day of Month.																												Total	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
<i>Southern Division</i>																															
Afton	Grand								.10							.02	.40													.30	0.82
Albia	Des Moines								.28			T.				.12				.05	T.	T.						T.		.51	0.96
Allerton	Chariton	T.									T.				.05	.06				.07							T.		.06	.52	0.76
Atlantic	Nishnabotna								.25				.10			.15	.25			T.	.05									.19	1.00
Bedford	Missouri	.05							.28					.28	.02	.25				T.							T.	.01	.02	.28	1.18
Bloomfield	Mississippi								.25			T.	.02		.01	.10	.05			T.							.01		1.05	1.49	
Bonaparte	Des Moines								.21			T.	.04	T.		.05				.06							T.	.03	.63	1.02	
Burlington	Mississippi												.25	T.		.20				.24	.06							.10		1.00	1.85
Centerville	Chariton	T.							.10	.08			T.	T.	T.	.09				.05						T.		T.	.86	1.18	
Chariton	Chariton								.16							.34				T.					T.				.36	0.86	
Clarinda	Nodaway	.04												.02		.05	.22	T.			.01								.61	0.95	
Columbus Junction	Iowa								.45	T.			.06	.06		T.	.15			T.						.05	T.		.73	1.53	
Corning	Nodaway								.64					.06		T.	.25												.35	1.30	
Corydon	Chariton	T.							.10	T.			T.	T.	.06	T.	.12				.08					T.		.05	.75	1.16	
Creston	Missouri								.62					.06		.04	.25				.02	.06					T.		.48	1.53	
Cumberland	Nodaway							1.00							.10		.40												.50	2.00	
Earlham	Des Moines							.77	T.				T.	.08		T.	.48				.64	T.				T.		T.	.20	1.57	
Fairfield	Skunk							.18					T.	T.		.15				T.						T.		T.	.40	0.73	
Fort Madison	Mississippi							.24							.02	.07				.05					T.	.08			1.16	1.62	
Glenwood	Missouri	.10						.40							T.	.10	.30				.10				T.			.05	.40	1.45	
Greenfield	Nodaway								.40						T.	T.	.05				T.							T.	.30	1.15	
Indianola	Des Moines							.56	T.					.07		T.	T.	.30			.03					T.		.06	.17	1.19	
Keokuk	Mississippi							.14	.02				.04	.03		T.	.01			T.	.16					T.		.14	.61	1.15	
Keosauqua	Des Moines							.08	T.							.10												.02	.62	0.82	
Knoxville	Des Moines							.75								.20					.25					.30			.30	1.80	
Lacona	Des Moines							.94						.01		.20					.20							.02	.30	1.67	
Lamoni	Grand	T.						.28						.02		.18	.09			.05	T.					T.			.88	1.60	
Lenox	Missouri							.10						.03	.02	.30				T.							.02	.15	.62	0.62	
Mount Ayr	Grand	.02						.14						.02	.02	T.	.11			T.						T.	.08	.08	.32	0.71	
Mount Pleasant	Skunk							.10					.01	.02		.04	T.	.15			T.						.08	T.	.60	1.00	
Murray	Grand							.38						T.	.05		T.	T.	.22			T.					T.		.15	0.80	
Northboro	Missouri							.50							.19	.05	.20				T.							.08	.42	1.44	
Oskaloosa	Des Moines							.64						T.		.20				T.								.22	.10	1.06	
Ottumwa	Des Moines													T.	T.		T.	.15			T.						T.		.71	0.86	
Pella	Skunk							.45	T.					T.	T.		T.	.22			.01	T.					T.		.24	0.92	
St. Charles	Des Moines							.67									.28				T.								.25	1.20	
Sigourney	Skunk			T.				.23	.02					T.		T.	.18				.05	T.					.01		.31	0.80	
Stockport	Skunk							.32	T.					T.	.05		.05	.08			.10					T.		T.	.72	1.32	
Thurman	Missouri	T.						.60						T.	T.	.10	.05	.25			T.							T.	.53	1.53	
Washington	Skunk							.29						.08		T.	.18				.04						.04		.72	1.35	
Winterset	Des Moines							.66						.01		.30					T.							T.	.55	1.52	
Omaha, Neb.	Missouri							.27						.01		.07	.34	.16			.02						T.	.10	.08	1.05	

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for 24 hours ending at the time of observation.

|||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

***Regular Weather Bureau Station; precipitation is for 24 hour period, midnight to midnight.

*Precipitation included in the next following measurement.

**Incomplete.

MISCELLANEOUS PHENOMENA.

THE WINTER OF 1917-18

Aurora: Observed at Inwood on the 10th; Allison and Nora Springs on the 12th; and Waukee on the 19th.

Birds: (migration of) Bedford, blue birds and ducks on the 26th; Corydon, robins on the 7th; Earlham, blue birds and ducks on the 14th.

Fog: 6th, 7th, 8th, 9th, 10th, 14th, 17th, 18th, 19th.

Hail: 5th, 8th, 14th, 19th.

Halo: (lunar or solar) 1st, 3d, 4th, 11th, 12th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th.

Haze: 18th.

Parhelia: 1st, 2d, 19th, 20th.

Sleet: 6th, 8th, 14th, 27th.

Thunderstorm: 8th, 13th, 25th, 28th.

The mean temperature for the three winter months was 15.4°, which is 5.4° below the normal for the State, and only 0.5° warmer than the coldest of the 28 winters of record, 1892-93. The highest temperature reported was 70° at Clarinda, Page County, on February 23. The lowest temperature reported was 40° below zero at Washta, Cherokee County on December 29.

The average monthly precipitation for the State was 0.84 inch, and the average total precipitation was 2.53 inches, or 0.89 inch less than the winter normal. The average total snowfall, unmelted, was 23.9 inches, or 3.4 inches more than the normal and 6.5 inches more than the average fall for the winter of 1916-17.

The total number of days with .01 inch or more of precipitation was 18, or 5 more than the average for the winter of 1916-17. The average number of clear days was 37, partly cloudy 24, cloudy 29, as compared with 46 clear, 24 partly cloudy and 20 cloudy days during the winter of 1916-17.

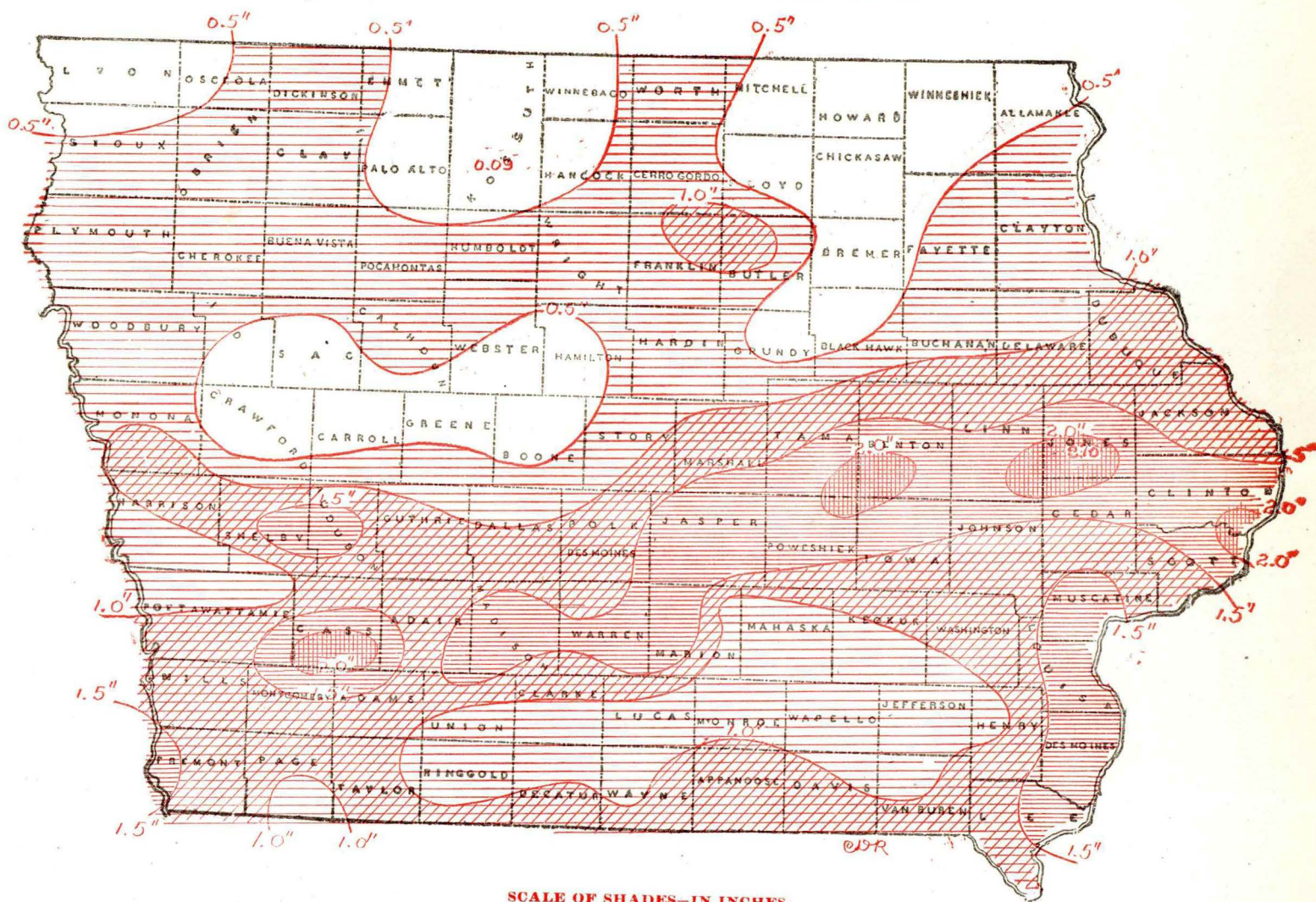
Daily Maximum and Minimum Temperatures for the Month of February, 1918.

Table with columns for Stations, days 1-28, and Mean. Rows are categorized by Northern Division, Central Division, and Southern Division, listing various Iowa locations and their daily temperature ranges.

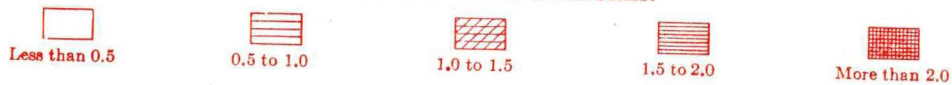
a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record.

§§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

TOTAL PRECIPITATION, FEBRUARY, 1918.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, February, 1918.



MAY 15 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

MARCH, 1918

BY

GEORGE M. CHAPPEL

SECTION DIRECTOR

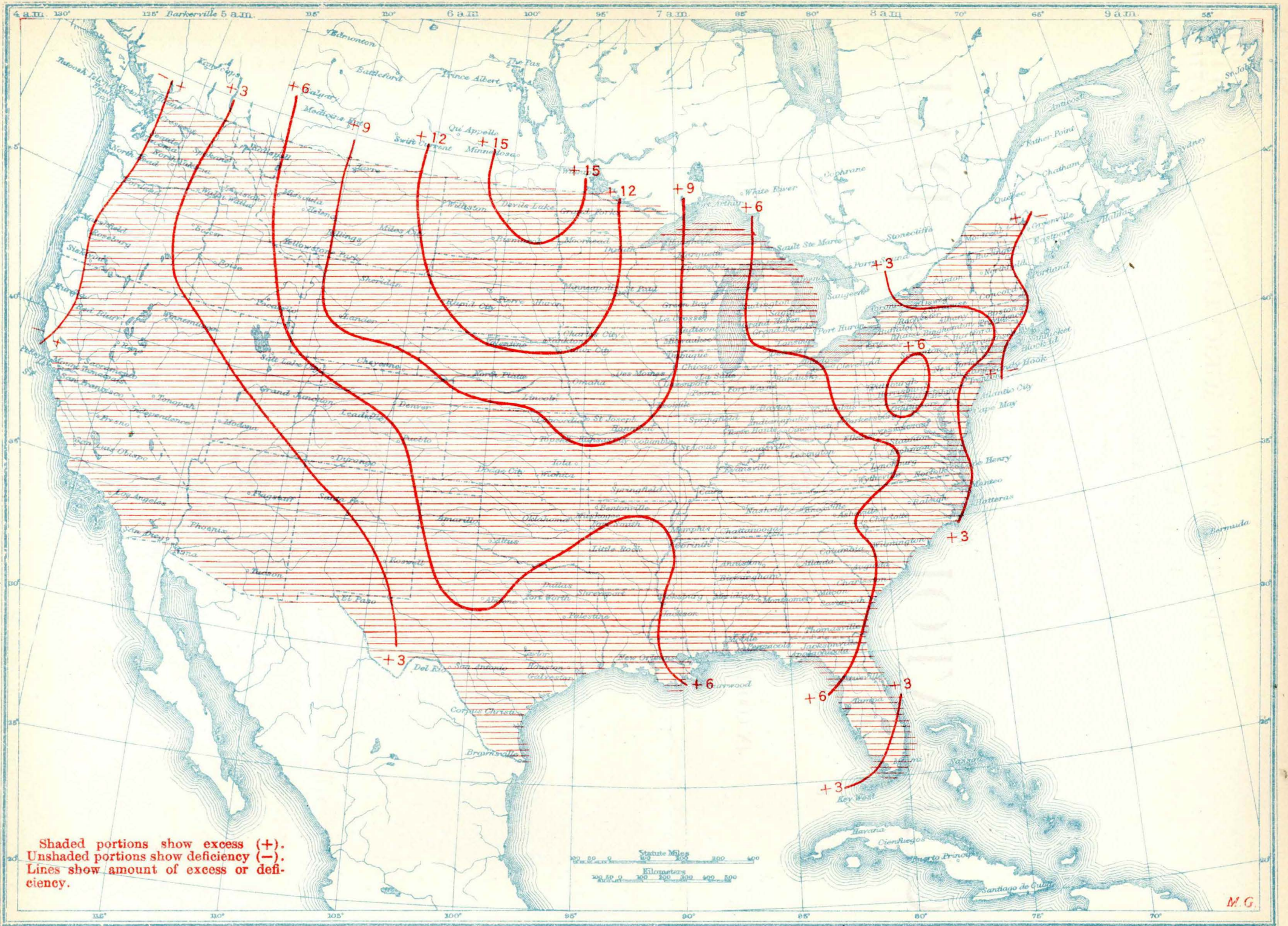


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

2

Departure of the Mean Temperature from the Normal, March, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

GEO. M. CHAPPEL, SECTION DIRECTOR.

VOL. XXIX. DES MOINES, IOWA, MARCH, 1918. No. 3.

GENERAL SUMMARY.

March was abnormally warm, the largest excesses in temperature, 12 degrees daily, being in Crawford County and the smallest excesses, 7 or 8 degrees, being in the north-eastern counties. Frost left the ground early in the month, not having penetrated deeply during the winter. Precipitation was in excess of the normal in the northern tier of counties, but very deficient over the southern half of the State except the extreme southeastern counties. Heavy snow fell in the northeastern part of the State on the 13th-14th. Further south along the Mississippi River this was a heavy rainstorm. Dubuque had 0.84 inch in one hour and 1.65 inches in 24 hours, being the largest amounts in the State for those periods. A glaze storm on the 9th damaged telephone and telegraph wires in the northern part of the State to the amount of \$50,000.

At the close of the month the season was two weeks earlier than usual; soil dry but working up in fine condition; seeding of spring wheat and oats completed in the south and progressing rapidly in the north; and the husking of the remnant of the 1917 corn crop was practically finished. The acreage of spring wheat is remarkably large and would be larger but for the shortage of cars in which to ship seed. Fall wheat wintered well, especially in the southeastern counties, but badly needed rain; some that failed to germinate last fall, germinated in March. The mild, dry weather was especially favorable for the lamb and pig crop.

C. D. R.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.03 inches. The highest recorded was 30.71 inches, at Sioux City, on the 15th; and the lowest was 29.12 inches, at Des Moines, Ia., and Omaha, Neb., on the 9th. The monthly range was 1.59 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 100 stations, was 42.9°, or 9.6° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 40.0°, or 9.5° higher than the normal; Central, 43.1°, or 9.5° higher than the normal; Southern, 45.6°, or 9.7° higher than the normal. The highest monthly mean was 47.8°, at Northboro and the lowest monthly mean was 36.8°, at Elkader. The highest temperature reported was 85°, at Denison, on the 19th. The lowest temperature reported was zero, at Sibley, on the 10th.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 74 per cent, and at 7 p. m. it was 51 per cent. The mean for the month was 63 per cent, or about 10 per cent lower than the normal. The highest monthly mean was 72 per cent, at Charles City, and the lowest was 55 at Omaha. Very low humidity prevailed after the 15th. On the 18th at Omaha

8 per cent at 7 p. m., at Des Moines 5 per cent at 2 and 3 p. m., and at Keokuk 14 per cent at noon are respectively the lowest ever observed at those stations.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 101 stations, was 0.63 inches, or 1.14 inches less than the normal. By divisions the averages were as follows: Northern, 1.12 inches, or 0.41 inch less than the normal; Central, 0.54 inch, or 1.33 inches less than the normal; Southern, 0.23 inch, or 1.69 inches less than the normal. The greatest amount, 2.12 inches occurred at Dubuque, and the least, a trace at Harlan. The greatest amount in any 24 consecutive hours, 1.65 inches, occurred at Dubuque on the 13th-14th.

SNOW

The average snowfall for the State was 2.6 inches, or 2.7 inches less than the normal. The greatest amount, 15.5 inches, occurred at Northwood; Burlington, Fort Madison, Lacona, and Oskaloosa reported no snow, and 18 stations reported only a trace.

WIND.

The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 52 miles an hour from the southwest, this occurring at Keokuk on the 9th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 73, or about 16 per cent higher than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 65; Davenport, 72; Des Moines, 77; Dubuque, 76; Keokuk, 68; Sioux City, 77; Omaha, Nebr., 76.

COMPARATIVE DATA FOR THE STATE—MARCH

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With precipi- tation .01 in.	Clear	Partly cloudy	Cloudy
1890	28.0	-5.3	75	-24	1.57	-0.20	3.67	0.82	---	10	6	8	17
1891	26.8	-6.5	66	-19	2.60	+0.83	4.58	1.33	---	11	8	9	12
1892	31.9	-1.4	84	-6	2.22	+0.45	4.58	0.67	3.9	6	13	11	8
1893	31.8	-1.5	84	-8	2.14	+0.37	4.40	0.64	4.0	8	9	11	8
1894	41.0	+7.7	84	-5	2.03	+0.26	4.52	0.26	2.7	6	13	10	8
1895	34.4	+1.1	94	-11	0.83	-0.94	2.60	0.22	2.9	4	16	8	7
1896	30.9	-2.4	81	-12	1.10	-0.67	3.99	0.16	5.4	6	12	9	10
1897	32.0	-1.3	72	-22	2.39	+0.62	6.16	0.29	5.5	8	9	8	14
1898	37.5	+4.2	72	-2	1.94	+0.17	6.21	0.33	3.7	6	12	9	10
1899	23.0	-10.3	75	-16	1.62	-0.15	5.90	0.37	8.0	6	7	12	12
1900	30.7	-2.6	61	-13	2.06	+0.29	5.15	0.45	6.6	5	12	9	10
1901	30.7	-2.6	61	-13	2.06	+0.29	5.15	0.45	6.6	5	12	9	10
1902	34.2	+0.9	76	-8	2.64	+0.87	5.25	0.70	12.6	7	10	8	13
1903	34.2	+0.9	76	-8	1.45	-0.32	4.33	0.13	1.3	7	9	11	11
1904	39.1	+5.8	79	-12	1.33	-0.39	3.90	0.15	3.9	7	11	7	13
1905	33.8	+5.5	82	6	2.18	+0.41	4.57	0.50	4.4	7	8	8	15
1906	34.8	+1.5	78	3	2.18	+0.41	4.57	0.89	4.1	7	8	8	15
1907	41.5	+8.2	84	1	2.04	+0.27	3.70	0.63	8.9	10	8	7	16
1908	27.1	-6.2	66	-14	2.34	+0.57	4.55	0.23	4.1	6	14	7	10
1909	40.6	+7.3	92	-7	1.35	-0.42	5.05	0.23	4.1	6	13	7	11
1908	37.9	+4.6	85	-8	1.53	-0.19	3.74	0.45	1.1	6	13	7	11
1909	32.5	-0.8	71	-15	1.53	-0.24	5.00	0.23	9.3	6	12	10	9
1910	43.9	+13.6	92	-10	0.17	-1.60	1.32	0.00	T	1	23	6	6
1911	39.4	+6.1	83	2	0.93	-0.84	4.84	T	1.9	5	15	9	10
1912	24.9	-8.4	70	-19	2.01	+0.24	5.25	0.60	19.1	7	15	8	10
1913	31.9	-1.4	78	-23	2.48	+0.71	5.88	0.74	5.3	9	11	10	11
1914	34.7	+1.4	78	-5	1.69	-0.08	3.84	0.23	1.8	7	12	8	11
1915	29.3	-4.0	61	-6	0.96	-0.81	2.12	0.17	8.3	5	8	9	14
1916	35.2	+1.9	80	-18	1.57	-0.20	5.30	0.23	2.9	6	11	9	11
1917	34.6	+1.3	85	-12	1.84	+0.07	4.35	0.57	6.2	6	14	8	9
1918	42.9	+9.6	85	0	0.63	-1.14	2.12	0.03	2.6	3	19	7	5

T indicates an amount too small to measure, or less than .005 inch precipitation, and less than .05 inch snowfall.

Climatological Data for March, 1918

Stations.	Counties.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in. or more.	Clear.			Partly cloudy.	Cloudy.
<i>Northern Division</i>																				
Algona	Kossuth	1,213	45	41.0	+10.4	74	18	8	10	86	0.54	-0.55	0.52	6.5	2	23	0	8	nw	W. E. Laird.
Allison	Butler	1,045	6	40.6		77	18	4	10	42	0.99		0.62	2.5	2	16	8	7	nw	J. A. Bell.
Alta	Buena Vista	1,513	27	42.0	+11.9	78	18	7	10	40	0.74	-0.78	0.42	4.0	3	19	9	3	sw	David E. Hadden.
Alta (Near)	Buena Vista		22								0.50	-0.87	0.23	3.0	3				sw	Warren Minard.
Alton	Sioux	1,305	13	40.8	+ 9.5	76	18	7	10	44	0.87		0.58	8.0	3	18	8	5	ne	W. S. Slagle.
Belmond	Wright	1,205	8	40.0		75	18	3	10	42	0.93		0.35	4.0	3	15	10	6	sw	Geo. P. Hardwick.
Britt	Hancock	1,236	21	35.4	+ 8.3	73	18	2	10	40	0.54	-0.82	0.45	1.2	3	24	3	4	s	L. M. Goodman.
Charles City	Floyd	1,015	27	39.7	+11.3	75	18	3	10	39	1.26	-0.63	0.61	6.5	4	15	10	6	se	U. S. Weather Bureau.
Decorah	Winnebago	875	25	37.2	+ 7.0	70	20	2	10	39	1.85	+0.05	1.31	11.5	4	21	3	7	s	Wm. F. Baker.
Elkader	Clayton	727	39	36.8	+ 5.2	70	20	3	10	46	1.60	-0.25	0.80	6.0	3	17	6	8	se	Chas. Reinecke.
Estherville	Emmet	1,298	23	37.8	+ 9.2	73	18†	1	10	38	1.75	+0.46	1.40	6.5	4	23	1	7	nw	A. O. Peterson.
Fayette	Fayette	1,003	28	39.6	+ 9.0	74	18†	4	10	42	1.17	-0.87	0.48	5.5	3	19	7	5	sw	R. Z. Latimer.
Forest City	Winnebago	1,226	24	38.7	+ 9.8	74	18†	2	10	41	1.04	-0.40	0.85	4.5	3	18	7	6	se	Eugene Secor.
Humboldt	Humboldt	1,095	30																	H. C. Smitkey.
Inwood	Lyon	1,474	14	40.0	+ 9.4	78	18†	9	6†	43	1.70	+0.69	1.55	2.3	5	23	4	4	sw	F. B. Hanson.
Lake Park	Dickinson	1,479	5	40.0		72	25	1	10	42	1.90		1.00	5.5	3	22	4	5	s	A. E. Woodruff.
Lansing	Allamakee	632	12								1.70	-0.33	1.18	13.0	6					Charles R. Sereno.
Le Mars	Plymouth	1,224	22	42.6	+10.5	80	18	7	10	46	0.83	-0.38	0.55	5.0	3	19	8	4	ne	G. A. C. Clarke.
Mason City	Cerro Gordo	1,133	21																	Dr. Roy De Sart.
New Hampton	Chickasaw	1,169	21	39.8	+10.2	72	18†	4	10	38	0.87	-1.06	0.42	3.5	3	24	1	6	nw	A. F. Kemman.
Nora Springs	Floyd	1,064	5	40.8		75	18	1	10	43	1.42		1.02	1.6	4	19	7	5	s	Arthur Betts.
Northwood	Worth	1,222	22	37.4	+ 8.0	68	20	1	10	38	1.85	+0.09	1.20	15.5	4	17	10	4	sw	Charles Dwelle.
Pocahontas	Pocahontas	1,248	14	41.4	+10.4	78	18	6	10	46	0.71	-0.57	0.30	4.3	4	20	8	3	sw	F. E. Hronek.
Postville	Clayton	1,180	19	35.6	+ 8.0	72	20	2	10	36	0.98	-0.93	0.40	5.5	5	21	5	5	sw	F. L. Williams.
Rock Rapids	Lyon	1,358	19	40.6	+10.8	78	18	7	10	47	2.08	+1.02	1.36	3.0	3	20	7	4	sw	J. K. Medberry.
Sanborn††	O'Brien	1,553	4	41.6		75	18	5	10	40	1.83		1.51		3	18	10	3	sw	Jas. W. Dow.
Sibley	Osceola	1,212	25	38.8	+10.4	74	18†	0	10	44	1.43	+0.25	0.76	7.0	3	25	3	3	ne	H. F. Olds.
Sioux Center	Sioux	1,426	19	40.4	+ 9.6	75	19	5	10	40	0.95	-0.31	0.45	5.0	3	21	5	5	s	J. de Ruyter.
Storm Lake	Buena Vista	1,440	29	42.6	+11.8	79	18	9	10	43	0.64	-0.68	0.33	3.5	3	24	3	4	s	Geo. H. Fracker.
Washta	Cherokee	1,157	20	42.7	+11.0	80	18	10	10	50	0.48	-0.45	0.48	5.0	1	23	5	3	s	H. L. Felter.
Waverly	Bremer	948	22	40.7	+ 9.2	79	18	7	10	43	0.77	-1.05	0.41	2.5	4	18	5	8	nw	H. Arnold.
West Bend	Palo Alto	1,197	25	41.8	+11.0	77	18	7	10	43	0.44	-1.23	0.26	0.5	2	19	5	7	sw	Jos. Dorweiler.
Means and extremes				40.0	+ 9.5	80	18	0	10	50	1.12	-0.41	1.55	5.4	3	20	6	5	sw	
<i>Central Division</i>																				
Ames	Story	926	42	43.3	+ 9.3	79	18	8	10	45	0.45	-1.07	0.26	5.5	2	21	7	3	s	Iowa State College.
Audubon	Audubon	1,301	24	43.1	+ 9.5	80	18	9	10	49	0.15	-1.47	0.10	1.4	2	17	7	7	ne	Geo. E. Kellogg.
Baxter	Jasper	998	18	43.7	+ 9.8	81	18	10	10	42	0.28	-1.68	0.13	1.2	4	23	4	4	sw	W. R. Vandike.
Belle Plaine	Benton	886	28	43.2	+ 9.9	81	18	11	1†	43	0.21	-2.12	0.09	0.5	4	22	3	6	s	O. C. Burrows.
Boone	Boone	1,134	13	42.2	+ 9.8	80	18	8	11	41	0.33	-1.20	0.17	1.2	2	26	3	2	s	Herbert A. Grabau.
Carroll	Carroll	1,265	28	41.7	+ 9.7	75	20	7	10	39	0.47	-1.39	0.35	2.0	2	21	6	4	nw	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	36	42.2	+ 9.5	79	18	11	1	39	0.41	-1.55	0.18	0.4	5	20	2	9	e	R. S. Toogood.
Clinton	Clinton	593	45	42.6	+ 7.8	77	18	2	1	46	0.53	-2.34	0.32	1.5	4	16	7	8	sw	H. Burde.
Davenport	Scott	580	47	44.8	+ 9.4	76	18	14	1	45	0.66	-1.55	0.45	1	5	16	7	8	sw	U. S. Weather Bureau.
Delaware	Delaware	1,083	27	39.8	+ 8.6	77	18	7	10	44	1.38	-0.31	0.83	2.5	4	23	3	5	s	Nettie E. Ball.
Denison	Crawford	1,180	24	45.8	+12.0	85	19	9	10	47	0.13	-1.47	0.07	0.5	2	19	10	2	ne	Prof. Webb Stump.
Des Moines	Polk	861	39	45.0	+ 9.3	80	18	12	10	38	0.29	-1.36	0.14	1.0	4	12	9	10	sw	U. S. Weather Bureau.
Dubuque	Dubuque	689	45	41.6	+ 8.4	77	18	10	1	38	2.12	-0.99	1.65	1.4	4	11	10	10	s	U. S. Weather Bureau.
Fort Dodge	Webster	1,126	18	41.8	+10.7	78	18	7	10	41	1.25	-0.48	0.60	7.0	4	23	4	4	sw	J. F. Monk.
Gilman	Marshall	1,052	19																	Jas. L. Wylie.
Grinnell	Poweshiek	1,023	24	44.4	+ 9.4	81	18	12	10	43						19	8	4	sw	D. W. Brainard.
Grundy Center	Grundy	976	27	43.4 ^a	+10.8	78 ^a	18	9 ^a	10	39 ^a	0.65	-1.16	0.45		3				sw	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	23	42.6	+ 8.2	80	18	8	10	52	0.21	-1.38	0.11	T	2	24	4	3	sw	C. T. Harney.
Harlan	Shelby	1,182	19	43.6	+ 9.8	81	18	11	10	45	T	-1.41	T	T	0	26	1	4	s	E. L. Tilton.
Independence	Buchanan	921	54	41.7	+ 9.3	78	18	8	10	48	1.93	+0.18	1.47	3.0	3	24	0	7	nw	Dr. H. A. Lindsay.
Iowa City	Johnson	683	57	42.2	+ 9.0	80	18	4	1	43	0.33	-2.05	0.24	T	4	20	3	8	sw	Prof. John F. Reilly.
Iowa Falls	Harold	1,107	25	39.9	+ 9.3	76	18	7	10	41	1.42	-0.44	0.93	6.0	4	20	6	5	sw	J. B. Parmelee.
Jefferson	Greene	1,052	19	43.3	+ 9.4	80	18	4	10	45	0.58		0.33	3.5	2	14	11	6	sw	Will I. Lyon.
Le Claire	Scott	576	18								0.49	-1.84	0.14	1.0	5				sw	Margaret T. Disney.
Little Sioux	Harrison	1,040	13	45.8	+10.2	83	18	9	10	48	0.26		0.20	2.5	3	19	7	5	se	Geo. H. Gibson.
Logan	Harrison	928	51	46.6	+11.4	82	18	15	6	48	0.21	-1.53	0.06	3.0	2	15	10	6	sw	Ted Stern.
Maquoketa	Jackson	688	17	41.8	+ 7.1	78	18	5	1	49	0.77	-1.58	0.41	0.4	4	17	8	6	sw	Ira H. Stephens.
Marshalltown	Marshall	947	26	42.2	+ 9.8	80	18	9	1†	46	0.31	-1.57	0.20	0.1	3	23	2	6	sw	Ed. F. Duntman.
Monroe	Jasper	922	6	45.6		75	20	12	10	46	0.07		0.07	1.0	1	24	1	6	s	J. A. Dibel.
Muscatine	Muscatine	554	58								0.25	-2.39	0.10	T	5				sw	Wm. P. Molis.
Olin	Jones	760	20	42.8 ^b	+ 8.5	78 ^b	18	8 ^b	1	43 ^b	0.40	-1.93	0.40	T	1				ne	Dr. F. W. Port.
Onawa	Monona	1,051	18																	Mrs. Clarence Anthony.
Perry	Dallas	975	17	44.0	+10.0	81	18	6	10	50	0.29	-1.69	0.15	1.5	2	20	6	5	nw	A. W. McIsaac.
Rock																				

Climatological Data for March, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit							Precipitation, in Inches				Number of Days				Prevailing direction of wind.	Observers
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in. or more.	Clear.	Partly cloudy.	Cloudy.		
Waukeee	Dallas	1,039	15	43.6	+ 9.3	82	18	9	10	45	0.21	-1.32	0.12	1.2	4	22	5	4	sw	Samuel F. Foft.
Webster City†	Hamilton	1,044	13	42.0	+ 8.7	82	25	6	10	45	0.60	-0.71	0.50	2.0	2	18	6	7	sw	C. D. Carpenter.
Whittent†	Hardin	1,036	21	42.9	+10.5	80	13	9	10	46	0.04	-1.47	0.04	T	1	23	4	4	nw	B. B. Butler.
Williamsburg	Iowa	765	2	43.2		79	18	5	1	44	0.08		0.08	0.0	1	21	7	3	se	Dr. F. C. Schadt.
Means and extremes				43.1	+ 9.5	85	19	2	1	50	0.54	-1.33	1.65	1.7	3	20	6	5	sw	
Southern Division																				
Afton†	Union	1,212	24	45.8		81	19	2	10	44	0.02	-1.90	0.02	0.2	1	18	11	2	n	J. E. Deitrick.
Albia	Monroe	959	20	44.5	+ 9.5	80	18	11	10	59					15	2	14	sw	F. H. Holmes.	
Allerton	Wayne	1,122	16	45.8	+ 9.2	83	13	9	1	49	0.14	-1.75	0.14	T	1	14	12	5	sw	Noel C. Huston.
Atlantic	Cass	1,164	27	43.6	+ 9.1	80	18	12	10	45	0.19	-1.48	0.13	1.2	3	12	11	8	sw	Thos. H. Whitney.
Bedford	Taylor		18	46.1	+ 9.8	79	18	7	1	51	0.16	-1.73	0.08	0.8	2	20	7	4	sw	E. E. Healy.
Bloomfield	Davis	881	11	46.4		79	18	9	1†	44	0.32	-1.89	0.07	0.4	6	9	20	2	sw	V. G. Warner.
Bonaparte	Van Buren	565	27	46.1	+ 9.5	80	18	13	1	47	0.05	-2.26	0.05	T	1	19	4	8	sw	Bruce R. Vale.
Burlington	Des Moines	544	22	45.2	+ 8.1	80	18	16	10	55	0.30	-2.35	0.15	0.0	5	17	9	5	sw	Mrs. J. A. Donnelly.
Centerville	Appanoose	1,013	13	47.4		78	19	8	1	43	0.54		0.45	0.2	3	16	8	7	sw	S. A. Martin.
Chariton	Lucas	1,042	23	44.5	+ 9.1	78	18	9	10	51	0.16	-1.45	0.16	T	1	18	12	1	nw	C. C. Burr.
Clarinda	Page	1,009	28	45.2	+10.3	81	18	9	1	47	0.11	-1.64	0.07	0.10	3	20	4	7	ne	A. S. Van Sandt.
Columbus Junction	Louisa	505	17	45.2	+ 8.8	78	18	10	1	44	0.13	-1.93	0.05	T	3	20	8	3	sw	J. B. Johnston.
Corning	Adams	1,117	26	44.2 ^a	+10.1	80 ^b	18	2 ^e	1	43 ^e	0.05	-1.75	0.05	0.5	1				sw	Jerome Smith.
Corydon	Wayne	1,101	25	46.1	+ 9.3	79	17	11	1†	45	0.22	-1.68	0.14	1.0	2	21	8	2	ne	May C. Miller.
Creston	Union	1,312	13	44.8	+10.6	81	18†	11	10	51	0.04		0.04	T	1	22	3	6	sw	Mrs. Tillie E. McConnell.
Cumberland	Cass		19								0.10	-1.64	0.10	1.0	1	25	4	2	sw	J. H. Reppert.
Earlham	Madison	1,126	16	44.6	+10.2	82	18	7	1	49	0.12	-1.73	0.12	1.0	1	21	3	7	sw	George Phillips.
Fairfield	Jefferson	780	34	45.8 ^a	+ 9.7	81 ^a	18	12 ^a	10	49									sw	R. Monroe McKenzie.
Fort Madison	Lee	516	69								1.14	-1.56	0.62	0.0	6	16	9	6	sw	F. M. Myers.
Glenwood	Mills	1,100	21	46.7		80	18	14	1	44	0.15		0.10	1.0	2	17	2	12	sw	Dr. Geo. Mogridge.
Greenfield	Adair		26	45.2	+10.7	78	18†	11	1†	38	0.03	-1.95	0.03	0.3	1	19	12	0	sw	Frank A. Ward.
Indianola	Warren	969	26	45.6	+10.0	80	18	12	10	40	0.04	-1.52	0.03	T	2	14	7	10	sw	Prof. J. L. Tilton.
Keokuk	Lee	614	47	47.6	+ 9.7	83	13	17	10	51	0.16	-2.21	0.07	T	5	15	10	6	sw	U. S. Weather Bureau.
Keosauqua	Van Buren	644	26	45.8	+10.0	79	18	12	1	49	0.64	-1.68	0.64	T	1	10	10	11	se	J. H. Landes.
Knoxville	Marion	920	23	45.4	+ 9.2	83	18	12	1†	45	0.13	-1.52	0.10	T	2	18	4	9	sw	W. J. Casey.
Lacona	Warren		19								0.31	-1.95	0.20	0.0	6	11	13	7		J. B. Alter.
Lamoni	Decatur		11	46.2	+ 9.2	83	13	11	10	54	0.17		0.09	0.9	2	14	15	2	sw	Chas. B. Woodstock.
Lenox	Taylor	1,250	23	45.9	+10.4	76	18†	12	1†	37	0.16	-1.42	0.10	0.3	2	24	5	2	s	J. L. Hurley.
Mount Ayr	Ringgold	1,236	25	46.4	+ 9.6	80	13	11	1†	43	0.19	-1.69	0.07	0.6	3	18	11	2	sw	Alex Maxwell.
Mt. Pleasant	Henry	729	37	46.0	+ 9.3	80	18	12	1	46	0.53	-1.68	0.19	T	4	18	4	9	sw	J. W. Edwards.
Murray	Clarke	1,216	27	46.2	+10.6	80	18	11	10	44	0.08	-1.57	0.06	T	3	15	9	7	sw	M. T. Ashley.
Northboro	Page	1,046	6	47.8		80	18†	10	1	44	0.15		0.09	0.5	2	20	3	8	nw	J. M. Darby.
Oskaloosa	Mahaska	843	42	44.7	+ 9.0	80	18	6	1	44	0.05	-1.75	0.04	0.0	2	21	2	8	sw	Jos. Boyd.
Ottumwa	Wapello	849	23	44.2		76	21	5	1	44	0.21	-1.69	0.17	T	2	14	7	10	se	Thos. Ray.
Pella	Marion	877	15	45.0	+ 9.2	82	18	9	1	43	0.03	-1.39	0.03	0.7	1	24	2	5	s	John H. Ver Steeg.
St. Charles	Madison	1,070	17	45.8	+ 9.5	80	18	12	10	40	0.06	-1.84	0.06	0.6	1	20	5	6	sw	R. D. Minard.
Sigourney	Keokuk	877	22	44.7	+ 8.8	80	18	8	1	43	0.22	-1.65	0.09	T	3	19	6	6	ne	W. E. Utterback.
Stockport	Van Buren	754	16	44.0	+ 7.7	79	18	7	1	49	0.33	-1.74	0.20	0.1	4	21	3	7	sw	C. L. Beswick.
Thurman	Fremont		21	45.8	+10.1	78	18	2	1	50	0.23	-1.42	0.15	5.0	2	13	12	6	sw	C. R. Paul.
Washington	Washington	769	36	45.0	+ 9.1	80	18	6	1	44	0.43	-1.61	0.27	0.0	3	11	17	3	sw	Wm. A. Cook.
Winterset	Madison	1,129	27	46.2	+10.8	81	18	12	10	42	0.30	-1.50	0.30	T	1	22	7	2	sw	H. S. Ely.
Omaha, Nebr.		1,040	47	47.1	+11.1	80	18	15	6	35	0.11	-1.28	0.11	0.8	1	16	9	6	s	U. S. Weather Bureau.
Means and extremes				45.6	+ 9.7	83	13†	2	1	50	0.23	-1.69	0.64	0.6	3	17	8	6	sw	
State means and extremes				42.9	+ 9.6	85	19	0	10	59	0.63	-1.14	1.65	2.6	3	19	7	5	sw	

The departures from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.
 Reference letters a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.
 †Also other dates. ††Received too late to be included in means and summaries.
 T. Precipitation is less than 0.01 inch rain or melted snow.

MISCELLANEOUS PHENOMENA.

Aurora: 7th, 8th, 9th. See special article, page 31.

Birds: (migration of) Corydon, ducks on the 8th; Earlham, black birds on the 9th; Baxter, robins on the 11th; Boone, robins on the 4th; Nora Springs, wild geese and robins on the 18th, black birds on the 20th, meadow larks on the 22d; Postville, robins on the 11th, blue birds on the 12th; Des Moines, robins on the 4th, wild geese on the 14th and blue birds on the 23d.

Fog: 4th, 5th, 6th, 9th, 13th, 14th, 21st, 30th.

Glaze: 9th.

Hail: 9th, 13th.

Halo: (lunar or solar) 5th, 9th, 13th, 14th, 22d, 25th, 27th, 28th, 29th.

Haze: 12th, 19th, 20th, 21st, 22d.

Sleet: 7th, 8th, 9th, 13th, 14th.

Thunderstorm: 9th, 13th, 14th, 21st, 22d.

RIVERS.

The rivers and streams broke up and ran out quietly, in the southern part of the State near the close of February, in the central part about the 6th of March, and in the northern part about the 18th. The breaking up of the upper Missouri River caused stages within about 1.5 feet of flood stage at Iowa points on that river toward the close of the month.

Daily Precipitation for March, 1918.

Stations.	Watersheds.	Day of Month.																															Total		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
<i>Northern Division</i>																																			
Algona	Des Moines								0.02					0.52																					0.54
Allison	Cedar			T.					0.37		T.		.02	T.																				0.99	
Alta	Raccoon								0.02	0.30				0.42																				0.74	
Alta (Near)	Raccoon								0.23					0.15	0.12																			0.50	
Alton	Floyd				T.				0.09					0.20	0.58																T.			0.87	
Belmond	Iowa					T.			0.35					0.34	0.24																			0.93	
Britt	Iowa								0.07					0.02	0.45																			0.54	
Charles City***	Cedar			0.02		T.			0.56					0.47	0.21																			1.28	
Decorah	Mississippi			0.05					0.15	0.34				1.31																				1.85	
Elkader	Mississippi				T.	T.			0.80					0.50	0.30																			1.60	
Estherville	Des Moines								0.10	0.15				0.10	1.40																			1.75	
Fayette	Mississippi								0.48					0.21	0.48																			1.17	
Forest City	Cedar								0.14					0.05	0.85																			1.04	
Humboldt	Des Moines																																		1.04
Inwood	Big Sioux								0.04	0.04				1.55																	0.03	0.04		1.70	
Lake Park	Little Sioux								0.15					1.00	0.75																			1.90	
Lansing	Mississippi				0.03	0.06			0.22	0.20				1.18	0.01																			1.70	
Le Mars	Floyd								0.16					0.12	0.55																			0.83	
Mason City	Cedar																																		0.87
New Hampton	Wapsipinicon				T.		T.		0.30					0.42	0.15																			0.87	
Nora Springs	Cedar				0.06		T.		0.25					1.02	0.09																			1.42	
Northwood	Cedar								0.05	0.30				0.30	1.20																			1.85	
Pocahontas	Des Moines								0.30	0.06				0.06	0.29																			0.71	
Postville	Mississippi				0.05				0.05	0.26				0.22	0.40																			0.98	
Rock Rapids	Big Sioux								0.22					1.36	0.50																			2.08	
Sanborn	Floyd								0.32					.26	1.25																			1.83	
Sibley	Big Sioux								0.45					0.56	0.42																			1.43	
Sioux Center	Floyd								0.20					0.45	0.30																			0.95	
Storm Lake	Raccoon								0.20					0.11	0.33																	T.		0.64	
Washta	Little Sioux													0.48																				0.48	
Waverly	Cedar		T.		T.	0.03			0.41					0.08	0.25																			0.77	
West Bend	Des Moines								0.18					0.26																				0.44	
<i>Central Division</i>																																			
Ames	Skunk				T.				.19	T.				.26																				0.45	
Audubon	Nishnabotna								.05					.10																				0.15	
Baxter	Skunk			.02	.02				.13					.11																				0.28	
Belle Plaine	Iowa			.02	T.				.07	T.				.03	.09																			0.21	
Boone	Des Moines								.16					T.	.17	T.																		0.33	
Carroll	Raccoon								.35					.12																				0.47	
Cedar Rapids	Cedar		.04		T.				.18	.04				.11	.04																			0.41	
Clinton	Mississippi					.04	T.		.32					.05	.12																			0.53	
Davenport***	Mississippi			.03	.01	T.	T.		.45					.02	.15																			0.66	
Delaware	Mississippi				.07				.34					.83	.14																			1.38	
Denison	Missouri								.07					T.	.06																			0.13	
Des Moines***	Des Moines			.01	.01				.14	T.				T.	.13																			0.29	
Dubuque***	Mississippi				.04	T.			.35					1.62	.11																			2.12	
Fort Dodge	Des Moines				.05				T.	.60				.05	.55																			1.25	
Gilman	Iowa																																		
Grinnell	Iowa								T.					T.	T.																			**	
Grundy Center	Cedar				.02				.45					.18																				0.65	
Guthrie Center	Raccoon				T.	T.			.08					.02	.11																			0.21	
Harlan	Nishnabotna																																		**
Independence	Wapsipinicon								.32					1.47	.14																			1.93	
Iowa City	Iowa				.07	.01			.24	T.				.01	T.																			0.33	
Iowa Falls	Iowa				T.				.14	.34				.01	.93	T.																		1.42	
Jefferson	Raccoon								.25					T.	.33																			0.58	
Le Claire	Mississippi				.05	T.			.14	.04				T.	.14	.12																		0.49	
Little Sioux	Little Sioux								.05					.01	.20																			0.26	
Logan	Missouri		T.	T.					.06					.15																				0.21	
Maquoketa	Maquoketa					.08			.41					.22	.08																			0.77	
Marshalltown	Iowa					T.			T.	.20				.08	.03																			0.31	
Monroe	Skunk					T.	T.		T.					T.	.07																			0.07	
Muscatine	Mississippi				.04				.10					.04	.05											.02								0.25	
Olin	Wapsipinicon								.40					T.	T.																			0.40	
Onawa	Missouri																																		
Perry	Raccoon								.15					.14																				0.29	
Rockwell City	Raccoon								.24					.06	.30																			0.60	
Sac City	Raccoon																																		
Sioux City***	Missouri				.01				.19					.30	.05																			0.55	
Tipton	Cedar								.08					.10																				0.08	
Toledo	Iowa					.																													

Daily Precipitation for March, 1918—Continued.

Stations.	Watersheds	Day of Month.																															Total		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
<i>Southern Division</i>																																			
Afton.....	Grand				.02									T.	T.																				0.02
Albia 	Des Moines			T.						T.	T.			T.	T.																			**	
Allerton.....	Chariton			T.	.14					T.				T.																				0.14	
Atlantic 	Nishnabotna				.01						.05			T.	.13																			0.19	
Bedford.....	Missouri			.08						T.												T.												0.16	
Bloomfield.....	Mississippi				.07					T.	.02			T.	.04	.06							.06	.07									0.32		
Bonaparte.....	Des Moines				.05		T.			T.				T.													T.						T.	0.05	
Burlington 	Mississippi				.05		T.			T.					.02	.03																		0.30	
Centerville.....	Chariton				.06										.03							T.	.05	.15			T.							0.54	
Chariton.....	Chariton				.16					T.					T.																				0.16
Clarinda 	Nodaway				.07										.03	.01																		0.11	
Columbus Jet.....	Iowa				.05					.03				T.	.05																			0.13	
Corning.....	Nodaway														.05																				0.05
Corydon.....	Chariton			T.	.14	T.				T.					.08								T.												0.22
Creston.....	Missouri				T.						T.			T.	.04																				0.04
Cumberland.....	Nodaway														.10																				0.10
Earlham.....	Des Moines									T.					.12																				0.12
Fairfield.....	Skunk									T.					.02																				0.04
Fort Madison.....	Mississippi			.05	T.					.05				.02	.02								.02											T.	0.14
Glenwood.....	Missouri			.05						T.					.10									.25			T.								0.15
Greenfield.....	Nodaway									T.					.03																				0.03
Indianola.....	Des Moines				.01	T.				T.					.03																				0.04
Keokuk***.....	Mississippi			.05	T.		T.			.02				.07	.01								.01	T.										T.	0.16
Keosauqua.....	Des Moines				T.	T.				T.				T.	T.								.64											T.	0.64
Knoxville.....	Des Moines				.03					T.					.10																				0.13
Lacona.....	Des Moines									.20	.01			.05	.02								.01												0.31
Lamon 	Grand				.09					T.				T.	.08																				0.17
Lenox.....	Missouri			.10											.06																				0.16
Mount Ayr.....	Grand			.07	.05					T.				T.	.07								T.												0.19
Mt. Pleasant.....	Skunk				.06					.12				T.	.16								.19												0.53
Murray.....	Grand				.01					T.				.01	.06																				0.08
Northboro.....	Tarkio			.09						T.					.06																				0.15
Oskaloosa.....	Des Moines									.01					.04																				0.05
Ottumwa 	Des Moines				T.			T.		.17	T.			T.	.04	T.							T.	T.											0.21
Pella.....	Skunk					T.				T.	T.			T.	.03																				0.03
St. Charles.....	Des Moines				T.										.06																				0.06
Sigourney.....	Skunk				.09	T.				.07				T.	.06																				0.22
Stockport.....	Skunk				.03		T.			.09				T.	.02									.20											0.33
Thurman.....	Missouri			.15			T.			T.					.08																				0.23
Washington.....	Skunk				.06					.27					.10																				0.43
Winterset.....	Des Moines									T.					.30																				0.30
Omaha, Nebr.***.....	Missouri			T.	T.		T.			T.				T.	.11																				0.11

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for 24 hours ending at the time of observation.
 |||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.
 ***Regular Weather Bureau Station; precipitation is for 24 hour period, midnight to midnight.
 **Incomplete.
 *Precipitation included in the next following measurement.

AURORA OF MARCH 7, 1918.

One of the most spectacular displays of the aurora borealis ever observed in this state occurred on the night of March 7. Newspapers report the display in nearly all portions of the United States and in northern Europe. At Des Moines it became noticeable about 7:20 p. m. in the form of an arch of light in the northern sky at an altitude of about 25°. This rapidly enlarged, became brighter and rose to an altitude of 60° by 8 p. m., the width of the arch being about 20° and extending from the eastern to the western horizons. About this time the flickering streamers of light known as "merry dancers" began to appear; also vivid colors, green predominating in the north and northeast and crimson in the northwest. About 9 p. m. large areas of light appeared in the south and gradually formed a continuous arch of light at an altitude of about 30°, known as the "auroral corona." At 9:30 p. m. the entire heavens were ablaze with hues and shafts of light that rapidly changed into forms of endless variety, the predominating thing being shafts of whiter light that rose from the horizon at nearly all points except a small arc in the south, and converged at a point a little, possibly 10°, southwest of the zenith. About 10:30 p. m. the display began to diminish, but some signs of it remained as late as 1:30 a. m. of the 8th. At times the light of the aurora was nearly equal to that of the full moon. Telegraph service was much troubled by the magnetic effects of the aurora.

Similar descriptions were received from observers in all portions of the State. Mr. J. H. Spencer, Meteorologist, Weather Bureau, Dubuque, Iowa, adds: "Another prominent feature was the many distinct patches or groups of light, resembling thin, whitish clouds. They were most numerous overhead and looked like cirrostratus clouds of irregular shape. There was a decided contrast between the clear sky and the cloud-like patches. Where there were no patches the stars shone with much brilliancy, but through the cloud-like patches the stars shone only faintly."

Prof. J. L. Tilton, Simpson College, Indianola, Iowa, states that, "Overhead was what appeared to be a faint grayish cloud forming a band about half way across the sky from east to west. This band slowly drifted southward and faded away when across Orion. * * * * * If this was a cloud it seemed related to the aurora in cause. Other bands of a similar character appeared with some degree of regularity, several of them completely arching the sky from east to west, all traveling slowly, almost imperceptibly, toward the south, some not fading away till within 15 or 20 degrees above the southern horizon. These moving patches and arches were visible all through the evening, even when the white streamers met overhead. For a time three parallel bands were in sight, each requiring half to three-quarters of an hour to move from the zenith to beyond Orion."

C. D. R.

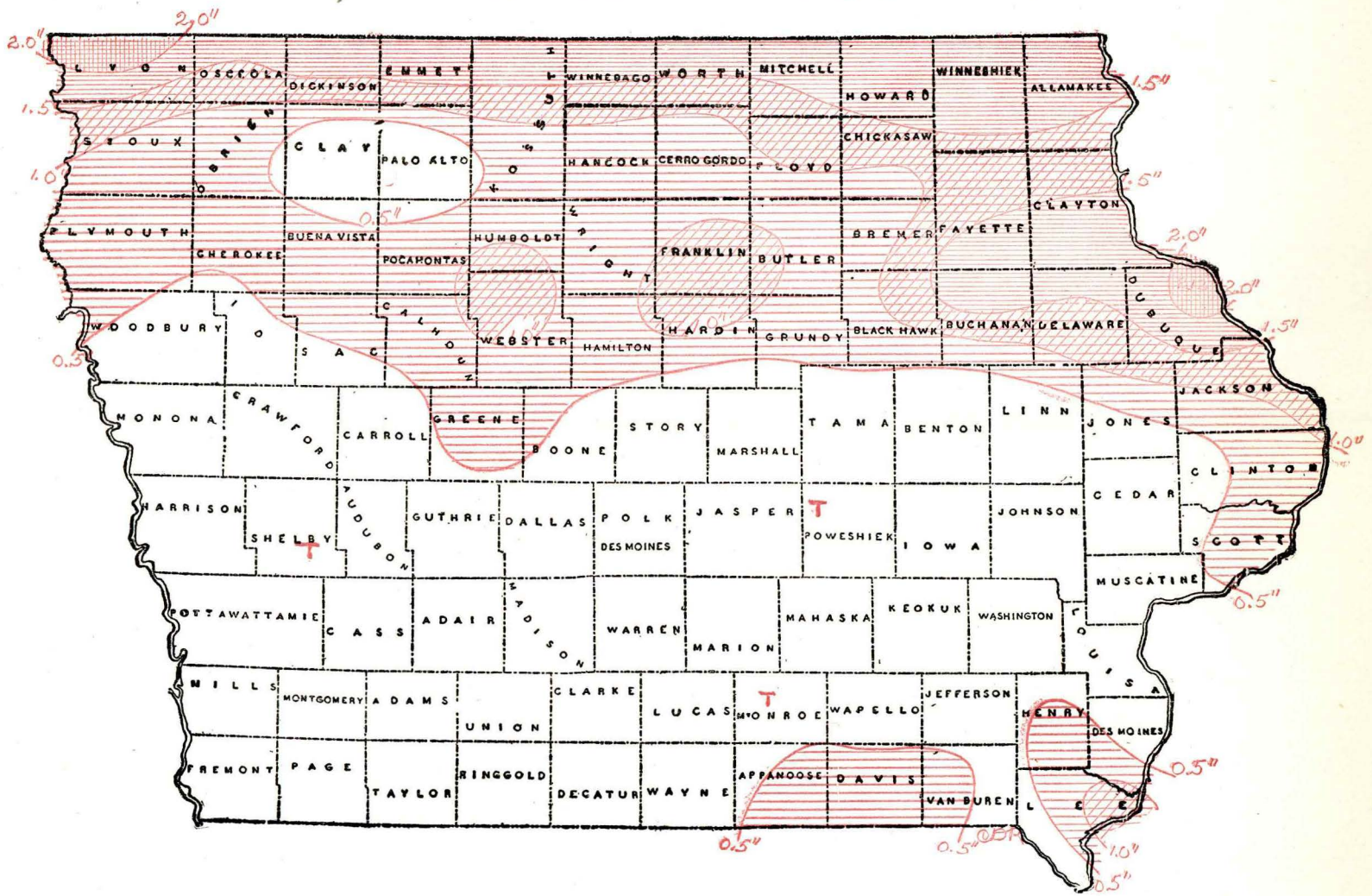
Daily Maximum and Minimum Temperatures for the Month of March, 1918.

Table with columns for Stations, days 1-31, and Mean. Rows are categorized by Northern Division, Central Division, and Southern Division, listing various Iowa locations and their daily temperature ranges.

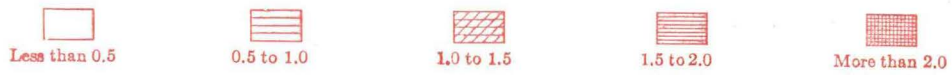
a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record.

§§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

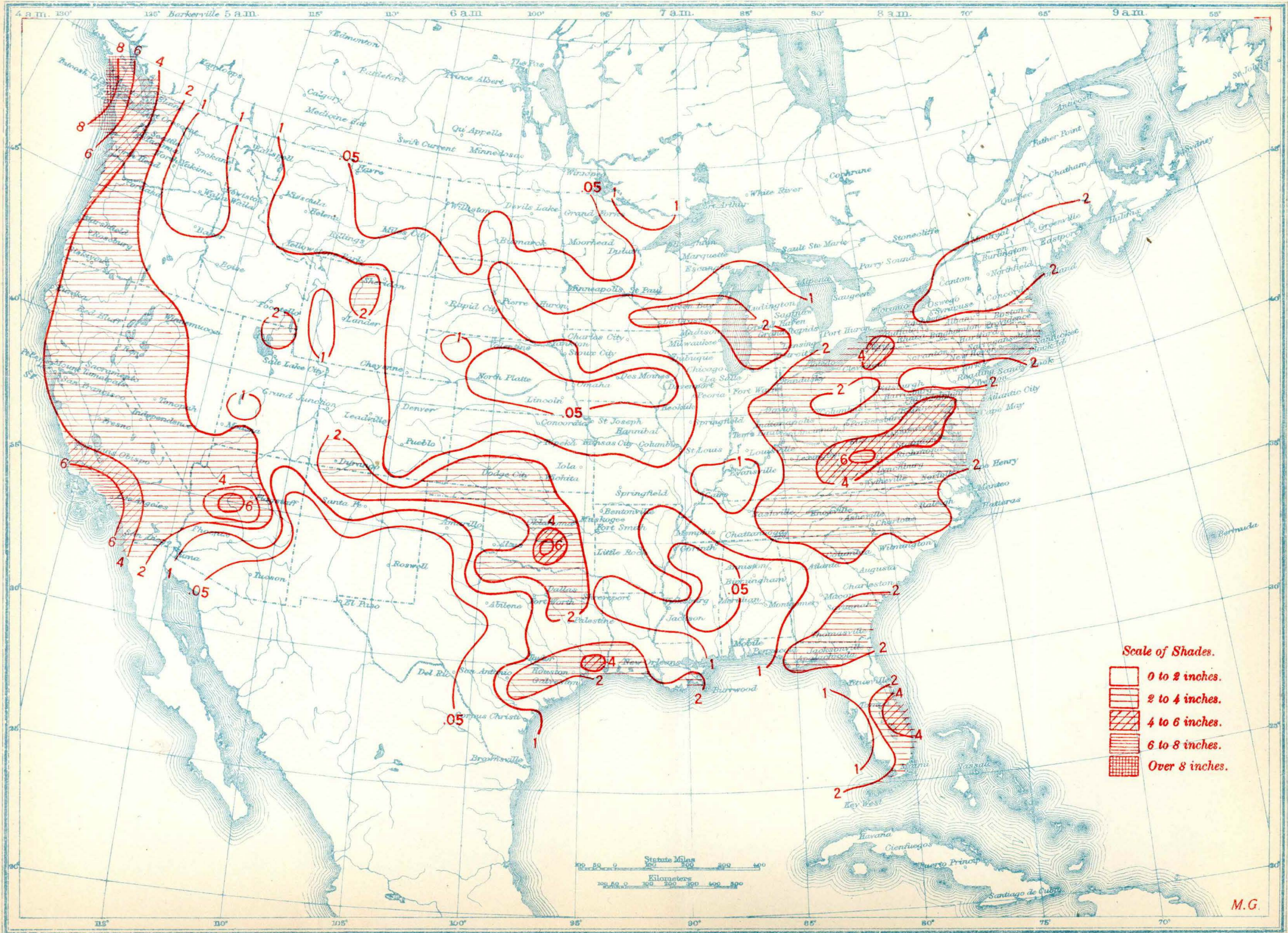
TOTAL PRECIPITATION, MARCH, 1918.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, March, 1918.



Scale of Shades.

- 0 to 2 inches.
- 2 to 4 inches.
- 4 to 6 inches.
- 6 to 8 inches.
- Over 8 inches.

Statute Miles
0 100 200 300 400

Kilometers
0 100 200 300 400 500

JUN 11 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

APRIL, 1918

BY

CHARLES D. REED

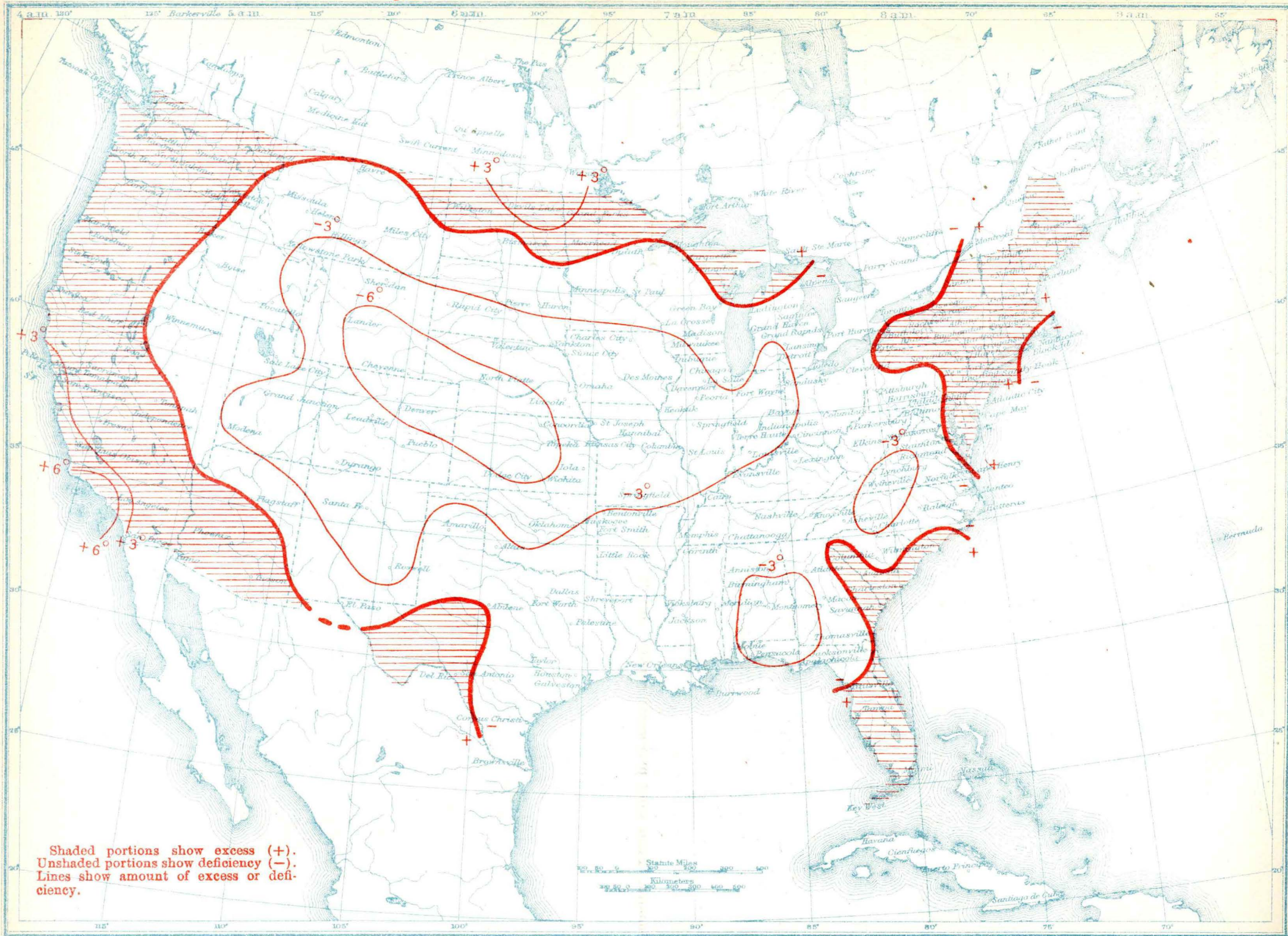
METEOROLOGIST



PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY

DES MOINES, IOWA
WEATHER BUREAU OFFICE

Departure of the Mean Temperature from the Normal, April, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST.

VOL. XXIX. DES MOINES, IOWA, APRIL, 1918 No. 4.

GENERAL SUMMARY.

April was colder than normal and less than 2° warmer than March. The deficiency accumulated mainly in the last 12 days, being the greatest, 7.6°, in Decatur County.

Precipitation was quite evenly distributed but generally deficient, though there was a slight excess in several of the eastern counties and in Fremont, Page and Taylor Counties. The deficiency was greatest, about 2 inches, in Madison County. A striking feature was the snowstorm of the 19th-21st, which covered the southern and eastern portions of the State, except the extreme southeast counties. In Page, Taylor, Ringgold and Decatur Counties from one to two feet of snow fell, exceeding the total fall of the winter months just preceding. Such a storm is believed to be unprecedented so late in the season, though a snowstorm of slightly less intensity occurred in south-central Iowa on April 7, 1917.

All vegetation made slow progress. Spring seeded grains depended largely on subsoil moisture till the middle of the month after which temperatures were too low, so that germination was very uneven; some that was seeded more than a month before was scarcely showing green at the end of the month over much of the State. Pears and plums were in full bloom in the southern counties near the close of the month. Field work progressed rapidly with the soil in excellent condition. Eighty-five per cent of the corn ground was made ready for the planter and a little planting was done in the south. Seed corn is generally scarce and of low vitality. Winter wheat, pastures and meadows suffered from drouth, cold and high winds.

PRESSURE.

The mean pressure, (reduced to sea level), for the State was 30.01 inches. The highest recorded was 30.78 inches, at Dubuque, on the 9th, and the lowest was 29.23 inches at Charles City, on the 29th. The monthly range was 1.55 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 106 stations, was 44.8°, or 3.9° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 43.5°, or 3.2° lower than the normal; Central, 45.0°, or 3.9° lower than the normal; Southern 45.9°, or 4.7° lower than the normal. The highest monthly mean was 47.6°, at Northboro, and the lowest was 41.5°, at Decorah. The highest temperature reported was 79°, at Corydon and Fayette, on the 1st, and the lowest was 12° at Lake Park, on the 8th. The temperature range for the State was 67°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 72 per cent; and at 7 p. m. it was 53 per cent. The mean for the month was 62 per cent, or about 5 per cent below the normal. The highest monthly mean was 74 per cent, at Charles City, and the lowest was 62 per cent, at Sioux City.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 113 stations, was 2.32 inches, or 0.54 inch less than the normal. By divisions the averages were as follows: Northern, 1.93 inches, or 0.75 inch less than the normal; Central, 2.31 inches, or 0.55 inch less than the normal; Southern, 2.32 inches, or 0.54 inch less than the normal. The greatest amount, 4.20 inches, occurred at Olin, and the least, 1.01 inches, at Humboldt. The greatest amount in any 24 consecutive hours, 1.80 inches, occurred at Lamoni on the 21st.

SNOWFALL

The average snowfall for the State was 3.5 inches, or 1.7 inches more than the normal. The averages by divisions were: Northern, 1.0 inch; Central, 2.5 inches; Southern, 7.0 inches. The greatest amount, 24.0 inches, occurred at Bedford.

WIND.

The prevailing direction of the wind was from the northeast. The highest velocity reported from a regular Weather Bureau station was at the rate of 59 miles an hour from the northwest at Sioux City on the 29th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 60, or about normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 65; Davenport, 62; Des Moines, 60; Dubuque, 58; Keokuk, 56; Sioux City, 58; Omaha, Nebr., 59. Clear days averaged 12; partly cloudy 8; cloudy, 10.

RIVERS.

All of the rivers fell almost steadily throughout the month. The Missouri River was rather high at the beginning but became moderate to low. At the close of the month the Mississippi was unusually low for April.

COMPARATIVE DATA FOR THE STATE—APRIL.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipi- tation .01 in.	Clear	Partly cloudy	Cloudy
1890	51.8	+3.1	88	2	1.80	-1.06	4.46	0.38	-----	6	14	9	7
1891	50.6	+1.9	98	13	2.15	-0.71	5.04	0.59	-----	8	14	7	9
1892	45.4	-3.3	88	14	4.75	+1.89	8.38	2.43	5.7	9	8	9	13
1893	45.5	-3.2	96	15	4.21	+1.35	8.51	1.24	6.0	10	8	9	13
1894	51.7	+3.0	93	12	3.07	+0.21	6.91	0.55	0.2	9	11	11	8
1895	54.2	+5.5	98	8	2.62	-0.24	5.88	0.28	2.1	5	14	8	8
1896	54.5	+5.8	94	10	5.02	+2.16	9.67	2.35	4.5	11	11	10	9
1897	47.9	-0.8	89	19	5.35	+2.49	9.86	2.22	T	11	9	9	12
1898	48.1	-0.6	91	14	2.56	-0.30	4.82	0.27	T	8	13	9	8
1899	48.9	+0.2	89	1	2.40	-0.46	5.76	0.56	2.0	7	12	11	7
1900	52.2	+3.5	89	19	2.67	-0.21	6.62	0.43	0.9	6	12	9	9
1901	49.9	+1.2	92	15	1.79	-1.07	3.47	0.66	2.0	5	14	8	8
1902	48.2	-0.5	96	9	1.71	-1.15	4.15	0.40	T	5	14	11	5
1903	49.8	+1.1	86	17	2.98	+0.12	6.00	0.74	0.8	9	11	9	10
1904	44.1	-4.6	86	13	3.63	+0.77	8.97	1.52	1.4	7	15	6	9
1905	47.5	-1.2	90	10	3.03	+0.17	5.49	0.63	1.2	8	12	8	10
1906	52.5	+3.8	94	22	2.42	-0.44	5.55	0.53	0.6	8	14	9	7
1907	41.5	-7.2	80	10	1.32	-1.54	3.22	0.24	2.7	6	12	8	10
1908	50.5	+1.8	91	8	2.24	-0.62	4.59	0.67	0.3	8	14	8	8
1909	43.8	-4.9	86	14	4.58	+1.72	9.43	0.83	3.1	12	9	9	12
1910	52.5	+3.8	99	15	1.48	-1.38	4.86	0.10	3.0	7	14	7	9
1911	46.7	-2.0	86	3	3.09	+0.23	6.04	1.33	3.6	9	11	8	11
1912	49.9	+1.2	84	20	2.66	-0.20	5.66	0.78	1.1	8	13	8	9
1913	50.2	+1.5	88	16	3.28	+0.42	7.43	1.12	2.7	9	15	5	10
1914	48.6	-0.1	88	11	2.52	-0.34	5.03	0.37	0.3	8	10	8	12
1915	57.2	+8.5	95	18	1.41	-1.45	4.02	0.05	T	7	15	10	5
1916	47.1	-1.6	90	11	2.62	-0.24	5.92	1.13	1.1	10	10	9	11
1917	45.5	-3.2	88	17	4.55	+1.69	7.84	2.05	3.8	11	9	7	14
1918	44.8	-3.9	79	12	2.32	-0.54	4.20	1.01	3.5	9	12	8	10

T indicates an amount too small to measure, or less than .005 inch rainfall, and less than .05 inch snowfall.

Climatological Data for April, 1918

Stations.	Counties.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.							Precipitation, in Inches.				Number of Days.				Prevailing direction of wind.	Observers.
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation not in, or more.	Clear.	Partly cloudy.	Cloudy.		
<i>Northern Division</i>																				
Algona	Kossuth	1,213	45	45.8	-1.2	69	14	20	4†	34	1.10	-1.41	0.60	0	3	15	4	11	se.	W. E. Laird.
Allison	Butler	1,045	6	44.4		73	1	20	4	43	2.49		0.81	3.0	8	11	8	11	se.	J. A. Bell.
Alta	Buena Vista	1,513	27	44.0	-2.3	69	14	20	8†	36	1.76	-1.28	0.68	T	5	13	11	6	se.	David E. Hadden.
Alta (near)	Buena Vista		22								1.47	-1.35	0.69	0	5				se.	Warren Minard.
Alton	Sioux	1,305	13	44.4	-2.4	68	13	20	8	40	1.20		0.41	T	7	10	11	9	se.	W. S. Slagle.
Belmond	Wright	1,205	8	43.4		70	1	19	4	44	2.12		0.76	1.1	9	11	12	7	se.	Geo. P. Hardwick.
Britt	Hancock	1,236	21	43.2	-3.4	69	1	18	8	40	1.58	-0.84	0.44	T	5	17	6	7	s.	L. M. Goodman.
Charles City	Floyd	1,015	27	43.1	-3.2	68	1	22	11	38	1.99	-0.84	0.44	3.9	9	9	13	8	se.	U. S. Weather Bureau.
Decorah	Winneshek	875	25	41.5	-5.4	69	14	20	9†	44	2.50	+0.06	0.60	2.0	8	14	6	10	se.	Wm. F. Baker.
Elkader	Clayton	727	39	41.8	-6.2	70	1†	19	4†	47	3.20	+0.43	0.70	6.0	8	12	7	11	se.	Chas. Reinecke.
Estherville	Emmet	1,298	23	41.6	-3.5	68	14	19	8	37	1.72	-1.13	0.85	T	7	20	4	6	nw.	A. O. Peterson.
Fayette	Fayette	1,003	28	42.8	-3.6	79	1	19	9†	56	3.33	+0.24	0.73	0.7	8	16	4	10	e.	R. Z. Latimer.
Forest City	Winnebago	1,226	24	42.8	-3.1	70	1†	20	4†	44	1.56	-0.79	0.40	0	5	13	10	7	se.	Eugene Secor.
Humboldt	Humboldt	1,005	30	44.8 ^b	-3.4	78 ^d	1	17	4	51 ^d	1.01	-1.66	0.25	0	5	14	8	8	s.	H. C. Snitkey.
Inwood	Lyon	1,474	14	42.8	-3.8	68	22	16	4†	38	1.60	-0.99	0.54	2.7	7	17	7	6	s.	F. B. Hanson.
Lake Park	Dickinson	1,479	5	43.4		71	14†	12	8	48	1.55		0.80	0	3	18	4	8	nw.	A. E. Woodruff.
Lansing	Allamakee	632	12								2.76	+0.38	0.74	T	8				se.	Charles R. Serens
Le Mars	Plymouth	1,224	22	45.2	-2.2	69	13	16	4	42	1.27	-1.60	0.42	0	6	13	9	8	se.	G. A. O. Clarke.
Mason City	Cerro Gordo	1,133	21	42.8	-3.6	68	1	20	8	40	1.77		0.42	T	7	16	14	0	e.	Dr. Roy De Sart.
New Hampton	Chickasaw	1,169	21	43.6	-2.8	69	14	24	4†	38	2.47	+0.05	0.64	1.0	10	16	3	11	se.	A. F. Kemman.
Nora Springs	Floyd	1,064	5	44.8		72	1	22	4†	47	2.37		0.62	T	7	16	6	8	s.	Arthur Betts.
Northwood	Worth	1,222	22	42.0	-4.1	67	14	20	8†	39	2.45	-0.02	0.60	T	7	14	5	11	se.	Chas. Dwell.
Pocahontas	Pocahontas	1,248	14	44.0	-3.0	70	14	16	4	43	1.27	-1.08	0.37	T	8	11	9	10	se.	F. E. Hronek.
Postville	Clayton	1,180	19	42.2	-4.4	68	1	22	5†	38	3.25	+0.27	0.75	6.0	8	11	9	10	ne.	F. L. Williams.
Rock Rapids	Lyon	1,358	19	45.2	+0.1	74	13	16	4	44	1.90	-0.75	0.68	1.5	9	15	10	5	s.	J. K. Meaberry.
Sanborn	O'Brien	1,553	4	43.8		67	14	17	4	38	1.31		0.55	0.5	6	11	13	6	se.	Jas. W. Dow.
Sibley	Osceola	1,212	25	42.2	-2.3	68	14	16	24	48	1.50	-0.63	0.71	1.9	9	17	7	6	nw.	H. F. Olds.
Sioux Center	Sioux	1,426	19	43.6	-2.9	67	13	18	8	37	1.84	-0.78	0.66	0.2	7				w.	J. de Ruyter.
Storm Lake	Buena Vista	1,440	29	45.0	-1.8	67	1†	20	8	35	1.62	-1.22	0.61	T	7	15	5	10	s.	Geo. H. Fracker.
Washta	Cherokee	1,157	20	44.6	-2.5	68	1†	15	3†	46	1.51	-0.90	0.50	0	5	17	3	10	n.	H. L. Felter.
Waverly	Bremer	948	22	42.8	-5.0	72	2	19	4	45	2.09	-0.77	0.44	1.0	8	14	5	11	se.	H. Arnold.
West Bend	Palo Alto	1,197	25	44.4	-2.8	70	14	17	8	41	1.51	-1.33	0.48	T	7	14	7	9	se.	Jos. Dorweiler.
Means and extremes				43.5	-3.2	79	1	12	8	51	1.93	-0.75	0.85	1.0	7	14	8	8	se.	
<i>Central Division</i>																				
Ames	Story	926	42	45.0	-4.6	74	1	20	11	49	2.01	-0.85	0.36	10.0	10	13	13	4	se.	Iowa State College.
Audubon	Audubon	1,301	24	43.8	-4.3	70 ^a	2†	16	9	49 ^a	1.64	-1.45	0.31	0.5	10	16	3	11	nw.	V. M. Jones.
Baxter	Jasper	968	18	45.4	-3.9	76	1	21	10	44	2.51	-0.55	0.51	4.0	11	13	8	9	ne.	W. R. Vandike.
Belle Plaine	Benton	886	28	45.2	-3.7	76	1	21	19	40	3.32	+0.05	0.61	7.8	10	10	10	10	se.	O. C. Burrows.
Boone	Boone	1,134	13	43.6	-4.3	74	1	22	8†	38	1.57	-1.19	0.38	1.5	10	14	12	4	nw.	Herbert A. Grabau.
Carroll	Carroll	1,265	28	43.8	-3.3	72	1	19	9	39	1.42	-1.47	0.36	0	6	21	1	8	ne.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	36	45.2	-3.6	73	1	26	9†	46	2.56	-0.34	0.80	2.0	7	13	6	11	e.	R. S. Toogood.
Clinton	Clinton	593	45	45.2	-4.5	73	1	25	4†	39	2.36	-0.80	0.77	1.8	11	11	9	10	ne.	H. Burde.
Davenport	Scott	580	47	45.6	-4.6	72	1	27	9	28	2.32	-0.56	1.01	0.1	10	8	7	15	e.	U. S. Weather Bureau.
Delaware	Delaware	1,063	27	43.0	-3.7	69	1	22	9†	40	3.46	+0.60	0.73	3.5	10	16	6	8	ne.	Nettie E. Ball.
Denison	Crawford	1,180	24	46.2 ^b	-2.4	71 ^c	1†	22 ^b	4†	44 ^c	1.42	-1.53	0.43	T	7	11	7	12	e.	Prof. Webb Stump
Des Moines	Polk	861	39	46.8	-3.8	75	1	27	8	41	1.81	-1.17	0.68	3.8	10	8	7	15	se.	U. S. Weather Bureau.
Dubuque	Dubuque	639	45	44.2	-4.7	69	1	27	9	35	2.16	-0.76	0.63	3.4	11	9	10	11	ne.	U. S. Weather Bureau.
Fort Dodge	Webster	1,126	18	44.2 ^a	-3.0	71 ^a	1	20 ^a	4	36 ^a	1.83	-0.80	0.55	T	7	14	5	11	nw.	J. F. Monk.
Gilman	Marshall	1,052	19								1.65	-0.90	0.73	4.0	5				nw.	Jas. L. Wylie.
Grinnell	Poweshiek	1,023	24	45.3	-4.5	77	1	24	10	43	4.06	+0.65	1.00	14.5	10	11	10	9	ne.	D. W. Brainard.
Grundy Center	Grundy	976	27	45.8	-3.0	72	1†	22	4†	47	2.41	-0.06	0.72	3.0	8	12	14	4	ne.	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	23	44.7	-4.9	75	1	14	9†	53	1.32	-1.59	0.33	2.0	8	18	6	6	nw.	C. T. Harney.
Harlan	Shelby	1,182	19	44.9	-4.0	69	14	23	4†	37	2.09	-0.43	0.40	0	11	18	1	11	n.	E. L. Tilton.
Independence	Buchanan	921	54	44.6	-3.2	70	1†	22	5†	39	2.72	+0.13	0.68	4.2	10	14	3	13	ne.	Dr. H. A. Lindsay.
Iowa City	Johnson	683	57	43.9	-4.7	73	1	26	5†	43	3.43	+0.25	0.96	3.0	12	10	9	11	ne.	Prof. John F. Reilly.
Iowa Falls	Hardin	1,107	25	42.0	-4.4	72	1	19	9	45	2.25	-0.88	0.74	4.3	9	14	4	12	ne.	J. B. Parmelee.
Jefferson	Greene	1,052	19	45.0	-4.1	72	1	18	11	45	1.23		0.26	T	9	13	7	10	se.	Will I. Lyon.
Le Claire	Scott	578	18								2.38	-0.55	0.90	0.1	12				se.	Margaret T. Disney.
Little Sioux	Harrison	1,040	13	47.1	-3.5	71	1	20	8	43	2.00		0.35	3.0	9	11	7	12	se.	Geo. H. Gibson.
Logan	Harrison	928	51	47.4	-3.0	75	1	24	5	39	1.87	-0.87	0.61	0	7	13	7	10	nw.	Ted Stern.
Maquoketa	Jackson	688	17	45.0 ^a	-4.2	77 ^a	14	21 ^a	10	45 ^a	2.76	-0.03	1.01	2.0	8				ne.	Ira H. Stephens.
Marshalltown	Marshall	947	26	43.6	-4.7	75	1	19	10†	47	2.91	+0.21	0.81	0.8	9	15	5	10	ne.	Ed. F. Duntman.
Monroe	Jasper	922	6	45.8		77	1	21	10	44	2.60		0.86	4.6	7	8	10	12	nw.	J. A. Dibel.
Muscatine	Muscatine	554	68								3.41	+0.08	1.37	T	9				nw.	Wm. P. Molis.
Olin	Jones	760	20	45.4	-3.3	74	1	22	5	45	4.20	+1.55	1.50	5.5	5	14	12	4	e.	Dr. F. W. Port.
Onawa	Monona	1,051	18																ne.	
Perry	Dallas	975	17	45.3	-4.3	75														

Climatological Data for April, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in or more.	Clear			Partly cloudy	Cloudy.
<i>Southern Division</i>																				
Afton	Union	1,212	24	45.6	-5.0	77	1	22	10	43	1.65	-1.70			10	9	12	9	w.	J. E. Deitrick.
Albia	Monroe	959	20	44.2	-5.4	78	1	21	10	41	3.65	+0.80	0.87	7.0	8	11	2	17	ne.	F. H. Holmes.
Allerton	Wayne	1,122	16	45.2	-5.7	78	14	22	9†	43	2.82	-0.12	0.66	9.0	10	9	10	11	ne.	Noel C. Huston.
Atlantic	Cass	1,164	27	44.8	-4.8	74	1	22	8†	41	1.58	-1.35	0.34	3.5†	11	11	7	12	se.	Thos. H. Whitney.
Bedford	Taylor		18	46.0	-4.3	77	1	19	11	46	3.32	+0.83	1.76	24.0	9	10	9	11	ne.	E. E. Healy.
Bloomfield	Davis	881	11	46.8		78	1	25	9†	41	2.87	-0.26	0.57	5.0	10	8	15	7	ne.	V. G. Warner.
Bonaparte	Van Buren	565	27	46.2	-5.1	77	1	24	5	38	3.29	+0.08	1.25	T.	11	16	3	11	ne.	Bruce R. Vale.
Burlington	Des Moines	544	22	45.5	-5.7	76	1	26	5	33	3.41	+0.17	1.64	0	13	11	8	11	ne.	Mrs. J. A. Donnelly.
Centerville	Appanoose	1,013	13	46.2		77	1	23	10	45	2.92		0.61	4.5	11	12	8	10	se.	S. A. Martin.
Chariton	Lucas	1,042	23	44.6	-5.4	77	1	19	5†	46	2.62	-0.50	0.92	4.0	9	9	12	9	ne.	C. C. Burr.
Clarinda	Page	1,009	28	45.8	-3.8	79	1	22	11†	49	2.38	-0.45	0.85	16.5	9	13	6	11	ne.	A. S. Van Sandt.
Columbus Jct.	Louisa	595	17	46.9	-3.8	75	1	27	9	34	3.60	+0.66	1.46	0.2	8	14	8	8	ne.	F. B. Johnston.
Corning	Adams	1,117	26	44.8	-4.8	71	1	16	11	44	2.54	-0.49	1.50	16.0	8	13	6	11	ne.	Jerome Smith.
Corydon	Wayne	1,101	25	45.6	-5.6	79	1	21	9†	45	3.53	+0.40	0.98	11.0	11	9	11	10	ne.	May C. Miller.
Creston	Union	1,312	13	45.4	-2.9	76	1	21	9	41	1.99		0.53	9.0	10	7	8	15	ne.	Mrs. Tillie E. McConnell.
Cumberland	Cass		19								1.16	-1.11	0.32	6.0	6	18	4	8	ne.	J. H. Reppert.
Earlham	Madison	1,126	16	44.6	-4.6	77	1	13	11	48	1.35	-2.11	0.33	T.	10	14	8	8	se.	Geo. Phillips.
Fairfield	Jefferson	780	34	47.2 ^a	-3.6	77 ^a	1	22 ^a	9	49 ^a	3.63	+0.03	0.80	2.0	12				w.	R. Monroe McKenzie.
Fort Madison	Lee	516	69								3.01	-0.26	1.24	0	9	8	9	13	ne.	F. M. Myers.
Glenwood	Mills	1,100	21	46.2		74	1	23	9	41	2.48		0.70	7.2	9	13	9	8	se.	Dr. Geo. Mogridge.
Greenfield	Adair		26	44.8	-5.0	72	15	22	10	33	1.23	-1.89	0.35	4.8	7	15	12	3	se.	Frank A. Ward.
Indianola	Warren	969	26	47.1	-3.4	76	1	24	8	36	1.10	-2.11	0.20	3.6	9	7	4	19	se.	Prof. J. L. Tilton.
Keokuk	Lee	614	47	47.0	-5.0	75	1	29	5	28	2.66	-0.68	1.08	T.	11	9	12	9	ne.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	26	46.8	-3.7	78	1	22	10	45	3.37	-0.13	0.69	4.2	11	8	6	16	se.	J. H. Landes.
Knoxville	Marion	920	23																se.	W. J. Casey.
Lacona	Warren		19								2.35	-0.35	0.43	12.0	10	9	11	10		J. B. Alter.
Lamoni	Decatur		11	43.4	-7.6	76	1	20	11†	41	3.90		1.80	20.0	9	9	15	6	ne.	Chas. B. Woodstock.
Lenox	Taylor	1,250	23	45.6	-4.7	74	1	23	8	36		+2.88		25.2	8	17	7	6	se.	J. L. Hurley.
Mount Ayr	Ringgold	1,236	25	45.9	-5.3	77	1	23	10	40	2.98	-0.17	1.52	20.3	10	12	7	11	ne.	Alex Maxwell.
Mt. Pleasant	Henry	729	37	47.0	-4.2	78	1	23	5	41	2.27	-0.63	0.80	T.	11	10	8	12	ne.	J. W. Edwards.
Murray	Clarke	1,216	27	46.7	-3.8	76	1	21	10	41	2.31	-0.92	1.20	12.0	11	9	7	14	se.	M. T. Ashley.
Northboro	Page	1,046	6	47.6		78	1	25	10	42	2.01		0.77	13.0	8	12	3	15	se.	J. M. Darby.
Oskaloosa	Mahaska	843	42	45.5	-5.1	78	1	24	8†	50	2.56	-0.20	0.60	3.5	8	10	3	17	e.	Jos. Boyd.
Ottumwa	Wapello	849	23	47.2 ^b		78 ^b	1	24 ^b	10	45 ^b	3.19	+0.44	0.70	5.0	9	13	7	10	se.	Thomas Ray.
Pella	Marion	877	15	45.7	-4.7	78	1	11	11	53	3.35	+0.52	0.99	8.5	10	12	2	16	e.	J. H. Ver Steeg.
St. Charles	Madison	1,070	17	45.8	-5.1	75	1	23	8	38	1.38	-1.92	0.42	5.0	7	14	5	11	ne.	R. D. Minard.
Sigourney	Keokuk	877	22	45.9	-5.1	78	2	24	10	46	3.27	-0.01	0.76	5.2	9	11	7	12	ne.	W. E. Utterback.
Stockport	Van Buren	754	16	44.8	-5.7	72	1	21	10	40	3.36	+0.30	0.79	T.	12	12	11	7	ne.	C. L. Beswick.
Thurman	Fremont		21	46.5	-4.7	74	1	19	11	46	3.63	+0.50	1.40	5.5	8	9	14	7	ne.	C. R. Paul.
Washington	Washington	769	36	46.2	-4.4	76	1	25	5†	38	3.00	+0.33	1.03	3.0	9	7	9	14	ne.	Wm. A. Cook.
Winterset	Madison	1,129	27	46.4	-4.3	77	1	22	8†	42	1.77	-1.33	0.50	5.0	10	17	8	5	ne.	H. S. Ely.
Omaha, Nebr.		1,040	47	47.4	-3.1	71	1	29	8	29	1.37	-1.44	0.64	0.6	9	12	5	13	se.	U. S. Weather Bureau
Means and extremes				45.9	-4.7	79	1	13	11	53	2.73	-0.32	1.80	7.0	10	11	8	11	ne.	
State means and extremes				44.8	-3.9	79	1	13	8	53	2.32	-0.54	1.80	3.5	9	12	8	10	ne.	

The departures from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining division means.

Reference letters, a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.

†Also other dates. ††Received too late to be included in means and summaries.

T. Precipitation is less than 0.01 inch rain or melted snow.

MISCELLANEOUS PHENOMENA.

Aurora: 5th, 10th, 29th, 30th.

Fog: 10th, 18th, 22d, 24th, 27th.

Hail: Northern Division, 2d, 17th, 28th; Central Division, 2d, 18th, 20th; Southern Division, 2d, 3d, 17th, 19th, 20th. At Belmond, moderate hail totaling 0.4 inch in depth occurred on the 17th; no damage.

Halo: (lunar or solar) 1st, 4th, 5th, 18th, 24th, 25th, 26th, 27th.

Haze: 9th, 22d, 25th.

Sleet: 2d, 3d, 17th, 18th, 19th, 20th, 21st, 23d, 28th.

Thunderstorm: 2d, 3d, 6th, 12th, 13th, 15th, 16th, 17th, 18th, 20th, 21st, 24th, 25th, 27th.

LATE REPORT.

Guthrie Center. December, 1917; mean temperature 13.8°; departure of mean from normal, -11.4°; highest temperature, 50° on the 1st and 20th; lowest temperature, -27° on the 29th; greatest daily range in temperature, 37 (maximum temperature of one day missing); precipitation record incomplete.

Mason City: March, 1918; mean temperature 39.5; departure of mean from normal 9.4; highest temperature 75 on the 18th and 30th; lowest 3 on the 10th; greatest daily range in temperature 49; total precipitation 1.07; departure from normal -0.33; greatest in 24 hours 0.62 on the 9th; total snowfall 9.2; number of days with .01 or more of precipitation 4; clear days 19; partly cloudy 10; cloudy 2.

ERRATA.

Report for January, 1918: Page 4, Harlan; mean temperature published 8.6, should be 8.7; departure from normal published -10.1, should be -10.0; page 5, Williamsburg, total snowfall published 7.3, should be 8.4.

Report for February, 1918: Page 20, Northboro, mean minimum temperature published 15.7, should be 15.5.

Report for March, 1918: Page 28; Charles City, greatest precipitation in 24 hours; published 0.61, should be 0.64; page 32; Charles City, maximum temperature on the 9th, published 33, should be 34.

Daily Precipitation for April, 1918—Continued.

Stations.	Watersheds	Day of Month.																													Total			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		30		
<i>Southern Division</i>																																		
Afton	Grand			.22		.58									.10	.10	.29		.02	.14	.02	.02						.03	.15			1.65		
Albia	Des Moines		.35		T.	.67										.87	.05	.41		.15	.58							.57	T.			3.65		
Allerton	Chariton		.55		.15										.35	.23	.08		.20	.66	.10							.22	.28			2.32		
Atlantic	Nishnabotna		.09		.19										.30	.31	.01	.02	.05	.23				.01				.34	.03			1.53		
Bedford	Missouri		.17		T.	.18									.23	.04	.06		.66	1.76	.15							.07				3.32		
Bloomfield	Mississippi		.57		.55										.45	.20	.05		.15	.40	.35					.10		.05	T.			2.37		
Bonaparte	Des Moines		.22		1.25										.25	.04	.35		.18	.24	.02		T.			.28		.18	.28	T.		3.29		
Burlington	Mississippi	.10	.30		.43	1.21										.22	.05	.21		.01	.30	.04				.25		.26	.03	T.		3.41		
Centerville	Chariton		.52		.39										.37	.40	.13		.09	.61	.05				T.		.19	.16	T.		2.92			
Chariton	Chariton		.12		.18	.26	.24	.13											.14	.28	.92							.35				2.62		
Clarinda	Nodaway		.28		.14										.01	T.	.07			.78	.85							.01	.23	.01		2.38		
Columbus Jct.	Iowa	.48			1.46										.28	.25	.33			.30	.15			T.		T.		.35				3.60		
Cornub	Nodaway		.19		.35										.19	.01	.09		.15	1.50								.07	.18			2.54		
Corydon	Chariton	T.	.41		T.	.16									.45	.40	.12		.26	.98	.17				T.	T.	.23	.29	T.	.01	3.53			
Creston	Missouri		.15		.15	.03									.27	.09	.05			.53	.52							.18	.02			1.99		
Cumberland	Nodaway	T.			.20										.12	.16	.11			.32								.25				1.16		
Earlham	Des Moines	T.	.09		T.	.33									.09	.02	.23		.18	.15	.06						.07	.13	T.	T.		1.35		
Fairfield	Skunk		.25	.08	.56										.58	.80	.47		.04	.48	.06					.04		.14	.18	T.		3.68		
Fort Madison	Mississippi	.10			1.24										.03	.30	.25		.20		.23					.33		.33				3.01		
Glenwood	Missouri	T.	T.	.24	.50										.25	.02			.25	.70	.02						.25	.25				2.43		
Greenfield	Nodaway		T.		T.	.10									.15		.17			.13		.35						.08	.25	T.		1.23		
Indianola	Des Moines	T.	T.		T.	.16									.15	.03	.18		.06	.20	.16			T.			.01	.15	T.			1.10		
Keokuk**	Mississippi	.01	.32		1.08										.31	T.	.11		.06	.13	.01					.32		.18	.13			2.66		
Keosauqua	Des Moines		.20		.68										.44	.13	.45		.17	.38	.03					.20	T.	.08	.61			3.37		
Knoxville	Des Moines																																	
Lacona	Des Moines		.18		.24												.11	.09	.28	.43	.42							.36	.14	.10			2.35	
Lamoni	Grand		.24		.08	.08									.30	.03	.03		1.04	1.30								.30					3.90	
Lenox	Missouri		.15												.48	.03	.07		.15	4.80	.04							.10					5.32	
Mt. Ayr	Grand	T.	.36		T.	.23									.08	.04	.09		.33	1.52	.15						.10	.08	T.			2.93		
Mt. Pleasant	Skunk		.03	.37	.80										.16	.06	.22		.04	.10	.06					.13	T.	T.	.30				2.27	
Murray	Grand	T.	.12		T.	.20									.07	.04	.07		.25	.95	.30						.11	.18	T.	.02			2.31	
Northboro	Tarkio				.34										.08	.09			.35	.77	.09						.05	.24					2.01	
Oskaloosa	Des Moines		.24		.46										.60		.43		T.	.35	T.						.04	.42	.02				2.56	
Ottumwa	Des Moines		.25		.54										.43	.32	.46		T.	.06	.70	.10				T.		T.	.33				3.19	
Pella	Skunk		.01	T.	.20										.44	.20	.99		T.	.98	.21			T.				.06	.24	.02				3.35
St. Charles	Des Moines	T.			.20											.19	.23		.13		.42							.19					1.33	
Sigourney	Skunk	T.	.18		.76										.47	.37	.62		T.	.37	.15		T.			T.		.05	.30	T.			3.27	
Stockport	Skunk	T.	.52		.79										.36	.22	.26		.09	.15	.04					.19		.11	.61	.02			3.33	
Thurman	Missouri	T.	T.		T.	.60									.21	.17	T.		.81	1.40	.10						.22	.12					3.63	
Washington	Skunk		.06		1.03											.70	.42			.28	.04					.03		.37		.02				3.00
Winterset	Des Moines		.11		.30										.08	.03	.08		.29	.50	.21							.06	.11				1.77	
Omaha, Nebr.**	Missouri		.18		.44	.20									.26	.02	T.		.07	.07								.31	.02				1.57	

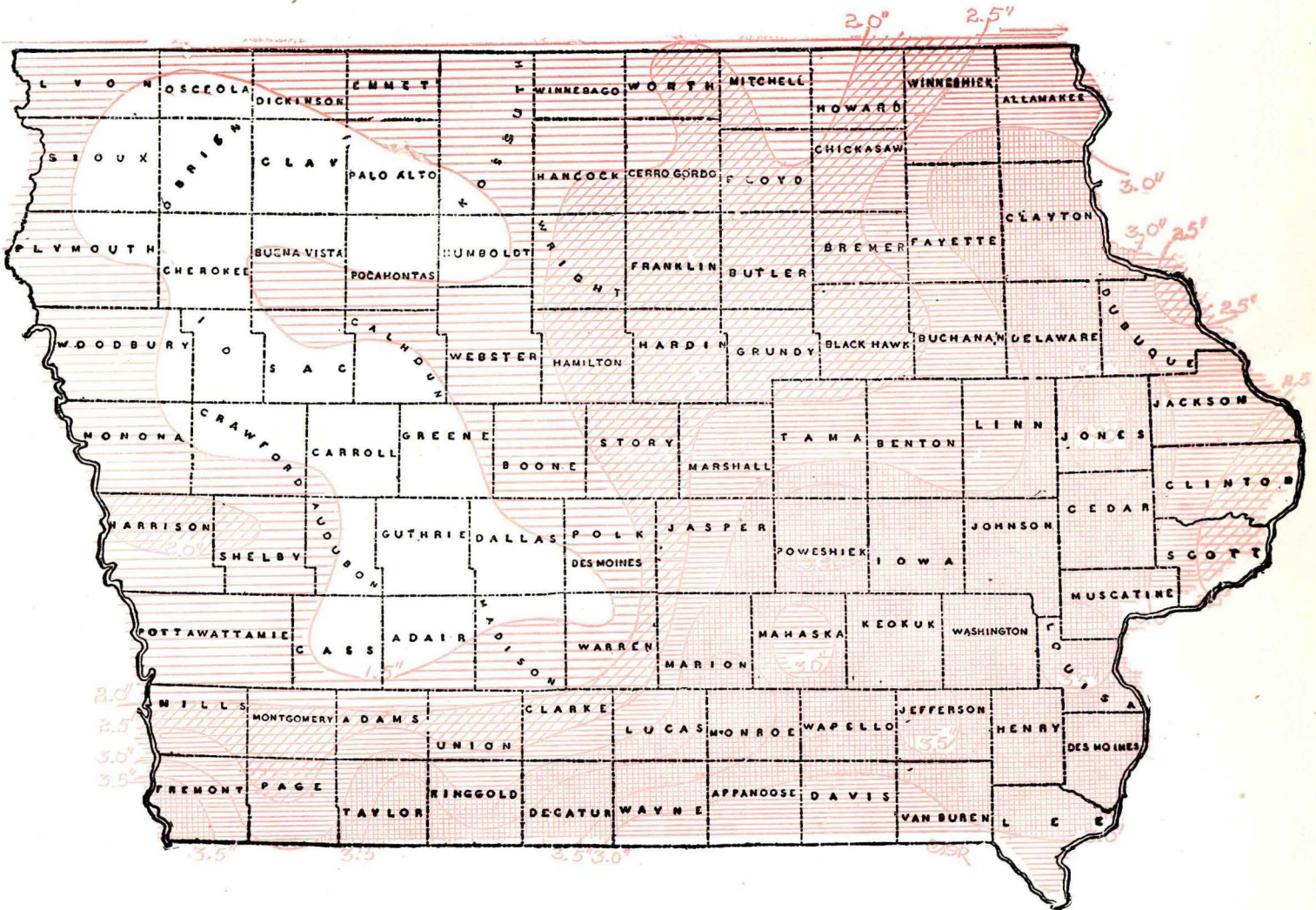
Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours ending at the time of observation.
 |||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.
 **Regular Weather Bureau station; precipitation is for the 24 hour period, midnight to midnight.
 *Incomplete. T. Trace, or less than 0.01 inch.
 †Precipitation included in the next following measurement.

Daily Maximum and Minimum Temperatures for the Month of April, 1918.

Table with columns for Stations, days 1-30, and Mean. Rows are categorized into Northern Division, Central Division, and Southern Division, listing various Iowa cities and their daily temperature ranges.

a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record. §§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

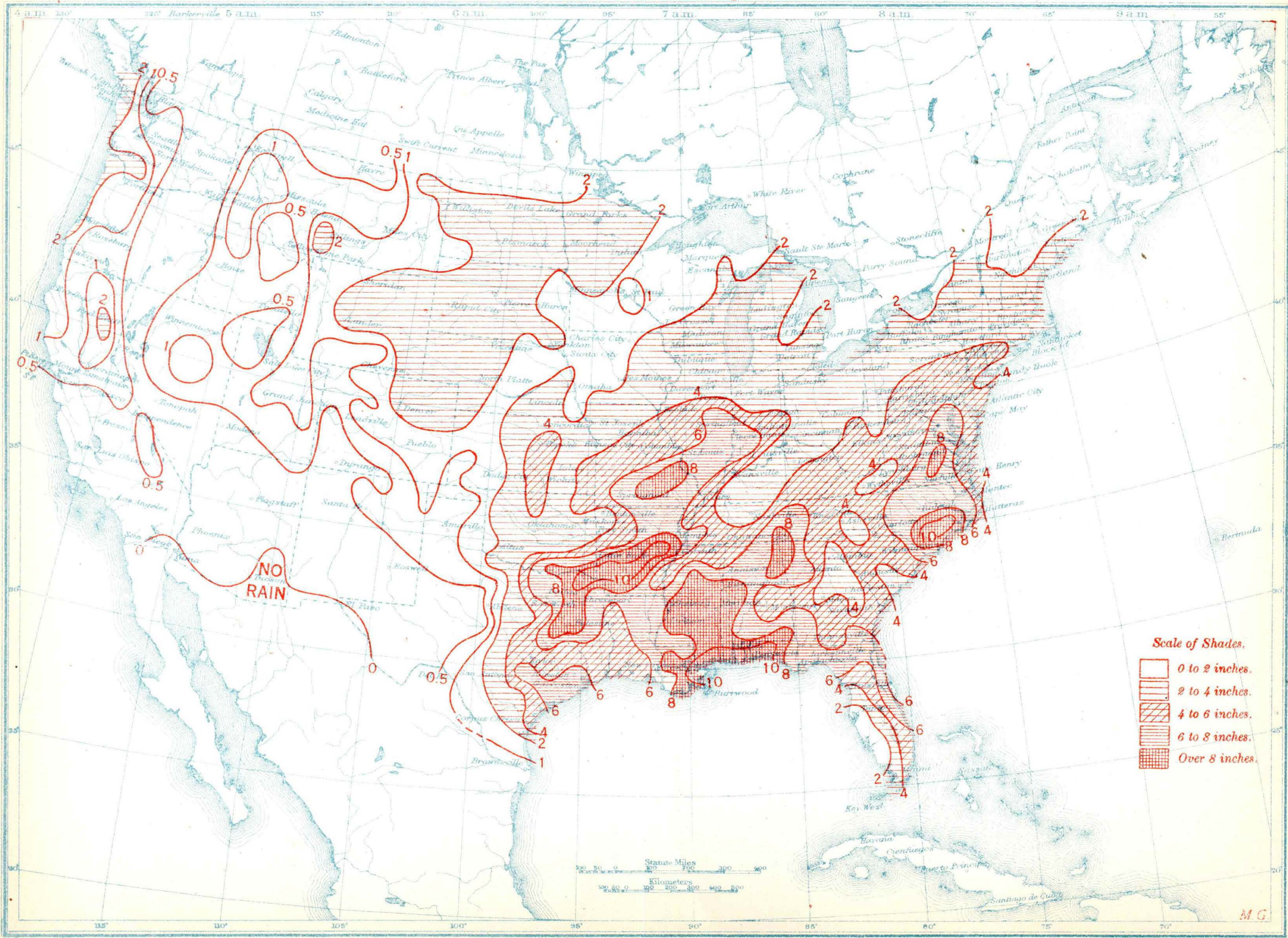
TOTAL PRECIPITATION APRIL, 1918



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, April, 1918.



JUL 15 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

MAY, 1918

BY
CHARLES D. REED
METEOROLOGIST

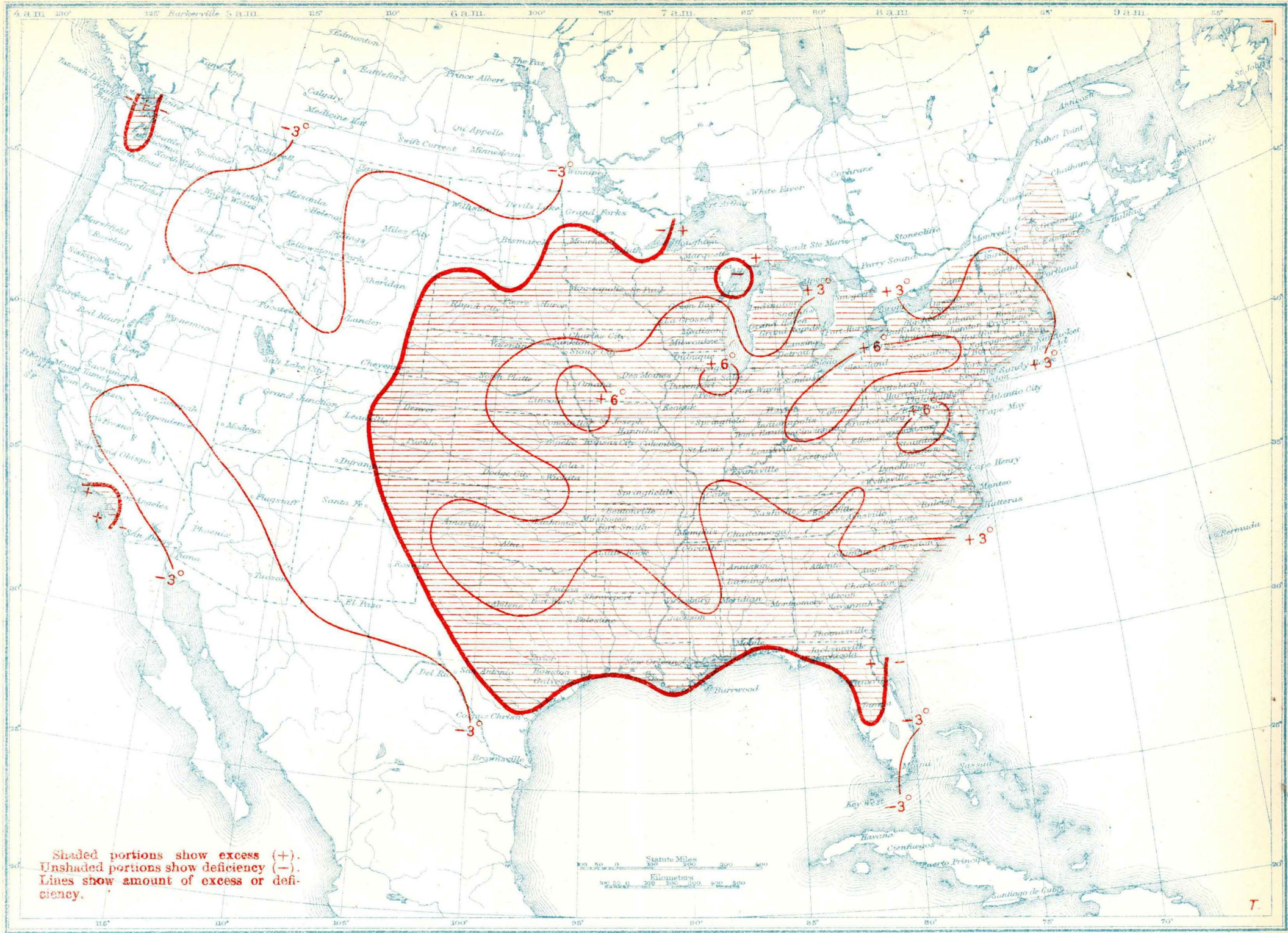


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

5

Departure of the Mean Temperature from the Normal, May, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST

VOL. XXIX. DES MOINES, IOWA, MAY, 1918 No. 5.

GENERAL SUMMARY.

May averaged warm. From freezing temperatures on the 1st the weather turned suddenly hot with maximum temperatures in the 90's in nearly all portions of the State on the 3d and 4th. High southwest winds and low humidities during this warm period, caused considerable damage to winter wheat, meadows and pastures in the western part of the State. During a cool period, 10th-13th, frost and ice were reported in many sections. Snow and sleet fell in Dallas, Polk, Madison, Warren and Marion Counties on the 13th. The remainder of the month was generally warm. On the afternoon of the 9th tornadoes occurred in Bremer, Chickasaw, Winneshiek, Hamilton and Scott counties, destroying much property and causing many injuries and several deaths. On the afternoon of the 21st what seemed from its progressive motion to be a single tornado moved from Denison, Iowa, at 2:30 p. m., east-northeastward through the State, passing Churdan at 3:45 p. m.; Boone 4 p. m.; Grundy Center, 5:30 p. m.; crossing the Mississippi at Guttenburg at 6:30 p. m. and was last observed at Lone Rock, Wis., at 7:45 p. m. Seventeen deaths occurred, and scores of injuries. The property loss was large but as yet is not estimated. Hail was unusually prevalent. (See note on page 55.) After the first five days precipitation was plentiful except in the south-central and southwest districts where drouth prevailed till the 21st. Toward the close of the month the rains became heavy to excessive but the soil readily absorbed most of the water.

The hay crop will be generally short due to drouth that prevailed till the 6th; winter wheat yields will be much reduced in southwest districts. Corn planting was done under unusually favorable conditions, and in spite of the defective seed, showed a good stand where up. About five per cent of the acreage remained to be planted when the heavy rains suspended planting toward the close of the month.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.91 inches. The highest recorded was 30.43 inches, at Dubuque, on the 23d, and the lowest was 29.09, at Des Moines, on the 9th. The monthly range was 1.34 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 104 stations, was 64.9°, or 4.4° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows. Northern, 62.8°, or 3.8° higher than the normal; Central, 65.3°, or 4.6° higher than the normal; Southern, 66.7°, or 5.0° higher than the normal. The highest monthly mean was 69.0°, at Ottumwa, and the lowest 58.9°, at Estherville. The highest temperature reported was 98° at Creston, on the 9th, and the lowest was 25° at Audubon, Earlham, Fayette and Guthrie Center, on the 1st. The temperature range for the State was 73°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 75 per cent, and at 7 p. m. it was 57 per cent. The mean for the month, 66 per cent, is about 1 per cent above the normal. The highest monthly mean was 69 per cent, at Davenport, and the lowest was 62 per cent, at Des Moines.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 113 stations, was 6.87 inches, or 2.30 inches more than the normal. By divisions the averages were as follows: Northern, 7.24 inches, or 2.76 inches more than the normal; Central, 7.26 inches, or 2.67 inches more than the normal; Southern, 6.11 inches, or 1.47 inches more than the normal. The greatest amount, 11.98 inches, occurred at Gilman, and the least, 2.72 inches, at Glenwood. The greatest amount in 24 consecutive hours, 4.81 inches, occurred at Gilman, on the 24th.

SNOWFALL.

The average snowfall for the State was a trace, or 0.1 inch less than the normal.

WIND.

The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 60 miles an hour from the west, at Sioux City, on the 9th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 66 or about 4 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 51; Davenport, 72; Des Moines, 76; Dubuque, 67; Keokuk, 70; Sioux City, 62; Omaha, Nebr., 67.

COMPARATIVE DATA FOR THE STATE—MAY.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With precip-itation .01 in.	Clear	Partly cloudy	Cloudy
1890	57.7	- 2.8	90	26	3.56	-1.01	6.44	1.61	-----	9	10	13	8
1891	58.3	- 2.2	94	21	3.18	-1.39	7.10	1.46	-----	8	14	9	8
1892	54.0	- 6.5	88	29	8.77	+4.20	12.64	4.87	T.	16	5	9	17
1893	56.6	- 3.9	96	26	8.45	-1.12	5.82	1.65	0	9	13	9	9
1894	61.1	+ 0.6	96	22	1.87	-2.70	4.77	0.33	0	6	17	10	4
1895	61.7	+ 1.2	104	24	3.19	-1.38	5.79	0.84	0	9	11	12	8
1896	65.5	+ 5.0	100	34	6.69	+2.12	11.79	3.40	0	12	11	12	8
1897	58.5	- 2.0	96	20	1.92	-2.65	3.59	0.21	0	5	16	10	5
1898	59.6	- 0.9	92	26	4.67	+0.10	7.82	2.22	0	12	9	10	12
1899	60.2	- 0.3	90	27	6.23	+1.66	11.47	3.09	0	13	9	12	10
1900	63.2	+ 2.7	98	22	3.31	-1.26	6.98	0.96	0	8	14	10	7
1901	60.7	+ 0.2	95	28	2.35	-2.22	4.57	0.72	0	7	16	9	6
1902	63.8	+ 3.3	97	25	5.39	+0.82	18.04	0.87	0	13	10	12	9
1903	61.6	+ 1.1	91	24	8.55	+3.98	15.45	2.88	0	16	9	12	10
1904	50.6	- 0.9	93	27	3.78	-0.79	8.15	1.50	0	8	13	10	8
1905	58.3	- 2.2	88	28	5.95	+1.88	10.83	2.57	0	14	12	11	8
1906	60.8	+ 0.3	95	24	3.54	-1.03	10.72	0.89	0	11	13	10	8
1907	58.5	- 7.0	96	14	3.48	-1.09	7.65	0.71	1.0	10	11	10	10
1908	59.4	- 1.1	93	18	8.34	+3.77	14.33	1.33	0	15	9	11	11
1909	57.9	- 2.6	97	18	4.34	-0.23	7.85	1.86	0.1	9	12	12	7
1910	55.4	- 5.1	89	18	3.41	-1.16	6.91	1.29	T.	10	15	7	9
1911	64.9	+ 4.4	98	23	3.76	-0.81	8.73	0.42	0.7	9	16	9	6
1912	62.7	+ 2.2	97	29	3.33	-1.24	6.41	0.72	0	10	14	11	6
1913	59.4	- 1.1	102	30	6.24	+1.67	10.25	3.14	0	13	11	8	12
1914	62.2	+ 1.7	98	25	3.31	-1.26	6.90	0.30	T.	10	14	11	6
1915	56.1	- 4.4	99	25	7.34	+2.77	13.21	3.82	T.	14	9	9	13
1916	59.9	- 0.6	94	27	4.93	+0.36	10.44	2.14	T.	12	13	10	8
1917	55.1	- 5.4	95	18	3.87	- 0.70	7.33	1.69	0.6	10	15	8	8
1918	64.9	+ 4.4	98	9	6.87	+2.34	11.98	2.72	T.	13	13	11	7

T indicates an amount too small to measure, or less than .005 inch of precipitation, and less than .05 inch of snowfall.

Climatological Data for May, 1918

Station.	County.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.				Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 6.01 in. or more.	Clear.	Partly cloudy.		Cloudy.	Prevailing direction of wind.
<i>Northern Division</i>																				
Algona	Kossuth	1,213	45	63.8	+ 4.5	92	3	30	1†	50	6.90	+2.82	1.50		7	20	2	9	sw	W. E. Laird.
Allison	Butler	1,045	6	63.9		93	4	29	13	40	10.65		2.53		14	11	10	10	sw	J. A. Bell.
Alta	Buena Vista	1,513	27	61.5	+ 2.5	91	4	31	9	46	7.68	+2.66	1.60		14	13	10	8	s	David E. Hadden.
Alta (near)	Buena Vista		22								7.88	+2.80	2.20		11					Warren Minard.
Alton	Sioux	1,305	13	63.3	+ 3.8	92	3†	34	10	45	6.20		1.63		11	8	14	9	sw	W. S. Slagle.
Belmond	Wright	1,205	8	63.2		92	3†	30	1†	46	10.48		2.75		14	8	17	6	se	Geo. P. Hardwick.
Britt	Hancock	1,236	21	61.8 ^a	+ 3.4	90	3	27	13	43	8.48	+3.76	2.43		17					L. M. Goodman.
Charles City	Floyd	1,015	27	62.4	+ 2.9	91	3	31	1	40	8.41	+3.47	2.79		13	7	15	9	s	U. S. Weather Bureau.
Decorah	Winneshiek	875	25	61.5	+ 1.5	91	4	27	1	47	6.40	+1.79	1.72		13	16	6	9	nw	Wm. F. Baker.
Elkader	Clayton	727	39	64.4	+ 4.3	89	4	26	1	44	6.40	+2.25	1.60		11	14	10	7	se	Chas. Reinecke.
Estherville	Emmet	1,298	23	58.9	+ 1.3	88	3	29	13	42	6.33	+1.26	1.22		13	16	12	3	s	A. O. Peterson.
Fayette	Fayette	1,003	28	63.2	+ 5.2	90	4	25	1	43	7.29	+2.23	2.09		14	15	6	10	sw	R. Z. Latimer.
Forest City	Winneshiek	1,226	24	61.5	+ 3.0	95	3	28	13	40	7.46	+2.97	1.80		12					Engene Secor.
Humboldt	Humboldt	1,095	30	64.8	+ 5.4	93	4	32	13	41	5.43	+1.03	1.04		12	6	18	7	sw	H. C. Snitkey.
Inwood	Lyon	1,474	14	60.4	+ 1.3	95	8	29	1	47	5.98	+2.08	1.20		15	18	4	9	nd	F. B. Hanson.
Lake Park	Dickinson	1,479	5	62.0		92	4	29	13	44	6.70		1.80		8	15	7	9	s	A. E. Woodruff.
Lansing	Allamakee	632	12								7.12	+2.12	3.29		12					Charles R. Screre.
Le Mars	Plymouth	1,224	22	64.5	+ 4.6	92	3†	33	10	45	7.77	+3.27	1.34		14	11	11	9	sw	G. A. C. Clarke.
Mason City	Cerro Gordo	1,133	21																	Dr. Roy De Sart.
New Hampton	Chickasaw	1,169	21	63.2	+ 4.7	91	4	30	1	41	7.82	+3.15	1.54		15	18	6	7	sw	A. F. Kemman.
Nora Springs	Floyd	1,064	5	64.5		95	3	29	1	48	10.02		2.02		15	15	7	9	s	Arthur Betts.
Northwood	Worth	1,222	22																	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	14	63.9	+ 4.6	92	3†	32	1	47	6.07	+1.78	2.20		10	11	12	8	s	F. E. Hronck.
Postville	Clayton	1,180	19	62.1	+ 3.4	90	4	31	1	40	5.58	+0.28	1.00		14	10	12	9	sw	F. L. Williams.
Rock Rapids	Lyon	1,358	19	62.4	+ 3.9	91	3	34	1†	44	5.89	+2.45	1.40	T	15	17	10	4	sw	J. K. Medberry.
Sanborn	O'Brien	1,553	4	62.1		90	4	32	10†	42	6.75		1.36		11	14	10	7	ne	Jas. W. Dow.
Sibley	Oseola	1,212	25	59.8 ^a	+ 2.9	90 ^a	8	29 ^a	13	44 ^a	6.98	+2.80	1.58		11					H. F. Olds.
Sioux Center	Sioux	1,426	19	63.6	+ 4.8	90	3†	32	10	43	8.47	+3.98	1.48		14	14	5	12	s	J. de Ruyter.
Storm Lake	Buena Vista	1,440	29	64.0	+ 4.7	90	4	36	1	40	5.44	+1.40	1.08		13					Geo. H. Fracker.
Washta	Cherokee	1,157	20	64.7	+ 5.7	94	8	32	10	44	5.55	+0.40	1.55		10	16	9	6	s	H. L. Felter.
Waverly	Bremer	948	22	63.4	+ 3.5	92	4	30	13	43	7.37	+2.85	1.57		14	16	9	6	se	H. Arnold.
West Bend	Palo Alto	1,197	25	64.5	+ 5.3	93	4	30	13	41	7.24	+3.24	1.69		10					Jos. Dorweiler.
<i>Means and Extremes—Northern Division</i>				62.8	+ 3.8	95	3†	25	1	48	7.21	+2.76	3.29	T	13	13	10	8	s	
<i>Central Division</i>																				
Ames	Story	926	42	65.8	+ 4.6	92	4	28	1	42	6.45	+1.68	2.89		17	22	8	1	sw	Iowa State College.
Audubon	Audubon	1,301	24	64.9	+ 4.7	91	4	25	1	45	6.23	+1.82	2.17		14	17	9	5	s	V. M. Jones.
Baxter	Jasper	998	18	66.1	+ 5.5	93	4	33	1	39	8.41	+3.11	3.40		18	11	19	1	sw	W. R. Vandike.
Belle Plaine	Benton	886	28	65.6	+ 5.2	92	4	28	1	40	9.28	+4.65	2.59		12	12	13	6	s	O. C. Burrows.
Boone	Boone	1,134	13	65.2	+ 5.5	94	9	33	1	55	5.89	+0.77	2.26		17	12	16	3	se	Herbert A. Grabau.
Carroll	Carroll	1,265	28	63.3	+ 4.1	92	4	32	12	54	6.22	+1.55	1.30		14	21	7	3	sw	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	36	65.2	+ 3.9	92	4	32	1†	46	6.04	+1.55	1.50		9	10	8	13	s	R. S. Toogood.
Clinton	Clinton	593	45	65.6	+ 4.1	90	4	27	1	40	5.10	+0.48	1.06		15	8	14	9	sw	H. Burde.
Davenport	Scott	580	47	66.2	+ 4.7	87	31	35	1	33	7.15	+2.96	2.02		14	7	17	7	sw	U. S. Weather Bureau.
Delaware	Delaware	1,083	27	63.2	+ 4.3	89	4	29	1	39	8.33	+3.83	1.40		16	14	12	5	s	Nettie E. Ball.
Denison	Crawford	1,180	24	66.8 ^a	+ 6.9	94 ^a	4	32 ^a	13	48 ^a	8.23	+4.03	1.87		13					Prof. Webb Stump.
Des Moines	Polk	861	39	67.2	+ 5.6	91	4	34	13	42	5.87	+1.31	2.07	0.1	15	7	13	11	sw	U. S. Weather Bureau.
Dubuque	Dubuque	639	45	64.9	+ 4.1	89	4	33	1	32	8.64	+4.32	2.33		17	7	9	15	s	U. S. Weather Bureau.
Fort Dodge	Webster	1,126	18	63.0	+ 3.3	92	4	33	1	48	7.01	+1.68	1.65		13	16	9	6	sw	J. F. Monk.
Gilman	Marshall	1,052	19								11.98	+7.76	4.81		11					Jas. L. Wylie.
Grinnell	Poweshiek	1,023	24	66.5	+ 5.1	93	4	32	1	40	10.34	+5.69	4.06		15	14	11	6	sw	D. W. Brainard.
Grundy Center	Grundy	976	27	67.0	+ 6.5	92	4	31	1	48	8.24	+3.33	1.72		15	14	11	6	sw	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	23	65.8	+ 4.4	94	4	25	1	47	6.50	+1.75	2.79		17	17	12	2	sw	C. T. Harney.
Harlan	Shelby	1,182	19	65.5	+ 5.3	92	4†	28	1	43	6.91	+2.39	2.50		13	23	4	4	s	E. L. Tilton.
Independence	Buchanan	921	54	65.4	+ 5.8	95	3†	28	1	45	7.66	+3.42	1.53		13	12	10	9	se	Dr. H. A. Lindsay.
Iowa City	Johnson	682	57	63.8	+ 2.9	88	4	28	1	40	6.22	+1.77	2.31		11	12	9	10	sw	Prof. John F. Reilly.
Iowa Falls	Hardin	1,107	25	61.9	+ 3.4	92	4	26	1	46	10.08	+5.48	2.82		13	13	11	7	sw	J. B. Parndee.
Jefferson	Greene	1,052	19	66.0	+ 5.0	92	4	33	1	42	4.79		1.40		14	11	8	12	sw	Will I. Lyon.
Le Claire	Scott	576	18								7.28	+3.22	1.65		13					Margaret T. Disney.
Little Sioux	Harrison	1,040	13	66.4	+ 4.4	93	4†	33	12	42	7.84		1.52		12	11	10	10	se	Geo. H. Gibson.
Logan	Harrison	998	51	66.6	+ 5.0	93	8	35	13	40	6.27	+2.07	1.50		11	16	10	5	sw	Ted Stern.
Maquoketa	Jackson	688	17	64.2	+ 3.9	89 ^a	4	27 ^a	1	38 ^a	6.74	+2.13	1.68		14					Ira H. Stephens.
Marshalltown	Marshall	947	26	63.5	+ 3.0	89	3	27	1	44	7.53	+3.02	2.50		15	18	0	13	e	Ed. F. Duntman.
Monroe	Jasper	922	6	67.0		93	4	32	1	43	8.03		2.69		14	14	6	11	s	J. A. Dibel.
Muscataine	Muscataine	554	58								8.10	+3.70	2.00		12					Wm. P. Molis.
Onawa	Jones	760	20	65.1	+ 4.6	91	4	28	1	40	5.10	+0.40	1.60		10					Dr. F. W. Port.
Onawa	Monona	1,051	18																	
Perry	Dallas	975	17	66.2	+ 4.8	95	4	30	1	45	5.46	+0.41	2.19		15	13	15	3	s	Mrs. Clarence Anthony.
Rockwell City	Calhoun	1,134	22	64.0 ^b	+															

Climatological Data for May, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of Record—years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days			Observers			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours	Total snowfall, unmelting.	Precipitation .01 or more.	Clear.		Partly cloudy.	Cloudy.	Prevailing direction of wind.
<i>Southern Division</i>																				
Afton	Union	1,211	24	66.6	+ 4.8	90	4†	25	1	36	5.57	+0.83	1.19	16	11	13	7	sw	J. E. Deitrick.	
Albia	Monroe	954	20	65.0	+ 3.8	90	9	34	1	48	6.06	+1.09	1.65	11	4	1	26	sw	F. H. Holmes.	
Allerton	Wyand	1,122	16	—	—	—	—	35	1	32	9.16	+4.45	4.07	11	8	18	5	s	Noel C. Huston.	
Atlantic	Cass	1,164	27	65.3	+ 4.2	98	8	31	1	54	4.93	+0.50	2.01	14	10	10	11	sw	Thos. H. Whitney.	
Bedford	Taylor	—	18	66.8	+ 6.1	89	8†	30	1	48	6.38	+1.62	1.85	12	14	12	5	s	E. E. Healy.	
Bloomfield	Davis	881	11	66.8	—	88	25	33	1	34	9.13	+4.28	3.00	12	9	20	2	s	V. G. Warner.	
Bonaparte	Van Buren	565	27	66.5	+ 4.5	87	4†	34	1	37	6.90	+2.47	2.74	12	18	9	4	sw	Bruce R. Vale.	
Burlington	Des Moines	544	22	65.8	+ 3.0	90	26	35	1	36	6.96	+2.86	1.40	12	14	15	2	sw	Mrs. J. A. Donnelly.	
Centerville	Appanoose	1,013	13	67.2	—	87	9†	33	1	32	7.44	—	2.42	14	11	14	6	sw	S. A. Martin.	
Chariton	Lucas	1,042	23	64.8	+ 4.2	88	4	30	1	36	4.69	-0.02	1.35	9	10	18	3	sw	C. C. Burr.	
Clarinda	Page	1,009	28	66.8	+ 6.0	94	8	30	1	52	3.46	-1.67	1.15	11	16	8	7	s	A. S. Van Sandt.	
Columbus Jct	Louisia	595	17	67.3	+ 4.9	88	31	32	1	39	6.89	+2.72	1.38	11	23	7	1	sw	J. B. Johnston.	
Corning	Adams	1,117	26	67.0	+ 6.4	90	8	31	1	39	5.54	+0.32	1.62	13	17	3	11	sw	Jerome Smith.	
Corydon	Wayne	1,101	25	66.0	+ 4.1	88	9	35	1†	36	8.12	+3.61	3.54	14	11	17	3	s	May C. Miller.	
Creston	Union	1,312	13	65.2	+ 5.7	98	9	30	1	60	5.89	—	1.40	13	4	19	8	sw	Mrs. Tillie E. McConnell.	
Cumberland	Cass	—	19	—	—	—	—	—	—	—	5.27	+1.05	2.06	9	20	8	3	sw	J. H. Reppert.	
Earlham	Madison	1,126	16	66.4	+ 6.5	93	4	25	1	45	6.44	+1.76	3.43	T	12	18	6	7	sw	Geo. Phillips.
Fairfield	Jefferson	780	34	—	—	—	—	—	—	—	10.00	+4.73	2.95	10	—	—	—	—	sw	Prof. R. Monroe McKenzie
Fort Madison	Lee	516	69	—	—	—	—	—	—	—	9.06	+4.51	3.62	11	12	12	7	sw	F. M. Myers.	
Glenwood	Hills	1,100	21	67.9	—	93	8	37	1†	42	2.72	—	0.94	12	13	11	7	s	Dr. Geo. Mogridge.	
Greenfield	Adair	—	26	66.8 ^a	+ 5.5	90 ^a	4†	33 ^a	13	40 ^a	6.48	+1.58	3.02	14	—	—	—	—	sw	Frank A. Ward.
Indianola	Warren	969	26	67.2 ^a	+ 5.6	90	4	35 ^a	13	33 ^a	7.04	+2.55	1.34	T	14	12	8	11	sw	Prof. J. L. Tilton.
Keokuk	Lee	614	47	67.8	+ 4.6	88	25	37	1	28	6.72	+2.37	2.47	12	12	14	5	s	U. S. Weather Bureau.	
Keosauqua	Van Buren	644	26	67.1	+ 4.9	89	25	31	1	38	7.46	+2.84	2.25	13	10	8	13	se	J. H. Landes.	
Knoxville	Marion	920	23	67.8	+ 5.1	91	4†	32	1	47	4.10	-0.02	0.75	T	12	10	12	9	sw	W. J. Casey.
Lacona	Warren	—	19	—	—	—	—	—	—	—	4.50	-0.67	1.26	13	7	14	10	—	J. B. Alter.	
Lamoni	Decatur	—	11	64.2	+ 2.2	86	9	35	1	46	5.74	—	1.70	12	9	18	4	sw	Chas. B. Woodstock.	
Lenox	Taylor	1,250	23	67.4	+ 6.1	89	8†	34	1	36	5.03	+0.23	1.57	12	20	11	0	s	J. L. Hurley.	
Mount Ayr	Ringgold	1,236	25	66.4	+ 4.2	89	9	35	1	35	6.79	+1.09	2.59	13	13	11	7	s	Alex Maxwell.	
Mt. Pleasant	Henry	729	37	67.4	+ 4.8	90	25	31	1	40	5.97	+1.50	1.50	13	15	12	4	sw	J. W. Edwards.	
Murray	Clarke	1,216	27	67.0	+ 5.7	89	4†	33	1	38	6.07	+1.17	1.62	16	8	17	6	s	M. T. Ashley.	
Northboro	Page	1,046	6	68.0	—	94	8	33	1	44	5.49	—	2.62	12	16	4	11	sw	J. M. Darby.	
Oskaloosa	Mahaska	843	42	66.3	+ 4.7	90	4	28	1	41	5.47	+1.65	2.27	9	18	2	11	—	Jos. Boyd.	
Ottumwa	Wapello	849	23	69.0 ^a	—	89 ^a	4†	36 ^a	13	40 ^a	5.52	+0.88	1.14	15	16	7	8	s	Thomas Ray.	
Pella	Marion	877	15	67.3	+ 5.1	93	4	27	1	42	4.24	+6.54	0.81	T	13	15	5	11	s	J. H. Ver Steeg.
St. Charles	Madison	1,070	17	66.5	+ 5.0	90	4†	35	13	36	4.68	-0.11	1.47	12	12	12	7	sw	R. D. Minard.	
Sigourney	Keokuk	877	22	66.0	+ 3.8	89	4	29	1	38	6.55	+2.27	1.28	15	9	16	6	sw	W. E. Utterback.	
Stockport	Van Buren	754	16	66.0	+ 4.2	87	25†	29	1	37	5.42	+0.92	1.81	1.0	12	15	11	5	sw	C. L. Beswick.
Thurman	Montgomery	—	21	68.6	+ 6.1	93	8	31	1	41	5.12	+0.21	2.18	9	5	26	—	—	C. R. Paul.	
Washington	Washington	769	36	65.7	+ 4.0	89	4	30 ^a	1	38 ^a	7.67	+3.64	1.64	15	9	13	9	sw	Wm. A. Cook.	
Winterset	Madison	1,129	27	67.4	+ 5.1	91	4	34	13	36	6.11	+1.47	2.60	T	17	17	11	3	sw	H. S. Ely.
Omaha, Nebr.	—	1,040	47	67.8	+ 5.3	92	8	39	13	46	4.08	-0.42	1.44	—	12	11	13	7	s	U. S. Weather Bureau.
Means and extremes	—	—	—	66.7	+ 5.0	98	9	25	1	60	6.11	+1.47	4.07	T	12	12	12	7	sw	—
State means and extremes	—	—	—	64.9	+ 4.4	98	9	25	1	60	6.87	+2.30	4.81	T	13	13	11	7	sw	—

The departures from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.
 Reference letters a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.
 †Also other dates. ††Received too late to be included in means and summaries.
 T. Precipitation is less than 0.01 inch rain or melted snow.

MISCELLANEOUS PHENOMENA.

Aurora: 16th.
Fog: 13th, 14th, 18th, 29th, 30th.
Frost: 1st, 11th, 13th, 14th, 20th, 23d.
Hail: Northern Division, 6th, 8th, 9th, 17th, 19th, 21st, Central Division, 8th, 9th, 17th, 18th, 19th, 20th, 21st, 22d, 25th, 26th; Southern Division, 8th, 9th, 19th, 21st, 22d, 23d, 24th, 26th, 27th, 28th. See note on page 55.
Halo (lunar or solar): 7th, 10th, 11th, 20th, 25th.
Sleet: 13th.
Thunderstorm: 6th, 7th, 8th, 9th, 10th, 13th, 14th, 15th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st.

RIVERS.

The rivers were below normal stages till about the middle of the month when the increased rainfall caused about the normal rise approaching the usual early summer maximum. Excepting slight overflows in some of the interior rivers of the eastern part of the State near the close of the month, the stages were generally moderate.

LATE REPORT.

Knoxville.—April, 1918; mean temperature, 46.5°; departure of mean from normal, -5.1; highest temperature, 79 on the 1st; lowest temperature, 20 on the 10th and 11th; greatest daily range in temperature, 46; total precipitation, 2.87; departure from the normal, -0.12; greatest in 24 hours, 0.65; total snowfall, 7.0 inches; number of days with .01 inch or more of precipitation, 10; clear days, 11; partly cloudy, 7; cloudy 12; prevailing wind direction, northwest.

ERRATA.

Report for March, 1918: Page 28; Guthrie Center; number of days with precipitation .01 published 2, should be 3.
 Report for April, 1918: Page 44; Des Moines; maximum temperature on the 19th, published 42, should be 44; Keokuk, minimum temperature on the 4th, published 36, should be 35; minimum temperature on the 7th, published 42, should be 41; minimum temperature on the 16th, published 54, should be 55; maximum and minimum temperatures on the 29th published 49 and 45, respectively, should be 52 and 43, respectively; mean maximum temperature published 54.9, should be 55.0; mean minimum temperature, published 39.2 should be 39.1.

Daily Precipitation for May, 1918.

Stations.	Watersheds.	Day of Month.																														Total						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31					
<i>Northern Division</i>																																						
Algona	Des Moines							1.25	1.50	.55								.60			.65												1.35		1.00			6.90
Allison	Cedar					.01	1.51	1.79	.06									1.06	.06	.86	.42				.78	T.					.91	.28	2.53	.11	.27	10.65		
Alta	Raccoon					.04	.16	.65	.68									.70	.55		.72	.65			.52					1.20	.10	1.60	.05	.03	7.08			
Alta (near)	Raccoon					.38	.18		.08	.06							.88					1.15	.04		.48				1.13	T.	2.20			.40	7.88			
Alton	Floyd						.21	.22					T.					.52		.83				.83		.07	.09		1.63	.16	.56			1.08	6.20			
Belmond	Iowa					T.			1.12	2.75	.13							.67	.08	.20		.50		T.	.78	.02	T.	1.40	.85	1.70	.05	.23	10.48					
Britt	Iowa					.01	.01	.38		2.43	.02				.01			.42	.03	.04	.49	.02	T.	.23	.01	T.	1.89	.30	1.43			.76	8.48					
Charles City***	Cedar					.07		1.22	2.36								1.50		.30					.12	T.	.07	.70	.42	.62	.02	.21	.02	.21	8.41				
Decorah	Mississippi						.03		.80	1.72							.61	.87	.52				.14			.12	.18	.79	.30	.04	.28			6.40				
Elkader	Mississippi					.25		.30	1.60								1.50		1.05				.30			.60			.30	.20	.15	.15			6.40			
Estherville	Des Moines					.05		.66	.35						1.00		.20	.50	.20		.60	.85		.05			1.22		.30			.35	6.33					
Fayette	Mississippi					.28	.03	.60	1.49	.15							.40	.79	.97	.40					.84			.37	.67	.16	T.	.14	7.29					
Forest City	Cedar						.02		1.80	1.55					T.		.40		T.		.10	.39		.16			1.00	.04	1.00	.10	.90	7.46						
Humboldt	Des Moines					.05		.40	.67								.57		.02		.68			.42		.02	1.04		.98		.03	.55	5.43					
Inwood	Big Sioux							.45	.22				.03		.35	.01	.47	.59	.28	.35		.03		.03		.02	1.00		.93	.05	1.20	5.98						
Lake Park	Little Sioux							.65	.45								.48		.60		1.56					1.80		.30		.86	6.70							
Lansing	Mississippi					.21		.54	3.29								.50	.12	1.00		.56			T.		.10	.13	.50	.11	.06			7.12					
Le Mars	Floyd						.27	.80	.14				.23				1.23		.87		.55			.02	.75		.09	.84	.05	.59		1.34	7.77					
Mason City	Cedar																																					
New Hampton	Wapsipicon		T.			.04	.03	.34	1.54	.26							.88	.44	1.47		.24				.10		T.	.55	.48	1.15	.06	.24	7.82					
Nora Springs	Cedar					.30		1.08	2.02					.02			1.46		.19		.50				.17	.04	.45	.75	1.55	.81	.20	.48	10.02					
Northwood	Cedar																																					
Pocahontas	Des Moines					.02			2.20	.05							.61		T.		1.03				.47			.91		.59		.19	6.07					
Postville	Mississippi					T.		.50	.96	.19							.73	.26	1.00		.06	.58			.98	.08		.36	.21	.21	.01	T.	5.58					
Rock Rapids	Big Sioux							.06	.69	.01			T.	.03	.20		.35		.34		.87			.05	.02			.89	.33	.37	.08	1.40	5.89					
Sanborn	Floyd					T.		.15	.37	.13					.29		.44		1.05		1.36				.04			1.33	T.	.51		1.08	6.75					
Sibley	Big Sioux							T.	.90	T.					.67		.43	.02	.44		1.11			T.	.02			1.58	1.14	.34		1.33	6.98					
Sioux Center	Floyd							.20	1.04	.18					.72		.38		.95		1.17				.10		.02	1.48	.68	.12	T.	1.43	8.47					
Storm Lake	Raccoon					.22		.13	.92	.04						.45	T.			1.08	.02	.01	.47		T.	1.06	.04	.89			.11	5.44						
Washita	Little Sioux							T.	.77				.07			.90				.80	.02	.07	.44		1.55			*	.40	.58	5.55							
Waverly	Cedar					.11	.10	.65								.80	.12	1.57		.80			T.	T.	.90		.05	.42	.65	1.00	.06	.14	7.37					
West Bend	Des Moines					.02		.46	*	1.09						.55		.04		.82			T.	T.	.91			1.44		1.02		.29	7.24					
<i>Central Div</i>																																						
Ames	Skunk					.13		.23	.06	T.						.78	.20	.04		.35	.03	.02	2.89	.02	.03	.90	.10	.17	.07	.43	6.45							
Audubon	Nishnabotna					.08		.38	.13				.36			.34		.03		.85			.10	2.17			1.10	.09	.44	.05	.11	6.23						
Baxter	Skunk					.56		.01	.07	.02		T.	T.			.46	.09	.60		.21	.14	.05	3.40	.30	.02	1.06	1.08	.09	.05	.20	8.41							
Belle Plaine	Iowa					.28		.06	1.28							.90	.30	.22		.28	.98	T.	2.59				1.42	.87	.10	T.	9.28							
Boone	Des Moines					.06	.04	.14	.26	.09						.86	.10	.04	.45	.09		.22	.07			.86	.12	.25	.02	.18	5.89							
Carroll	Raccoon					.02			.09	.02			T.	.15			.90	.46		.70	.32		1.30		T.	1.21	.15	.46	.20	.24	6.22							
Cedar Rapids	Cedar					T.	.28	T.	.48	T.						1.50		.10		.62			.70	.90			1.31	T.	.15			6.04						
Clinton	Mississippi					.50	.05	.16	.53	.49		.02				.35	.43	.12		.09	.15		1.06			.19	.19	.57			5.10							
Davenport***	Mississippi					T.	.50	.06	.25	.34	.02		T.			.84		.16		.69			2.02			.51	.21	1.42	T.	.06	7.15							
Delaware	Mississippi					.22	.26	.51	1.40							.72	1.25	.01	.18	.14			1.00	.52		.47	.50	.08	.01	.04	8.33							
Denison	Missouri					T.			.27				.32			.30		.50		1.14			.12	1.87		.01	1.80	.30	.62	.76	.32	8.23						
Des Moines***	Des Moines					.01	.22		T.	.02		T.	.25			.59		.04		.47	T.	.18	1.89	T.	.02	1.87	.02	.07	.08	1.14	5.87							
Dubuque***	Mississippi					T.	.41	.03	1.15	1.02	.04		.01			2.17	.16	.21	1.61		.61		.01	.76	.01	T.	.66	.05	.15		.19	8.64						
Fort Dodge	Des Moines					.07	T.	.04	.45	.05						.90	.25	.50	.80				.80			1.20	.15	1.65	.15	T.	7.01							
Gilman	Iowa					.42	.05		.76							1.03		.43		2.98				4.81	.07	T.	.91	T.	.14	.38	11.98							
Grinnell	Iowa					.43		.53	.05	T.						.50	.70	.51		.40	1.02	.06	4.00	.06		1.33	.25	.08	T.	.42	10.34							
Grundy Center	Cedar					.23		.24	1.52	.06						1.32		1.52		.25	1.72		.90			.45	.28	2.82	.03	.09	10.08							
Guthrie Center	Raccoon					.20		.05	.28	.08			.50			.08	.05		.06	.50	.02	.08	2.79			1.05	0.35	.18	.03	.20	6.50							
Harlan	Nishnabotna							.35	.05	.15			.14			.35		.23	.92				.22	2.50			1.40	.10	.32	.25	.28	6.91						
Independence	Wapsipicon					.38		.16	1.45							.61	.87	.56		.21	1.53		1.07	.21		.41	.06	.14			7.66							
Iowa City	Iowa						.66	T.	.72	.03			T.				1.34		.09		.22		1.51	.80	T.	T.	.47	.21	.17		6.22							
Iowa Falls	Iowa						T.	.15	1.24	.09							2.00	.43	.51	T.	1.09		.90			.45	.28	2.82	.03	.09	10.08							
Jefferson	Raccoon					.06			.07	.08			T.			.26	.06	.24		.46			T.	.04	1.40		T.	1.35	.43	.19	.11	.04	4.79					
Le Claire	Mississippi		T.			T.	.96	T.	.37	.24		.08				.80		.29				.72		.40	1.65			.65	.32	.75		7.28						
Little Sioux	Little Sioux							1.05					.14				.28						1.05		.18	.96		.06	1.10	.49	1.52	.48	.53	7.84				
Logan	Missouri												.10			.15		.85		.91			.14	1.15			1.50	.20	.25	.95	.07	6.27						
Maquoketa	Maquoketa					1.68		.20	1.38	.03	.02					.45	.27	.02	.18	.18			1.15			.55	.27			.36	6.74							
Marshalltown	Iowa					.02	.56	.08	.74							1.05	.70	.23	.09	.55		2.04	.55			.45	.31	.03	T.	.13	7.53							

Daily Precipitation for May, 1918—Continued.

Stations.	Watersheds	Day of Month.																														Total	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31
<i>Southern Division</i>																																	
Afton	Grand				.32		.15	.12			.12	.10				.50	.08			.85	.65	.15	.10				1.19	.20	.48	.23	.33	5.57	
Albia	Des Moines					0.26		.09					0.17				1.09			0.18	1.65	0.16	0.58	0.10				1.16	0.62			6.06	
Allerton	Chariton				0.22						.03	T.				0.73	.05	.20		1.58	1.00	.25	T.				.55	4.07	0.48			9.16	
Atlantic	Nishnabotna				.03	.04		.03	.02				T.	0.12			.15				.51	.88		.95	.02		2.01	.01	.05		.41	4.93	
Bedford	Missouri				.41		.09				.01	T.				.36				1.68	.27	.23				T.	1.85	.30	.60	.13	.45	6.38	
Bloomfield	Mississippi				.87			T.					T.			.50	.24	.20		1.55	.40	.20	.20				.20	3.00	1.75		.02	9.13	
Bonaparte	Des Moines				T.	.49	T.	T.	T.		.15	.04				1.00		.35		.37	.14	.02	.26				.24	2.74	1.10			6.90	
Burlington	Mississippi							1.35	.08		.15	.24	.05			.94		.21			1.06	T.	.47					.90	1.40	.11			6.96
Centerville	Chariton				.42	T.		.03	T.		.06	.04				.12	.40	.07		1.25	.76	.40	T.				.54	2.42	.83		.10	7.44	
Chariton	Chariton				.30	T.	T.				T.	T.				.47	.25	T.		1.35	.52	T.	.25	T.	T.		.85	.22	.48		T.	4.69	
Clarinda	Nodaway				.14	.14		.04					T.			.10				1.03	.21		.37	.01			1.15	.10			.17	3.46	
Columbus Jct.	Iowa				1.12			.15			T.	T.				.19	.42	.15			.70	.49	1.98				.28	2.74	1.15			6.89	
Corning	Nodaway				.56		.05	.15								.50				1.00	.13	.26	.57				1.62	.16	.10	.30	.14	5.54	
Corydon	Chariton				.25	.07		.04			.06	.04				1.13	.07	T.		1.51	.60	.29	T.	T.			1.21	2.33	.45		.07	8.12	
Creston	Missouri				.09	.18		.34					.08	T.			.20			.73	1.30		.20	.03			.95	1.40	.30		.09	5.89	
Cumberland	Nodaway				.22		T.				.02					T.				1.08	.23		.42				2.06	.60	.41		.14	5.27	
Earlham	Des Moines				.19				T.		.27					.37				.50	.37	.04	.72			T.	3.43	.15	.08	.07	0.25	6.44	
Fairfield	Skunk				1.31			.06			.03	.21				.86	.08			1.15			2.95				1.74	1.01				10.00	
Fort Madison	Mississippi				.67			1.10			.45	.14				.76		.76			.15	.10	T.	.20			3.62	1.11				9.06	
Glenwood	Missouri				.01		T.				T.	.10				.02				.94	.05	.18	.08		.10	.80	T.	.08	.06	.30	2.72		
Greenfield	Nodaway				.25			.08			T.	.12	T.			.96	.02			.38	.07	.25	.33		T.	3.02	.27	.18	.10	.45	6.48		
Indianola	Des Moines				T.	.60		T.			T.	.29				.33	.02		.01	.93	1.34	.11	1.19		T.	1.34	.23	.29	.14	.22	7.04		
Keokuk**	Mississippi				.55		.18				T.	.52	.10			1.05		.52		T.	.06	.02	.01				1.71	1.51	.49			6.72	
Keosauqua	Des Moines				1.54						.15	.03				.52	.09	.34		.58	.27	.06	.08				.08	2.25	1.47			7.46	
Knoxville	Des Moines				.33		T.		T.		T.	.21				.28	.12			.52	.25	.12	.75		T.	.60	.24	.38	T.	.30	4.10		
Lacona	Des Moines				.50				.02			.40				.30				.85	.48	.10				.08	1.26	.10	.08	.10	.23	4.50	
Lamoni	Grand				.28	.26		.03								.80				1.70	.72	.21	.31				.30	.35	.75	.03		5.74	
Lenox	Missouri				T.	.40		.04								.30				1.00	.35		.18	.03			1.57	.12	.38	.08	.58	5.03	
Mount Ayr	Grand				.62			.05			.02	T.				.62	.03			2.59	.46	.13	.08				.77	.43	.46	T.	.53	6.79	
Mt. Pleasant	Skunk				T.	.37		1.50			.12	.08				.29	.34		.10	.29	.04		1.05				.14	.30	.85			5.97	
Murray	Grand				T.	.57		.12	.11			T.	.12			.23	.02	.01		1.48	.38	.18	.20				1.62	.15	.50	.08	.30	6.07	
Northboro	Tarkio				.13			T.								.12	.02			1.32	.05	.25	.01		.09	2.62		.13	.45	.30		5.49	
Oskaloosa	Des Moines				.23			T.				.02				2.27		.56		.85		.03	.62		T.	.53	T.	.36		T.	5.47		
Ottumwa	Des Moines				.62		T.	.05	T.		.05	.10				.41	.16	.05		1.06	.27	.10	1.14				.26	.63	.57	.05		5.52	
Pella	Skunk				T.	.30		T.			T.	.10				.78	.10	.13		.33	.50	.11	.81	T.	T.		.63	.05	.32	T.	.08	4.24	
St. Charles	Des Moines				.37				.04			.16								.58	.05		.58				1.47	.10		.34	.26	4.68	
Sigourney	Skunk				T.	.55		.75			T.	.08				1.03	.02	.12	.28	.80	.10	.06	1.28		T.	.34	.18	.81		.15	6.55		
Stockport	Skunk				.87			.02			.13	.02				.59	.19	.03	.40		.59	.19	.03	.40			.04	1.81	1.02			5.42	
Thurman	Missouri				T.			T.	T.		T.					T.				1.74	.24	.26	.28		T.	2.18	.10	.18	.12	.02	5.12		
Washington	Skunk				1.02			.52	.02			.03	.07			.31	.55	.35		.63	.37		1.64				.34	.27	1.37		.18	7.67	
Winterset	Des Moines				.27		.01	.05				.19				.26	.05			.68	1.05	.10	.37	.01	.09	2.60	.02	.08	.10	.25	6.11		
Omaha, Nebr.**	Missouri				T.		.15	.01			.02					.05		.18		.80		.55				.30	1.44	.10		.09	.39	4.08	

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for 24 hours ending at the time of observation.

|||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

***Regular Weather Bureau Station; precipitation is for 24 hour period, midnight to midnight.

**Incomplete

*Precipitation included in the next following measurement.

HAILSTORMS OF JUNE, 1918.

M. V. ROBINS.

On the 6th light hail fell in Franklin County, and on the 8th and 9th a number of storms occurred, but on neither date was any serious damage reported, although in Jefferson County and southeast of Sanborn, O'Brien County, large hail fell. Hampton reported hail varying in size from one-fourth inch to one and one-fourth inches in diameter, but little harm resulted except that windows were broken and the soil packed by the stones. Grinnell reported a fall of moderate sized stones that injured tender plants and did considerable damage to greenhouses, and Mt. Pleasant a storm with but little damage. On the 9th hail fell in scattered areas along the eastern border of the state, Dubuque reporting light hail with but slight damage. In the vicinity of Davenport there was a light fall covering an area about 8 miles in width by 10 in length extending from Rock Island and Moline, Ill., northward and northeastward to Eldridge

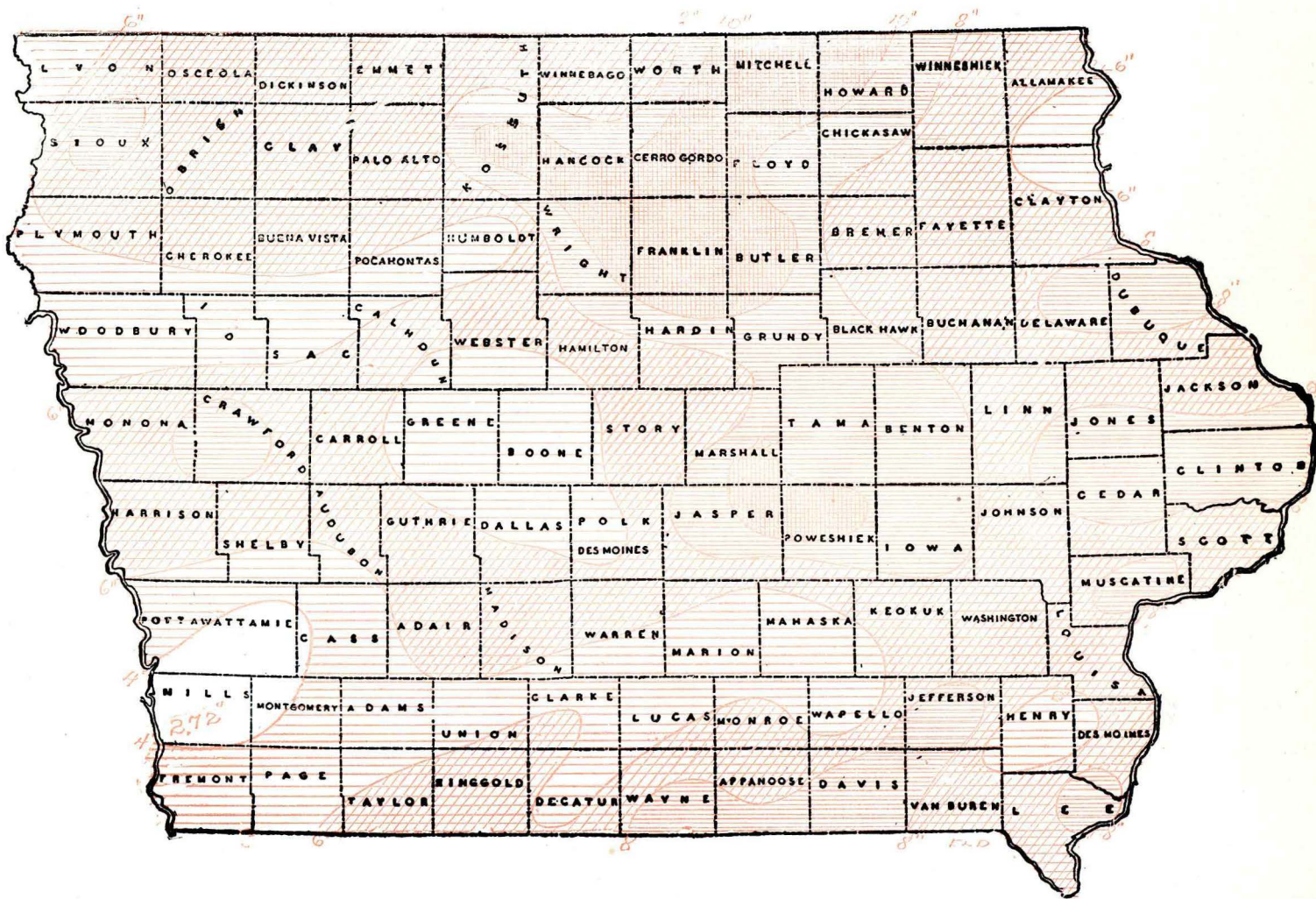
and Argo, Iowa, and while some of the stones were very large, practically no damage resulted except to fruit blossoms. Burlington, Kingston and Danville reported hail and there was a heavy fall in Lee County, but no damage was reported. Pocahontas, in the northern section, also reported a light fall but no damage except to early garden truck. On the early morning of the 10th near Fairfield some damage resulted from hail that varied in size from hickory nuts to hens' eggs. On the 21st in the southwestern and south-central districts, considerable damage was done in Adams, Taylor, Pottawattamie, Fremont and Ringgold counties. In some places in the last named, hail the size of wrens' eggs drifted to a depth of several feet beating down oats, corn and garden truck. In the other counties in this district rye and other grains were seriously damaged and in places ruined, but fruit seems to have suffered most. In the southwestern part of Pottawattamie County over a considerable area, berries, garden truck and fruit were practically ruined.

Daily Maximum and Minimum Temperatures for the Month of May, 1918.

Table with columns for Stations, days 1-31, and Mean. Rows are categorized by Northern Division, Central Division, and Southern Division, listing various Iowa cities and their daily temperature ranges.

a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record. §§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

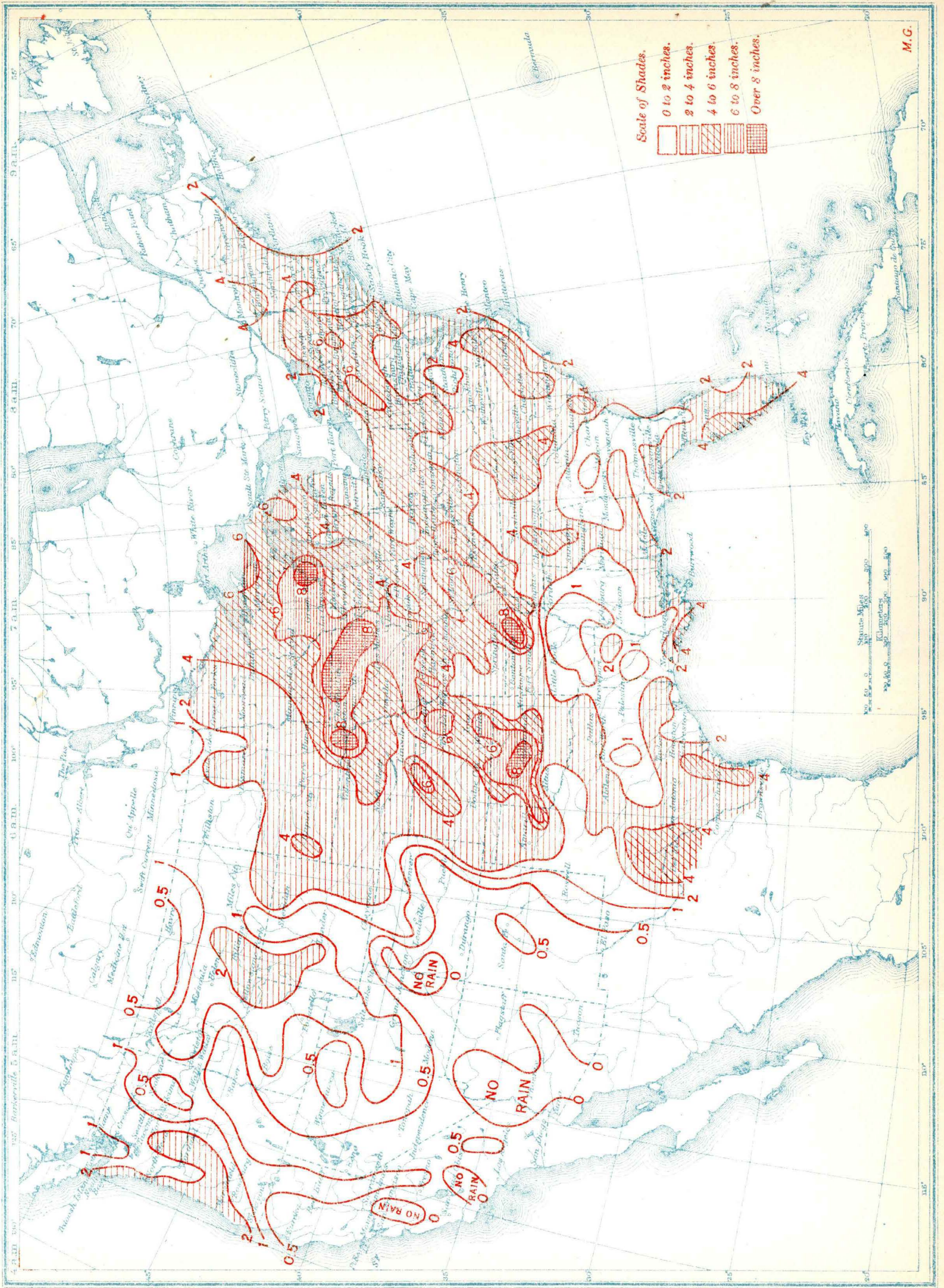
TOTAL PRECIPITATION MAY, 1918.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, May, 1918.



Scale of Shades.
0 to 2 inches.
2 to 4 inches.
4 to 6 inches.
6 to 8 inches.
Over 8 inches.

Statute Miles
0 100 200 300 400 500
Kilometers
0 100 200 300 400 500

M.G.

AUG 19 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

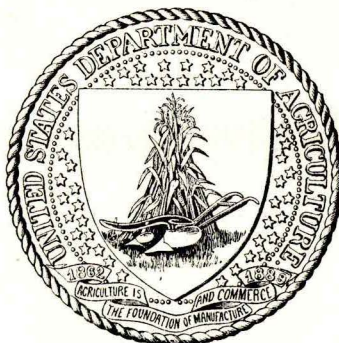
IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

JUNE, 1918

BY

CHARLES D. REED

METEOROLOGIST

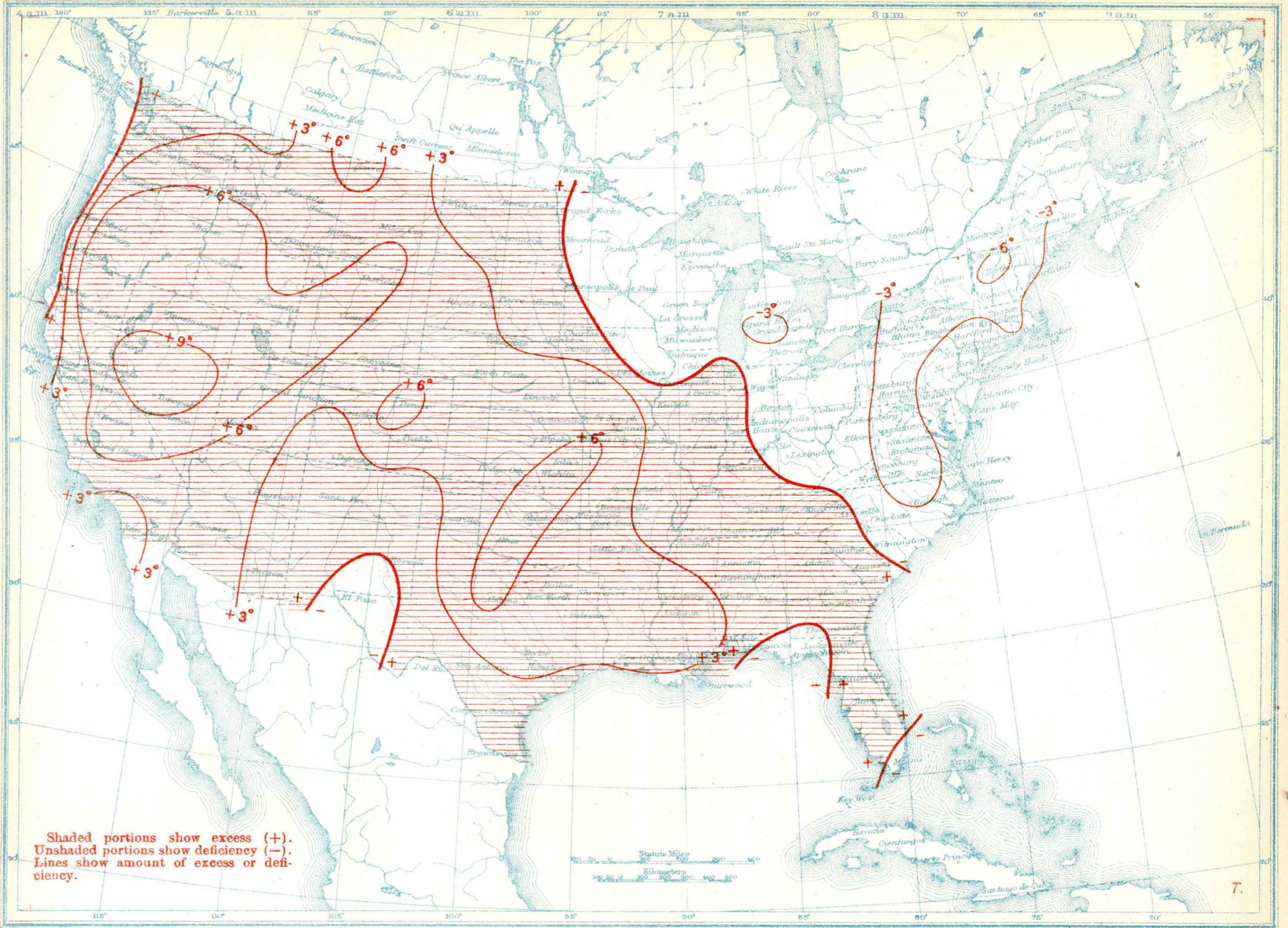


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

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Departure of the Mean Temperature from the Normal, June, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST

VOL. XXIX DES MOINES, IOWA, JUNE, 1918 No. 6

GENERAL SUMMARY.

Temperatures averaged about 5 degrees in excess of the normal in the southwestern and about 1 degree below normal in the northeastern counties. The period 10th-16th was notably warm. On the 16th, many stations reported temperatures of 100 degrees or higher and broke their June records. During the period, 2d-5th, excessive rains occurred from Webster and Hamilton, southeast to Poweshiek and Johnson counties, causing unusual overflows in the watersheds involved. Precipitation was very deficient in several southwestern counties. A severe hailstorm occurred in portions of Polk, Marion and Mahaska counties on the 27th.

Crops made excellent progress, except oats which were prematurely ripened by the hot weather in the southwestern portion of the State; early potatoes also were injured. Corn was far advanced and some laid by at the close of the month. Rye harvest began in the southern counties about the 25th, and oats toward the close of the month.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.93 inches. The highest recorded was 30.33 inches, at Sioux City, on the 7th, and the lowest was 29.56 at Sioux City on the 1st. The monthly range was 0.77 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of stations, was 70.8°, or 1.7° higher than normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 68.7°, or 1.1° higher than the normal; Central 70.6°, or 1.3° higher than the normal; Southern, 73.1°, or 2.8° higher than the normal. The highest monthly mean was 76.4°, at Thurman, in the extreme southwestern part of the State, and the lowest was 65.7° at Postville, in the extreme northeast. The highest temperature reported was 105° at Omaha, Neb., on the 16th and the lowest was 38°, at West Bend, on the 2nd. The temperature range for the State was 67°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 77 per cent, and at 7 p. m. it was 60 per cent. The mean for the month was 69 per cent, or normal. The highest monthly mean was 74 per cent, at Charles City, and the lowest was 66 per cent, at Sioux City.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 111 stations, was 5.29 inches, or .091 inch more than the normal. By divisions the averages were as follows: Northern, 4.89 inches, or 0.46 of an inch more than the normal; Central, 6.49 inches or 2.17 inches more than the normal; Southern, 4.50 inches, or 0.11 of an inch more than the normal. The greatest amount, 10.19 inches, occurred at Monroe, and the least, 1.55 inches at Audubon. The greatest amount in 24 consecutive hours, 5.37 inches, occurred at Monroe, on the 24th.

WIND.

The prevailing direction of the wind was from the southeast. The highest velocity reported from a regular Weather Bureau station was 45 miles an hour, from the northeast, at Sioux City, on the 24th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 69, or about 1 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 57; Davenport, 67; Des Moines, 76; Dubuque, 64; Keokuk, 67; Sioux City, 74; Omaha, Neb., 80.

MISCELLANEOUS PHENOMENA.

Aurora: 9, 11.

Fog, dense: 4th, 6th, 25th, 26th, 28th.

Hail: Northern Division, 3d, 6th, 14th, 20th, 27th, 30th; Central Division, 3d, 5th, 27th; Southern Division, 1st, 2d, 3d, 4th, 5th, 24th, 27th, 28th. The hailstorms of June will be more fully covered in the report for July.

Halos, solar: 1st, 2d, 7th, 9th, 11th, 22d.

Thunderstorms: All days except 7th, 8th, 11th, 12th, 15th, 21st, 22d, 23d.

Rainbow: 5th, 29th.

LATE REPORT.

Mason City; May, 1918: Mean temperature, 63.7; departure of mean from normal, +4.9, highest temperature, 91 on the 3rd and 16th; lowest, 29 on the 13th; greatest daily range in temperature, 42; total precipitation, 8.42; departure from normal, +3.76; greatest in 24 hours, 1.70 on the 9th; total snowfall, 0.0; number of days with .01 or more of precipitation, 13; clear days, 15; partly cloudy, 15; cloudy, 1; prevailing wind direction, northeast.

COMPARATIVE DATA FOR THE STATE—JUNE.

YEAR	Temperature				Precipitation					Number of Days		
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	72.7	+3.6	106	44	7.76	+3.88	16.63	1.57	11	12	10	8
1891	69.1	0.0	99	37	5.39	+1.01	19.88	1.68	11	8	10	12
1892	69.2	+0.1	102	42	5.19	+0.81	14.16	0.67	10	12	11	7
1893	71.2	+2.1	100	40	3.91	-0.47	7.56	1.36	8	15	11	4
1894	73.2	+4.1	104	34	2.67	-1.71	6.20	0.57	7	16	10	4
1895	69.7	+0.6	102	34	4.32	-0.06	9.26	0.98	10	11	11	8
1896	69.1	0.0	100	40	3.11	-1.27	7.89	0.81	9	12	13	5
1897	69.1	0.0	103	29	3.81	-0.57	9.38	1.03	10	10	12	8
1898	71.4	+2.3	99	42	4.72	+0.34	12.48	1.90	9	13	10	7
1899	70.7	+1.6	100	42	5.04	+0.66	11.99	1.10	10	12	13	5
1900	69.7	+0.6	102	38	3.98	-0.40	12.35	0.67	5	17	10	3
1901	72.3	+3.2	106	30	3.71	-0.67	7.84	1.05	9	16	11	4
1902	65.2	-3.9	97	32	7.16	+2.78	16.04	1.46	14	8	11	11
1903	64.6	-4.5	96	30	2.86	-1.52	6.04	0.75	10	13	10	7
1904	67.1	-2.0	94	35	3.45	-0.93	8.35	0.44	7	13	10	7
1905	69.9	+0.8	100	36	5.53	+1.15	14.89	1.80	10	12	11	7
1906	67.9	-1.2	99	37	3.92	-0.46	8.27	1.48	8	15	10	5
1907	66.5	-2.6	98	36	5.35	+0.97	9.33	2.07	11	14	9	7
1908	67.1	-2.0	94	35	5.66	+1.28	11.88	1.77	13	12	10	8
1909	69.1	0.0	96	40	6.41	+2.03	13.30	2.80	13	12	10	8
1910	69.5	+0.4	105	33	1.99	-2.39	5.51	0.05	7	18	7	5
1911	75.7	+6.6	103	36	1.82	-2.56	6.23	0.06	5	20	8	2
1912	63.2	-2.9	101	34	2.74	-1.64	5.71	0.78	7	15	9	6
1913	71.5	+2.4	102	33	3.31	-1.07	8.95	0.74	7	19	8	3
1914	72.2	+3.1	101	40	5.57	+1.19	13.24	1.17	13	12	14	4
1915	65.1	-4.0	91	31	4.16	-0.22	9.99	1.72	11	12	12	6
1916	64.5	-4.6	98	38	3.71	-0.67	7.96	1.41	10	13	11	6
1917	66.0	-3.1	100	32	6.65	+2.27	13.82	3.04	12	13	10	7
1918	70.8	+1.7	104	38	5.29	+0.91	10.19	1.55	11	16	10	4

Climatological Data for June, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days				Observers		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in. or more.	Clear.	Partly cloudy.		Cloudy.	Prevailing direction of wind.
Webster City	Hamilton	1,044	13	70.4	+ 0.7	99	16	45	7	33	9.35	+5.25	3.10	0	12	19	4	7	se	C. D. Carpenter. Burr B. Butler. Dr. F. C. Schadt.
Whitten	Hardin	1,036	21	70.3	+ 1.4	102	16	45	7	34	8.47	+4.03	2.45	0	11	15	5	10	sw	
Williamsburg	Iowa	765	2	70.6	-----	100	16	49	7	20	8.31	-----	2.62	0	12	18	6	6	sw	
Means and Extremes				70.6	+ 1.3	102	16	44	7†	40	6.49	+2.17	5.37	0	12	16	8	6	se	
Southern Division																				
Afton	Union	1,212	24	74.4	+ 3.6	99	11	48	7	32	3.61	-1.33	2.15	0	9	13	15	2	sw	J. E. Deitrick. F. H. Holmes. Noel C. Huston. Thos. H. Whitney. E. E. Healy.
Albia	Monroe	959	20	71.2	+ 1.7	99	16	48	7†	36	7.01	+2.89	2.75	0	12	14	6	10	sw	
Allerton	Wayne	1,122	16	70.7	+ 0.5	97	16	49	7	26	3.55	-0.66	1.20	0	8	18	10	2	s	
Atlantic	Cass	1,164	27	73.6	+ 4.0	102	16†	48	7	36	2.39	-2.73	0.60	0	11	16	8	6	se	
Bedford	Taylor	-----	18	73.8	+ 4.2	100	11	48	7	35	2.75	-1.19	0.79	0	8	22	4	4	s	
Bloomfield	Davis	881	11	73.4	-----	99	16	52	7†	33	5.30	+1.39	2.00	0	9	13	15	2	se	V. G. Warner. Bruce R. Vale. Mrs. J. A. Donnelly. S. A. Martin. C. C. Barry.
Bonaparte	Van Buren	565	27	72.2	+ 1.8	99	16	50	7†	33	4.61	+0.37	1.25	0	10	22	6	2	e	
Burlington	Des Moines	544	22	72.2	+ 0.3	102	16	52	22	38	3.47	-0.92	1.89	0	6	15	10	5	se	
Centerville	Appanoose	1,013	13	73.6	-----	100	16	50	6	33	4.27	-----	1.86	0	10	11	15	6	sw	
Chariton	Lucas	1,042	23	70.6	+ 1.9	96	11†	47	22	85	5.26	+0.98	2.05	0	7	13	15	2	sw	
Clarinda	Page	1,009	28	75.2	+ 5.2	104	17	50	7†	33	4.93	+0.11	3.87	0	8	21	6	3	ne	A. S. Van Sandt. J. P. Johnston. J. C. Smith. Mar. C. Miller. Mrs. Tillie E. McConnell.
Columbus Jet.	Louisa	595	17	71.6	+ 0.6	96	16	53	22	28	6.32	+2.16	1.15	0	14	21	7	2	e	
Corning	Adams	1,117	26	74.4 ^b	+ 5.0	101 ^a	11	48 ^b	7	33†	2.31	-1.79	0.72	0	8	-----	-----	-----	sw	
Corydon	Wayne	1,101	25	72.4	+ 2.1	99	16	48	7†	32	4.57	+0.28	1.60	0	12	15	13	2	ne	
Creston	Union	1,312	13	72.8	+ 4.3	101	16	47	7†	38	4.88	-----	2.47	0	12	14	13	3	se	
Cumberland	Cass	-----	19	-----	-----	-----	-----	-----	-----	-----	4.10	-0.34	0.90	0	9	29	0	1	sw	J. H. Reppert. Geo. Phillips. R. Monroe McKenzie. F. M. Myers. Dr. Geo. Mogridge.
Earlham	Madison	1,126	16	72.3	+ 4.6	99	16	47	7	29	4.66	+0.42	1.77	0	10	-----	-----	-----	nw	
Fairfield	Jefferson	780	34	71.8 ^a	+ 1.1	69 ^e	16	50 ^d	7†	37 ^d	8.19	+3.42	3.00	0	12	-----	-----	-----	nw	
Fort Madison	Lee	516	69	-----	-----	-----	-----	-----	-----	-----	6.72	+2.39	4.65	0	9	14	8	8	sw	
Glenwood	Mills	1,100	21	75.4	-----	101	16	49	7	33	3.60	-----	1.30	0	8	20	8	2	ne	
Greenfield	Adair	-----	26	74.2	+ 4.0	101	15	48	7	29	4.74	-0.19	1.45	0	8	10	20	0	sw	Frank A. Ward. Prof. J. L. Tilton. U. S. Weather Bureau. J. H. Landes. W. J. Cassey.
Indianola	Warren	969	26	70.8	+ 0.5	98	16	49	7†	37	3.71	-0.75	1.25	0	10	14	8	8	sw	
Keokuk	Lee	614	47	74.6	+ 2.1	101	16	56	22	28	3.90	-0.45	2.61	0	11	16	12	2	ne	
Keosauqua	Van Buren	644	26	73.2	+ 1.9	100	16	47	8	36	6.25	+2.22	5.23	0	7	13	14	3	ne	
Knoxville	Marion	920	23	73.3	+ 2.2	100	16	49	8	36	6.52	+2.57	3.30	0	10	19	6	6	se	
Lacona	Warren	-----	19	-----	-----	-----	-----	-----	-----	-----	6.60	+2.13	3.60	0	13	6	20	4	-----	J. B. Alter. Chas. B. Woodstock. J. L. Hurley. Alex Maxwell. J. W. Edwards.
Lamoni	Decatur	-----	11	71.6	+ 0.7	96	11†	49	7†	33	4.79	-----	1.55	0	12	12	17	1	ne	
Lenox	Taylor	1,250	23	75.1	+ 5.5	102	15†	48	7	34	2.09	-1.97	0.67	0	9	23	7	0	s	
Mount Ayr	Ringgold	1,236	25	74.0	+ 3.4	100	11	50	7	33	2.38	-2.46	0.79	0	10	21	4	5	ne	
Mt. Pleasant	Henry	729	37	72.6	+ 1.2	101	16	49	8	36	5.63	+0.52	2.47	0	10	17	8	5	ne	
Murray	Clarke	1,216	27	73.6	+ 3.6	97	15†	49	7	32	6.54	+2.60	2.88	0	12	13	12	5	ne	M. T. Ashley. J. M. Darby. Jos. Boyd. Thomas Ray. J. H. Ver Steeg.
Northboro	Page	1,120	6	77.0	-----	103	11	50	7	36	1.98	-----	1.03	0	6	22	5	3	sw	
Oskaloosa	Mahaska	843	42	71.6	+ 1.4	97	16	51	7	32	5.44	+1.37	2.99	0	8	18	4	8	sw	
Ottumwa	Wapello	849	23	74.7 ^a	-----	99 ^a	16	52 ^a	22	32 ^a	5.97	+2.14	3.03	0	10	20	0	10	nw	
Pella	Marion	877	15	71.8	+ 1.4	101	16	51	8†	30	5.93	+2.44	2.25	0	10	21	0	9	nw	
St. Charles	Madison	1,070	17	72.4	+ 2.7	101	16	48	7	32	4.78	+0.20	1.47	0	10	18	9	3	sw	R. D. Minard. L. L. Hunter. W. E. Utterback. C. L. Eswick. C. R. Paul.
Shenandoah	Page	-----	-----	73.8 [†]	-----	103 ^c	16	45 ^e	30	35†	2.27	-----	0.71	0	6	23	2	5	s	
St. Gourney	Keokuk	877	22	71.0	+ 0.2	98	16	50	22	29	5.35	+1.46	1.20	0	12	17	5	8	se	
Stockport	Van Buren	754	16	71.2	+ 0.6	99	16	48	8	32	4.96	+0.41	1.96	0	11	16	10	4	n	
Thurman	Fremont	-----	21	76.4	+ 5.1	104	16	49	22	38	1.82	-3.79	0.74	0	6	14	14	2	ne	
Washington	Washington	769	36	72.0	+ 1.0	97	16	52	22	30	5.00	+1.12	1.20	0	9	12	11	7	sw	Wm. A. Cook. H. S. Ely. U. S. Weather Bureau.
Winterset	Madison	1,129	27	73.2	+ 3.0	100	16	47	7	31	2.60	-2.43	0.62	0	10	22	7	1	nw	
Omaha, Neb.	-----	1,040	47	73.1	+ 4.5	105	16	53	7	29	1.80	-3.25	0.40	0	10	17	10	3	n	
Means and Extremes				73.1	+ 2.8	105	16†	45	30	43	4.50	+0.11	5.23	0	10	17	9	4	sw	
State means and extremes				70.8	+ 1.7	105	16	38	2	43	5.29	+0.91	5.37	0	11	16	9	5	se	

The departures from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining division means.

Reference letters, a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.

†Also other dates. ††Received too late to be included in means and summaries.

T. Precipitation is less than 0.01 inch rain or melted snow.

RIVERS.

Moderate stages prevailed in the Missouri river but the flood stage was not reached, nor was the flood stage reached on the Mississippi except near Keokuk, where flood conditions prevailed from the 10th to the 14th, inclusive, due to the heavy discharge of the Skunk, Iowa and Des Moines rivers; above Burlington moderate stages prevailed but a great deal of bottom land was flooded and some crops destroyed. In the interior of the State rivers and small streams were overflowed for a considerable period due to an unusually heavy fall of rain on the 3rd and 4th, in the central counties. At Boone the Des Moines river reached a stage of 23.2 feet on the 5th, which is within 2.2 feet of the highest of record and 6.2 feet above the flood stage. The principal damage was to crops and bridges but there was some damage to other property, and train movements for a time were demoralized.

ERRATA.

Report for April, 1918: Page 40, Ames, greatest precipitation in 24 hours, published 0.36, should be 0.40; Little Sioux, greatest precipitation in 24 hours, published 0.35, should be 0.52; Britt, mean temperature published 43.2, should be 43.4, departure from the normal published -3.4, should be -3.2; page 44, Mason City, maximum temperature on 17th published 48, should be 50; mean of the maximum published 54.8, should be 54.9.

Report for May, 1918: Page 52, Forest City, total precipitation published 7.46, should be 6.56; departure from the normal published +2.97, should be +2.07; Page 54, Forest City, precipitation on 31st published 0.90, should be 0.00; total precipitation published 7.46, should be 6.56; page 55, Keokuk, no precipitation published on 20th, should be T.

Daily Precipitation for June, 1918—Continued.

Stations.	Watersheds	Day of Month.																													Total				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		30			
<i>Southern Division</i>																																			
Afton	Grand			.33	.31	.15												T.							.25	2.15	.26	.02	.11	.03			3.61		
Albia	Des Moines	.10	.52	.81	.26	.05				.03					T.					.03	.07				1.62	2.75			T.	.05	.72	7.01			
Allerton	Chariton		.30	.07	.50								.40						.03						1.20	T.				.15	.90	3.55			
Atlantic	Nishnabotna	.14	.37	.27	.16	.20									.42				T.	T.							.60		.15	.02	.04	2.39			
Bedford	Missouri		.30	.06	.24	.76									.79									T.	.25				.17	.18		2.75			
Bloomfield	Mississippi		.45	1.10	.01	.08					.01				T.						T.	T.				2.00	.95			.05	T.	.65	5.30		
Bonaparte	Des Moines	.17	.03	1.25	T.	.12	T.				T.				T.						T.	.35	.07			1.00	1.06		T.	.28	T.	.28	4.61		
Burlington	Mississippi			T.		.03															.10	.45				.20	1.69		1.00			3.47			
Centerville	Chariton		.06	T.	.03	.02					T.				.10						T.	T.				1.06	1.86	.01		.11	.08	.94	4.27		
Chariton	Chariton		.46	.20	.95	.76	T.								T.											.50	2.05			T.	T.	.34	5.26		
Clarinda	Nodaway	.05	.22			3.50	.37								.46						T.				T.	T.				.06	.15	.12	4.98		
Columbus Jct.	Iowa	.25	.17	.20	.20	.55	T.				.15										.28	.70	.17			.90	1.15		.15	.72		.73	6.32		
Corning	Nodaway		.59	T.	.16	.11									.67											.72					.06		2.31		
Corydon	Chariton		.18		.10	.92	.01								.39													.01	.02		.22	.20	.91	4.57	
Creston	Missouri	.20	.75		.23	.10	.20	T.							.30											T.	.30	2.47			.05	T.	.08	4.88	
Cumberland	Nodaway		.90	.62	.38	.21	.18								.67												.85						.28	4.10	
Earlham	Des Moines		.48	.94	1.77	.43	.10				.15				.21											.39					.11	T.	.07	4.66	
Fairfield	Skunk	.16	.17	.20	3.00	.53	T.																			.65	2.41			.03	.05		.31	8.19	
Fort Madison	Mississippi	T.		.60	.05	.02									T.											1.02	.02			.30	.02	T.	.04	6.72	
Glenwood	Missouri		1.30		.31	.24	.80								.68												.05	.07			T.	.15		3.60	
Greenfield	Nodaway		.80	.25	1.45	.28	.28				T.				.38												1.15				.15	T.		4.74	
Indianola	Des Moines		.44	.76	.51	.37	T.								.11											1.25				.05	.02		.10	3.71	
Keokuk**	Mississippi				.54										.01												2.61	T.		.02	.08	.02	.07	3.90	
Koesauqua	Des Moines			.21	.11	T.					T.																4.25	.98			T.	T.	.31	6.25	
Knoxville	Des Moines	.58	.42	.93	.70	.11	T.				.06				T.												3.30	.30		.05	T.			6.52	
Lacona	Des Moines		.45	.41	.55	.95					.04				.07												3.60	.40			.02	.01	.05	6.60	
Lamoni	Grand	.60	.17				1.55				.16				.38	.33										.08	.05				.13	.69	4.79		
Lenox	Missouri		.67		.15	.07	.45																					.35			.10	.15	2.09		
Mount Ayr	Grand		.05		.02		.79								.69														.01	.29		.15	.25	1.22	
Mt. Pleasant	Skunk	.17		.17		.75	.27				T.				T.													.75	.27		T.	.07		5.63	
Murray	Grand		.48	.10	2.88	T.	.16				.04				.33																	.05	.05	.01	6.54
Northboro	Tarkio		.22				1.03								.27																.20	.25		1.98	
Oskaloosa	Des Moines		.30	.19	.71	.34	T.								T.																.14		.64	5.44	
Ottumwa	Des Moines	.06	.25	.43	.07	.17																										.06		.65	5.97
Pella	Skunk	.08	.52	.66	1.49	.29	.04								T.																.40	T.	.15	5.93	
St. Charles	Des Moines		.50	.61	.62	1.04	.07				.09				.30																		.05	.03	4.78
Shenandoah	Nishnabotna	.61			.71	.48									.35																	.08	.04	2.27	
Sigourney	Skunk		.26	.38	.61	.86	T.																									.54	T.	1.20	5.35
Stockport	Skunk	.02	.01	.28	.05	.08																										.02	T.	.32	4.96
Thurman	Missouri		.74		.05		.72								.12																		T.	.15	1.82
Washington	Skunk			.35	.15	.42	.28																											1.20	5.00
Winterset	Des Moines		.62	.46	.11	.62	.05				.09																					.07	.04		2.60
Omaha, Neb.***	Missouri	.40		.21	.01	.17	.27								.36																		T.	.08	1.80

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours at the time of observation.

||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

***Regular Weather Bureau station; precipitation is for the 24 hour period, midnight to midnight.

**Incomplete. T. Trace, or less than 0.01 inch.

*Precipitation included in the next following measurement.

IOWA CROP REPORT, JULY 1, 1918.

Reports received July 1, from township correspondents of the Iowa Weather and Crop Service, show the following results as to the acreage and average condition of staple farm crops:

Corn. The acreage planted this year, after making allowance for the acreage lost by floods and washing, is 10,337,700 or 33,000 less than last year, as shown by Township Assessors. The condition was 105 per cent, or 18 per cent better than on July 1, 1917. The stand is remarkably good, considering the low vitality of the seed. This is probably due to the untiring efforts of the County Agricultural Agents and farmers in seed testing, together with unusually favorable weather and soil conditions at planting time. The crop is far advanced.

Oats. Area seeded, 5,526,500 or 116,500 acres more than last year. Condition, 97 per cent, is 5 per cent less than last year.

Spring Wheat. Area seeded, 580,400 acres, or an increase of 415,600 acres over last year. Condition, 101 per cent, or 2 per cent better than last year. The increase in acreage is a patriotic response of the farmers to the appeal of the State Council of Defense made through the County Agents.

Winter Wheat. Acreage to be harvested, 197,270, or 46,172 acres more than in 1917. Condition, 92 per cent or 12 per cent better than last year.

Barley. Acreage seeded, 340,100, increase 34,700 acres. Condition, 100 per cent, 2 per cent better than last year.

Rye. Acreage, 50,040 which is 1,636 more than last year. Condition, 96 per cent or 2 per cent better than last year.

Flax. Acreage, 8,687 as compared with 8,384 in 1917. Condition, 95, or 1 per cent better than last year.

Potatoes. Acreage, 97,210 a decrease of about 3,000 acres. Condition, 97 per cent, or 9 per cent lower than last year.

Hay. Acreage of tame and wild hay, 2,994,200, or 291,900 acres less than in 1917. Condition, 88 per cent, or 5 per cent better than last year.

Alfalfa. Acreage, 116,040; increase, 870 acres.

Pastures. Acreage, 9,080,400; decrease, 415,900 acres. Condition, 92 per cent, or 3 per cent below last year.

Fruit. The Secretary of the State Horticultural Society reports the condition of fruit on July 1, as follows: "Summer apples, 32%; fall apples, 36%; winter apples, 38%; cherries, 38%; pears, 14%; American plums, 37%; Domestic plums, 18%; Japanese plums, 9%; grapes, 49%; red raspberries, 60%; black raspberries, 68%; blackberries, 70%; currants, 65%; gooseberries, 70% of a full crop. The average for all fruits is 48%, or 9% below the last 5-year average. The indications are that there will be about half as many apples and plums as last year, and about the same quantity of grapes and raspberries as in 1917."

Daily Maximum and Minimum Temperatures for the Month of June, 1918.

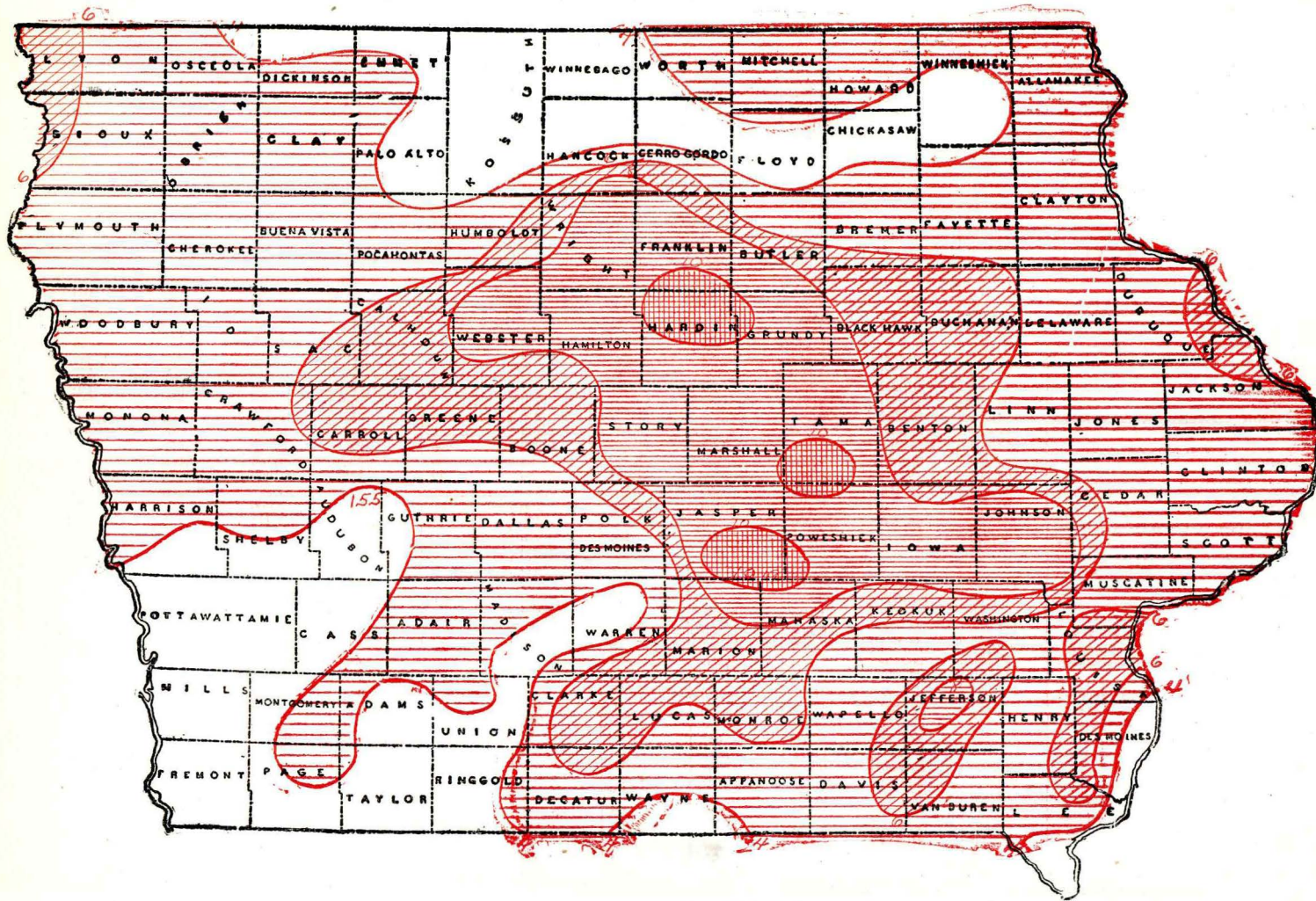
Table with columns for Stations, days 1-30, and Mean. Rows are categorized by Northern Division, Central Division, and Southern Division, listing various Iowa cities and their daily temperature ranges.

a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record. §§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

IOWA CROPS, 1918, ESTIMATED NUMBER OF ACRES BY COUNTIES.

Counties	Corn	Oats	Spring Wheat	Winter Wheat	Barley	Rye	Flax	Potatoes	Tame Hay	Wild Hay	Alfalfa	Pastures
Adair	120,000	39,300	3,000	1,000	4,200	40		820	25,200	1,560	70	117,700
Adams	82,100	26,900	1,900	1,600	1,200	210		450	18,500	1,440	490	88,000
Allamakee	45,100	37,100	8,700	1,000	7,500	450	20	1,090	48,800	1,020	50	160,000
Appanoose	50,100	21,400	1,000	1,700	100	320		290	30,600	720	50	120,000
Audubon	91,600	37,500	5,000	900	8,500	30		780	25,000	1,980	1,040	72,600
Benton	147,300	85,800	2,000	200	8,000	900		1,100	31,800	2,000	70	96,600
Black Hawk	102,900	64,100	1,000	400	4,300	1,900	5	1,610	24,600	7,500	30	87,500
Boone	131,900	70,400	2,000	700	1,000	50		520	16,600	5,900	220	69,300
Bremer	60,700	47,800	2,000	200	1,300	480		1,320	15,000	19,500	30	69,800
Buchanan	104,900	63,200	3,500	200	2,800	910	20	1,000	27,600	10,530	10	108,800
Buena Vista	135,700	88,000	2,000	150	1,000	40		1,050	15,800	7,520	700	65,300
Butler	95,500	75,000	3,600	50	1,100	1,000		2,340	26,500	8,960	10	71,500
Calhoun	138,500	101,400	1,000	50	900	30		650	16,500	3,610	270	50,000
Carroll	120,300	66,800	8,600	500	2,300	20	15	1,660	22,700	6,480	450	115,200
Cass	129,200	39,600	7,100	3,000	10,000	230		1,120	24,400	1,240	550	104,100
Cedar	110,100	38,800	1,700	200	13,000	560		1,230	39,300	140	70	115,800
Cerro Gordo	98,200	73,900	3,000	50	2,100	100	90	1,200	28,700	9,970	120	74,300
Cherokee	124,900	78,400	1,200	50	2,400	40		950	22,700	7,900	2,200	78,800
Chickasaw	59,800	69,000	6,200	00	2,500	430	105	910	31,500	11,230	10	82,500
Clarke	64,200	25,700	2,000	2,300	200	110		290	21,600	30	30	97,400
Clay	116,500	78,000	1,100	130	2,700	260	405	680	20,300	13,720	650	74,800
Clayton	74,000	63,000	11,900	2,500	12,000	500		1,050	6,100	1,260	50	157,000
Clinton	110,800	45,600	9,300	8,000	10,000	1,600		930	48,200	1,590	100	131,400
Crawford	150,100	66,000	29,000	3,400	4,500	160		1,420	40,900	5,240	4,130	110,800
Dallas	139,500	60,400	1,200	12,000	1,200	80		530	16,400	2,330	350	79,600
Davis	59,700	22,500	1,500	2,500	100	660		590	43,200		40	133,400
Decatur	72,000	25,600	1,000	3,500	100	720		300	25,900	130	140	103,300
Delaware	87,100	59,600	2,300	90	8,800	1,540		1,120	33,300	5,270	60	112,900
Des Moines	65,700	27,200	1,200	5,000	300	2,110		720	18,300	70	240	79,700
Dickinson	65,600	45,600	4,700	100	1,400	20	600	580	12,500	12,050	210	53,400
Dubuque	67,300	51,500	9,200	500	4,400	300		2,110	52,500	600	90	144,600
Emmet	71,800	54,900	1,500	50	1,400	130	440	490	16,000	8,350	110	49,000
Fayette	88,000	73,000	7,600	200	8,700	390	20	1,230	53,600	10,200	40	141,500
Floyd	89,300	47,200	3,000	50	2,100	720	115	1,250	31,900	4,190	20	68,000
Franklin	113,600	84,300	2,000	50	2,500	120	10	1,520	38,400	8,460	100	40,500
Fremont	130,100	13,100	2,000	7,200	300	340		590	5,800	2,230	7,650	52,600
Greene	136,700	70,000	2,000	900	700	20		570	19,700	5,030	110	72,600
Grundy	106,300	71,800	1,200	100	3,000	40		1,630	23,200	5,520	30	70,000
Guthrie	110,400	46,400	3,900	1,000	1,500	20	5	630	21,700	3,320	280	100,000
Hamilton	129,400	88,700	1,000	400	1,000	20	10	720	21,500	6,100	150	69,200
Hancock	108,300	88,900	5,800	50	3,000	310	460	1,050	23,900	21,800	110	76,800
Hardin	109,000	71,500	3,300	50	2,500	100		940	26,200	5,360	110	72,200
Harrison	153,300	30,300	30,000	4,300	2,600	250		950	6,200	6,530	11,600	91,400
Henry	77,000	32,800	1,500	2,200	200	1,160		300	25,800	10	90	92,800
Howard	54,500	56,300	2,200	200	4,900	310	295	930	35,500	11,930	10	83,400
Humboldt	95,800	66,000	1,700	150	1,800	30	75	500	16,900	5,700	210	41,000
Ida	99,600	51,700	6,700		3,500	30	12	640	21,000	1,320	1,600	111,700
Iowa	96,500	49,100	3,300	800	2,000	1,600		1,140	23,300	400	20	89,800
Jackson	58,500	29,100	3,300	1,600	2,600	760		1,280	52,900	750	60	22,400
Jasper	159,900	65,200	12,000	2,000	800	150	15	800	29,400	500	100	115,500
Jefferson	68,200	30,900	1,600	2,000	200	710		300	28,400		20	98,200
Johnson	106,700	151,500	2,400	1,000	2,100	1,320		1,030	38,810	550	60	113,900
Jones	72,700	37,200	5,400	500	6,400	650		700	44,800	220	20	122,800
Keokuk	111,100	40,300	10,500	1,400	300	410		770	35,700	40	40	120,700
Kossuth	184,400	142,600	3,700	100	3,700	100		1,800	30,900	20,340	250	114,600
Lee	59,900	24,500	1,600	2,700	500	7,630		1,220	28,600		220	128,200
Linn	118,200	59,200	8,000	200	3,300	670		1,460	40,100	2,060	140	112,300
Louisa	65,800	25,500	1,000	7,800	60	2,280		420	15,700	150	60	70,600
Lucas	62,400	25,300	1,600	2,400	100	470		440	23,200	110	60	97,800
Lyon	129,600	102,600	6,400	100	12,000	20	20	1,650	11,700	9,440	2,620	159,000
Madison	105,800	35,100	2,100	4,400	2,800	130		1,040	19,500	1,460	160	122,700
Mahaska	122,900	47,500	4,300	3,300	700	420		1,670	25,000	280	120	111,300
Marion	99,800	36,500	5,500	6,500	900	200		440	18,800	420	110	130,700
Marshall	127,200	67,400	4,100	700	1,000	50		810	26,960	440	80	85,800
Mills	108,700	18,500	7,900	3,200	1,100	160		910	7,100	4,150	6,870	58,000
Mitchell	67,500	77,500	6,500	50	3,200	50	730	2,440	30,200	3,300	10	66,000
Monona	139,000	28,500	29,000	25,000	2,000	90		1,250	6,800	11,800	11,260	90,200
Monroe	53,200	14,800	2,200	3,000	100	470	40	270	25,400	20	20	103,900
Montgomery	100,000	28,100	6,600	4,900	800	350		640	15,300	750	2,990	77,900
Muscatine	78,400	33,500	3,600	1,600	7,600	2,540		1,410	20,300	610	220	78,800
O'Brien	125,500	81,000	1,600	50	7,300	20	10	1,160	22,400	6,770	1,690	71,500
Osceola	83,700	58,600	1,500	00	2,600	60	195	870	12,300	5,650	130	36,200
Page	124,500	25,500	2,000	12,000	400	440		540	20,700	1,180	3,000	100,400
Palo Alto	100,800	68,100	3,600	50	600	300	420	630	13,400	18,000	190	58,300
Plymouth	190,800	95,700	65,000	500	5,000	300	5	1,520	20,310	22,580	10,460	103,500
Pocahontas	132,400	101,400	2,000	50	1,000	270	115	840	17,000	8,800	180	63,500
Polk	111,400	46,700	6,000	5,200	200	550		1,100	17,200	3,000	370	70,800
Pottawattamie	219,900	64,800	12,000	1,900	12,000	510		2,090	24,500	6,600	12,660	127,300
Poweshiek	123,100	50,900	3,700	400	2,300	100		780	23,200	100	60	91,900
Ringgold	87,800	31,300	1,100	1,700	200	350		270	30,400	160	30	112,500
Sac	129,100	81,400	2,600	50	2,900	10	20	740	23,700	4,030	450	37,900
Scott	75,700	28,400	5,600	1,500	29,000	2,270		4,160	28,500	1,780	610	81,100
Shelby	128,000	47,600	14,000	300	10,000	80		1,110	29,800	3,820	3,570	94,000
Sioux	176,500	97,200	21,000	500	15,000	50		1,250	16,000	14,020	4,470	77,400
Story	142,000	67,900	2,000	300	100	30	5	190	21,500	2,730	90	60,100
Tama	134,300	77,300	15,000	300	10,000	220		1,240	30,900	1,100	60	116,800
Taylor	102,100	33,000	1,500	3,000	300	340		560	21,000	740	600	103,900
Union	73,800	27,000	1,400	1,200	600	60		740	19,700	710	70	90,500
Van Buren	56,200	23,400	1,200	2,000	100	1,130		160	29,300	30	190	113,800
Wapello	65,100	23,900	1,500	3,500	300	430		970	24,800	10	170	96,000
Warren	101,000	32,600	3,300	10,000	600	410		540	24,800	640	230	118,700
Washington	104,900	43,700	1,200	1,200	400	150	10	520	13,400	10	60	105,800
Wayne	90,600	32,900	1,200	1,000	100	140		30	30,700	50	20	100,000
Webster	156,800	118,900	4,500	500	1,200	40	30	1,010	21,300	8,810	420	75,900
Winnebago	67,000	50,700	10,000	00	4,100	00	810	1,340	18,800	20,080	30	52,400
Winnesiek	77,200	67,000	15,000	600	12,000	330	190	1,310	54,000	4,570	20	138,300
Woodbury	200,500	72,000	25,000	5,200	2,900	70	15	1,550	17,00			

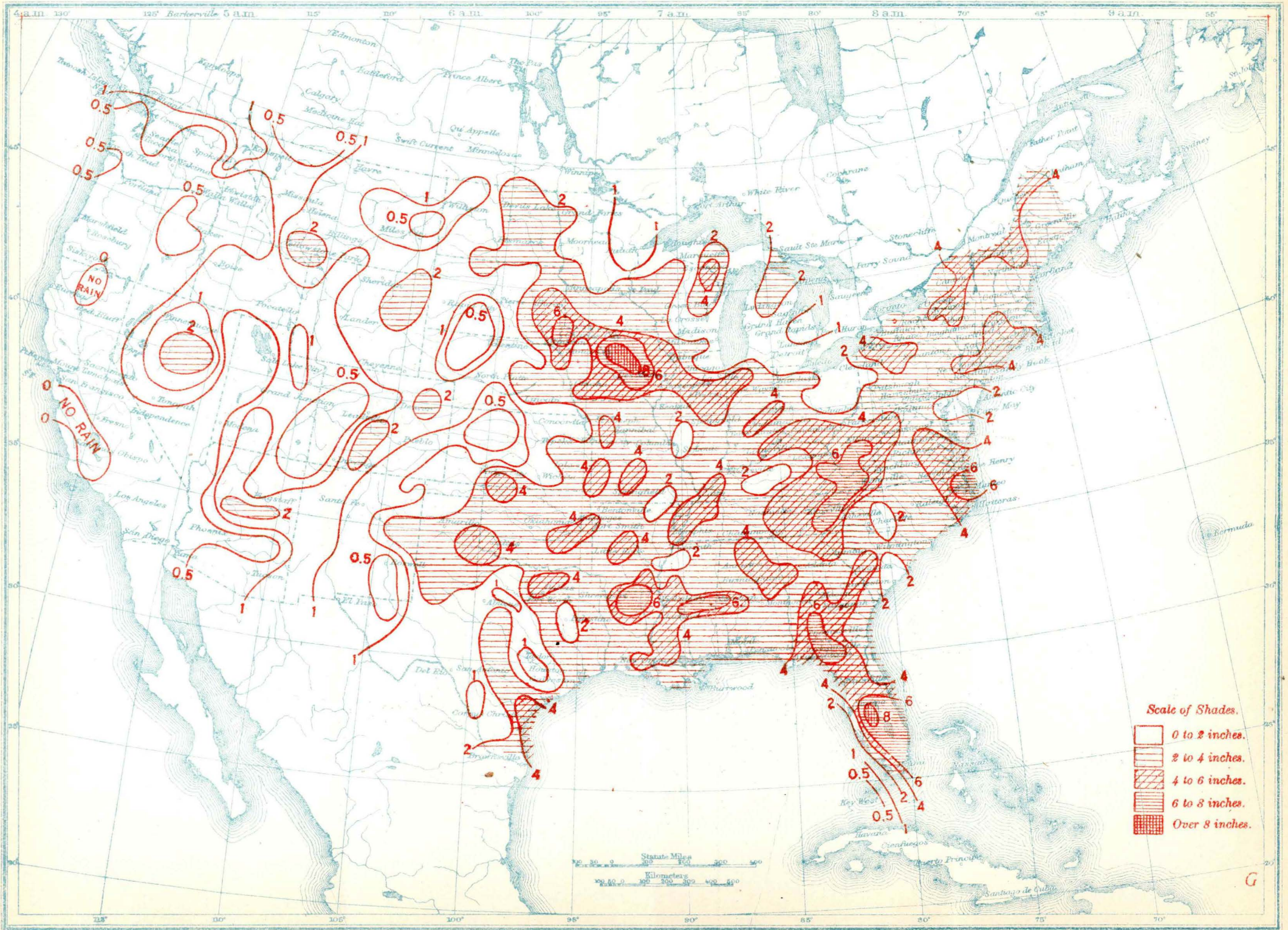
TOTAL PRECIPITATION JUNE, 1918.



SCALE OF SHADES - IN INCHES.



Total Precipitation, Inches, June, 1918.



SEP -3 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

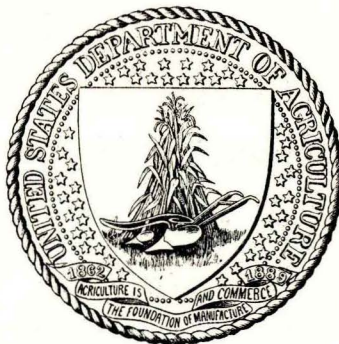
IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

JULY, 1918

BY

CHARLES D. REED

METEOROLOGIST

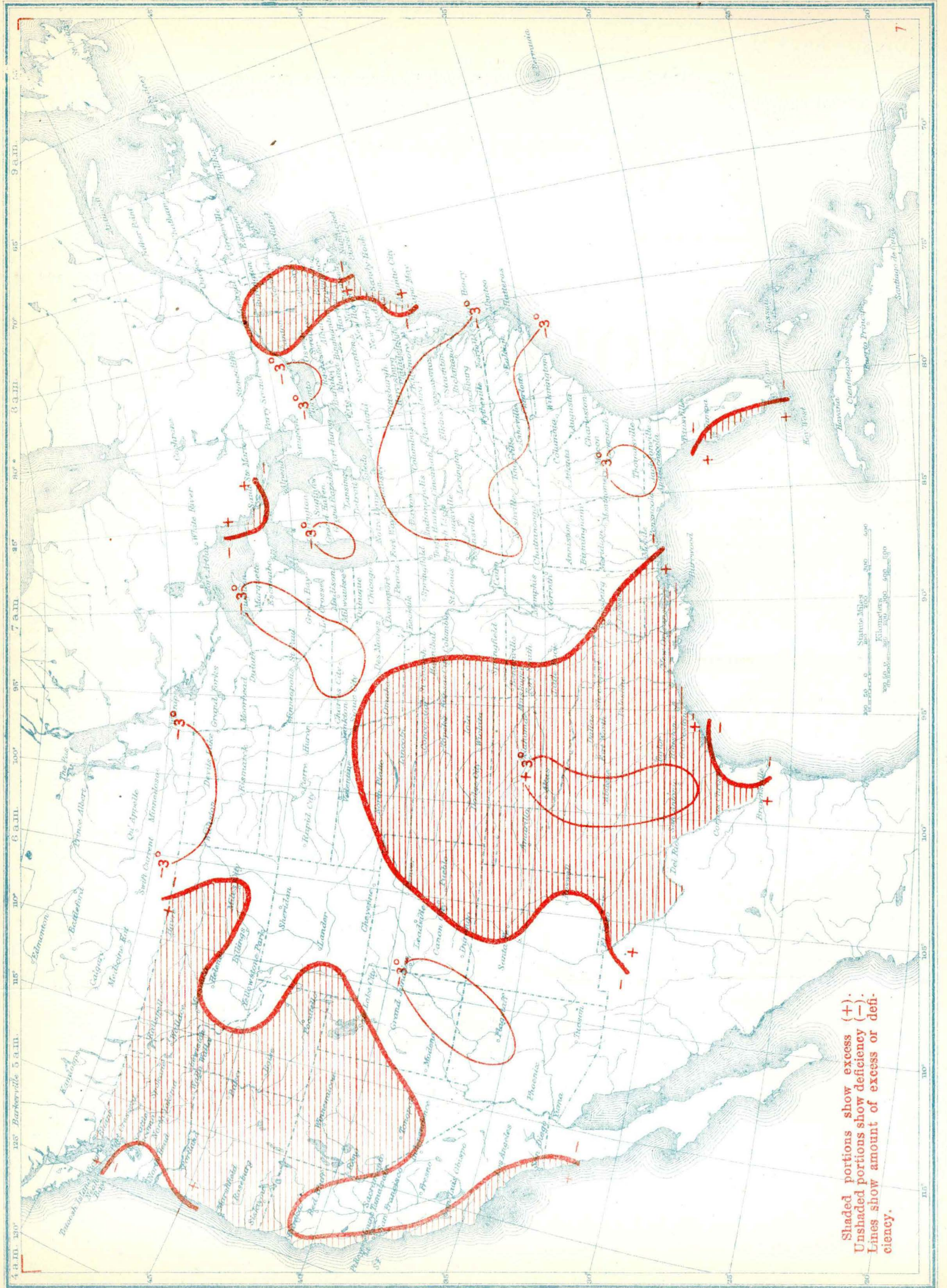


PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY

DES MOINES, IOWA
WEATHER BUREAU OFFICE

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Departure of the Mean Temperature from the Normal, July, 1918.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST

VOL. XXIX DES MOINES, IOWA, JULY, 1918 No. 7

GENERAL SUMMARY.

Temperatures averaged slightly below normal in all but the southwest counties where there was a slight excess, the largest excess being 3.6 degrees at Corning. Comparatively cool weather prevailed on the 1st, 6th-13th and 29th-31st. The warmest period over most of the State was the 24th-28th, though many stations in the north reported their highest temperatures about the 20th. Three general rain periods, 4th-7th, 14-15th and 22d-26th resulted in deficient totals, except in the north two tiers of counties and from Marshall southeast to Muscatine and Scott counties. In the central counties of the southern tier, the deficiency approached 4 inches. Excessive rains occurred in the north-eastern counties on the 25th-26th, which, together with high winds, beat down the corn and oats badly and delayed harvest. Otherwise harvest progressed rapidly, with unusually good conditions for labor and curing of the shocked grain. Threshing was well under way in the south half of the state the last of the month. Yields and quality of small grains were generally good.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.02 inches. The highest pressure recorded was 30.31 inches, at Dubuque on the 12th, and the lowest was 29.65 at Sioux City on the 3rd. The monthly range was 0.66 of an inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 100 stations, was 73.1°, or 1.0° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 71.2° or 1.5° lower than the normal; Central, 73.0° or 1.3° lower than the normal; Southern, 75.0°, or 0.2° lower than the normal. The highest monthly mean was 78.0° at Corning, and the lowest was 68.6°, at Postville. The highest temperature reported was 105°, at Clarinda, on the 28th; the lowest was 40°, at Audubon, on the 1st. The temperature range for the State was 65°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 77 per cent, and at 7 p. m. it was 56 per cent. The mean for the State was 66 per cent, or 1 per cent lower than the normal. The highest monthly mean was 74 per cent, at Sioux City, and the lowest was 58 per cent at Omaha, Neb.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 108 stations, was 3.17 inches, or 0.79 inch less than the normal. By divisions the averages were as follows: Northern, 4.57 inches, or 0.69 inch more than the normal; Central, 3.00 inches, or 0.96 inch less than the normal; Southern, 1.93 inches, or 2.09 inch less than the normal. The greatest amount, 8.05 inches, occurred at Postville, and the least 0.26 of an inch at Albia. The greatest amount in 24 consecutive hours, 3.62 inches, occurred at Charles City on the 25th and 26th.

WIND.

The prevailing direction of the wind was from the southeast. The highest velocity reported from a regular Weather Bureau station was 41 miles an hour, from the south, at Sioux City, on the 3rd.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 72, or 2 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 65; Davenport, 73; Des Moines, 78; Dubuque, 74; Keokuk, 80; Sioux City, 64; Omaha, Neb., 71.

MISCELLANEOUS PHENOMENA.

Aurora: 10th.
Fog: 5th, 6th, 15th, 16th, 17th, 25th.
Hail: Northern Division, 22d, 25th, 26th; Southern Division, 27th, 28th.
Halo, Lunar: 22d. *Solar:* 1st, 14th, 16th, 17th, 27th.
Rainbow, Lunar: At Grinnell on the 25th.
Thunderstorms: 2nd, 3rd, 4th, 5th, 6th, 7th, 9th, 14th, 15th, 19th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 31st.

COMPARATIVE DATA FOR THE STATE—JULY.

YEAR	Temperature				Precipitation					Number of Days		
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	With precipi- tation .01 in	Clear	Partly cloudy	Cloudy
1890	75.6	+1.5	110	45	1.98	-1.98	5.00	0.37	3	18	8	5
1891	68.5	-5.6	99	41	4.22	+0.26	8.20	1.67	8	13	13	5
1892	73.0	-1.1	104	38	5.29	+1.33	12.86	1.71	9	16	10	5
1893	75.0	+0.9	102	47	3.33	-0.63	8.84	1.49	7	19	10	2
1894	76.4	+2.3	109	39	0.63	-3.33	3.50	T	3	22	8	1
1895	72.1	-2.0	104	35	3.40	-0.56	10.10	0.45	7	15	12	4
1896	73.6	-0.5	104	42	6.90	+2.94	12.67	1.61	9	14	11	6
1897	75.6	+1.5	106	42	3.26	-0.70	7.60	1.01	6	18	10	3
1898	73.4	-0.7	102	42	2.98	-0.98	12.88	0.55	7	19	9	3
1899	73.1	-1.0	101	38	3.07	-0.89	8.66	0.42	7	16	10	5
1900	73.4	-0.7	102	37	6.15	+2.19	18.45	1.80	9	16	10	5
1901	82.4	+8.3	113	46	2.34	-1.62	5.97	0.27	5	21	9	1
1902	73.1	-1.0	99	41	8.67	+4.71	13.57	4.82	13	14	10	7
1903	72.9	-1.2	100	40	4.83	+0.87	12.72	0.94	9	17	9	5
1904	70.6	-3.5	100	38	4.41	+0.45	11.97	1.28	10	16	9	6
1905	70.6	-3.5	102	40	2.91	-1.05	7.08	0.69	9	14	10	7
1906	70.9	-3.2	102	42	3.04	-0.92	7.05	0.26	8	18	10	8
1907	73.7	-0.4	102	41	7.27	+3.31	13.66	3.97	13	16	11	4
1908	73.0	-1.1	100	42	3.66	-0.30	9.21	0.70	8	16	10	5
1909	72.3	-1.8	102	46	4.77	+0.81	12.20	1.20	10	15	8	4
1910	74.5	+0.4	108	43	1.86	-2.10	5.69	0.12	7	19	8	4
1911	75.5	+1.4	111	38	2.27	-1.69	6.62	0.08	7	18	10	3
1912	74.6	+0.5	103	38	3.71	-0.25	7.56	1.17	10	17	10	4
1913	76.1	+2.0	108	45	1.82	-2.14	6.23	T	5	21	8	3
1914	76.6	+2.5	109	43	2.27	-1.69	6.50	0.24	5	20	8	3
1915	69.5	-4.6	92	40	8.32	+4.36	15.83	3.68	14	10	12	9
1916	79.7	+5.6	105	48	1.78	-2.18	6.87	0.10	5	23	7	1
1917	74.3	+0.2	106	38	2.27	-1.69	6.06	0.23	7	21	8	2
1918	73.1	-1.0	105	40	3.17	-0.79	8.05	0.26	8	19	8	4

Climatological Data for July, 1918

Stations.	Counties.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.				Number of Days.				Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Precipitation 0.01 in. or more.	Clear.		Partly cloudy.	Cloudy.	Prevailing direction of wind.
<i>Northern Division</i>																				
Algona	Kossuth	1,213	45	72.3	-1.0	92	3†	50	8†	32	4.43	+1.41	1.52	0	6	21	3	7	sw	W. E. Laird.
Allison	Butler	1,045	6	71.2	-2.1	98	19	46	1	37	6.41	-0.27	0	9	13	12	6	se	J. A. Bell.	
Alta	Buena Vista	1,513	27	71.0	-1.8	94	19	50	1†	33	3.37	-1.18	1.32	0	10	16	12	3	s	David E. Hadden.
Alta (near)	Buena Vista		22								4.02	-0.73	1.79	0	7					Warren Minard.
Alton	Sioux	1,305	13	72.5	-0.5	96	19	48	1	37	3.28	-	1.06	0	9	18	7	6	sw	W. S. Slagle.
Belmond	Wright	1,205	8	72.2	-	96	19	48	1	35	4.21	-	1.08	0	9	11	17	3	se	Geo. P. Hardwick.
Britt	Hancock	1,236	21	60.6 ^a	-3.1	93 ^a	19†	45 ^a	1	35 ^a	4.37	-0.38	1.19	0	10				s	L. M. Goodman.
Charles City	Floyd	1,015	27	71.1	-2.4	95	20	47	1	32	7.24	+3.66	-3.62	0	10	13	12	6	se	U. S. Weather Bureau.
Decorah	Winneshek	875	25	70.4	-3.0	95	20	49	1†	33	7.59	+3.64	2.03	0	11	19	8	4	se	Wm. F. Baker.
Elkader	Clayton	727	39	71.4	-3.0	98	20	48	1†	40	5.55	+1.37	1.35	0	7	14	15	2	se	Chas. Reincke.
Estherville	Emmet	1,298	23	70.6	-0.1	91	20†	49	1†	27	4.81	+0.28	1.30	0	10	23	6	2	sw	A. O. Peterson.
Fayette	Fayette	1,003	28	70.0	-2.1	93	20†	47	31	33	3.29	-0.67	0.85	0	8	21	6	4	se	R. Z. Latimer.
Forest City	Winnebago	1,226	24	69.8	-2.8	94	19†	45	-1	32	4.25	+0.61	1.23	0	7	18	7	6	e	Eugene Secor.
Humboldt††	Humboldt	1,095	30	73.0	-0.2	97	20	47	1	38	2.40	-1.26	0.80	0	8	12	18	1	s	H. C. Snitkey.
Inwood	Lyon	1,474	14	70.6	-2.3	93	3†	47	10	37	3.46	+0.31	1.20	0	9	21	5	5	s	F. B. Hanson.
Lake Park	Dickinson	1,479	5	71.8 ^a	-	97 ^a	18	47 ^a	1	36 ^a	5.44	-	1.70	0	7				se	A. E. Woodruff.
Lansing	Allamakee	632	12								4.14	-0.25	1.09	0	13					Charles R. Serene.
Le Mars	Plymouth	1,224	22	72.2	-0.5	95	19	47	10	34	1.96	-2.05	0.88	0	7	16	15	0	s	G. A. C. Clarke.
Mason City	Cerro Gordo	1,133	21	71.2	-1.7	96	20	46	1	33	5.06	+1.44	1.15	0	9	16	10	5	nw	Dr. Roy De Sart.
New Hampton††	Chickasaw	1,169	21	70.9	-1.3	96	25	45	1	32	5.71	+1.96	1.60	0	9	18	6	7	s	A. F. Kemman.
Nora Springs	Floyd	1,064	5	72.2	-	95	19†	46	1	36	7.01	-	2.27	0	13	16	14	1	s	Arthur Betts.
Northwood	Worth	1,222	22																	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	14	72.2	-0.3	97	19†	41	1	43	1.99	-2.11	0.85	0	7	20	6	5	n	F. E. Hronek.
Postville	Clayton	1,180	19	68.6	-3.1	88	20	47	1†	27	8.05	+3.53	3.10	0	11	14	15	2	se	F. L. Williams.
Rock Rapids	Lyon	1,358	19	71.6	-2.2	95	3	45	1	39	6.04	+2.96	1.71	0	10	23	5	3	sw	J. K. Medberry.
Sanborn	O'Brien	1,553	4	71.0	-	95	24	48	1	34	4.87	-	1.53	0	8	18	11	2	se	Jas. W. Dow.
Sibley	Osceola	1,212	25	69.0	-1.6	92	24	42	1	35	5.53	+2.16	2.19	0	8	23	5	3	se	H. F. Olds.
Sioux Center	Sioux	1,426	19	72.4	+0.1	94	19	49	30	35	3.18	-1.21	0.80	0	8	20	6	5	s	J. de Ruyter.
Storm Lake	Buena Vista	1,440	29	72.4	-0.5	94	19	51	1†	32	3.60	-0.29	1.10	0	10	23	4	4	s	Geo. H. Fracker.
Washita	Cherokee	1,157	20	71.0	-1.7	95	3†	46	1	40	2.53	-1.67	1.05	0	6	20	7	4	s	H. L. Felter.
Waverly	Bremer	948	22	71.4	-1.6	95	20	46	1	33	3.61	-0.33	1.92	0	7	18	11	2	se	H. Arnold.
West Bend	Palo Alto	1,197	25	72.0	-1.0	95	19	47	1	36	3.79	+0.23	0.94	0	7	18	9	4	nw	Jos. Dorweiler.
Means and extremes.				71.2	-1.5	98	19†	41	1	43	4.57	+0.69	3.62	0	9	18	9	5	se	
<i>Central Division</i>																				
Ames	Story	926	42	73.4	-0.6	96	19	48	1	35	1.76	-2.58	0.54	0	8	26	4	1	nw	Iowa State College
Audubon	Audubon	1,301	24	72.6 ^a	-0.7	98 ^a	27	46 ^a	1	47 ^a	3.46	-0.27	1.65	0	8				s	V. M. Jones.
Baxter	Jasper	998	18	73.2	+0.4	96	20†	42	1	41	2.94	-1.12	0.83	0	10	19	8	4	se	W. R. Vandike.
Belle Plaine	Benton	886	28	71.9	-1.5	92	22	45	1	34	4.33	+0.35	1.70	0	9	18	10	3	ne	O. C. Burrows.
Boone	Boone	1,134	13	72.7	-1.6	100	20	49	30†	34	2.37	-1.57	0.87	0	6	15	15	1	n	Herbert A. Grabau.
Carroll	Carroll	1,265	28	72.2	-0.6	97	28	49	1	35	2.95	-0.66	0.93	0	7	22	2	7	se	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	36	73.6	-2.0	97	20†	52	31	29	3.04	-0.65	1.25	0	6	19	4	5	s	R. S. Toogood.
Clinton	Clinton	593	45	72.8	-2.3	96	21	46	31	36	2.79	-1.27	1.10	0	7	16	10	5	ne	H. Burde.
Davenport	Scott	580	47	74.1	-1.3	94	22	53	31	26	4.39	+0.84	2.87	0	9	15	10	6	e	U. S. Weather Bureau.
Delaware	Delaware	1,083	27	69.8	-3.2	92	20	45	1†	31	3.22	-0.47	1.13	0	8	17	12	2	re	Nettie E. Ball.
Denison	Crawford	1,180	24	75.2	+1.7	99	27	48	4	39	1.52	-2.14	0.93	0	3	22	5	4	n	Emma Brogden.
Des Moines	Polk	861	39	75.6	+0.1	98	27	53	1	32	1.18	-2.68	0.74	0	7	12	14	5	n	U. S. Weather Bureau.
Dubuque	Dubuque	639	45	72.3	-2.4	93	21	52	31	27	3.77	-0.53	0.82	0	13	15	7	9	s	U. S. Weather Bureau.
Fort Dodge	Webster	1,126	18	71.4	-2.2	94	20	49	1	31	3.61	-0.07	1.35	0	10	20	7	4	sw	J. F. Monk.
Gilman	Marshall	1,052	19								4.16	+0.99	1.42	0	6					Jas. L. Wylie.
Grinnell	Poweshiek	1,023	24	74.0	-0.5	98	20	48	1	34	2.98	-1.13	1.90	0	4	21	5	5	se	D. W. Brainard.
Grundy Center	Grundy	976	27	74.0	-0.3	95	20†	49	31	33	2.95	-0.99	1.20	0	6	20	8	3	sw	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	23	73.3	-1.5	101	27	44	1†	44	2.35	-1.93	0.86	0	9	20	5	6	sw	O. T. Harney.
Harlan	Shelby	1,182	19	73.4	-0.1	99	27	46	1	39	1.72	-2.39	0.34	0	8	29	2	0	s	E. L. Tilton.
Independence	Buchanan	921	54	71.6	-1.1	93	20	48	1†	32	3.52	-0.90	1.54	0	6	24	4	3	nw	Dr. H. A. Lindsay.
Iowa City	Johnson	683	57	71.9	-2.8	93	20	49	31	29	4.87	+0.59	2.45	0	8	17	9	5	s	Prof. John F. Reilly.
Iowa Falls	Hardin	1,107	25	70.1	-1.8	92	20	47	1	34	3.54	-0.65	1.47	0	8	20	7	4	ne	J. B. Parmelee.
Jefferson	Greene	1,052	19	73.2	-0.8	96	19	48	1	37	2.33	-	0.66	0	9	15	12	4	sw	Will I. Lyon.
Le Claire	Scott	576	18								3.66	-0.13	1.55	0	11					Margaret T. Disney.
Little Sioux	Harrison	1,040	13	74.6 ^a	-0.6	100 ^a	27	47 ^a	1	43 ^a	1.98	-	0.78	0	7				se	Geo. H. Gibson.
Logan	Harrison	928	51	75.4	+0.7	100	27	48	1	41	1.72	-2.92	0.35	0	9	18	10	3	se	Ted. Stern.
Maquoketa	Jackson	688	17	71.0	-2.2	92	20	46	31	29	4.09	-0.18	1.14	0	9	17	9	5	n	Ira H. Stephens.
Marshalltown	Marshall	947	26	71.8	-2.2	96	20†	43	31	33	3.56	-0.61	1.12	0	9	21	7	3	ne	Ed. F. Duntman.
Monroe	Jasper	922	6	74.0	-	96	19†	51	1	30	2.03	-	1.31	0	4	20	8	3	s	J. A. Dibel.
Muscatine	Muscatine	554	58								4.22	+0.39	2.35	0	9					Wm. P. Molis.
Olin	Jones	760	20	72.5	-1.2	96	20	45	31	33	3.00	-0.52	1.60	0	4	18	11	2	sw	Dr. F. W. Port.
Onawa	Monona	1,051	18																	
Perry	Dallas	975	17	73.8	-1.2	98	27	47	1	39	2.07	-1.98	0.66	0	10	18	10	3	n	

Climatological Data for July, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit					Precipitation, in Inches				Number of Days				Prevailing direction of wind.	Observers			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation over in or more.	Clear			Partly cloudy	Cloudy.	
<i>Southern Division</i>																					
Aiton	Union	1,212	24	77.0	+ 1.5	99	25	54	30	29	2.30	-1.75	1.10	0	8	18	10	3	sw	J. E. Deitrick.	
Albia	Monroe	959	20	73.4	- 1.3	100	28	49	13	36	0.26	-3.80	0.12	0	3	14	7	10	sw	F. H. Holmes.	
Allerton	Wayne	1,122	16	73.6	- 1.6	98	22†	48	2	37	0.86	-3.50	0.26	0	7	17	9	5	ne	James Huston.	
Atlantic	Cass	1,164	27	74.8	+ 0.1	101	27	49	1	39	1.50	-2.23	.40	0	8	18	6	7	ne	Thos. H. Whitney.	
Bedford	Taylor	18	75.4	+ 0.7	103	28	45	1	41	2.35	-2.05	.90	0	10	19	10	2	s	E. E. Healy.		
Bloomfield	Davis	881	11	74.4	-----	97	20	51	31	36	1.89	-2.67	1.00	0	8	17	12	2	s	V. G. Warner.	
Bonaparte	Van Buren	565	27	73.8	- 1.3	96	20	50	1	35	2.85	-0.79	1.17	0	7	28	2	1	nw	Bruce R. Vale.	
Burlington	Des Moines	544	22	74.7	- 1.3	98	26	51	1	28	3.33	-0.21	1.60	0	8	24	4	3	sw	Mrs. J. A. Donnelly.	
Centerville	Appanoose	1,013	13	75.6	-----	100	28	50	31	33	0.68	-----	0.16	0	11	18	7	6	sw	S. A. Martin.	
Chariton	Lucas	1,042	23	72.7	- 1.1	100	27	46	1	43	1.33	-3.13	0.45	0	4	17	12	2	sw	C. C. Burr.	
Clarinda	Page	1,009	28	76.6	+ 1.4	105	28	48	1	43	2.12	-2.36	0.69	0	8	20	5	6	s	A. S. Van Sandt.	
Columbus Jet	Louisa	595	17	73.8	- 1.2	92	20†	50	30	31	3.91	-0.00	2.10	0	8	28	2	1	n	J. B. Johnston.	
Corning	Adams	1,117	26	78.0	+ 3.6	102	27	45	1	43	2.05	-1.96	1.23	0	6	19	7	5	sw	Jerome Smith.	
Corydon	Wayne	1,101	25	74.6	- 0.9	101	27	49	1†	34	0.75	-3.02	0.18	0	7	17	9	5	se	May C. Miller.	
Creston	Union	1,312	13	74.6	+ 0.8	101	25	49	1†	37	1.74	-----	0.85	0	7	15	12	4	sw	Mrs. Tillie E. McConnell.	
Cumberland	Cass	19	74.6	+ 0.8	101	25	49	1†	37	1.74	-----	0.85	0	7	15	12	4	sw	Mrs. Tillie E. McConnell.		
Earnham	Madison	1,126	16	74.6	+ 1.3	100	27	45	1†	41	1.13	-2.90	0.64	0	6	22	5	4	sw	J. H. Reppert.	
Fairfield	Jefferson	780	34	73.1 ^b	- 2.9	96 ^b	22	45 ^b	29	39 ^b	4.03	0.17	1.40	0	7	-----	-----	-----	-----	Geo. Phillips.	
Fort Madison	Lee	516	69	73.8	- 1.3	98	27	45	1	28	3.33	-0.21	1.60	0	8	24	4	3	sw	Prof. R. Monroe McKenzie.	
Glenwood	Mills	1,100	21	76.5	-----	97	2†	47	1	43	3.40	-----	2.30	0	7	17	10	4	ne	F. M. Myers.	
Greenfield	Adair	26	75.6 ^b	+ 1.0	102 ^b	27	50 ^b	1†	36 ^b	1.05	-3.03	0.48	0	4	-----	-----	-----	-----	sw	Frank A. Ward.	
Indianola	Warren	969	26	73.5 ^b	- 1.6	98 ^b	27	48 ^c	3†	43 ^c	1.69	-2.05	0.80	0	7	-----	-----	-----	-----	ne	Prof. J. L. Tilton
Keokuk	Lee	614	47	76.2	- 0.8	97	20†	55	1	28	1.08	-2.95	0.45	0	8	20	9	2	s	U. S. Weather Bureau.	
Keosauqua	Van Buren	644	26	74.4	- 1.3	98	20†	48	3†	38	2.79	-1.21	2.29	0	5	19	4	8	se	J. H. Landes	
Knoxville	Marion	920	23	75.0	- 0.7	100	25	48	3†	39	1.48	-2.53	0.90	0	6	17	9	5	se	W. J. Casey	
Lacona	Warren	19	74.6	+ 0.8	101	25	49	1†	37	1.74	-----	0.85	0	7	15	12	4	sw	Mrs. Tillie E. McConnell.		
Lamoni	Decatur	11	72.8	- 3.3	100	28	48	30	36	2.11	-----	1.36	0	7	16	14	1	se	J. B. Alter		
Lenox	Taylor	1,250	23	76.7	+ 1.8	102	25†	50	1	38	1.00	-3.36	0.55	0	6	25	6	0	s	Chas. B. Woodstock	
Mount Ayr	Ringgold	1,236	25	75.9	- 0.1	101	28	50	1	34	0.76	-3.91	0.29	0	8	19	8	4	s	J. L. Hurley	
Mt. Pleasant	Henry	729	37	74.6	- 1.2	97	21†	48	3†	36	2.93	-0.49	0.87	0	6	22	5	4	sw	Alex Maxwell	
Murray	Clarke	1,216	27	75.4	+ 0.4	100	25†	52	30	34	1.72	-2.44	0.86	0	8	17	9	5	ne	J. W. Edwards	
Northboro	Page	1,120	6	78.0	-----	101	23	53	1†	37	2.54	-----	1.80	0	6	20	7	4	se	M. T. Ashley	
Oskaloosa	Mahaska	843	42	73.4	- 1.6	97	20	49	3†	39	1.68	-2.25	0.51	0	5	20	4	7	se	J. M. Darby	
Ottumwa	Wapello	849	23	75.0 ^c	-----	99 ^c	28	51 ^c	3†	33	0.88	-2.55	0.55	0	6	-----	-----	-----	-----	se	Jos. Boyd
Pella	Marion	877	15	73.6	- 1.6	97	19	47	3†	39	1.06	-2.17	0.72	0	6	22	0	9	s	Thomas Ray	
St. Charles	Madison	1,070	17	74.7	- 0.4	99	25	51	1	33	1.49	-2.41	1.27	0	5	19	11	1	sw	J. H. Ver Steeg	
Shenandoah	Page	76.2	-----	102	25	50	29	38	2.41	-----	1.40	-----	-----	0	6	17	9	5	s	R. D. Minard.	
Sigourney	Keokuk	877	22	73.4	- 2.2	97	20	49	3†	39	1.68	-2.25	0.51	0	5	20	4	7	se	L. L. Hunter.	
Stockport	Van Buren	754	16	73.4	- 1.6	97	28	50	1†	34	4.25	-0.15	1.70	0	7	19	7	5	s	W. E. Utterback	
Thurman	Fremont	21	76.8	+ 0.4	99	3†	45	1	46	2.43	-2.61	1.67	0	8	8	21	2	ne	C. L. Beswick		
Washington	Washington	769	36	73.6	- 1.1	93	21†	51	1	27	3.61	+0.22	1.74	0	8	15	12	4	sw	C. R. Paul	
Winterset	Madison	1,129	27	75.2	- 0.6	99	27	49	30	37	2.00	-2.67	1.23	0	8	23	6	2	sw	Wm. A. Cook	
Omaha, Nebr.	-----	1,040	47	77.2	+ 0.7	99	27	56	8	31	1.76	-2.57	1.26	0	7	13	11	7	s	H. S. Ely	
Means and extreme	-----	-----	-----	75.0	- 0.2	105	28	45	1	46	1.93	-2.09	2.30	0	7	19	8	4	sw	U. S. Weather Bureau	
State means and extremes	-----	-----	-----	73.1	- 1.0	105	28	40	1	47	3.17	-0.79	3.62	0	8	19	8	4	se	-----	

The departures from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.

Reference letters a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.

†Also other dates. †Received too late to be included in means and summaries.

T. Precipitation is less than 0.01 inch rain or melted snow.

IOWA CROP REPORT AUGUST 1, 1918

The condition of crops on August 1, as compared with the average of past years on that date, was as follows: Corn, 101 per cent; pastures, 89; potatoes, 86; and flax, 97. Last year on August 1, the condition of corn was 92 per cent; pastures, 90; potatoes, 96; and flax, 96.

Preliminary reports show the average yield of winter wheat to be about 21 bushels per acre; spring wheat, 18; early oats, 42; late oats, 43; barley, 32; rye, 19; tame hay, 1.2 tons; and wild hay also 1.2 tons. Threshing reports received up to August 1 were mostly from the south half of the state. If final returns maintain these averages, the State will produce about 4,143,000 bushels of winter wheat; spring wheat, 9,447,000; oats, 234,876,000; barley, 10,883,000; rye, 951,000 bushels; and 3,593,000 tons of hay.

The Secretary of the State Horticultural Society reports the condition of fruit on August 1 as follows: Summer apples, 26 per cent; fall apples, 27; winter apples, 29; pears, 18; americana plums, 23; domestica plums, 13; Japanese plums, 5; grapes 52 per cent of a full crop. The percentage of crop on the eight leading varieties of commercial apples is as follows: Duchess, 26 per cent; Wealthy, 24; Grimes Golden, 32; Jonathan, 30; Winesap, 19; Ben Davis, 25; Northwestern Greening, 29; and Willow Twig, 31. There will be about half as many apples and plums, and the same quantity of grapes as were harvested last year, should normal conditions prevail until crops are gathered for market or storage.

Daily Precipitation for July, 1918—Continued.

Stations.	Watersheds	Day of Month.																														Total		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31	
<i>Southern Division</i>																																		
Afton	Grand			.42	1.10	.04									T.	.02		.42								.16			.08			.06		2.30
Albia	Des Moines			.12			.02	T.							T.	T.			T.	T.						.12							T.	0.26
Allerton	Chariton			T.	.17	.02										.18		.11	T.	T.					.07	.05				T.	.26		0.86	
Atlantic	Nishnabotna				.15		.02									.23			.26						.40	.20		.18			.06		1.50	
Bedford	Missouri			.19	.33	.01	T.								.03	.01	.43						T.		.10		.09	.90	.26	T.			2.35	
Bloomfield	Mississippi				.10	.09	.01									.08									.16	.20				1.00	.25		1.89	
Bonaparte	Des Moines			T.	.16	.15	.08								1.17				T.					T.	.82			.44	.03				2.85	
Burlington	Mississippi	.19			.37		1.60								T.	.18									.65	.14	.07		.13				3.33	
Centerville	Chariton	T.			.12	.01	.02										.04	.07	.01						.07	.04	.02		.12	.16			0.68	
Chariton	Chariton		T.	.40	T.											.26								T.		T.	.45						1.33	
Clarinda	Nodaway				.67											.10		.06	.63						.08	.15				.40		.03	2.12	
Columbus Jct.	Iowa		.03		.23	.14	2.10									.27	T.	.06						T.	.92		.16		T.				3.91	
Corning	Nodaway				1.23	.15										T.	.30							T.	.24	.06			T.	T.			.07	2.05
Corydon	Chariton				T.	.18	.02	T.								T.	.11	.16	.04						.10			T.		T.	.14			0.75
Creston	Missouri				.85		T.									.06	T.		.32						.30	.08		.08		T.		.05	1.74	
Cumberland	Nodaway				.27		.10											.56						.18	.29				.16				1.56	
Earlham	Des Moines	T.			.64		T.	T.								T.	.15	.04							.15	.08	.07		T.				1.13	
Fairfield	Skunk				.89	T.	.05	.08								.61		T.							1.40		.10	.90					4.03	
Fort Madison	Mississippi				.08	.13										.75									.40		.07	1.30					2.73	
Glenwood	Missouri				.08	.05										.04		2.30							.23	.68				.02			3.40	
Greenfield	Nodaway				.48											T.		.35							.10			.12					1.05	
Indianola	Des Moines				.58	.80	.04	.12								.09	.05											.01					1.69	
Keokuk	Mississippi				.09	.33	.02										.04			.01					.18	.27			.14				1.08	
Keosauqua	Des Moines					T.	T.									.23									.11	2.18			.11	.16			2.79	
Knoxville	Des Moines				T.	.90	.07	.03								.30									.03	.15			T.				1.48	
Lacona	Des Moines				.14	.89										.01	.06	.09	.06						.40	.05				.01	.09		1.80	
Lamoni	Grand					.37		T.								.05		1.36							.03	.07		T.	.01	.22			2.11	
Lenox	Missouri				.55											.05									.10	.02				.18			.10	1.00
Mt. Ayr	Grand				.10	.29	T.	.01										.21							.03	.02		T.	.01	T.	.09		0.76	
Mt. Pleasant	Skunk		T.			.28		.85								.53									.01	.87		T.		.39			2.93	
Murray	Grand				.30	.86	.02	.01								T.	.22		.21						.09	.01		T.			T.		1.72	
Northboro	Tarkio				.18											.09		1.80							.05		.22			.20			T.	2.54
Oskaloosa	Des Moines																																	
Ottumwa	Des Moines				.10		.05									.15										.01	.02	T.		.55				0.88
Pella	Skunk				.22	.50	.02	.02								.25									T.	T.	.05	T.		T.			1.06	
St. Charles	Des Moines				1.27		.01	.06								T.	.13													.02				1.49
Shenandoah	Nishnabotna				.45											.04		1.40							.21	T.		.18			.13			2.41
Sigourney	Skunk				.18	T.	.30									.37									T.	.32			.51					1.68
Stockport	Skunk				.16	.20	.04									.70									T.	1.70			1.43	.02				4.25
Thurman	Missouri				.08	T.	T.									.02		1.67							.02	.08	.32		.08	1.43	.16			2.43
Washington	Skunk					.16	.13	1.74									.31									.02	1.18			.07				3.61
Winterset	Des Moines				1.23		.01									.32		.05								.30			.07	.01		.01		2.00
Omaha, Neb.	Missouri				.17	T.	.01									.11		1.26							.06	.13		.02		T.			1.76	

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for 24 hours ending at the time of observation.
 |||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.
 ***Regular Weather Bureau Station; precipitation is for 24 hour period, midnight to midnight.
 **Incomplete.
 *Precipitation included in the next following measurement.

ERRATA.

RIVERS.

The principal rivers fell steadily during the month except when affected temporarily by heavy rainfall. Moderate stages for July prevailed on the Missouri and low stages on the Mississippi. None of the streams in the interior of the State were overflowed and low stages prevailed generally.

Report for May, 1918. Page 52; Charles City; mean temperature published 62.4°, should be 62.6°, departure from normal published +2.9° should be +3.1°; greatest precipitation in 24 hours published 2.79 inches, should be 2.57 inches. Page 55: Heading "Hailstorms of June, 1918" should read "Hailstorms of May, 1918." Page 56; Charles City; the minimum temperature on the 24th published 45°, should be 55°; the mean of the minimum published 50.9°, should be 51.3°.

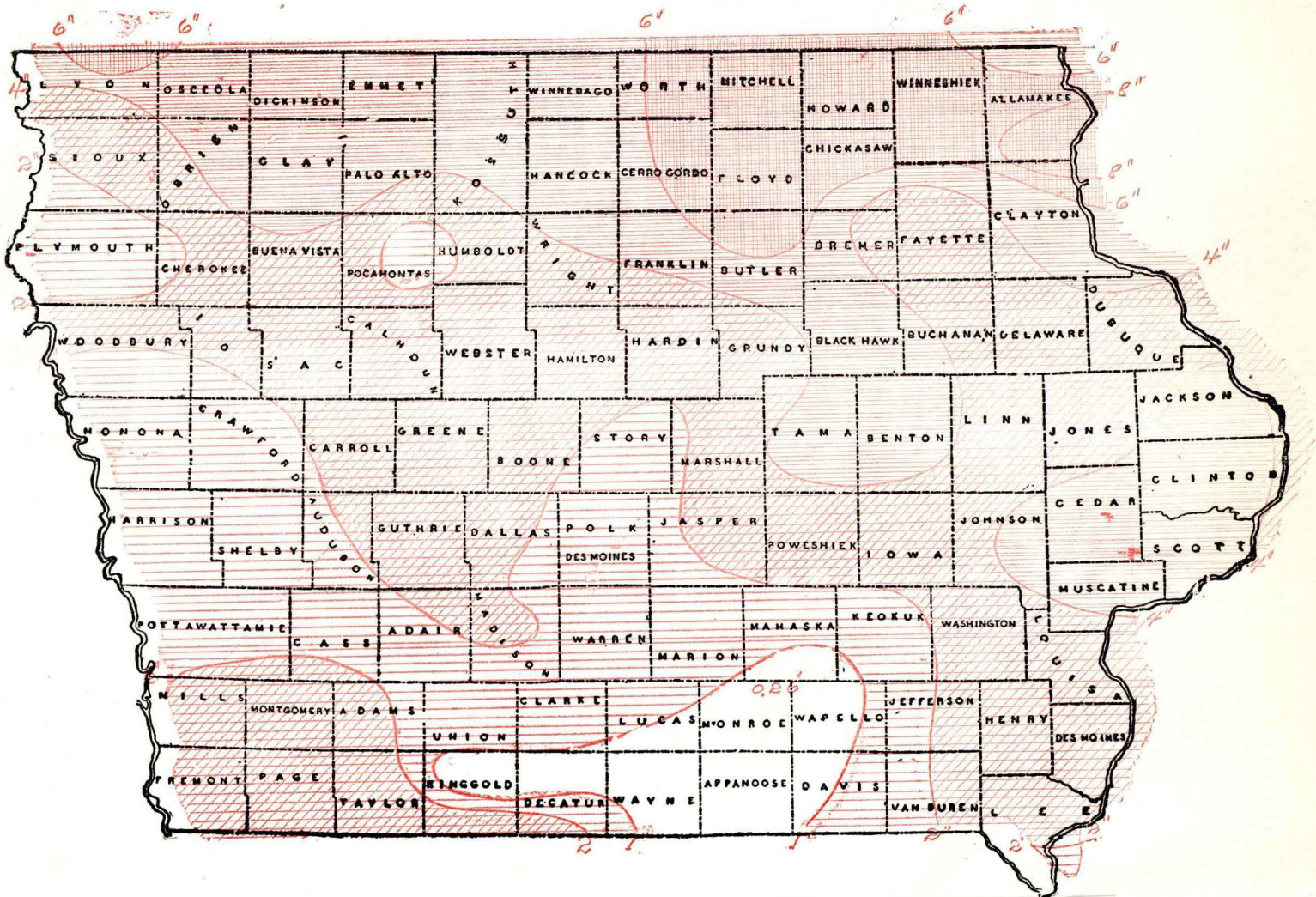
Daily Maximum and Minimum Temperatures for the Month of July, 1918.

Table with columns for Stations, days 1-31, and Mean. Rows are categorized into Northern Division (Albion to Omaha, Neb.), Central Division (Belle Plaine to Iowa Falls), and Southern Division (Albia to Pella).

a, b, c, etc. indicate respectively 1, 2, 3, etc., days missing from record.

§§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

TOTAL PRECIPITATION JULY, 1918.



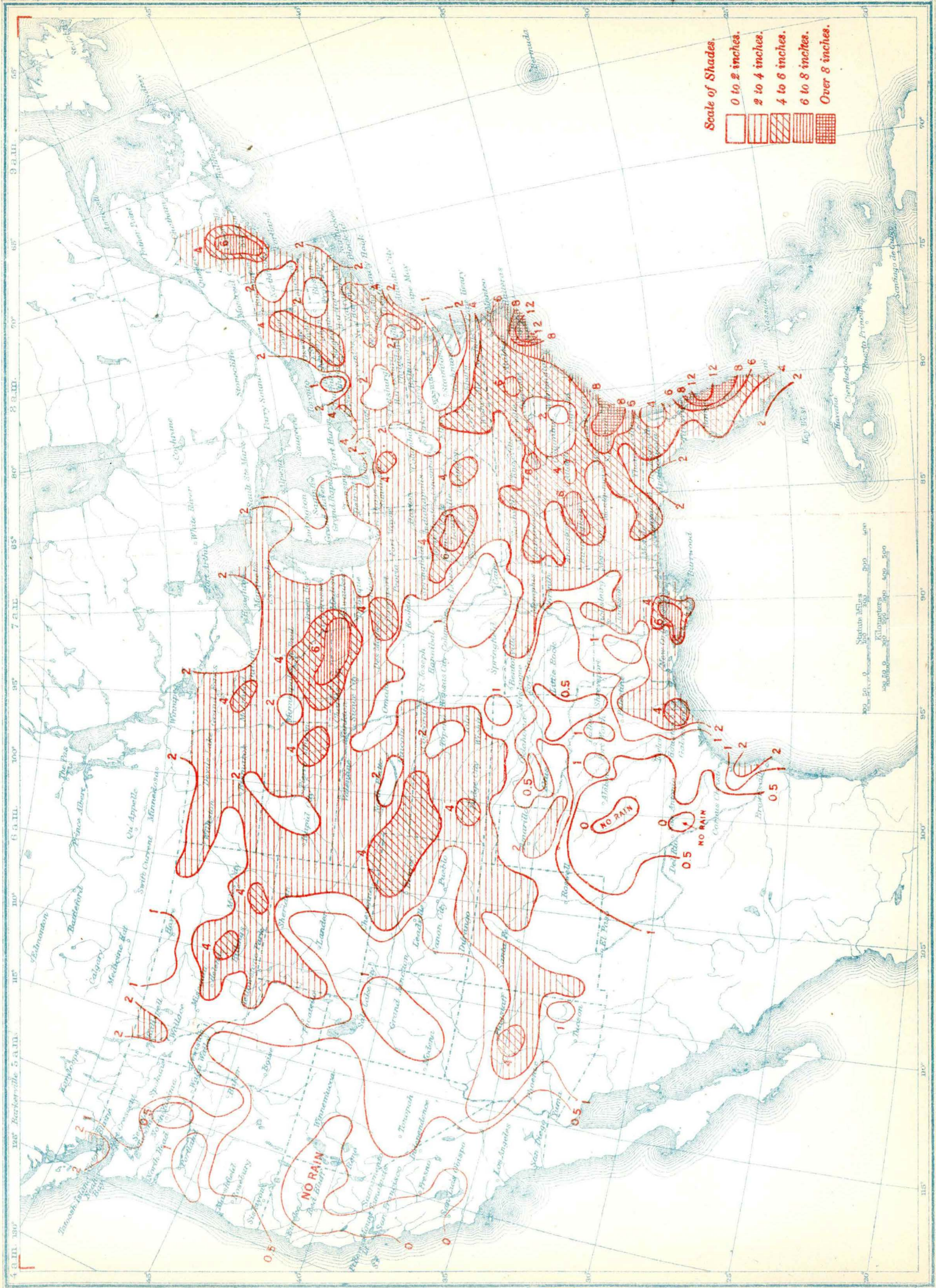
SCALE OF SHADES—IN INCHES.

SCALE OF SHADES—IN INCHES.



Please paste the above "Scale of Shades" over the one published in *Climatological Data, Iowa Section, July, 1918, page 81.*

Total Precipitation, Inches, July, 1918.



OCT 21 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

AUGUST, 1918

BY

CHARLES D. REED

METEOROLOGIST

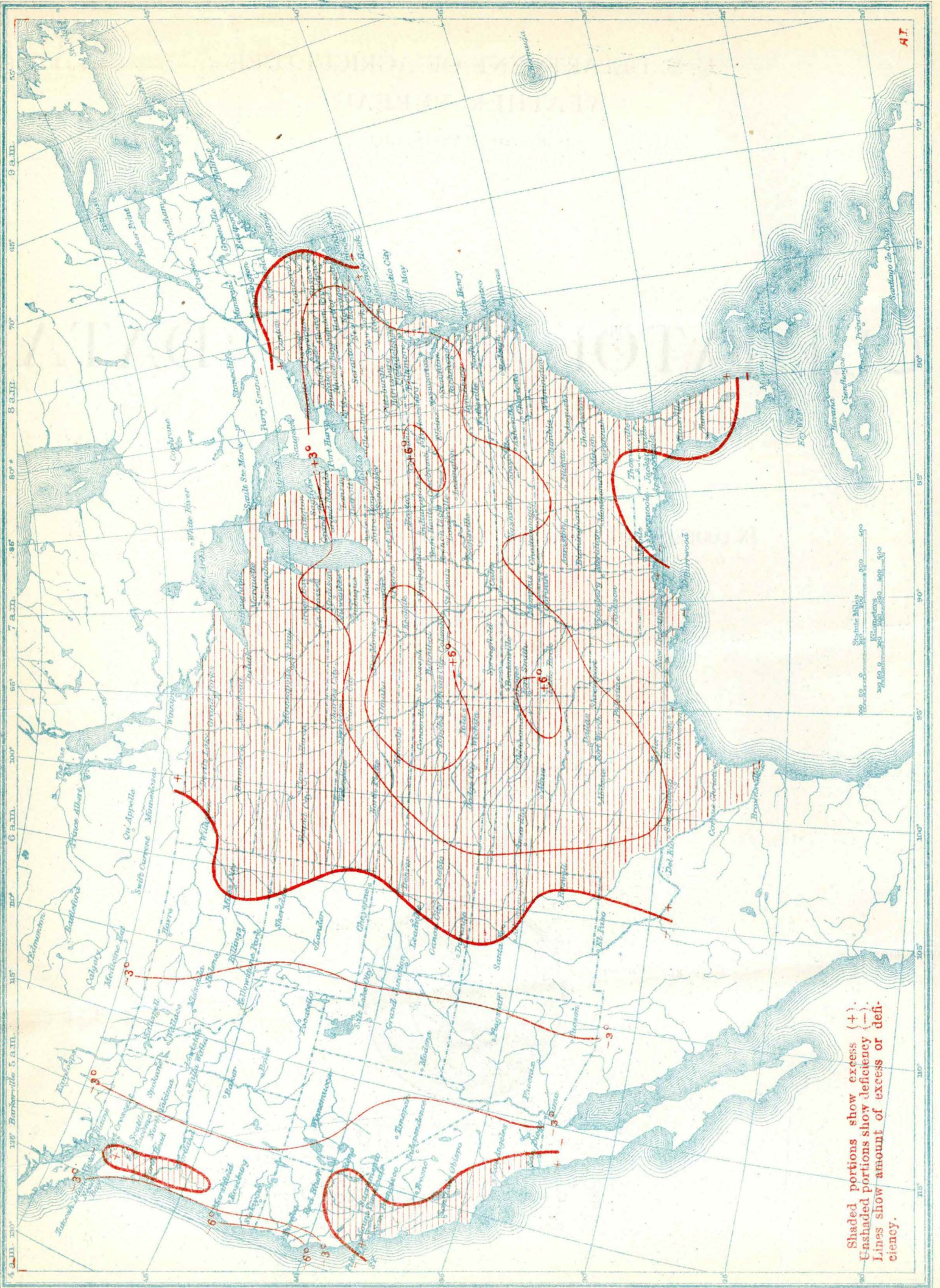


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

5

Departure of the Mean Temperature from the Normal, August, 1918.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST

VOL. XXIX DES MOINES, IOWA, AUGUST, 1918 No. 8

GENERAL SUMMARY.

On August 4th-5th high temperature records, covering periods of 40 to 46 years at some stations, were broken. The highest reported was 113° at Clarinda, Knoxville and Shenandoah on the 4th, which equals the absolute maximum for the State that occurred at Sigourney on July 22, 1901. The monthly mean for the State, 76.0°, though 4.2° above normal, was exceeded in August, 1900, 1909 and 1913. The excess in temperature was greatest, 8.0°, in Adams county where the greatest damage to corn occurred. Precipitation was deficient from the Missouri River eastward over the central counties extending in a narrow belt to the middle Mississippi. The deficiency exceeded 3 inches in Monona, Fremont, and Webster Counties; and in the extreme southwest counties from March 1 to August 31 is more than 50% of the normal.

The corn crop had been somewhat injured by drouth prior to August in the southwest one-third of the State and was in poor condition to withstand the withering heat, strong southerly winds and low humidity which were at a climax August 4-6 and were somewhat damaging in localities till general showers came about the middle of the month. As a whole, the crop deteriorated 11 per cent or about 35,000,000 bushels. In Adams County where the worst damage is reported, the crop will be only 20 per cent of the normal. Much livestock was sold in the southwest counties because of the shortage of feed and that which remained was on winter feed throughout the month. Excessive rains with unusually severe electrical storms in the north and east-central counties on the 16th-17th damaged shocked grain and delayed threshing.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.93 inches. The highest recorded was 30.30 inches, at Dubuque, on the 19th, and the lowest was 29.58 inches, at Sioux City, on the 5th. The monthly range was 0.72 of an inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 102 stations, was 76.0°, or 4.2° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 72.8°, or 2.4° higher than the normal; Central, 76.1°, or 4.4° higher than the normal; Southern, 79.1°, or 5.9° higher than the normal. The highest monthly mean was 80.8°, at Clarinda, Keokuk, Thurman, and Omaha, Neb., and the lowest was 70.0°, at Forest City. The highest temperature recorded was 113°, at Clarinda, Knoxville and Shenandoah, on the 4th, and the lowest was 38°, at Sibley, on the 30th. The temperature range for the State was 75°.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 112 stations, was 3.61 inches, or 0.07 of an inch less than the normal. By divisions the averages were as follows: Northern, 4.32 inches, or 0.84 of an inch more than

the normal; Central, 2.97 inches, or 0.80 of an inch less than the normal; Southern, 3.55 inches, or 0.23 of an inch less than the normal. The greatest amount 8.38 inches, occurred at Centerville, and the least, 0.54 of an inch, at Thurman. The greatest amount in 24 hours 5.22 inches, occurred at Dubuque on the 16th-17th.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 77 per cent, and at 7 p. m. it was 58 per cent. The mean for the month was 67 per cent, or 4 per cent lower than the normal. The highest monthly mean was 76 per cent, at Charles City, and the lowest was 56 per cent, at Omaha, Neb.

WIND.

The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular weather Bureau station was at the rate of 51 miles an hour, from the south, at Sioux City, on the 15th.

SUNSHINE.

The average per cent of the possible amount of sunshine was 68, or 3 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 63; Davenport, 69; Des Moines, 62; Dubuque, 66; Keokuk, 76; Sioux City, 68; Omaha Neb., 70.

MISCELLANEOUS PHENOMENA.

- Aurora:* 17th, 24th, 25th, 26th and 31st.
- Fog:* 9th, 14th, 16th, 24th, 27th and 28th.
- Frost, (light):* 31st, at Mt. Ayr.
- Hail:* 14th, 17th, 22d, 29th and 30th.
- Halo, Solar:* 27th.
- Rainbow:* 22d.
- Thunderstorms:* All days except 5th 9th, 24th, 25th, 26th, 27th and 31st.

COMPARATIVE DATA FOR THE STATE—AUGUST.

YEAR	Temperature				Precipitation					Number of Days		
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	With precipi- tation of in.	Clear	Partly cloudy	Cloudy
1890	68.4	-3.4	102	36	3.41	-0.27	6.44	1.02	8	15	10	6
1891	69.1	-2.7	103	34	4.24	-0.56	13.02	1.23	5	13	12	6
1892	71.4	-0.4	102	40	2.24	-1.34	4.69	0.65	5	18	9	4
1893	69.4	-2.4	101	30	2.32	-1.26	6.22	0.40	5	19	9	3
1894	74.6	+2.8	108	39	1.58	-2.10	4.53	T	4	21	8	2
1895	71.9	+0.1	103	37	4.43	+0.75	10.63	0.67	7	17	9	5
1896	71.7	-0.1	104	34	3.52	-0.16	12.25	0.80	8	15	11	5
1897	68.9	-2.9	104	35	1.86	-1.82	4.93	0.47	6	15	11	5
1898	71.2	-0.6	103	40	3.44	-0.24	10.55	0.58	6	17	9	5
1899	74.4	+2.6	100	41	3.68	0.00	10.45	1.12	7	17	10	4
1900	77.4	+5.6	103	44	4.65	+0.97	10.43	1.26	6	18	10	3
1901	73.8	+2.0	105	40	1.29	-2.39	4.46	T	5	20	9	2
1902	69.1	-2.7	98	37	6.58	+2.90	15.47	1.57	11	11	11	9
1903	69.1	-2.7	101	41	6.64	+2.96	17.74	2.55	11	12	10	9
1904	69.1	-2.7	97	35	3.43	-0.25	6.75	0.66	7	17	8	6
1905	74.3	+2.5	104	44	4.05	+0.37	8.47	1.04	9	16	9	6
1906	74.1	+2.3	101	33	3.95	+0.27	10.51	0.92	9	17	9	5
1907	71.1	-0.7	99	37	4.33	+0.65	9.67	1.05	9	17	9	5
1908	70.0	-1.8	101	38	4.77	+1.09	10.55	1.35	9	17	9	5
1909	76.1	+4.3	103	33	1.81	-1.87	8.21	T	5	21	8	2
1910	71.9	+0.1	104	36	3.88	+0.20	11.22	0.37	8	15	10	6
1911	71.7	-0.1	107	34	3.32	-0.36	9.47	0.44	9	16	10	5
1912	71.0	-0.8	101	40	3.78	+0.10	7.90	0.89	10	15	10	6
1913	76.6	+4.8	108	40	2.68	-1.00	7.13	0.08	6	17	10	4
1914	73.7	+1.9	103	40	2.19	-1.49	4.00	0.42	7	17	10	4
1915	65.9	-5.9	91	30	2.81	-0.87	9.2	0.27	8	16	8	7
1916	74.0	+2.2	106	35	2.58	-1.10	6.23	0.49	7	18	9	4
1917	69.4	-2.4	102	31	2.29	-1.39	6.31	0.70	7	19	8	4
1918	76.0	+4.2	113	38	3.61	-0.07	8.38	0.54	8	16	10	5

T indicates an amount too small to measure, or less than .005 inch precipitation, and less than .05 inch snowfall.

Climatological Data for August, 1918

Table with columns: Stations, Counties, Elevation—feet, Length of record—years, Temperature in Degrees Fahrenheit (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation in inches (Total, Departure from normal, Greatest in 24 hours, Total snowfall, unmetted, Precipitation 0.01 in. or more, Clear, Partly cloudy, Cloudy), Prevailing direction of wind, and Observers. The table is divided into Northern and Central Divisions and includes means and extremes.

Climatological Data for August, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit					Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in. or more.			Clear.	Partly cloudy.	Cloudy.
<i>Southern Division</i>																				
Afton	Union	1,212	24	80.2	+ 7.2	110	4	50	29	36	3.55	+0.03	1.75	0	7	16	11	4	sw	J. E. Deitrick.
Albia	Monroe	959	20	77.7	+ 4.6	106	5	49	29†	45	5.09	+1.87	3.17	0	7	15	3	13	sw	F. H. Holmes.
Allerton	Wayne	1,122	16	79.6	+ 5.7	108	4	51	29†	35	4.19	-0.04	1.80	0	7	20	7	4	s	James Huston.
Atlantic	Cass	1,164	27	79.2	+ 6.6	111	5	49	29†	48	2.02	-1.57	0.86	0	16	15	9	7	ne	Thos. H. Whitney.
Bedford	Taylor	—	18	79.2	+ 5.8	108	4	43	31	39	1.90	-1.95	0.61	0	8	20	9	2	sw	E. E. Healy
Bloomfield	Davis	881	11	79.4 ^b	—	107 ^b	4	59 ^b	31	38 ^b	3.39	-0.19	1.30	0	9	10	19	2	s	V. G. Warner.
Bonaparte	Van Buren	565	27	78.2	+ 5.1	105	4	52	31	34	3.09	-0.86	1.21	0	6	23	6	2	sw	Bruce R. Vale.
Burlington	Des Moines	544	22	79.2	+ 5.2	106	4†	54	31	35	4.52	+0.19	2.50	0	11	16	13	2	sw	Mrs. J. A. Donnelly.
Centerville	Appanoose	1,013	13	80.4	—	109	4	52	31	39	8.38	—	2.73	0	10	17	6	8	sw	Leo J. Allen
Chariton	Lucas	1,042	23	78.2	+ 5.6	110	4	47	31	43	5.45	+1.53	2.90	0	4	16	9	6	sw	C. C. Burr.
Clarinda	Page	1,009	28	80.8	+ 7.3	113	4	47	31	48	3.09	-0.53	1.05	0	7	18	9	4	s	A. S. Van Sandt.
Columbus Jet.	Louisa	595	17	77.5	+ 4.8	99	4†	52	31	31	5.51	+0.28	1.45	0	9	26	5	0	sw	J. B. Johnston.
Corning	Adams	1,117	26	80.2	+ 8.0	111	4	48 ^a	31	42 ^a	2.96	-0.98	0.75	0	10	20	10	1	sw	Jerome Smith.
Corydon	Wayne	1,101	25	78.9	+ 5.0	109	4	48	31	42	4.35	+0.79	1.66	0	8	18	11	2	se	May C. Miller.
Creighton	Union	1,312	13	78.2	+ 6.4	111	4	49	31	41	5.24	-2.07	1.07	0	8	13	13	5	s	Mrs. Tillie E. McConnell.
Cumberland	Cass	—	19	—	—	—	—	—	—	—	2.23	-1.74	1.10	0	5	27	3	1	sw	J. H. Reppert.
Earlham	Madison	1,126	16	78.8	+ 7.6	112	4	44	29	44	4.31	-0.09	2.83	0	7	22	6	3	sw	Geo. Phillips.
Fairfield	Jefferson	780	34	77.0 ^e	+ 3.9	104 ^e	4	43 ^e	30	42 ^e	2.85	-0.79	1.50	0	4	—	—	—	—	Prof. R. Monroe McKenzie
Fort Madison	Lee	516	69	—	—	—	—	—	—	—	2.24	-1.41	0.68	0	9	16	10	5	nw	F. M. Myers.
Glenwood	Mills	1,100	21	78.8	—	108	4	48	29	38	3.63	—	1.90	0	7	13	16	2	ne	Dr. Geo. Mogridge.
Greenfield	Adair	—	26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Frank A. Ward.
Indianola	Warren	969	26	79.4	+ 6.5	111	4	52	31	38	3.99	-0.29	2.41	0	7	4	17	10	sw	Prof. J. L. Tilton.
Keokuk	Lee	614	47	80.8	+ 6.2	108	4	55	31	32	3.24	0.00	1.03	0	11	14	16	1	s	U. S. Weather Bureau.
Keosauqua	Van Buren	644	26	78.8	+ 5.5	107	4	51	29	37	3.05	-0.49	1.10	0	7	15	12	4	se	J. H. Landes.
Knoxville	Marion	920	23	79.6	+ 6.0	113	4	47	29	44	4.24	+0.17	1.95	0	8	13	11	7	sw	W. J. Casey.
Lacona	Warren	—	19	—	—	—	—	—	—	—	3.93	+0.01	1.75	0	9	11	13	7	—	J. B. Alter.
Lamoni	Decatur	—	11	77.5	+ 3.8	106	4	51	31	40	2.91	—	0.98	0	10	18	11	2	s	Edward D. Moore.
Lenox	Taylor	1,250	23	80.4	+ 7.6	108	4	48	31	41	2.62	-1.10	0.53	0	7	26	4	1	s	J. L. Hurley
Mount Ayr	Ringgold	1,236	25	79.4	+ 5.3	108	4	47	31	39	3.00	-0.50	1.11	0	10	18	10	3	s	Alex Maxwell.
Mount Pleasant	Henry	729	37	78.0	+ 4.6	105	4	50	31	38	3.67	+0.24	1.71	0	8	19	9	3	sw	J. W. Edwards.
Murray	Clarke	1,216	27	80.3	+ 6.7	109	4	50	31	43	4.74	+1.21	2.21	0	9	13	13	5	s	M. T. Ashley.
Northboro	Page	1,120	6	80.6	—	110	4	50	31	40	3.58	—	0.88	0	9	19	4	8	sw	J. M. Darby.
Oskaloosa	Mahaska	843	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Jos. Boyd.
Ottumwa	Wapello	849	23	79.9	—	109	4	52	31	36	5.43	+1.85	2.21	0	6	20	4	7	sw	Eugene O. Field.
Pella	Marion	877	15	78.0	+ 4.9	112	4	48	29	43	5.18	+1.73	1.96	0	8	20	1	10	s	J. H. Ver Steeg.
St. Charles	Madison	1,070	17	78.9	+ 5.0	110	4	52	31	35	2.98	-0.69	1.48	0	7	17	11	3	sw	R. D. Minard.
Shenandoah	Page	—	—	—	—	113	4	—	—	46 ^c	1.01	—	0.54	0	4	18	6	7	s	L. L. Hunter.
Sigourney	Keokuk	877	22	77.4 ^b	+ 4.2	109 ^b	4	50 ^b	29†	40 ^b	3.25	-0.22	1.00	0	7	20	9	2	se	W. E. Utterback.
Stockport	Van Buren	754	16	77.2	+ 4.0	104	4	51	29†	35	2.71	-1.08	1.08	0	9	18	9	4	s	C. L. Beswick.
Thurman	Fremont	—	21	80.8	+ 7.4	109	4	43	31	41	0.54	-3.91	0.24	0	5	7	24	0	sw	C. R. Paul.
Washington	Washington	769	36	76.9	+ 4.4	101	5	50	31	30	3.70	-0.08	1.10	0	9	7	19	5	sw	Wm. A. Cook.
Winterset	Madison	1,129	27	79.8	+ 6.3	111	4	48	29	36	2.63	-1.19	1.17	0	8	26	5	0	sw	H. S. Ely.
Omaha, Neb.	—	1,040	47	80.8	+ 6.4	110	4	54	31	32	1.14	-2.48	0.97	0	8	14	13	4	se	U. S. Weather Bureau.
Means and extremes—State means and extremes	—	—	—	79.1	+ 5.9	113	4	43	30†	48	3.55	-0.23	3.17	0	8	17	10	4	sw	—
—	—	—	—	76.0	+ 4.2	113	4	38	30	50	3.61	-0.07	5.22	0	8	16	10	5	sw	—

The departure from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.

Reference letters ^a, ^b, ^c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.

†Also other dates. ††Received too late to be included in means and summaries.

T. Precipitation is less than 0.01 inch rain or melted snow.

RIVERS.

Moderate stages prevailed on the Missouri River, with a general falling tendency the greater portion of the month; on the Mississippi low stages prevailed, with a falling tendency, until the 17th, when a sharp rise, due to unusually heavy rainfall over the northeastern portion of the State, occurred. Crest stages occurred at Dubuque on the 18th, at Davenport on the 19th and at Keokuk on the 21st. At the end of the month low stages were general on the Mississippi. The interior rivers were low except for brief periods.

LATE REPORT.

For June, 1918: Britt; mean temperature, 67.3°; departure of mean from normal, -0.1; highest temperature, 96 on the 16th; lowest temperature, 41 on the 7th; greatest daily range in temperature 35; total precipitation, 4.25; departure from the normal, +0.26; greatest in 24 hours, 1.23; number of days with 0.01 inch or more of precipitation, 10; clear days, 21; partly cloudy 5; cloudy, 4; prevailing wind direction, south.

IOWA CROP REPORT SEPTEMBER 1, 1918

Following is a summary showing the condition of crops on September 1, as compared with the average of past years on that date: Corn, 90 per cent; potatoes, 78; flax, 95; pastures, 85. On September 1, 1917, the conditions were: Corn, 84; potatoes, 95; flax, 94; and pastures, 80 per cent.

Hot winds and drouth seriously damaged corn in the southwest one-third of the State during the first half of August, so that the average condition September 1, was 11 per cent lower than on August 1. The total production will be about 350,000,000 bushels, or nearly 17,000,000 bushels above the 10-year average.

Preliminary reports indicate the average yield of winter wheat to be 21 bushels per acre; spring wheat, 19; oats, 43; barley, 31; rye, 18; and timothy seed, 4.6. If these estimates are maintained by final reports, the State will produce about 4,143,000 bushels of winter wheat, 11,028,000 of spring wheat; 237,640,000 of oats, 10,679,000 of barley; and 900,000 bushels of rye. The area of timothy cut for seed was 73 per cent of last year's acreage. Eighty per cent of the threshing had been finished on September 1, which is about 10 per cent above the normal.

Daily Precipitation for August, 1918.

Stations.	Watersheds.	Day of Month.																															Total				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
<i>Northern Division</i>																																					
Algona	Des Moines													.17		1.11	.20	1.10				.33	1.65											4.66			
Allison	Cedar	.18			.08											.66	.80	.71														.05			3.04		
Alta	Raccoon						.42	.07								.42		2.00	.03	.05	.40														3.42		
Alta (near)	Raccoon					.53										.43	2.10	.44		.09	.85														4.00		
Alton	Floyd					.03	1.66					.02	.03	.78		.07	.12	1.64	.07			.19	.33										.21		5.15		
Belmond	Iowa	.11												.11	.06	.73	.36	.58				.03	1.30	.70							.06		.06	3.40			
Britt	Iowa	.22												.09	.01	1.40	1.18	.44			.25	1.26	.70								.01		.04	5.66			
Charles City***	Cedar	.76			.07											.33	3.59	.28			.02	.33									.10			5.48			
Decorah	Mississippi		.04		.14	.39			.31				.03		.07	2.43	1.14					.09												4.64			
Elkader	Mississippi				.10							.05	.15		.12	.10	1.90	2.85					.05												5.42		
Estherville	Des Moines						.35	.83							.36		.30	1.10	.18	.27		.20	1.40								.07	.05		5.11			
Fayette	Mississippi	.10			.05							1.15			.12		.25	2.83	3.14																7.71		
Forest City	Cedar	.38					.05	.05					.06	.02	.01	.83	3.67	.66	.15			1.74													7.62		
Humboldt	Des Moines															.09	.30						.70												1.05		
Inwood	Big Sioux					.14	.07	1.06							.03		.20					.94	.26		.01						.20		.11		3.02		
Lake Park	Little Sioux						1.75	.35						1.85		1.10						.80	.50										.35		6.70		
Lansing	Mississippi			.02	.49			.95									1.34	.87	.08																	3.75	
Le Mars	Floyd			.04			1.33					.04		.40	.02	.05	.31	.14	.03			.01												.04		2.41	
Mason-City	Cedar															.33	2.72	.40																		4.24	
New Hampton	Wapsipicon	.34			.11		.05															.27										.02				4.24	
Nora Springs	Cedar	.08			.11		.06			.03	.03			.04	.04	.51	5.20	.56				.02	.48	.02								.24			7.42		
Northwood	Cedar																																				2.31
Pocahontas	Des Moines				.05			.77								.01	.11	.36	.08	.04		.10	.83									.02		.04		2.31	
Postville	Mississippi	.04			.29							.12	.10			.07	2.25	.66															.01	.01		3.58	
Rock Rapids	Big Sioux					.23	1.26	.06				.02	.21	.09		.20						1.12	.17									.15				3.51	
Sanborn	Floyd						1.70	.26				.05	1.08	.01	.24	.36	.51					.26	.45										.02		4.94		
Sibley	Big Sioux	.02				.04	1.39					.07	.21	.27		.31						.60	.12								.05	.25			3.49		
Sioux Center	Floyd						1.48					.09	.24	.23		.19	.27	1.05				.17	.13											.12		3.97	
Storm Lake	Raccoon					.01	.50						.03			.09	.74	.61				.02	.02	.88										.01		2.91	
Washita	Little Sioux						1.40					.18				.30						.16	.16													2.83	
Waverly	Cedar	.20						.21						.05		.87	1.15	.88					.28										.05			3.69	
West Bend	Des Moines	.02						.89						.03		.59	.12	1.18				.03	.45	.90				.09				.02		.08		4.40	
<i>Central Division</i>																																					
Ames	Skunk															.68	.13	.12																		.93	
Audubon	Nishnabotna											.07			.02	.24	.10	.15				1.57		.05	.31											2.51	
Baxter	Skunk											.06			.04	.85	.01	.10	1.47						.17						.05		.03		2.92		
Belle Plaine	Iowa	.07						.24				.42			.07		.57	.39	.16	1.74					.18											3.23	
Boone	Des Moines														.07		.27	.23	.02	.42			.04	.24												1.29	
Carroll	Raccoon															.14		.04	2.02	.21			.03	1.01												4.05	
Cedar Rapids	Cedar	.12													.60	.32	.55	.50	.60																	1.54	
Clinton	Mississippi	.10	.40		.04						.31	.06			.13	.28	.62	.83	.37						.37						.01		.19		4.31		
Davenport***	Mississippi										.08	.02				.87	.26	.63	.55				.01								.05	.31	.60		3.38		
Delaware	Mississippi	.06			.02								.06		.55	.33	1.13	.81	.03				.05		.05								.11			3.20	
Denison	Missouri						.19					.58				.68		.52		.18		.18														2.33	
Des Moines***	Des Moines													.05	.04	.40	.26	1.35	.24				.04	.08										.08		2.54	
Dubuque***	Mississippi	.01			.05			.04				.01	.01	.56	.01	.03	4.26	1.01														.01	.03	.06		6.09	
Fort Dodge	Des Moines				.03											.22	.10	.10	.06				.13	.15												0.79	
Gilman	Iowa																																				
Grinnell	Iowa													.05		1.12	.05	.05	2.55													.13		.55		4.75	
Grundy Center	Cedar	.34										.10	.10		.25	.65	.05	.42	.08			.10									.02	.08			2.09		
Guthrie Center	Raccoon										.10	.08			.23	.11	.05	.08				.72	.10									.08		.05		1.55	
Harlan	Nishnabotna					.06						.12			.26	.10	.35		.15			.10	.10													1.23	
Independence	Wapsipicon	.11													.06	.56	1.08	.74														.02		.07		2.91	
Iowa City	Iowa		.04										.58		.27	.71	.10	.39	1.59	.21						.57					.03	2.21				6.72	
Iowa Falls	Iowa		.24													.10	.36	.26	.46			.10	.61													2.14	
Jefferson	Raccoon						.02						.17			.21	.31	.63	.18	.08		1.18														2.78	
Le Claire	Mississippi											.06	.04			.38	.62		.68	.25	.06															3.05	
Little Sioux	Little Sioux					.10	.03	.10					.41		.09	.05	1.45	.04				.51	.59													3.37	
Logan	Missouri					.06						.15			.12	.03		.13	.03	.08	.20	.19														0.90	
Maquoketa	Maquoketa											.02			.21	.15	1.98	1.10	.27															.51		4.51	
Marshalltown	Iowa	.06													.70	.23	.06	.26	1.42																		

Daily Precipitation for August, 1918—Continued.

Stations.	Watersheds	Day of Month.																														Total								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31							
<i>Southern Division</i>																																								
Afton.....	Grand.....										.27	.23			.40				1.75	.05	.05			.80													3.55			
Albia 	Des Moines.....		T.								T.	.33	.26	.05			T.		T.	.95				3.17														5.09		
Allerton.....	Chariton.....	T.									.07	.11	.33	.30						1.80				.64														4.19		
Atlantic 	Nishnabotna.....										T.	.01	.01	.53	.05	.03	.09	.23	.02	.03	.86	.09		.01	.01	.03													2.02	
Bedford.....	Missouri.....										T.	.61	.55						.09		.04	.30			.03								.01					1.90		
Bloomfield.....	Mississippi.....		.24								T.	T.	.30	.21				T.	.04	.24	.06	1.30			.45													3.39		
Bcnparte.....	Des Moines.....		T.								T.	T.	.78	.16				T.		.20	.07	1.21			T.													3.09		
Burlington 	Mississippi.....											.08	.04	.09				.18	.72	.10	2.50	.08				T.						.03							3.09	
Centerville.....	Chariton.....		.01									.02	.13	.42	.66					.05					2.73									.02				2.38	8.38	
Chariton.....	Chariton.....										T.	T.	.60								2.90	T.			1.45														5.45	
Clarinda 	Nodaway.....											.36	1.05					.60			.20	.45	T.		.21														3.09	
Columbus Jct.....	Iowa.....										T.	.14			.13	.75	1.00	.50	.65	1.45																				5.51
Corning.....	Nodaway.....										T.	.19	.47			.20	.09	.07			.04	.18				.75														2.96
Corydon.....	Chariton.....											.02																												4.35
Creston 	Missouri.....											.05	1.12	.15				.20			2.07	.05	.05		.40										1.15				5.24	
Cumberland.....	Nodaway.....												1.10			.06	.05			.95					.07														2.23	
Earlham.....	Des Moines.....												.22			T.	.22	.53		2.00	.83	T.			.47														4.31	
Fairfield.....	Skunk.....											.20		.65				T.		T.	1.50			T.	.50														2.85	
Port Madison.....	Mississippi.....											T.	.33	.30	.03			T.	T.	.30	.15	.40			.02									.03					2.24	
Glenwood.....	Missouri.....												.45					.14			.87	.15	1.90	.07		T.													3.63	
Greenfield.....	Nodaway.....																																							
Indianola.....	Des Moines.....											.01		.13	T.			.05	T.	.62		T.	2.41	T.	T.		.59												3.99	
Keokuk***.....	Mississippi.....											.13	.26	.60		.69	T.	T.	.02	.02	1.03				.05										.01	.01			4.22	
Keosauqua.....	Des Moines.....											.07	.52	.23				T.	T.	.01	.08	1.10				T.													3.05	
Knoxville.....	Des Moines.....	T.										.15	T.					.05	.23	T.	T.	.90		T.	.29	1.95									.04				4.24	
Lacona.....	Des Moines.....											.01	.02	.07	.02				.05	.01		1.75			1.50												.50		3.93	
Lamoni 	Grand.....		T.										.98	.45	.14					.76	.04	.07		.11										.01	.08	.27	2.91			
Lenox.....	Missouri.....												.52	.53				.16			.50	.28	.18															2.62		
Mt. Ayr.....	Grand.....		.02									.21	1.11	.63				.01	T.			.39	.17	T.															3.00	
Mt. Pleasant.....	Skunk.....	T.										.09	.02	.06	.11					T.		.18	1.71			.07													3.87	
Murray.....	Grand.....		.06									.04		.15	.18			.05	.03	T.		1.72	T.			2.21													4.74	
Northboro.....	Tarkio.....												.65	.88				.35	.71			.45	.01	.07		.22												3.58		
Oskaloosa.....	Des Moines.....																																							
Ottumwa.....	Des Moines.....																																							
Pella.....	Skunk.....		T.																		.41	T.	.42	.20	T.	1.96														
St. Charles.....	Des Moines.....												.23	.13						.18			1.48		T.		.59									.07			2.98	
Shenandoah 	Nishnabotna.....												.54	.04					.01	T.						.42													1.01	
Sigourney.....	Skunk.....												.10	T.							.72	.03	.12	.49			1.00												3.25	
Stockport.....	Skunk.....												.03	.14	.21						.02	.07	1.02				.10												2.71	
Thurman.....	Missouri.....												.24	.14				.02	T.	T.				.02	T.														0.54	
Washington.....	Skunk.....											.18	.14						.89	.16		.07	1.10				.42												3.70	
Winterset.....	Des Moines.....													.05				.42	.14	.16			1.17				.09									.05			2.63	
Omaha, Nebr.***.....	Missouri.....												.62	.35					.01	.01	T.			.04	.04	.05	T.											1.14		

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours at the time of observation.

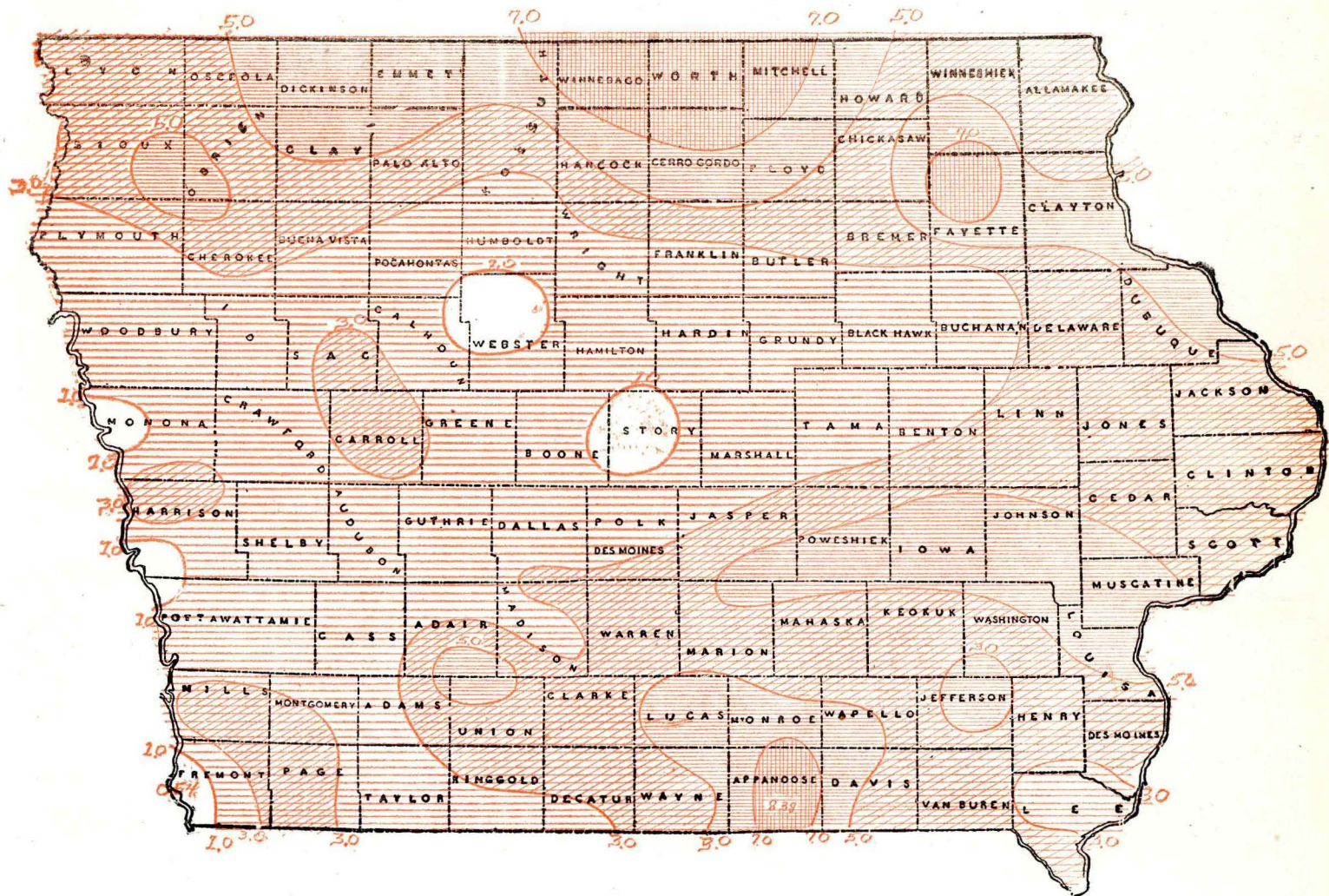
|||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.
 ***Regular Weather Bureau station; precipitation is for the 24 hour period, midnight to midnight.
 **Incomplete. T. Trace, or less than 0.01 inch.
 *Precipitation included in the next following measurement.

Daily Maximum and Minimum Temperatures for the Month of August, 1918.

Table with columns for Stations, days 1-31, and Mean. Rows are grouped by division: Northern Division (Albion to Le Mars), Central Division (Belle Plaine to Sioux City), and Southern Division (Albia to Omaha, Nebr.). Each station entry includes maximum and minimum temperature values for each day.

a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record. §§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

TOTAL PRECIPITATION AUGUST, 1918.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, August, 1918.



Scale of Shades.

- 0 to 2 inches.
- 2 to 4 inches.
- 4 to 6 inches.
- 6 to 8 inches.
- Over 8 inches.

0 50 100 150 200
 STATUTE MILES
 0 100 200 300 400
 KILOMETERS

NOV 23 1918

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

SEPTEMBER, 1918

BY

CHARLES D. REED

METEOROLOGIST

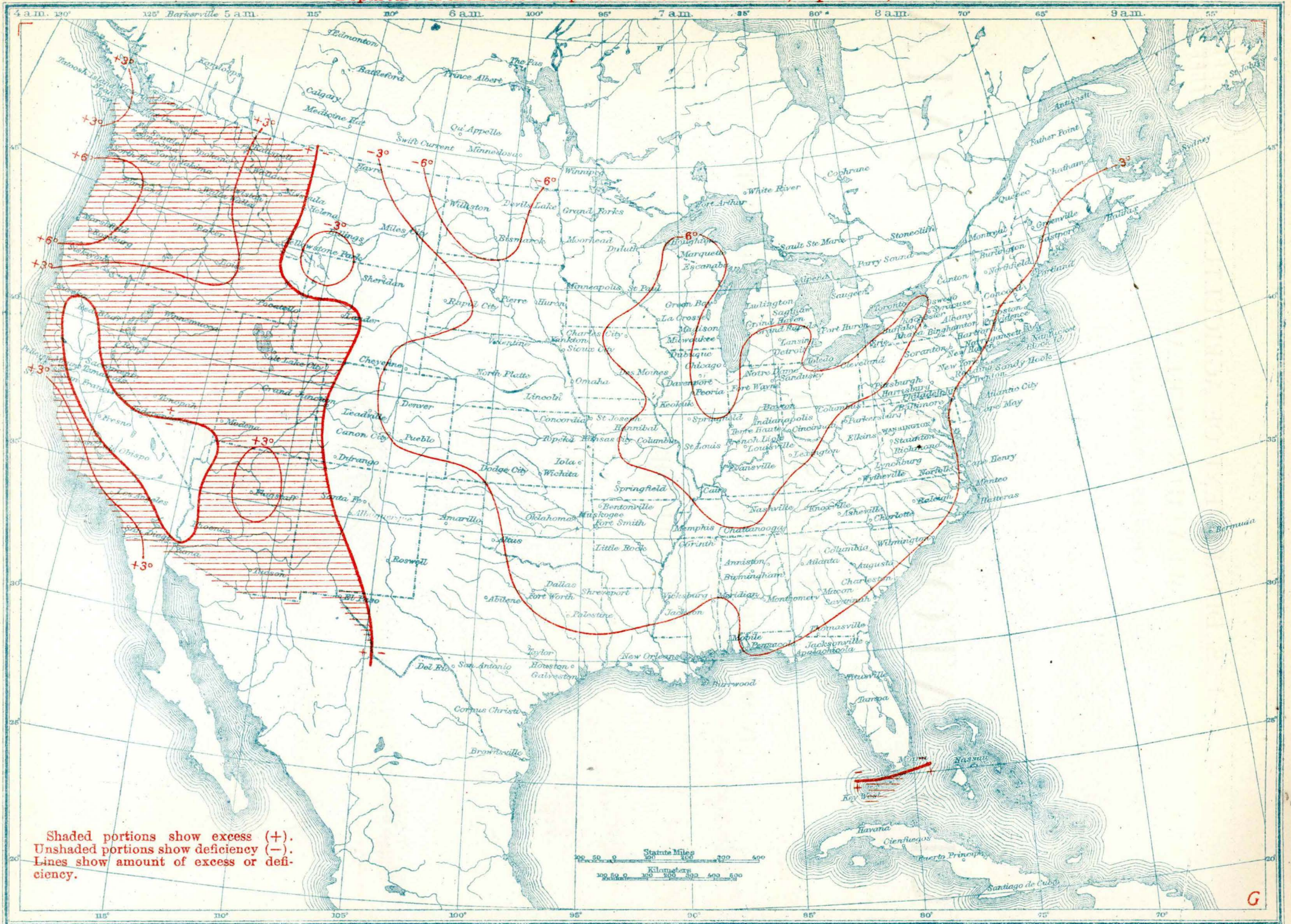


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

25

Departure of the Mean Temperature from the Normal, September, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST

VOL. XXIX DES MOINES, IOWA, SEPTEMBER, 1918 No. 9

GENERAL SUMMARY.

September mean temperature, 58.6°, is the lowest of 29 Septembers, except 1896, which was only 0.1° cooler. The deficiency in temperature was greatest, 8°, in the extreme northeast portion and least, 2.6°, in Adams County. The temperature was normal or higher on very few days. During the coolest period, 18th-21st, heavy to killing frosts covered all sections of the State except a distance of about 50 miles west of the Mississippi River, and frosts reached most of the east-central counties on the 27th. Precipitation was deficient except in Floyd and surrounding counties where heavy rains on the 10th caused a monthly excess; also in Wapello and adjacent counties where heavy rains fell on the 2d and 4th.

Due to the great damage by frost last year, the seed corn available for planting this season was limited largely to the earlier varieties. This, together with a favorable season, left little corn subject to damage by the early frosts. That planted after the June floods suffered most.

The garden vegetable season was shortened about three weeks. The dry weather favored the maturing of corn but interfered considerably with the seeding and germination of wheat and rye. Where the moisture was sufficient these crops were up and growing nicely at the close of the month.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.09 inches. The highest recorded was 30.51 inches at Dubuque, on the 10th, and the lowest was 29.70 at Davenport, on the 14th. The monthly range was 0.81 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 96 stations was 58.6°, or 4.8° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 56.7°, or 5.1° lower than the normal; Central, 58.5°, or 5.0° lower than the normal; Southern, 60.5° or 4.5° lower than the normal. The highest monthly mean was 62.4°, at Omaha, Nebr., and the lowest 54.0°, at Postville. The highest temperature reported was 93° at Omaha, Nebr., on the 18th, and the lowest, 21° at Denison, on the 21st. The temperature range for the State was 73°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 79 per cent and at 7 p. m. 58 per cent. The mean for the month was 68 per cent, which is 6 per cent below normal. The highest monthly mean was 83 per cent at Charles City, and the lowest was 69 per cent at Omaha, Nebr.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 108 stations, was 1.87 inches, or 1.49 inches below the normal. By divisions the averages were as follows: Northern, 1.83 inches, or 1.22 inches less than the normal; Central, 1.46 inches, or 2.00 inches less than the normal; Southern, 2.32 inches, or 1.24 inches less than the normal. The greatest amount, 4.62, occurred at Keosauqua, and the least, 0.48 inch, at Cumberland. The greatest amount in 24 consecutive hours 2.82 inches, occurred at Keosauqua, on the 2d.

WIND.

The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 34 miles an hour from the northwest at Sioux City, on the 11th, and at Des Moines from the southwest, on the 17th.

SUNSHINE.

The average per cent of the possible amount of sunshine was 63, which is normal. The per cent of the possible amount at regular Weather Bureau stations was as follows: Charles City, 61; Davenport, 56; Des Moines, 60; Dubuque, 55; Keokuk, 75; Sioux City, 65; Omaha, Nebr., 68.

MISCELLANEOUS PHENOMENA.

Aurora: 1st, 21st, 29th, 30th.

Fog, dense: 8th, 11th, 12th, 14th, 25th, 27th.

Frost, killing: Northern Division: 12th, 16th, 17th, 18th, 19th, 20th, 21st; Central Division: 17th, 18th, 20th, 21st, 27th; Southern Division: 17th, 20th, 21st.

Hail: 10th, 11th, 18th, 19th, 20th.

Halo (lunar or solar): 17th.

Thunderstorms: 1st, 2d, 9th, 10th, 11th, 12th, 14th, 15th, 17th, 18th, 19th, 24th, 25th.

COMPARATIVE DATA FOR THE STATE—SEPTEMBER

YEAR	Temperature				Precipitation				Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	With pre. of in. or more	Clear	Partly cloudy	Cloudy
1890	59.3	-4.1	96	23	2.97	-0.39	4.85	1.36	7	13	10	7
1891	67.3	+3.9	104	23	1.33	-2.06	3.60	0.13	4	20	7	3
1892	64.7	+1.3	99	29	1.53	-1.83	4.15	0.16	4	16	8	6
1893	64.7	+1.3	102	18	2.34	-1.02	5.49	0.74	4	20	6	4
1894	65.1	+1.7	100	26	3.57	+0.21	7.43	0.67	8	15	10	5
1895	66.8	+3.4	103	22	3.03	-0.33	7.43	0.85	5	18	8	4
1896	58.5	-4.9	95	22	4.09	+0.73	9.96	1.82	10	11	9	10
1897	70.9	+7.5	106	26	2.04	-1.32	5.83	0.00	4	23	5	2
1898	65.3	+1.9	99	29	2.69	-0.67	8.45	0.41	7	16	9	5
1899	62.5	-0.9	104	15	0.93	-2.43	4.32	T	4	16	9	5
1900	64.4	+1.0	99	26	4.98	+1.62	8.82	2.48	9	15	8	7
1901	63.3	-0.1	102	26	4.77	+1.41	13.62	1.71	9	13	9	8
1902	59.1	-4.3	88	23	4.35	+0.99	10.41	1.65	9	15	6	9
1903	60.3	-2.6	94	28	3.81	+0.45	8.79	1.42	10	14	6	10
1904	64.0	+0.6	94	30	2.78	-0.58	8.33	0.09	7	13	8	9
1905	65.8	+2.4	96	36	3.81	+0.45	13.18	0.50	8	14	8	8
1906	67.2	+3.8	100	27	4.16	+0.80	11.10	0.64	8	16	8	6
1907	62.8	-0.6	98	25	2.75	-1.61	6.06	1.38	8	15	9	6
1908	67.9	+4.5	98	20	1.20	-2.16	3.46	0.25	3	21	6	3
1909	62.4	-1.0	94	30	3.58	+0.22	7.34	1.39	9	14	8	8
1910	63.2	-0.2	99	30	3.59	+0.23	7.43	1.18	9	14	7	9
1911	65.8	+2.4	103	32	5.12	+1.76	13.73	1.19	10	11	9	10
1912	62.1	-1.3	104	24	3.98	+0.62	10.12	0.28	11	12	8	10
1913	64.5	+1.1	107	19	3.31	-0.05	7.44	0.45	9	15	8	7
1914	64.5	+1.1	99	30	7.88	+4.52	16.24	2.48	10	16	7	7
1915	63.7	+0.3	91	30	6.03	+2.67	12.45	2.88	11	11	8	11
1916	62.5	-0.9	98	21	3.89	+0.53	9.71	1.45	7	17	8	5
1917	62.6	-0.8	97	28	2.90	-0.46	8.68	0.39	7	15	7	8
1918	58.6	-4.8	93	20	1.87	-1.49	4.62	0.48	6	16	8	6

Climatological Data for September, 1918

Stations.	Counties.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.				Observers.		
				Mean.	Departure from normal.	Highest.	Date	Lowest.	Date	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Precipitation 0.01 in. or more.	Clear.	Partly cloudy.		Cloudy.	Prevailing direction of wind.
<i>Northern Division</i>																				
Algona	Kossuth	1,213	45	57.0	-5.2	85	2	30	20	33	2.09	-1.15	0.76	0	4	21	5	4	sw	W. E. Laird.
Allison	Butler	1,045	6	57.2	-----	85	1	30	21	41	2.14	-----	1.06	0	5	14	8	8	nw	J. A. Bell.
Alta	Buena Vista	1,513	27	57.1	-4.8	84	1	29	20	33	0.95	-2.13	0.37	0	4	13	13	4	nw	David E. Hadden.
Alta (near)	Buena Vista	22	22	55.2	-----	85	1	31	21	41	0.89	-2.75	0.35	0	5	21	4	5	nw	Warren Minard.
Alton	Sioux	1,306	13	56.8	-5.6	85	1	27	20	40	1.58	-----	0.66	0	9	13	10	7	n	W. S. Slagle.
Belmond	Wright	1,205	8	58.2	-----	85	1	30	20	39	2.56	-----	1.22	T.	7	8	16	6	nw	Geo. P. Hardwick.
Britt	Harl-ock	1,236	21	57.2	-----	85	1	30	20	39	2.22	-1.27	1.28	0	7	14	11	5	nw	L. M. Goodman.
Charles City	Floyd	1,015	27	55.3	-6.4	85	1	31	21	38	4.07	+1.27	2.21	0	6	10	13	7	nw	U. S. Weather Bureau
Decorah	Winneshiek	875	25	55.2	-7.0	81	1	31	21	41	2.62	-1.32	1.71	0	5	21	4	5	nw	Wm. F. Baker.
Elkader	Clayton	727	39	54.4	-8.3	80	1	30	21	42	2.32	-1.51	1.50	0	5	12	12	6	nw	Chas. Reinecke.
Estherville	Emmet	1,298	23	56.4	-3.7	83	2	29	20	38	1.32	-2.37	0.50	0	5	-----	-----	s	A. O. Peterson.	
Fayette	Fayette	1,003	28	55.4	-5.9	85	1	29	20	42	2.05	-1.34	1.52	0	6	17	8	5	nw	R. Z. Latimer.
Forest City	Winnebago	1,226	24	55.5	-5.8	85	1	30	20	41	1.34	-2.11	0.80	0	4	13	8	9	nw	Eugene Secor.
Humboldt	Humboldt	1,095	30	57.3 ^f	-5.0	90	2	30 ^h	20	44 ^k	0.87	-2.17	0.42	0	3	15	10	5	s	H. C. Snitkey.
Inwood	Lyon	1,474	14	57.4	-5.1	86	8	23	20	42	1.02	-1.79	0.46	0	9	20	6	4	s	F. B. Hanson.
Lake Park	Dickinson	1,479	5	57.6	-----	85	1	27	20	49	1.20	-----	1.00	0	3	22	2	6	nw	A. E. Woodruff.
Lansing	Allamakee	632	12	57.2	-----	85	1	29	20	39	2.26	-1.52	1.55	0	7	-----	-----	nw	Chas. R. Serene.	
Le Mars	Plymouth	1,224	22	57.8	-4.6	88	1	23	20	53	0.94	-2.31	0.43	0	7	13	15	2	nw	G. A. C. Clarke.
Mason City	Cerro Gordo	1,148	21	56.0	-4.9	85	1	31	21	40	3.34	+0.22	1.70	0	7	15	10	5	n	Northern Sugar Corp.
New Hampton	Chickasaw	1,169	21	56.0	-4.9	85	1	31	21	40	3.34	+0.22	1.70	0	7	15	10	5	n	A. F. Kemman.
Nora Springs	Floyd	1,064	5	57.2	-----	86	1	28	21	42	2.89	-----	1.52	0	8	17	9	4	s	Arthur Betts.
Northwood	Worth	1,222	22	54.6	-6.4	78	1	29	21	34	3.25	-9.01	-----	0	-----	10	15	5	nw	Chas. Dwell.
Pocahontas	Pocahontas	1,248	14	58.5	-3.9	90	1	29	20	42	1.56	-2.23	0.50	0	9	17	8	5	n	F. E. Hronek.
Postville	Clayton	1,180	19	54.0	-7.1	78	1	34	19	32	2.55	-1.14	1.47	0	6	10	16	4	se	F. L. Williams.
Rock Rapids	Lyon	1,358	19	55.4	-6.6	83	8	24	20	43	0.73	-1.69	0.16	0	7	21	5	4	nw	J. K. Medberry.
Sanborn	O'Brien	1,553	4	56.8	-----	84	1	25	20	39	2.14	-----	0.62	0	6	19	5	6	ne	Jas. W. Dow.
Sibley	Oscola	1,212	25	55.5	-4.5	87	1	23	20	45	0.96	-2.65	0.34	0	6	22	3	5	sw	H. F. Olds.
Sioux Center	Sioux	1,426	19	57.6	-4.2	84	1	26	20	38	1.73	-1.33	1.08	0	5	-----	-----	s	J. de Ruyter.	
Storm Lake	Buena Vista	1,440	29	58.0 ^a	-4.2	86 ^b	1	30	20	41 ^b	1.25	-1.81	0.32	0	7	16	7	7	nw	Geo. H. Fracker.
Washta	Cherokee	1,157	20	58.1	-5.2	88	1	22	20	50	0.66	-2.86	0.26	0	5	20	5	5	n	H. L. Felter.
Waverly	Bremer	945	22	56.5	-5.7	85	1	28	21	44	3.29	+0.30	1.46	0	4	14	9	7	nw	H. Arnold.
West Bend	Palo Alto	1,197	25	57.8	-3.8	86	1	26	20	41	1.74	-1.33	-----	0	4	17	7	6	nw	Jos. Dorwieler.
Means and extremes				56.7	-5.1	90	1	22	20	53	1.83	-1.22	2.21	T.	6	16	9	5	nw	
<i>Central Division</i>																				
Ames	Story	926	42	57.2	-----	86	1	28	21	42	2.89	-----	1.52	0	8	17	9	4	s	Arthur Betts.
Audubon	Audubon	1,301	24	58.2 ^b	-4.3	90	13	25 ^c	21	44	0.56	-2.84	0.30	0	5	-----	-----	n	V. M. Jones.	
Baxter	Jasper	998	18	59.0	-4.5	85	1	31	20	42	1.52	-1.57	0.75	0	8	15	6	9	nw	Rev. Paul Traeger.
Belle Plaine	Benton	886	28	57.8	-5.4	82	1	29	21	42	1.57	-2.10	0.45	0	8	15	10	5	sw	O. C. Burrows.
Boone	Boone	1,134	13	60.8	-1.7	90	1	31	19	42	0.92	-2.64	0.39	0	4	15	11	4	se	Herbert A. Grabau.
Carroll	Carroll	1,265	28	59.0	-3.0	86	1	27	20	42	0.88	-2.20	0.46	0	5	18	5	7	nw	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	36	59.6	-4.4	84	1	36	21	39	1.65	-1.38	1.10	0	4	13	6	11	s	R. S. Toogood.
Clinton	Clinton	593	45	58.3	-5.2	82	1	33	27	40	1.94	-1.39	1.16	0	4	12	7	11	nw	H. Burde.
Davenport	Scott	580	47	58.9	-5.8	82	1	35	20	31	2.19	-0.95	0.94	0	6	12	7	11	sw	U. S. Weather Bureau
Delaware	Delaware	1,083	27	56.6	-5.3	81	1	34	20	37	1.67	-1.71	1.35	0	4	15	12	3	s	Nettie E. Ball.
Denison	Crawford	1,180	24	58.0 ^a	-5.5	90 ^a	13	21 ^d	21	47 ^d	0.77	-2.16	0.38	0	7	-----	-----	ne	Emma Brogden.	
Des Moines	Polk	861	39	60.2	-4.8	85	1	34	20	41	0.91	-2.16	0.44	0	7	14	8	8	n	U. S. Weather Bureau
Dubuque	Dubuque	639	45	57.4	-6.2	81	1	36	27	37	1.63	-1.96	1.18	0	9	9	13	8	nw	U. S. Weather Bureau
Fort Dodge	Webster	1,126	18	56.9	-5.7	87	1	31	20	38	1.35	-2.96	0.80	0	4	17	8	5	nw	J. F. Monk.
Gilman	Marshall	1,052	19	57.2	-----	86	1	28	21	42	2.89	-----	1.52	0	8	17	9	4	s	Jas. L. Wylie.
Grinnell	Poweshiek	1,023	24	59.0	-5.6	84	1	32	21	43	1.38	-2.21	0.40	0	5	17	10	3	sw	D. W. Brainard.
Grundy Center	Grundy	976	27	59.4	-4.2	88	1	28	21	44	1.82	-1.61	0.75	0	6	16	5	9	nw	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	23	59.8	-3.9	88	1	25	21	47	0.92	-2.61	0.25	0	10	15	10	5	nw	C. T. Harney.
Harlan	Shelby	1,182	19	59.2	-4.0	90	13	25	21	49	0.63	-3.55	0.26	0	4	24	3	3	s	E. L. Tilton.
Independence	Buchanan	921	54	57.6	-5.0	83	1	31	21	43	1.66	-2.20	1.34	0	4	20	7	3	nw	Dr. H. A. Lindsay.
Iowa City	Johnson	683	57	58.0	-5.6	82	1	31	21	43	2.00	-1.68	1.14	0	6	17	6	7	nw	Prof. John F. Reilly
Iowa Falls	Hardin	1,107	25	56.6	-4.3	86	1	27	21	42	2.98	-0.56	1.18	0	8	15	9	6	n	J. B. Parmelee.
Jefferson	Greene	1,052	19	58.2	-5.0	86	1	28	21	44	0.60	-----	0.17	0	6	15	6	9	sw	Will I. Lyon.
Le Claire	Scott	576	18	58.2	-5.0	86	1	28	21	44	0.60	-----	0.17	0	6	15	6	9	sw	Will I. Lyon.
Little Sioux	Harrison	1,040	13	60.2	-5.4	92	13	23	20	48	0.83	-----	0.25	0	7	17	6	7	se	Margaret T. Disney.
Logan	Harrison	928	51	61.0	-3.5	90	13	27	20	47	0.70	-2.64	0.25	0	7	17	8	5	nw	Geo. F. Gibson.
Maquoketa	Jackson	683	17	56.3	-6.3	80	1	29	27	43	2.61	-0.65	1.20	0	4	13	10	7	sw	Ted Stern.
Marshalltown	Marshall	947	26	57.6	-5.8	86	2	27	21	43	1.09	-2.65	0.66	0	5	19	3	8	nw	Ira H. Stephens.
Monroe	Jasper	922	6	59.8	-----	83	1	33	20	41	1.46	-----	0.46	0	4	18	4	8	s	Ed. F. Duntman.
Muscatine	Muscatine	754	58	58.2	-4.2	85	1	31	27	51	2.50	-1.48	0.97	0	5	-----	-----	s	J. A. Dibel.	
Olin	Jones	700	20	58.8	-4.2	85	1	31	27	51	2.50	-0.90	1.50	0	4	20	9	1	nw	Wm. P. Moils.
Onawa	Monona	1,071	18	60.4	-----	90	1	26	20	48	0.67	-2.79	0.25	0	6	16	4	10	s	Dr. F. W. Fort.

Climatological Data for September, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit							Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers	
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Precipitation 0.01 in. or more.	Clear.	Partly cloudy.			Cloudy.
<i>Southern Division</i>																				
Afton	Union	1,212	24	62.0	-2.5	84	2	31	20	31	1.92	-2.05	0.75	0	7	17	7	6	n	J. E. Deitrick.
Albia	Monroe	950	20	59.6	-5.0	85	1	30	20	42	4.43	+0.78	2.02	0	8	13	7	10	sw	F. H. Holmes.
Allerton	Wayne	1,122	16	59.6	-6.1	83	1†	31	20	40	3.69	-0.06	1.75	0	5	19	7	4	n	James C. Huston.
Atlantic	Cass	1,164	27	61.0	-3.1	90	13	29	21	45	1.05	-2.47	0.29	0	9	12	10	8	sw	Thos. H. Whitney.
Bedford	Taylor	18	18	60.6	-4.8	87	13	26	21	53	2.03	-1.55	0.50	0	8	19	6	5	s	E. E. Healy.
Bloomfield	Davis	881	11	60.5	-----	83 ^a	1	33	21	38	4.54	+0.56	2.75	0	5	14	12	4	n	V. G. Warner.
Bonaparte	Van Buren	565	27	59.8	-5.7	84	1	31	21	41	1.69	-2.51	1.00	0	5	23	3	4	nw	Bruce R. Vale.
Burlington	Des Moines	544	22	61.0	-5.1	85	1†	35	20†	36	2.36	-1.29	0.84	0	7	19	5	6	sw	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	13	61.0	-----	85	1	33	20†	39	3.92	-----	2.45	0	6	16	9	5	sw	Leo J. Allen.
Chariton	Lucas	1,642	23	58.3	-6.4	83	1	28	20	44	2.68	-0.64	1.30	0	5	16	10	4	n	J. C. Burr.
Clarinda	Page	1,009	28	61.6	-3.0	89	13	28	21	46	1.99	-1.60	0.70	0	6	18	6	6	s	A. S. Van Sandt.
Columbus Jet.	Louisa	595	17	60.3	-5.0	82	1	36	21	31	1.44	-1.72	0.65	0	3	23	6	1	sw	J. B. Johnston.
Corning	Adams	1,117	23	61.3	-2.6	87	13	29	21†	49	1.73	-1.55	0.46	0	9	23	2	5	sw	Jerome Smith.
Corydon	Wayne	1,101	25	59.5	-6.5	84	1	30	20	42	4.17	+0.69	2.16	0	8	17	9	4	nw	May C. Miller.
Creston	Union	1,312	13	60.5 ^b	-2.9	86	1	29 ^b	20	40 ^b	1.56	-----	0.60	0	7	16	8	6	n	Mrs. T. E. McConnell.
Cumberland	Cass	19	19	-----	-----	-----	-----	-----	-----	-----	0.48	-3.30	0.23	0	3	20	7	3	sw	J. H. Reppert.
Earlham	Madison	1,126	16	59.2	-4.1	83	2†	28	21	48	1.30	-2.30	0.36	0	8	19	3	8	nw	Geo. Phillips.
Fairfield	Jefferson	780	34	-----	-----	-----	-----	-----	-----	-----	2.19	-1.69	0.70	0	8	15	9	6	nw	Prof. R. M. McKenzie.
Fort Madison	Lee	516	69	-----	-----	-----	-----	-----	-----	-----	2.19	-1.69	0.70	0	8	15	9	6	nw	F. M. Myers.
Glenwood	Mills	1,100	21	62.1	-----	90	13	27	21	45	1.36	-----	0.50	0	7	13	8	9	nw	Dr. Geo. Mogridge.
Greenfield	Adair	26	26	-----	-----	-----	-----	-----	-----	-----	2.00	-1.74	0.62	0	7	11	14	5	-----	Frank A. Ward.
Indianola	Warren	960	26	60.4 ^c	-4.6	86 ^c	2	32 ^c	20†	41 ^c	2.52	-0.90	0.59	0	9	-----	-----	-----	nw	Prof. J. L. Tilton.
Keokuk	Lee	614	47	61.4	-5.0	83	1	37	20	31	1.77	-2.20	0.60	0	9	15	10	5	s	U. S. Weather Bureau.
Keosauqua	Van Buren	644	26	60.2	-4.3	85	1	29	21†	43	4.62	+0.36	2.82	0	7	10	12	8	n	J. H. Landes.
Knoxville	Marion	920	23	60.3	-5.0	86	1	29	21	43	2.40	-1.18	0.83	0	5	11	12	7	nw	W. J. Casey.
Lacona	Warren	19	19	-----	-----	-----	-----	-----	-----	-----	2.00	-1.74	0.62	0	7	11	14	5	-----	J. B. Alter.
Lamoni	Decatur	1,100	11	60.4	-4.9	85	13	30	21	44	1.99	-----	0.85	0	8	18	7	5	s	Edward D. Moore.
Lenox	Taylor	1,250	23	60.4	-4.3	84	13	30	20	41	1.77	-1.63	0.87	0	10	18	8	4	s	J. L. Hurley.
Mount Ayr	Ringgold	1,236	25	61.0	-4.9	85	1	31	20	42	1.77	-1.81	0.56	0	9	20	5	5	w	Alex Maxwell.
Mt. Pleasant	Henry	729	37	60.3	-5.1	85	1	33	21	38	2.61	-0.62	1.43	0	7	16	7	7	w	John H. Jericho.
Murray	Clarke	1,216	27	60.6	-4.7	84	1	32	20	39	2.55	-0.92	0.90	0	10	15	9	6	n	M. T. Ashley.
Northboro	Page	1,130	6	62.1	-----	87	13	33	20†	41	2.54	-----	0.75	0	10	17	4	9	ne	J. M. Darby.
Oskaloosa	Mahaaska	835	42	60.0 ^a	-4.7	82	1	32 ^b	21	40 ^b	3.09	+0.04	1.62	0	4	-----	-----	-----	-----	Roy R. Robinson.
Ottumwa	Wapello	849	23	61.2 ^a	-----	84 ^a	1	32 ^a	21	40 ^a	4.04	+0.35	2.45	0	5	17	6	7	nw	Eugene O. Field.
Pella	Marion	877	15	59.0	-6.2	85	1	29	21	48	2.38	-0.85	0.92	0	4	18	2	10	nw	J. H. Ver Steeg.
St. Charles	Madison	1,070	17	60.3	-5.3	84	1	33	20	40	1.77	-1.72	0.37	0	10	20	7	3	nw	R. D. Minard.
Shenandoah	Page	-----	-----	-----	-----	91	14	-----	-----	-----	2.24	-----	0.61	0	7	21	4	5	n	L. L. Hunter.
Sigourney	Keokuk	877	22	58.6	-6.4	83	1	31	21	41	2.45	-0.77	1.32	0	5	17	7	6	nw	W. E. Utterback.
Stockport	Van Buren	754	16	58.6	-6.3	84	1	29	27	42	4.41	+0.48	2.08	0	6	18	7	5	ne	C. L. Beswick.
Thurman	Fremont	21	21	60.8	-4.4	87	13	24	21	49	1.43	-3.07	0.42	0	8	9	16	5	sw	C. R. Paul.
Washington	Washington	769	36	59.0	-5.7	83	1	34	20†	36	2.44	-0.57	0.99	0	4	12	9	9	sw	Wm. A. Cook.
Winterset	Madison	1,129	27	61.2	-3.6	85	1	31	20	42	1.54	-1.80	0.45	0	9	19	7	4	sw	H. S. Ely.
Omaha, Nebr.	-----	1,040	47	62.4	-3.4	93	13	35	20	53	1.03	-2.00	0.71	0	9	14	9	7	n	U. S. Weather Bureau.
Means and extremes	-----	-----	-----	60.5	-4.5	93	18	24	21	53	2.32	-1.24	2.82	0	7	17	7	6	nw	-----
State means and extremes	-----	-----	-----	58.6	-4.8	93	18	20	21	53	1.87	-1.49	2.82	0	6	16	8	6	nw	-----

The departure from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.

Reference letters a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.

†Also other dates. ††Received too late to be included in means and summaries.

T. Precipitation is less than 0.01 inch rain or melted snow.

LATE REPORTS

Northwood; May, 1918: Mean temperature, 61.4; departure of mean from the normal, +3.0, highest temperature, 89, on the 3d and 4th; lowest, 29, on the 13th; greatest daily range in temperature, 44; total precipitation, 10.23; departure from normal, +5.14; greatest in 24 hours, 1.70 on the 9th; total snowfall, 0.0; number of days with .01 inch or more of precipitation, —; clear days, 10; partly cloudy, 12; cloudy, 9; prevailing wind direction, southwest.

Oskaloosa; July, 1918: Mean temperature, 73.2; departure of mean from normal, -1.4; highest temperature, 95 on the 28th; lowest, 44 on the 31st; greatest daily range in temperature, 35; total precipitation, 2.36; departure from normal, -1.25; greatest in 24 hours, 0.80 on the 23d; total snowfall, 0.0; number of days with .01 inch or more of precipitation, 5; clear days, 23; partly cloudy, 2; cloudy, 6; prevailing wind direction, southeast.

Daily Precipitation for September, 1918—Continued.

Stations.	Watersheds	Day of Month.																													Total	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		30
<i>Southern Division</i>																																
Afton.....	Grand.....	.12		.75						.15	.15				.25			.30													.20	1.92
Albia	Des Moines	2.02	.12	1.33	.08					.08	.47				.12			.16									T.				4.43	
Allerton.....	Chariton.....	1.75		1.25						.33	.05																			.31	3.69	
Atlantic	Nishnabotna		.02	.21						.03	.08				.12			.29	.01							.05				.24	1.05	
Bedford.....	Missouri.....	.50	T.	.50						.20	.05							.20	.03						.20	.06			.49	2.03		
Bloomfield.....	Mississippi.....	2.75		.55						.70	.25							.08												.21	4.54	
Bonaparte.....	Des Moines.....	T.		1.00						.07	.40				T.	.05		.07	T.							T.				.15	1.69	
Burlington	Mississippi.....	.34	.51	.45	.12						.84				T.	.05		.05	T.								T.				2.36	
Centerville.....	Chariton.....	2.45		.76						.33	.11				T.	.04		.04	T.											.23	3.92	
Chariton.....	Chariton.....	1.30		.80											T.	.15		.10								T.				.33	2.63	
Clarinda.....	Nodaway.....			.70						.22	.15					.01	T.	.25									.20				1.99	
Columbus Jet.....	Iowa.....			.95						.06	.43			T.																T.	1.44	
Corning.....	Nodaway.....	.19	.17	.46					.06	.16	.12					T.	.16									.08				.33	1.73	
Corydon.....	Chariton.....	2.16		1.28						.27	.08					.07		.07								.01	T.			.23	4.17	
Creston	Missouri.....	.20		.60						.20	.10					.15		.23								.03				.15	1.56	
Cumberland.....	Nodaway.....			.08						.17									.23												0.48	
Earlham.....	Des Moines.....	.13	.11	.18					T.	T.	.36	.11				.11		T.	.18								T.			.12	1.30	
Fairfield.....	Skunk.....	2.18	T.	.13						.28	T.						1.12		.05							T.				*		
Fort Madison.....	Mississippi.....	.65		.70						T.	.60				.03	.02		.02		.02										.15	2.19	
Glenwood.....	Missouri.....	.12	.20	.20						.25	.02	.07						T.												.50	1.36	
Greenfield.....	Nodaway.....																															
Indianola.....	Des Moines.....	.59	.13	.25					.01	.40	.31			T.				.38								.38				.07	2.52	
Keokuk***	Mississippi.....	.51	.11	.32						.18	.44			T.	.06	.01	T.	.03									T.			.11	1.77	
Keosauqua.....	Des Moines.....	2.82		1.24						.14	.24			T.	.04			.07	T.											.07	4.62	
Knoxville.....	Des Moines.....	.83		.73						.45	.30			T.				T.	T.											.09	2.40	
Lacena.....	Des Moines.....	.50		.62						.28		.22			.17			.10												.11	2.00	
Lamoni	Grand.....	.85		.68	.03					.09	.24					T.		.06	.03							.01				.19	1.99	
Lenox.....	Missouri.....	.23	.05	.82						.12	.13	.05				.05		.02	.05	.03										.25	1.77	
Mt. Ayr.....	Grand.....	.42	T.	.56						.08	.19	.03				.01		.07	.01							T.				.40	1.77	
Mt. Pleasant.....	Skunk.....	1.43		.62				.03			.45				.02			.04												.02	2.61	
Murray.....	Grand.....	.60	.01	.30						.02	.16	.16				.17		T.	.24	.01						T.				.28	2.55	
Northboro.....	Tarkio.....	.15	.75	.10	.62					.11	.19					.07		.02	T.	T.						.08				.45	2.54	
Oskaloosa.....	Des Moines.....	1.62	.62								.75					T.		T.								T.				.10	3.09	
Ottumwa.....	Des Moines.....	2.45	.90							.36				T.	T.			.30												.03	4.04	
Pella.....	Skunk.....	.92	T.	.62						T.	.42	.42						T.								T.				T.	2.38	
St. Charles.....	Des Moines.....	.28	.20	.37						T.	.27	.20				.15		.07	.10								.01			.12	1.77	
Shenandoah	Nishnabotna.....	.61		.50						.33	.06	.03						.30												.41	2.24	
Sigourney.....	Skunk.....	1.32	T.	.50				T.		T.	.14	.48						T.								T.				.01	2.45	
Stockport.....	Skunk.....	2.08		1.71						.09	.24					.06														.23	4.41	
Thurman.....	Missouri.....	.42	T.	.12	.06					.21	.04	T.				T.		.08	.12	T.						T.				.38	1.43	
Washington.....	Skunk.....	.99		.87						.04	.54																			.11	2.44	
Winterset.....	Des Moines.....	.23	.04	.30						.45	.09					.15		.15									.02			.11	1.54	
Omaha, Nebr.***	Missouri.....	.03		.29		T.				.05	.04					.01		.08								.01	.01			.51	1.03	

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours at the time of observation.
 |||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.
 ***Regular Weather Bureau station; precipitation is for the 24 hour period, midnight to midnight.
 **Incomplete. T. Trace, or less than 0.01 inch.
 *Precipitation included in the next following measurement.

Daily Maximum and Minimum Temperatures for the Month of September, 1918.

Table with columns for Stations, days 1-30, and Mean. Rows are categorized by Northern Division, Central Division, and Southern Division, listing various Iowa cities and their daily temperature ranges.

a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record. §§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

HAIL STORMS DURING APRIL, 1918

Date	County	Township	Direction	Character	Size of Stones	Damage	Width of Path
2	Floyd	Rock Grove		Small	Light	Slight	
2	Boone	Des Moines	N.	Small	Light	Slight	
2	Buchanan	Washington		Small	Light	Slight	
2	Dubuque	Dubuque		Small	Light	Slight	
2	Ringgold	Poe	N. E.	Small	Light	Slight	
2	Wayne	Union		Small	Light	Slight	
2	Louisa	Columbus City	N. E.	Small	Moderate	Slight	Narrow
17	Pocahontas	Center	S. W.	Small	Light	Slight	2 miles
17	Wright	Belmond	N. W.	Small	Heavy	Slight	½ mile
17	Keokuk	Sigourney	N. W.	Small	Light	Slight	
18	Marshall	Green Castle	N.	Small	Heavy	Considerable	1,000 feet
19	Lee	Washington	N. E.	Small	Light	Slight	Narrow
20	Appanoose	Vermillion	N. E.	Large	Light	Slight	Wide
20	Jefferson	Fairfield		Large	Heavy	Slight	Wide
28	Sioux	West Branch		Large	Light	Slight	Wide

HAIL STORMS DURING MAY, 1918

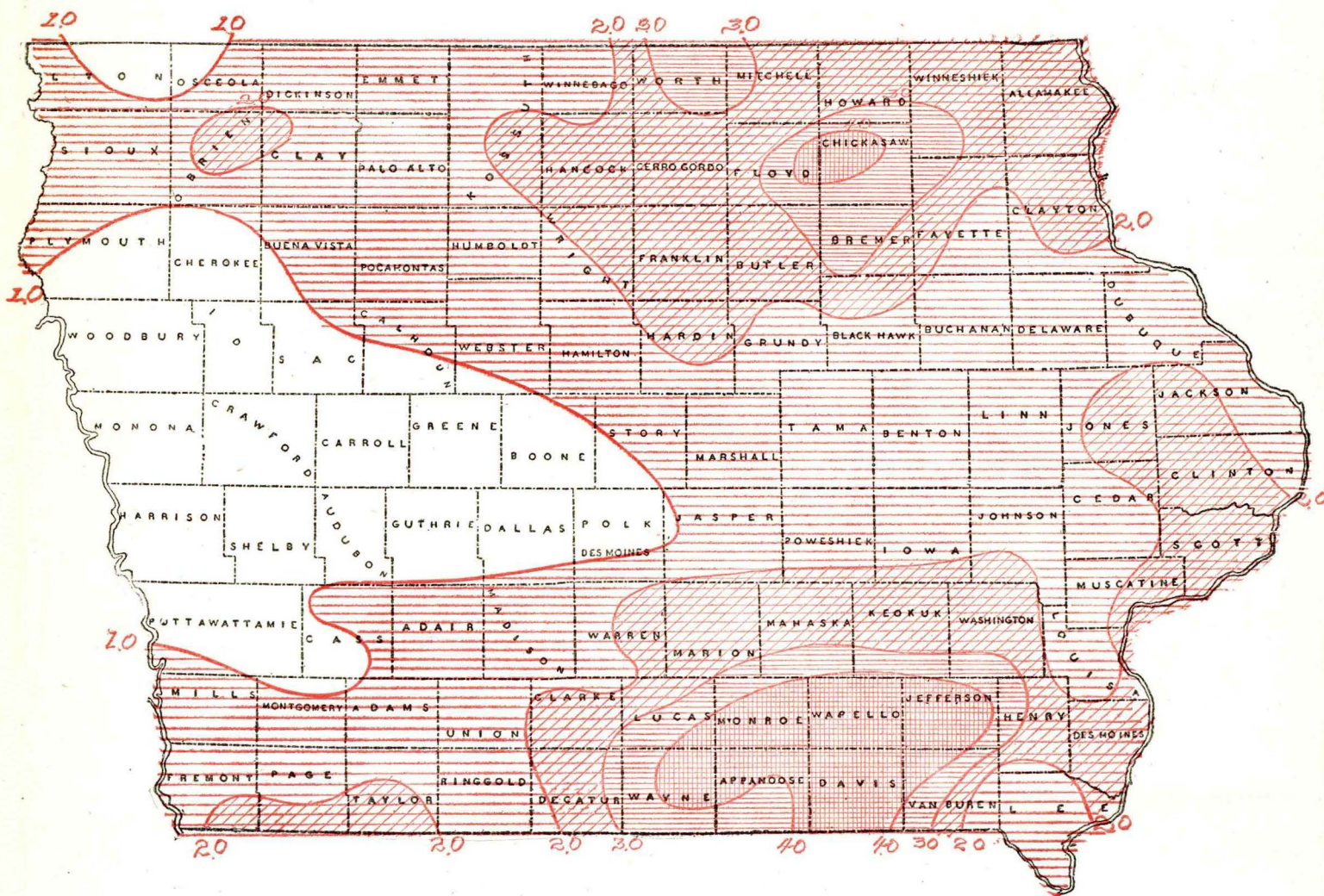
6	Franklin	Geneva	N.	Large	Light	Slight	20 miles
8	Wright	Pleasant	N. W.	Small	Moderate	Considerable	
8	Franklin	West Fork	S. W.	Large	Heavy	Considerable	Wide
8	Poweshiek	Grinnell	N. W.	Large	Moderate	Considerable	10 miles
8	Keokuk	Lancaster	N. W.	Large	Heavy	Considerable	2 miles
8	Johnson	East Lucas	S. W.	Small	Light	Slight	Narrow
8	Jefferson	Fairfield	N. W.	Small	Heavy	Slight	Narrow
8	Henry	Center	S. W.	Small	Heavy	Considerable	¾ mile
8	Lee	Washington	N. W.	Large	Heavy	\$10,000	½ mile
8	Lee	Washington	W.	Small	Moderate	Slight	½ mile
8	O'Brien	Franklin	S. W.	Small	Heavy	Slight	Narrow
9	Pottawattamie	James	S. W.	Small	Light	Slight	Narrow
9	Pocahontas	Center	N. W.	Small	Light	Slight	½ mile
9	Winneshek	Decorah	W.	Small	Light	Considerable	2½ miles
9	Dubuque	Dubuque	W.	Large	Moderate	Slight	15 to 20 miles
9	Scott	Sheridan	S. W.	Large	Heavy	Slight	Narrow
9	Des Moines	Danville	W.	Small	Heavy	Slight	2 to 3 miles
9	Des Moines	Huron	S. W.	Large	Light	Slight	
9	Des Moines	Benton		Large	Light	Slight	3 miles
9	Des Moines	Franklin		Large	Light	Slight	2 miles
9	Des Moines	Burlington	W.	Large	Light	Slight	
9	Lee	Jefferson	N. W.		Heavy	Slight	1 to 3 miles
10	Montgomery	Red Oak	S. W.	Large	Moderate	Considerable	Narrow
10	Jefferson	Fairfield	S. W.	Small	Heavy	Slight	
15	Butler	Benezette	S. W.		Heavy	Slight	
17	Worth	Union	S. W.	Large	Moderate	Slight	Several miles
20	Taylor	Clayton	S. W.		Moderate	Considerable	Several miles
21	Taylor	Benton	W.		Moderate	\$2,000	
21	Adams	Jasper	W.	Large	Heavy	Considerable	6 miles
21	Ringgold	Poe	S. W.	Small	Heavy	Slight	Narrow
21	Tama	Columbia	S. W.		Heavy	Considerable	
27	Dickinson	Westport	S. W.	Large	Light	Slight	2 miles
27	Madison	Crawford	N. W.		Heavy	Considerable	
29	Pocahontas	Lizard	N. W.	Large	Light	Slight	3 miles

HAIL STORMS DURING JUNE, 1918

1	Greene	Green Brier	W.	Large	Heavy	Severe	2 miles
1	Greene	Franklin	W.	Large	Heavy	Severe	2 miles
1	Greene	Willow	W.	Large	Heavy	Severe	2 miles
1	Greene	Washington	W.	Large	Heavy	Severe	2 miles
1	Crawford	Boyer	N. W.	600 acres	Heavy	\$5,000	½ mile
1	Story	Indian Creek	W.	1,500 acres	Moderate	Considerable	1½ miles
2	Plymouth	Perry	S. W.		Moderate	Slight	Narrow
2	Boone	Douglas	W.		Light	Slight	Narrow
2	Story	Collins	S. W.	Large	Heavy	Considerable	Wide
2	Polk	Washington	W.	Large	Heavy	Severe	2 miles
2	Poweshiek	Bear Creek	N. W.	1,500 acres	Light	Slight	1 mile
2	Marion	Lake Prairie	S. E.	Small	Light	Slight	Narrow
2	Ringgold	Clinton	S.	Large	Moderate	Slight	Wide
2	Lee	Washington	S. W.	Large	Heavy	Considerable	Wide
3	Pocahontas	Lake	S. W.	Small	Light	Slight	Narrow
3	Humboldt	Weaver			Moderate	Considerable	
3	Wright	Dayton			Moderate	Considerable	
3	Webster	Pleasant Valley	N. W.		Light	Slight	Narrow
3	Hamilton	Clear Lake	N. W.	Large	Heavy	Severe	Wide
3	Guthrie	Beaver	N.	Large	Moderate	Considerable	Wide
3	Guthrie	Thompson	S. W.	Large	Moderate	Considerable	Wide
3	Guthrie	Orange	N. W.	Large	Moderate	Considerable	Wide
3	Adair	Jefferson	N. W.	Large	Heavy	Severe	2 miles
3	Madison	South	N. W.	Large	Heavy	Severe	2 miles
3	Madison	Jackson	S. E.	Large	Heavy	Considerable	2 miles
3	Warren	Virginia	W.	Large	Moderate	Considerable	2 miles
3	Story	Washington			Heavy	Severe	
3	Mahaska	Pleasant Grove	N. W.	Large	Heavy	Severe	Wide
3	Lee	Jefferson	N. W.	Large	Heavy	Severe	Wide
3	Lee	Harrison	W.	Small	Moderate	Slight	Narrow
3	Lee	Franklin	N. W.		Heavy	\$15,000	
3	Winneshek	Decorah			Moderate	Slight	
3	Jasper	Independence	N. W.	Large	Heavy	\$15,000	1 mile
3	Polk	Des Moines	N. W.	Small	Light	Slight	Narrow
4	Fremont	Walnut	S. W.	Large	Heavy	\$5,000	1½ miles
4	Adair	Jefferson	S.	Large	Heavy	Considerable	1 mile
4	Keokuk	Adams	N. W.	Large	Heavy	Considerable	1 mile
5	Lyon	Cleveland	W.	Small	Moderate	Slight	Narrow
5	Adair	Lincoln	W.	Large	Moderate	Considerable	Narrow
5	Madison	Ohio	N. W.	Small	Heavy	Considerable	1½ miles
5	Decatur	Fayette	S. W.		Light	Slight	Narrow

(Hail Storms During June, 1918, Continued in October Issue)

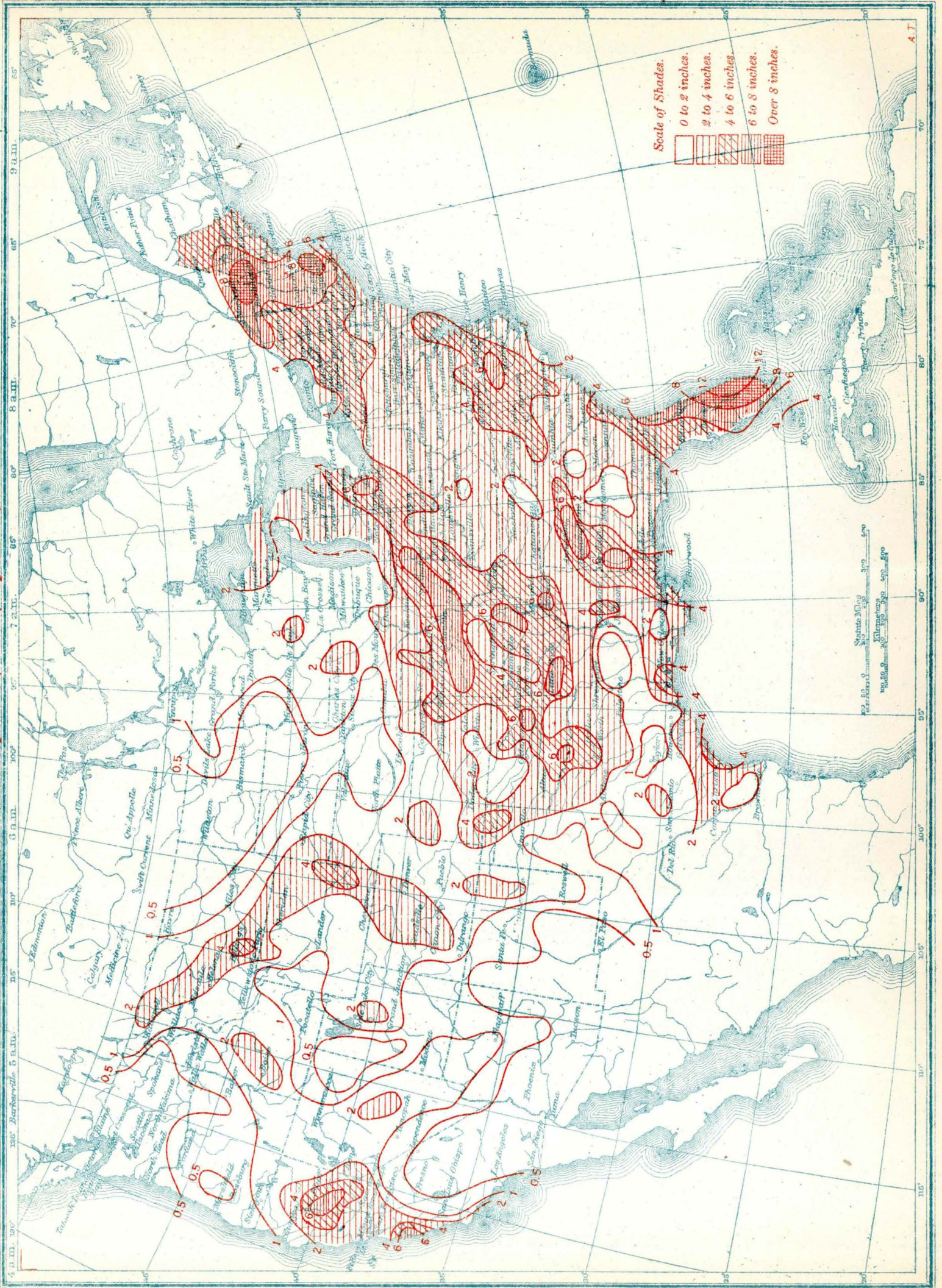
TOTAL PRECIPITATION SEPTEMBER, 1918.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, September, 1918.



U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

OCTOBER, 1918

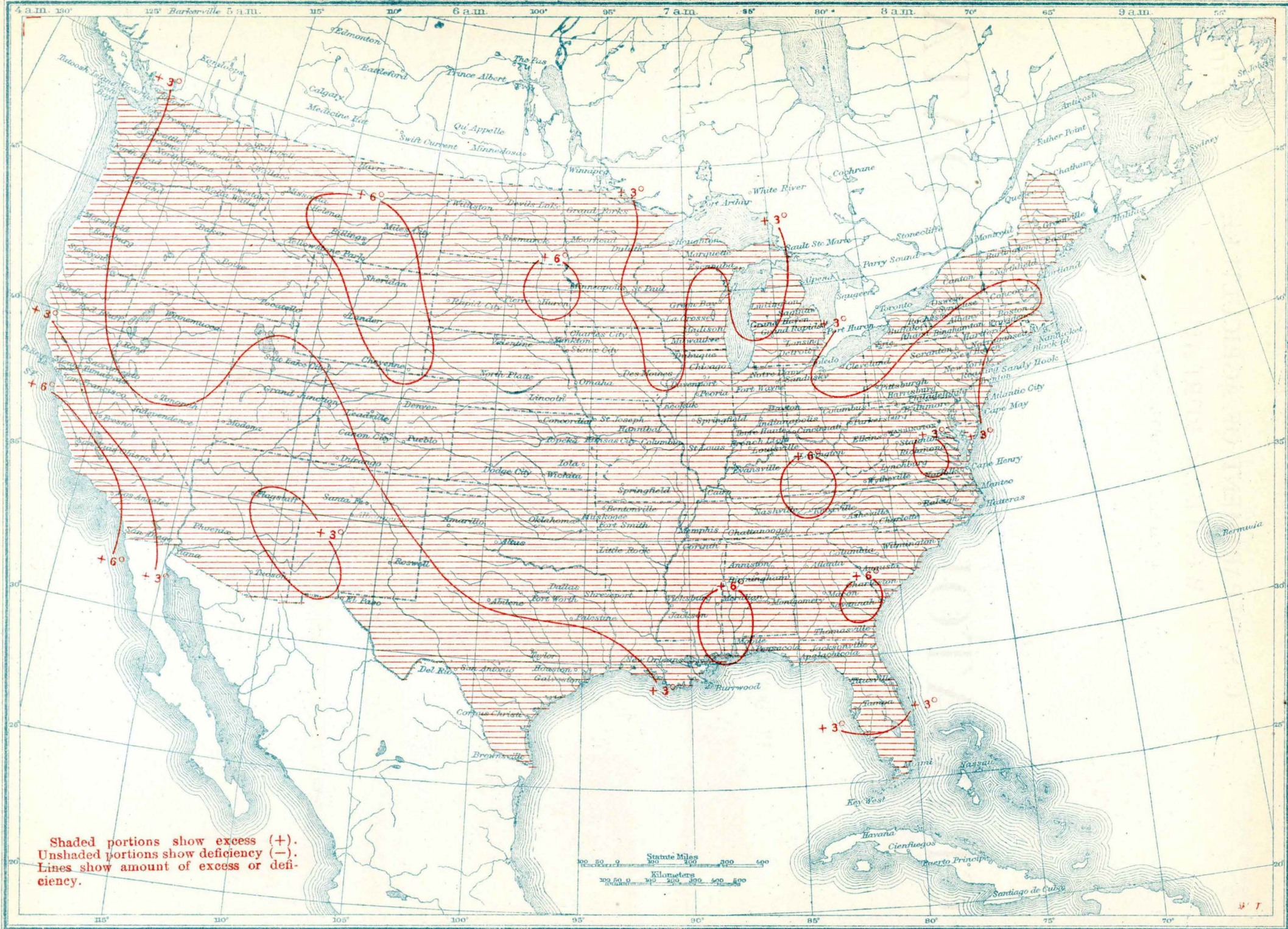
BY
CHARLES D. REED
METEOROLOGIST



PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY

DES MOINES, IOWA
WEATHER BUREAU OFFICE

Departure of the Mean Temperature from the Normal, October, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST

VOL. XXIX DES MOINES, IOWA, OCTOBER, 1918 No. 10

GENERAL SUMMARY.

October was generally warm and pleasant, but with cool periods on the 1st, 24th-26th, and 30th-31st. From the 8th to the 17th the weather was unusually warm. The first killing frost of the season occurred in the extreme eastern counties on the 27th, the rest of the State having had killing frosts in September. Precipitation was well distributed both as to time and area but slightly below normal till a storm center of marked intensity crossed the State from south to north on the 27th, causing heavy to excessive rains, 26th-28th. In the northwest part of the State the precipitation on the 26th was largely in the form of snow.

Corn dried out rapidly and husking and cribbing began early and progressed rapidly. A largely increased acreage of winter wheat in the winter wheat sections of the State made excellent growth. Potato digging was finished and the crop is generally small.

An unusually brilliant aurora was observed during the night of the 8th-9th at Oskaloosa and some other stations.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.03 inches. The highest recorded was 30.44 inches, at Dubuque, on the 3d, and the lowest was 29.17 inches at Des Moines, on the 27th. The monthly range was 1.27 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 100 stations, was 55.1°, or 4.3°, higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 52.8°, or 3.8° higher than the normal; Central, 55.5°, or 4.6° higher than the normal; Southern, 57.0°, or 4.4° higher than the normal. The highest monthly mean was 59.0°, at Afton, and the lowest was 50.2° at Northwood. The highest temperature reported was 93°, at Shenandoah, on the 12th; the lowest was 21°, at Sibley, on the 29th. The temperature range for the State was 72°.

HUMIDITY.

The average relative humidity for the State at 7 A. M. was 82%, and at 7 P. M. it was 63%. The mean for the month was 72%, or 1% greater than the normal. The highest monthly mean was 78%, at Charles City, and the lowest was 69% at Omaha, Neb. At Des Moines, the remarkably low humidity of 10% was observed at 1:45 P. M. of the 16th.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 110 stations, was 3.64 inches, or 1.18 inches greater than the normal. By divisions the averages were as follows: Northern, 3.34 inches, or 1.00 inch greater than the normal; Central, 3.71 inches, or 1.22 inches greater than the normal; Southern, 3.87 inches, or 1.33 inches greater than the normal. The greatest amount, 7.56 inches, occurred at Thurman, and the least, 1.36 inches, occurred at Mt. Pleasant. The greatest amount in 24 consecutive hours, 3.27 inches, occurred at Boone on the 27th.

SNOW.

General snow occurred in the northwest portion of the State on the 26th and at its maximum totaled 6 inches over a belt extending from Monona and Woodbury counties to Dickinson and Emmet counties. The snow was soon melted by the heavy rain that followed.

WIND.

The prevailing direction of the wind was south. The highest velocity reported from a regular weather Bureau station was 37 miles per hour, from the south, at Keokuk, on the 27th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 52, or 9 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 48; Davenport, 45; Des Moines, 50; Dubuque, 57; Keokuk, 61; Sioux City, 53; Omaha, Neb., 47.

COMPARATIVE DATA FOR THE STATE—OCTOBER.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	49.2	-1.6	86	16	3.48	+1.02	6.82	1.59	-----	7	11	11	9
1891	50.0	-0.8	92	19	2.77	+0.31	6.53	0.85	-----	6	13	7	6
1892	54.5	+3.7	96	14	1.55	-0.91	2.58	0.00	0.0	4	21	6	4
1893	52.4	+1.6	94	10	1.28	-1.18	4.56	0.02	0.0	4	16	9	6
1894	51.7	+0.9	90	20	2.67	+0.21	5.25	0.03	0.2	8	14	8	9
1895	46.0	-4.8	88	4	0.47	-1.99	1.38	0.00	T.	2	19	8	4
1896	47.9	-2.9	88	12	3.13	+0.67	5.05	1.51	T.	5	18	6	7
1897	56.8	+6.0	97	12	1.14	-1.32	3.30	0.03	0.0	4	17	8	6
1898	47.5	-3.3	88	17	3.56	+1.10	5.75	1.27	3.6	8	7	9	15
1899	56.7	+5.9	95	17	1.73	-0.73	4.64	0.15	0.0	5	17	8	6
1900	59.3	+8.5	90	21	3.91	+1.45	8.00	1.20	0.0	7	16	7	8
1901	54.2	+3.4	88	20	1.98	-0.48	4.23	0.45	T.	6	17	7	7
1902	53.5	+2.7	83	20	2.54	+0.08	6.66	0.28	T.	5	16	8	7
1903	52.2	+1.4	90	16	1.95	-0.51	4.50	0.32	0.0	5	19	6	6
1904	53.1	+2.3	96	16	1.67	-0.79	4.43	0.14	T.	6	15	8	8
1905	49.2	-1.6	95	16	3.40	+0.94	5.36	1.20	1.6	8	16	6	9
1906	50.5	-0.3	87	7	1.96	-0.50	4.25	0.50	0.1	6	14	7	10
1907	50.4	-0.4	85	10	1.50	-0.96	3.71	0.30	0.0	5	20	5	6
1908	51.1	+0.3	89	17	3.38	+0.92	8.83	0.58	2.6	8	16	6	9
1909	49.7	-1.1	97	10	2.22	-0.24	4.70	0.48	T.	6	16	6	9
1910	55.2	+4.4	93	10	0.77	-1.69	1.73	T.	0.1	4	21	4	6
1911	48.7	-2.1	87	14	3.74	+0.88	7.03	0.73	0.6	10	12	8	11
1912	52.2	+1.4	92	16	2.98	+0.52	5.77	1.03	T.	6	21	3	7
1913	49.2	-1.6	89	2	3.03	+0.57	7.29	0.35	1.2	9	15	8	8
1914	55.9	+5.1	88	14	3.23	+0.77	6.64	0.74	T.	9	16	6	9
1915	54.4	+3.6	86	19	1.31	-1.15	3.25	T.	0.5	5	19	6	6
1916	50.9	+0.1	92	6	2.00	-0.46	4.33	0.20	2.0	8	16	7	8
1917	42.9	-7.9	85	0	1.41	-1.05	4.00	0.15	2.2	6	10	11	10
1918	55.1	+4.3	93	21	2.64	+1.18	7.56	1.36	0.8	7	13	7	11

T indicates an amount too small to measure, or less than .005 inch rainfall, and less than .05 inch snowfall.

Climatological Data for October, 1918

Stations.	Counties.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.				Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation 0.01 in. or more.	Clear.	Partly cloudy.		Cloudy.	Prevailing direction of wind.
<i>Northern Division</i>																				
Algona	Kossuth	1,213	45	54.1	+ 5.5	88	5	28	31	35			0		17	3	11	W. E. Laird.		
Allison	Butler	1,045	6	53.4	-----	86	12	30	14†	40	3.12		1.68	T.	8	15	3	J. A. Bell.		
Alta	Buena Vista	1,513	27	52.8	+ 4.0	83	12	27	31	31	4.83	+1.88	1.80		6	8	13	David E. Hadden.		
Alta (near)	Buena Vista		22								5.35	+3.16	1.80		5	6	6	Warren Minard.		
Alton	Sioux	1,305	13	52.7	+ 3.7	84	12	26	29	42	3.48		1.38		4	6	9	W. S. Slagle.		
Belmond	Wright	1,205	8	53.4	-----	85	12	30	31	38	4.34		2.20	T.	8	13	12	Geo. P. Harwick.		
Britt	Hancock	1,236	21	52.4	+ 3.8	84	12	26	31	37	5.19	+2.86	2.42		0	9	13	L. M. Goodman.		
Charles City	Floyd	1,015	27	51.6	+ 3.4	84	12	26	31	35	3.13	+1.10	1.87		T.	7	12	U. S. Weather Bureau.		
Decorah	Winneshek	875	25	52.5	+ 3.4	82	12	29	1†	41	1.76	-1.01	0.91		0	6	16	Wm. F. Baker.		
Elkader	Clayton	727	39															Chas. Reinecke.		
Estherville	Emmet	1,298	23	53.0	+ 5.7	83	16	26	31	43	2.53	+0.11	1.30		6.0	6	14	A. O. Peterson.		
Fayette	Fayette	1,003	28	52.8	+ 4.1	82	12†	27	1	41	1.37	-1.09	1.05		T.	4	15	R. Z. Latimer.		
Forest City	Winnebago	1,226	24	52.2	+ 3.9	85	12	28	31	43	4.31	+1.90	2.01		0	5	13	Eugene Secor.		
Humboldt	Humboldt	1,095	30	54.4 ^a	+ 3.6	87 ^a	16	28 ^a	31	41 ^a			0		0	11	3	H. C. Snitkey.		
Inwood	Lyon	1,474	14	54.2	+ 5.3	90	12	28	26†	49	1.52	-0.70	0.57		3.0	7		F. B. Hanson.		
Lake Park	Dickinson	1,479	5	52.8	-----	89	12	27	31	45	2.80		2.00		5.0	4	14	A. E. Woodruff.		
Lansing	Allamakee		632	12							1.94	+0.86	0.75		0	10		Chas. R. Serene.		
Le Mars	Plymouth	1,224	22	53.6	+ 4.3	83	12†	26	29	42	2.09	-0.13	0.93		4.2	4	16	G. A. C. Clarke.		
Mason City	Cerro Gordo	1,133	21								3.15	+1.01	1.95		0	6	14	Northern Sugar Corporation		
New Hampton	Chickasaw	1,109	21	52.6	+ 4.5	84	12	30	31	38	2.51	+0.24	1.65		0	7	12	A. F. Kemman.		
Nora Springs	Floyd	1,064	5	53.8	-----	89	12	29	1	42	4.27		2.26		0	6	13	Arthur Betts.		
Northwood	Worth	1,222	22	50.2	+ 2.5	82	12	27 ^a	31	35 ^a	4.82	+2.22	2.80		0	7	10	Chas. Dwell.		
Pocahontas	Pocahontas	1,248	14	53.7 ^a	+ 4.3	85 ^a	12	30 ^a	25	45 ^a	4.96	+2.49	2.02		2.5	6		F. E. Hronek.		
Postville	Clayton	1,180	19	52.2	+ 3.1	81	12	30	30†	32	1.64	-0.94	1.12		T.	12	13	F. L. Williams.		
Rock Rapids	Lyon	1,358	19	51.0	+ 4.1	84	12	27	29	43	1.78	-0.54	0.72		2.8	7	20	J. K. Medberry.		
Sanborn	O'Brien	1,553	4	52.4	-----	85	12	27	29	37	2.66		1.25		3.0	6	14	Jas. W. Dow.		
Sibley	Osceola	1,212	25	50.8 ^a	+ 3.6	85 ^a	12	21 ^a	29	43 ^a	3.09	+1.15	1.35		3.0	7		H. F. Olds.		
Sioux Center	Sioux	1,426	19	52.6	+ 3.9	87	12	28	26†	37	2.76	+0.70	1.25		6.0	6	15	J. de Ruyter.		
Storm Lake	Buena Vista	1,440	29	54.0	+ 3.8	84	12	29	25	36	4.09	+2.21	1.65		5.7	6		Geo. H. Fracker.		
Washta	Cherokee	1,157	20	54.0	+ 4.4	86	12	27	25†	50	5.45	+3.41	1.80		6.0	5	15	H. L. Felter.		
Waverly	Bremer	948	22	53.2	+ 3.1	86	11†	30	1	50	2.81	+0.45	1.72		T.	8	10	H. Arnold.		
West Bend	Palo Alto	1,197	25	53.4	+ 5.3	85	12	24	31	38	4.63	+2.70	2.55		2.0	7	11	Jos. Dorweiler.		
Means and extremes					52.8	+ 3.8	90	12	21	29	45	3.34	+1.00	2.80		2.0	6	13		
<i>Central Division</i>																				
Ames	Story	926	42								4.12	+1.38	1.62		0	7	18	Iowa State College.		
Audubon	Audubon	1,301	24	53.6	+ 3.3	84	4†	28	25†	38	4.15	+1.87	1.78		0	7	18	V. M. Jones.		
Baxter	Jasper	998	18	55.5	+ 4.0	85	12†	28	25	36	2.42	-0.37	1.42		0	11	5	Rev. Paul Traeger.		
Belle Plaine	Benton	886	28															O. C. Burrows.		
Boone	Boone	1,134	13	56.4 ^a	+ 5.8	87 ^a	12	29 ^a	25	36 ^a	6.02	+3.31	3.27		0	11		Carl F. Henning.		
Carroll	Carroll	1,265	28	54.5	+ 5.2	86	12	30	25	40	4.62	+2.06	1.81		0	7	16	Mrs. Jos. J. Wolfe.		
Cedar Rapids	Linn	733	36	57.2	+ 6.3	84	12†	32	25	36	2.20	-0.23	0.78		0	6	17	R. S. Toogood.		
Clinton	Clinton	593	45	55.8 ^k	+ 4.8	85 ^k	15	29 ^k	24	38 ^k	2.04	-0.35	1.18		0	9		H. Burde.		
Davenport	Scott	580	47	56.1	+ 3.5	83	16	33	25	32	2.45	+0.06	1.51		T.	10	12	U. S. Weather Bureau.		
Delaware	Delaware	1,083	27	54.2	+ 5.1	82	12	28	25	37	2.77	+0.47	1.13		0	7	16	Nettie E. Ball.		
Denison	Crawford	1,180	24	57.0	+ 6.2	86	17	30	28	35	4.01	+1.89	1.00		1.0	8	11	Emma Brogden.		
Des Moines	Polk	861	39	56.6	+ 4.1	86	16	30	31	34	3.81	+1.13	2.45		T.	9	8	U. S. Weather Bureau.		
Dubuque	Dubuque	639	45	54.0	+ 2.0	82	15	32	25	34	2.85	+0.17	1.50		T.	9	11	U. S. Weather Bureau.		
Fort Dodge	Webster	1,126	18	55.2	+ 5.3	86	12	32	26	42	4.89	+1.90	2.52		0	7	14	J. F. Monk.		
Gilman	Marshall	1,072	19															Jas. L. Wylie.		
Grinnell	Poweshiek	1,023	24	56.8	+ 4.4	85	5†	31	25	43	3.44	+0.76	1.67		0	8	14	D. W. Brainard.		
Grundy Center	Grundy	976	27	56.4	+ 5.6	84	13	32	1†	39	4.15	+1.55	2.30		0	9	15	M. G. Heiberger.		
Guthrie Center	Guthrie	1,077	23	55.5	+ 4.2	85	4†	30	31	40	6.38	+3.85	2.45		0	9	14	C. T. Harney.		
Harlan	Shelby	1,182	19	54.8	+ 4.4	85	12	28	28	40	6.86	+4.32	2.15		0	10	19	E. L. Tilton.		
Independence	Buchanan	921	54	54.9	+ 5.0	83	12	31	25†	37	2.50	+0.02	1.14		0	8	14	Dr. H. A. Lindsay.		
Iowa City	Johnson	643	57	55.8	+ 4.8	86	15	28	25	39	2.05	-0.67	0.81		0	11	14	Prof. J. F. Reilly.		
Iowa Falls	Hardin	1,107	25	53.8	+ 5.4	86	12	30	1†	40	2.66	+0.30	1.24		0	8	15	J. B. Parmelee.		
Jefferson	Greene	1,062	19	55.0	+ 4.0	85	4	27	31	38	5.70		2.15		T.	9	11	Will L. Lyon.		
Le Claire		576	18								3.03	+0.96	1.55		0	8		Margaret T. Disney.		
Little Sioux	Harrison	1,040	13	55.6	+ 2.8	86	12	25	28	43	5.34		1.60		5.0	9	11	Geo. H. Gibson.		
Logan	Harrison	928	51	56.7	+ 4.9	87	12	29	28	40	6.35	+4.00	2.37		T.	11	10	Mary Jean Stern.		
Maquoketa	Jackson	688	17	54.6	+ 3.5	84	5†	27 ^a	25	39 ^a	2.59	-0.19	1.18		0	6	14	Ira H. Stephens.		
Marshalltown	Marshall	947	26	56.2 ^a	+ 5.6	86 ^b	12	31	1†	43 ^b	3.29	+0.57	1.60		0	12	12	Chas. F. W. Kothenbeutel		
Monroe	Jasper	922	6	55.6 ^c	-----	84 ^c	12	29 ^c	25	41 ^c	4.19		2.16		T.	7	16	J. A. Dibel.		
Muscatine	Muscatine	554	58								2.75	+0.05	0.95		0	11		Wm. P. Molis.		
Olin	Jones	760	30	54.8	+ 4.0	83	15	28	25	39	2.65	+0.27	1.40		0	4	10	Dr. F. W. Port.		
Onawa	Monona	1,051	18	54.8	-----	88	12	26	28	40	4.69	+2.49	---		6.0	7	12	Mrs. H. E. Colby.		
Perry	Dallas	975	17	55.6	+ 4.3	87	15†	28	25	44	4.99	+2.25	1.99		0	9	17	Mrs. C. E. Anthony.		
Rockwell City	Calhoun	1,134	22	56.2 ^b	+ 5.5	84 ^b	4	30 ^b	25	35 ^b	4.92	+2.38	2.00		0	7		A. W. Melsaac.		
Sac City	Sac	1,344	42															E. N. Baily.		
Sioux City	Woodbury	1,135	29	54.0	+ 2.9	87	12	28	28	35	2.65	+0.86	0.89		5.5	12	9	U. S. Weather Bureau.		
Tipton	Cedar	807	19	56.2	-----	85	16	30	25	39	3.07	+0.92	1.57		0	6	11	C. N. Wallick.		
Toledo	Tama	856	24	55.8	+ 4.6	87	12	28	25	42	3.12	+0.60	1.66		0	8	15	I. P. Giger.		
Waterloo	Black Hawk</																			

Climatological Data for October, 1918 - Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Precipitation 0.01 or more.	Clear.			Partly cloudy.	Cloudy.	
<i>Southern Division</i>																					
Afton	Union	1,212	24			86	12†					3.93	+1.26	2.25	0	7	9	11	11	sw	J. E. Deitrick.
Albia	Monroe	959	20	57.0	+ 5.1	86	15	27	25	41	2.98	+0.44	2.30	0	6	11	3	17	sw	F. H. Holmes.	
Allerton	Wayne	1,122	16	56.6	+ 3.2	85	15	28	25	41	2.88	+0.28	1.90	0	5	12	12	7	s	James Huston.	
Atlantic	Cass	1,164	27	56.4 ^a	+ 5.4	88 ^a	2	30 ^a	28	38 ^a	6.08	+3.32	2.98	T.	13				ne	Thos. H. Whitney.	
Bedford	Taylor		18	57.0	+ 4.6	87	15	29	28	39	4.97	+2.28	2.65		7	13	9	9	s	E. E. Healy.	
Bloomfield	Davis	881	11	57.9		91	4	30	25	36	2.94	+0.35	1.10	T.	7	11	11	9	se	V. G. Warner.	
Bonaparte	Van Buren	565	27	56.8	+ 3.4	85	5†	30	25	37	1.94	+0.03	1.10	0	3	15	2	14	e	Bruce R. Vale.	
Burlington	Des Moines	544	22	58.6	+ 4.9	87	5†	33	25	35	3.21	+0.95	0.80	0	9	14	6	11	sw	Mrs. J. A. Donnelly.	
Centerville	Appanoose	1,013	13	57.6		85	15	30	25	37	3.72		2.29	T.	8	13	8	10	sw	Leo J. Allen.	
Chariton	Lucas	1,042	23	55.4	+ 2.6	86	15	26	25	49	3.13	+0.62	2.20	T.	4	10	12	9	sw	C. C. Burr	
Clarinda	Page	1,009	28	57.8	+ 5.9	91	12	29	28	41	7.30	+4.72	2.84	0	12	11	11	9	s	A. S. Van Sandt.	
Columbus Jct.	Louisa	595	17	57.6	+ 4.7	83	5†	31	25	31	2.32	-0.19	1.07	0	6	21	5	5	sw	J. B. Johnston.	
Corning	Adams	1,117	26	56.2	+ 4.8	89	12	31	25†	45	6.41	+3.74	2.95	0	8	13	4	14	sw	Jerome Smith.	
Corydon	Wayne	1,101	25	56.7	+ 2.8	86	15	27	25	36	3.11	+0.29	1.98	T.	9	9	10	12	se	May C. Miller.	
Creston	Union	1,312	13	57.6	+ 6.3	89	15	30	28	38	3.94		1.62	T.	9				n	Mrs. T. E. McConnell.	
Cumberland	Cass		19								6.15	+3.23	2.07	0	6	20	4	7	sw	J. H. Reppert.	
Earham	Madison	1,126	16	55.4	+ 3.6	85	15†	27	25	39	3.59	+0.94	1.66	T.	7	16	2	13	sw	Geo. Phillips.	
Fairfield	Jefferson	780	34																	Prof. R. M. McKenzie.	
Fort Madison	Lee	516	69								2.37	-0.20	0.90	0	8	11	9	11	ne	F. M. Myers.	
Glenwood	Mills	1,100	21	57.6		88	15	30	28	34	6.78		2.15	T.	10	10	10	11	nw	Dr. Geo. Mogridge.	
Greenfield	Adair		26																	Frank A. Ward.	
Indianola	Warren	969	26	56.2 ^a	+ 3.3	85 ^a	15	29 ^a	25	30 ^a	4.11	+1.63	2.00	T.	9				nw	Prof. J. L. Tilton.	
Keokuk	Lee	614	47	58.3	+ 3.7	85	5	35	31	30	2.16	-0.33	0.93	0	9	14	6	11	s	U. S. Weather Bureau.	
Keosauqua	Van Buren	644	26	56.6	+ 4.4	84	5†	29	25	39	2.20	+0.21	0.79	T.	5	8	11	12	se	J. H. Landes.	
Knoxville	Marion	920	23	56.4	+ 2.9	86	12†	28	25	42	2.87	+0.48	1.86	T.	7	15	2	14	sw	W. J. Casey.	
Lacota	Warren		19								3.36	+0.42	1.48	0	10	8	17	6		J. B. Alter.	
Lamoni	Decatur		11	57.3	+ 4.4	85	4†	29	25	40	3.59		1.48	T.	12	15	7	9	s	Ed. D. Moore.	
Lenox	Taylor	1,250	23	56.4	+ 4.2	85	12†	30	25†	32	6.07	+2.21	2.40	0	8	21	5	5	s	J. L. Hurley.	
Mount Ayr	Ringgold	1,236	25	57.2	+ 3.6	87	12	30	25	35	3.98	+1.19	2.22	0	9	14	6	11	s	Alex Maxwell.	
Mt. Pleasant	Henry	729	37	57.6	+ 4.9	87	5	30	25	39	1.36	-1.10	0.58	0	5	11	7	13	se	J. W. Edwards.	
Murray	Clarke	1,216	27	56.8	+ 4.0	88	15	28	25	38	3.72	+1.20	1.86	T.	10	10	9	12	s	M. T. Ashley.	
Northboro	Page	1,120	6	58.4		89	4†	28	28	36	6.27		2.54	1.0	6	13	5	13	nw	J. M. Darby.	
Oskaloosa	Mahaska	843	42	56.9	+ 4.4	87	15	27	25	36	2.53	+0.35	1.21	T.	7	15	2	14	e	Roy R. Robinson.	
Ottumwa	Wapello	849	23	60.7 ¹		87 ¹	4	30 ^h	25	37 ¹				0	5				se	Eugene O. Field.	
Pella	Marion	877	15	56.7 ^a	+ 3.6	87 ^a	15	26 ^a	25	42 ^a	3.53	+0.79	2.00	T.	6				se	J. H. Ver Steeg.	
St. Charles	Madison	1,070	17	57.0	+ 3.1	88	15	29	25	33	3.96	+1.19	1.87	0	8	14	4	13	nw	R. D. Minard.	
Shenandoah	Page					93	12	29	25		6.13		2.58	0	6	15	5	11	n	L. L. Hunter.	
Sigourney	Keokuk	877	22	56.8	+ 4.2	86	15	26 ^a	25	43 ^a	1.86	-0.50	1.16	0	6	15	4	12	nw	W. E. Utterback.	
Stockport	Van Buren	754	18	55.6	+ 2.8	84	5†	28	24	42	1.60	-0.49	0.65	0	8	12	6	13	s	C. L. Beswick.	
Thurman	Fremont		21	57.2	+ 4.6	87	4†	28	28	45	7.56	+4.68	3.08	0	10	6	17	8	nw	C. R. Paul	
Washington	Washington	769	36	56.6	+ 4.1	86	15	29	25	37	2.00	-0.17	0.70	0	9	9	9	13	sw	Wm. A. Cook.	
Winterset	Madison	1,129	27	56.8	+ 4.5	86	15	29	25	34	4.48	+2.00	2.40	0	6	20	6	5	sw	H. S. Ely.	
Omaha, Nebr.		1,040	47	57.7	+ 3.5	88	4	31	22	28	4.65	+2.30	1.42	0.2	12	8	9	14	s	U. S. Weather Bureau.	
Means and extremes				57.0	+ 4.4	93	12	26	25	49	3.87	+1.33	3.08	T.	8	13	7	11	sw		
State means and extremes				55.1	+ 4.3	93	12	21	29	49	3.64	+1.18	3.27	0.8	7	13	7	11	s		

The departure from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.

Reference letters a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.

†Also other dates. ††Received too late to be included in means and summaries.

T. Precipitation is less than 0.01 inch rain or melted snow.

MISCELLANEOUS PHENOMENA.

Aurora: 8th, 9th, 12th, 16th.

Fog: 1st, 2d, 9th, 12th.

Halos, Solar: 2d, 9th, 17th, 24th.

Halos, Lunar: 15th, 16th, 17th, 21st, 24th.

Rainbow: 8th.

Sleet: 25th, 26th, 27th, 30th, 31st.

Smoke: 17th.

Thunderstorms: 7th, 8th, 27th, 28th.

Killing Frosts: Northern Division: 3d, 25th, 30th; Central Division: 14th, 25th, 26th, 28th, 31st; Southern Division: 28th.

ERRATA.

Report for April, 1918: Page 41, Afton; total precipitation published 1.65, should be 3.14; departure from normal published -1.70, should be -0.21; greatest in 24 hours blank, should be 1.50; total snowfall published blank, should be 16.0; page 43, precipitation on 20th published 0.14, should be, 1.50; on the 21st published 0.02, should be, 0.15; total published 1.65, should be, 3.14.

Report for September, 1918; page 105; the column without a heading, following "Direction", should have the heading, "Area Covered."

Daily Precipitation for October, 1918—Continued.

Stations.	Watersheds	Day of Month.																															Total								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31									
<i>Southern Division</i>																																									
Afton	Grand	.50									.10									.75		.08				.15	2.25	.10					3.93								
Albia	Des Moines		.15									.09								.36		T.								.08			2.98								
Atterton	Chariton	.60								.18	.04									.16													2.88								
Atlantic	Nishnabotna	.32							.24	.10	.22	.03								T.	.14	.08	.10							.01	.02		6.08								
Bedford	Missouri	.43		.06				.01	T.										T.	.68		.14					1.00	2.65					4.97								
Bloomfield	Mississippi	.51							.01			.55								.22					.50		.05	1.10					T.	2.94							
Bonaparte	Des Moines	.49																		T.				.44										T.	1.94						
Burlington	Mississippi	.14	.23							.05											.22				.80	.15		.76	.80		.06			T.	3.21						
Centerville	Chariton	.58	T.	T.	T.				.03	T.	.01	.31								.31	T.			.13			.06	2.29						T.	3.72						
Chariton	Chariton	.55							T.		T.	.18								.20				T.											T.	3.13					
Clarinda	Nodaway	.80	.02								.01	.01								.20	.35		.15	.12				1.10	2.84	1.67				.03	7.30						
Columbus Jct.	Iowa	.25				T.			.28											.13				.53								.06			T.	2.32					
Corning	Nodaway	.66		.07																.66			.25						1.68	2.95	.08					.06	6.41				
Corydon	Chariton	.64				T.			.01		.16	.02								.18			T.					.06	1.98	.03		.03				T.	3.11				
Creston	Missouri	.75							T.			.05	T.							.42	.35		.08	.05				.12	1.62	.50						T.	3.94				
Cumberland	Nodaway	.97								1.28										.80			.16						2.07	.87							6.15				
Earlham	Des Moines					T.					.03	.70								.41			.11					.60	1.66	.06							.02	3.59			
Fairfield	Skunk	**								T.										.40	.06	T.							.98	T.							**				
Fort Madison	Mississippi	.45							.02				T.							.20				.90	.22				.53			.03					.02	2.37			
Glenwood	Missouri	.60		.10							.51	.20								T.	.55			.25			.02	2.15	2.15	.25							T.	6.78			
Greenfield	Nodaway																																								
Indianola	Des Moines	.32						T.	.08		.25	.59	T.							.49			T.					.35	2.00	.02	.01		T.			T.	4.11				
Keokuk**	Mississippi	.32				T.			.01	.01		.05								.25				.47	.46				T.	.56		.03					T.	2.16			
Keosauqua	Des Moines	.48																		.56				.33					T.	.79		.04						T.	2.20		
Knoxville	Des Moines	.33							T.			.05	.18							.28				.03					.14	1.86								T.	2.87		
Lacona	Des Moines							.62	.50			.09								.11	.08							.40	1.48		.01	.01					.06	3.36			
Lamoni	Grand	.89		.04					T.		.18	.01								.18	.12		T.						.03	1.48	.58	.02	.03					.03	3.59		
Lenox	Missouri	.75		.10																.90			.17						.60	2.40	.10							.05	5.07		
Mt. Ayr	Grand	.56		.07					T.			.04								.76				.03					.25	2.22	.02		T.					.03	3.93		
Mt. Pleasant	Skunk	.25																		.11									.25	.68								.04	1.36		
Murray	Grand	.54							.04			.02								.88			.02						.23	1.86	.06							.03	3.72		
Northboro	Tarkio	.29		T.							T.									.93			.22						2.25	2.54								.04	6.27		
Oskaloosa	Des Moines	.40		T.							.01	.26								.47									.14	1.21	.04		T.					T.	2.53		
Ottumwa	Des Moines	.34									.10									.40				.15					1.45	**									**		
Pella	Skunk	.28			T.						T.	.52								.42				T.					.13	2.00	T.	.18						T.	3.53		
St. Charles	Des Moines	.13							.02			.37								.85			.09						.13	1.87	.50								3.06		
Shenandoah	Nishnabotna	.36		.05																.60			.06						2.58	2.48								T.	6.13		
Sigourney	Skunk	.25							.02		T.	.10								.31									T.	1.16									T.	1.86	
Stockport	Skunk	.40	.02			T.					.04									.05				.06					.32		.65	T.	.06						T.	1.60	
Thurman	Missouri	.42		.08							.24	.15								.06	.78		.10						T.	3.08	2.53	.12							T.	7.56	
Washington	Skunk	.20							.52			.03								.07									.42		.70								.02	2.00	
Winterset	Des Moines	.42								.01	1.30													.13						.22	2.40										4.48
Omaha, Nebr.***	Missouri	.20	.05	T.							1.41									.06	.21		.06	.25				.69	.93	.74								.03	.02	4.65	

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours ending at the time of observation.

||||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

***Regular Weather Bureau station; precipitation is for the 24-hour period, midnight to midnight.

**Incomplete. T. Trace, or less than 0.01 inch.

*Precipitation included in the next following measurement.

LATE REPORT.

Oskaloosa.—August, 1918; mean temperature, 80.0°; departure of mean from normal, +7.2°; highest temperature, 109° on the 4th; lowest temperature, 55° on the 31st; greatest daily range in temperature, 39°; total precipitation, 3.63 inches; departure from the normal, +0.44 inch; greatest in 24 hours, 2.55 inches; total snowfall, 0.00; number of days with 0.01 inch or more of precipitation, 4; clear days, 16; partly cloudy, 7; cloudy, 8; prevailing wind direction, blank.

Rockwell City, September, 1918: mean temperature, 58.0°; departure of mean from normal, -4.8°; highest temperature, 86° on the 1st; lowest temperature, 28° on the 20th; greatest daily range in temperature, 39°; total precipitation, 1.35 inches; departure from the normal, -2.60 inches; greatest in 24 hours, 0.40 inch; total snowfall, 0.00; number of days with 0.01 inch or more of precipitation, 6; clear days, 22; partly cloudy, 2; cloudy, 6; prevailing wind direction, north.

Daily Maximum and Minimum Temperatures for the Month of October, 1918.

Table with columns for Stations, days 1-31, and Mean. Rows include Northern Division (Algona, Alta, Alton, Belmont, Charles City, Decora, Forest City, Inwood, Lake Park, Le Mars, Mason City, New Hampton, Northwood, Pocahontas, Postville, Sibley), Central Division (Belle Plaine, Carroll, Davenport, Des Moines, Dubuque, Fort Dodge, Grinnell, Guthrie Center, Independence, Iowa City, Iowa Falls, Little Sioux, Marshalltown, Sac City, Sioux City), and Southern Division (Albia, Allerton, Atlantic, Bedford, Bloomfield, Burlington, Columbus Jet, Corning, Fairfield, Keokuk, Northboro, Pella, Sigourney, Thurman, Omaha, Nebr.).

a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record.

§§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

HAIL STORMS DURING JUNE, 1918—Continued

Date	County	Township	Direction	Area Covered	Character	Size of Stones	Damage	Width of Path
5	Wayne	Washington	S. W.	Large	Moderate	Small	Slight	½ mile
5	Keokuk	Washington	N. W.	Large	Heavy	¼ to ½ inch	Considerable	2 miles
5	Greene	Washington	N. W.	Small	Moderate	Small	Slight	2 miles
6	Pocahontas	Lincoln		Small	Light	Small	Slight	Narrow
6	Osceola	Ocheyedan	N. W.	Large	Heavy	Up to 1½ inches	Severe	1½ miles
6	Mills	Glenwood	N. W.	Small	Light	Small	Slight	Narrow
7	Story	LaFayette	N. W.	Large	Moderate	¼ to 1 inch	Considerable	4 miles
8	Story	Franklin	S. W.	500 acres	Heavy	¾ inch	Severe	Narrow
8	Tama	Lincoln						
8	Tama	Grant	N. W.	Large	Light	½ inch	Considerable	3 miles
8	Decatur	Decatur	N. W.	Small	Light	Small	Slight	Narrow
9	Howard	Howard	W.	Small	Light	Small	Slight	Narrow
9	Greene	Kendrick						
9	Greene	Bristol	W.	Small	Heavy		\$15,000	2 miles
9	Boone	Grant-Amaqua	N. W.	Large	Heavy	½ to 1½ inches	\$12,000	2 miles
9	Polk	Camp	N. W.	Small	Moderate	¼ to 1 inch	Considerable	Narrow
13	Plymouth	Elkhorn	N. W.	Large	Moderate	Small	Considerable	2 miles
13	Polk	Jefferson						
13	Polk	Webster	W.	Large	Light	¼ inch	Slight	2 miles
13	Adams	Quincy	S. W.	Small	Moderate	½ inch	Considerable	Narrow
13	Howard	Afton	W.	Small	Moderate	Small	Slight	Narrow
17	Story	Washington	N. W.	Large	Heavy	½ to ¾ inch	Considerable	2 miles
17	Buchanan	Fairbank						
17	Buchanan	Perry						
17	Buchanan	Hazelton						
17	Buchanan	Washington	N. W.	Large	Heavy	Up to 1¼ inches	Considerable	Wide
20	O'Brien	Carroll						
20	O'Brien	Union			Light			
20	O'Brien	Baker			to			
20	O'Brien	Caladonia	N. W.	Large	Moderate	½ to 1½ inches	Considerable	Wide
20	Jasper	Clear Creek	S. W.	Large	Moderate	¾ inch	Considerable	Wide
24	Decatur	Hamilton	N. W.	Small	Light	Small	Slight	Narrow
24	Lucas	Lincoln	W.	Large	Heavy	½ inch	Slight	Wide
24	Lyon	Lyon	N. W.	Large	Moderate	Up to ¾ inch	\$20,000	Wide
27	Sioux	Nassua						
27	Sioux	Lynn						
27	Sioux	Floyd	N. W.	Large	Heavy	Up to 1 inch	Considerable	2 miles
27	O'Brien	Carroll						
27	O'Brien	Summit					Considerable to severe	
27	O'Brien	Baker						
27	O'Brien	Dale	N. W.	Large	Moderate	Up to 1 inch	Severe	
27	Story	Indian Creek	W.	Large	Heavy	½ to ¾ inch	Severe	Wide
27	Polk	Des Moines						
27	Polk	Allen	W.	Large	Heavy	¾ inch	Severe	Wide
27	Warren	Allen		Small	Moderate	Small	Slight	Narrow
27	Warren	Swan	N. W.	Large	Heavy	¼ to ½ inch	Considerable	Wide
27	Warren	Richland		Small	Light	Small	Slight	Narrow
27	Jasper	Fairview	N. W.	Small	Light		Considerable	Narrow
27	Marion	Swan	N. W.	Small	Moderate	¼ to ½ inch	Considerable	2 miles
27	Marion	Red Rock	S. W.	Large	Heavy	¼ inch	Considerable	Wide
27	Marion	Summit	W.	Large	Heavy	½ to 1 inch	Severe	Wide
27	Marion	Lake Prairie	N. W.	Large	Heavy	¼ to ½ inch	Severe	Wide
27	Lucas	Otter Creek	S. W.	Large	Light	Up to ¾ inch	Slight	Wide
27	Mahaska	Harrison	N. W.	Large	Light	½ inch	Slight	2 miles
27	Mahaska	Richland	N. W.	Large	Light	Large	Considerable	4 miles
27	Cedar	Farmington	S. W.	Large	Heavy		Considerable	2 miles
27	Muscatine	Bloomington	N. E.	Small	Light		Considerable	2 miles

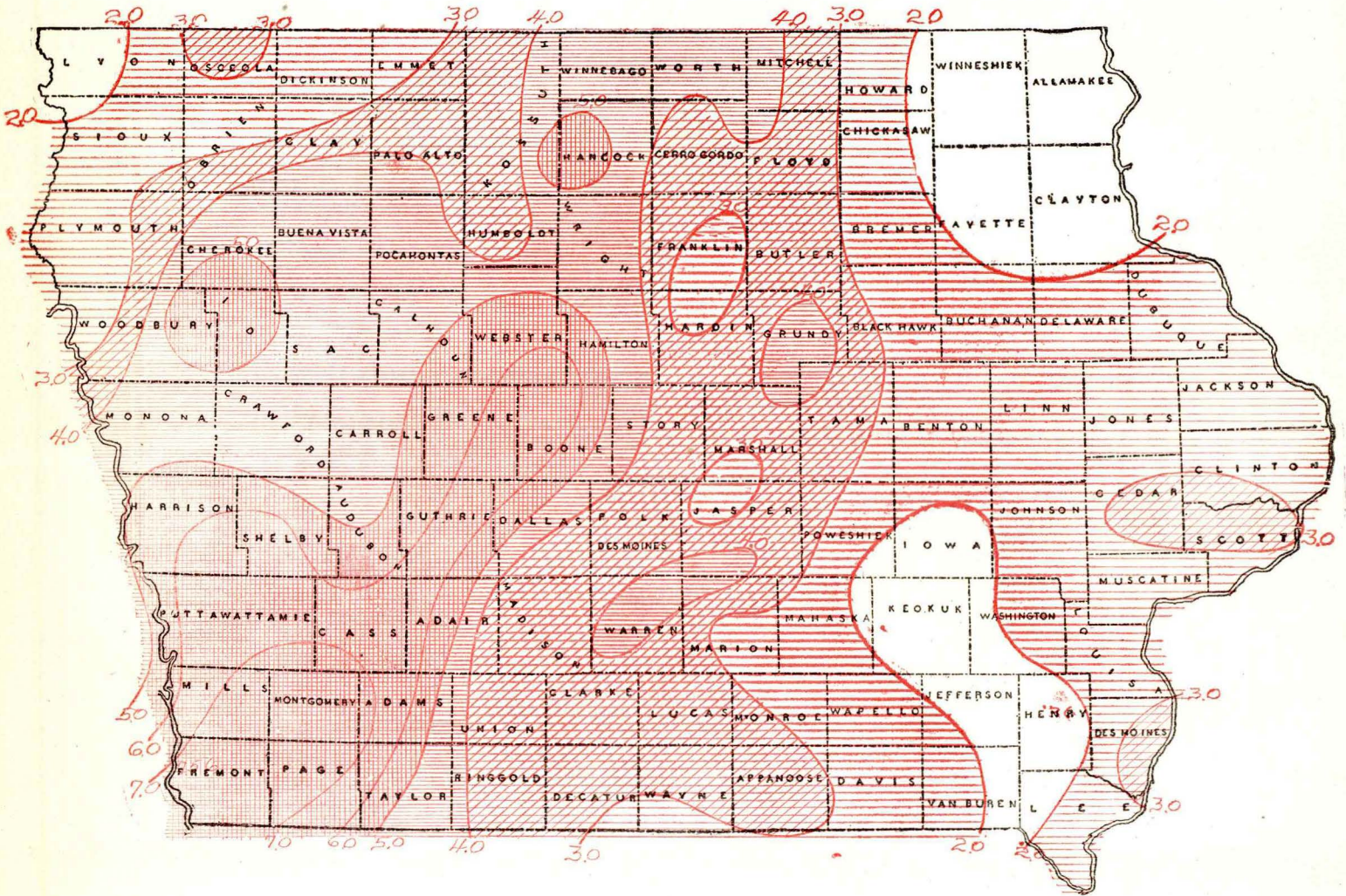
HAIL STORMS DURING JULY, 1918

3	Howard	Albion						
3	Howard	Vernon Springs						
3	Howard	New Oregon	N. E.	Large	Moderate	¼ to 1 inch	Considerable	Wide
3	Winneshiek	Calmar						
3	Winneshiek	Decorah						
3	Winneshiek	Springfield	N. W.	Large	Heavy	½ inch	Considerable	1½ miles
5	Plymouth	America	W.	Large	Heavy	Large	Severe	Wide
6	Plymouth	Preston	N. W.	Small	Moderate	½ inch	Considerable	1 mile
6	Plymouth	Grant	W.	Large	Moderate	½ inch	Considerable	2 miles
6	Plymouth	Fredonia	N. W.	Large	Heavy	¾ inch	Severe	Wide
6	Plymouth	Medaow	W.	Large	Heavy	Small	Considerable	1 mile
6	Plymouth	Remsen	W.	Large	Heavy	¾ inch	\$200,000	4 miles
24	Boone	Jackson	S. W.	Small	Light	Small	Considerable	Wide
25	Butler	West Point	N. E.		Light	¼ inch	Considerable	Wide
25	Allamakee	Taylor	W.	Large	Moderate		Considerable	2 miles
25	Floyd	St. Charles						
25	Floyd	Pleasant Grove						
25	Floyd	Riverton	W.	Large	Heavy	Up to 1 inch	\$20,000	2 miles
25	Dickinson	Milford		Small	Light	Small	Slight	Narrow
27	Appanoose	Franklin	S. W.	Large	Heavy	¼ to 1 inch	Considerable	1½ miles
27	Appanoose	Bellair	S. W.	Small	Moderate	¼ to ½ inch	Considerable	Narrow
27	Appanoose	Vermillion	S. W.	Small	Moderate	½ inch	Slight	Narrow
27	Davis	Lick Creek	S. W.	Small	Light	¾ to ¾ inch	Slight	Narrow

HAIL STORMS DURING AUGUST, 1918

2	Des Moines	Huron						
2	Des Moines	Benton						
2	Des Moines	Jackson	N. W.	Small	Light	¼ inch	Slight	¼ mile
5	Des Moines	Huron	S. W.	Large	Moderate	¾ inch	Considerable	2 miles
10	Appanoose	Vermillion	S. W.	Small	Light	¾ inch	Slight	Narrow
11	Appanoose	Vermillion	S. W.	Small	Light	¼ inch	Considerable	Narrow
13	Boone	Douglas	S. W.	Small	Light	¼ inch	Slight	Narrow
13	Louisa	Col. City	N.	Small	Moderate	Up to ¼ inch	Slight	Narrow
29	Marion	Lake Prairie	W.	Small	Light	¼ inch	Slight	Narrow
29	Muscatine	Bloomington	N. W.	Small	Moderate	Up to 3 inches	Severe	1 to 3 miles
30	Muscatine	Lake	S. W.	Small	Light	¾ inch	Slight	Narrow

TOTAL PRECIPITATION OCTOBER, 1918.



SCALE OF SHADES—IN INCHES.

Less than 2

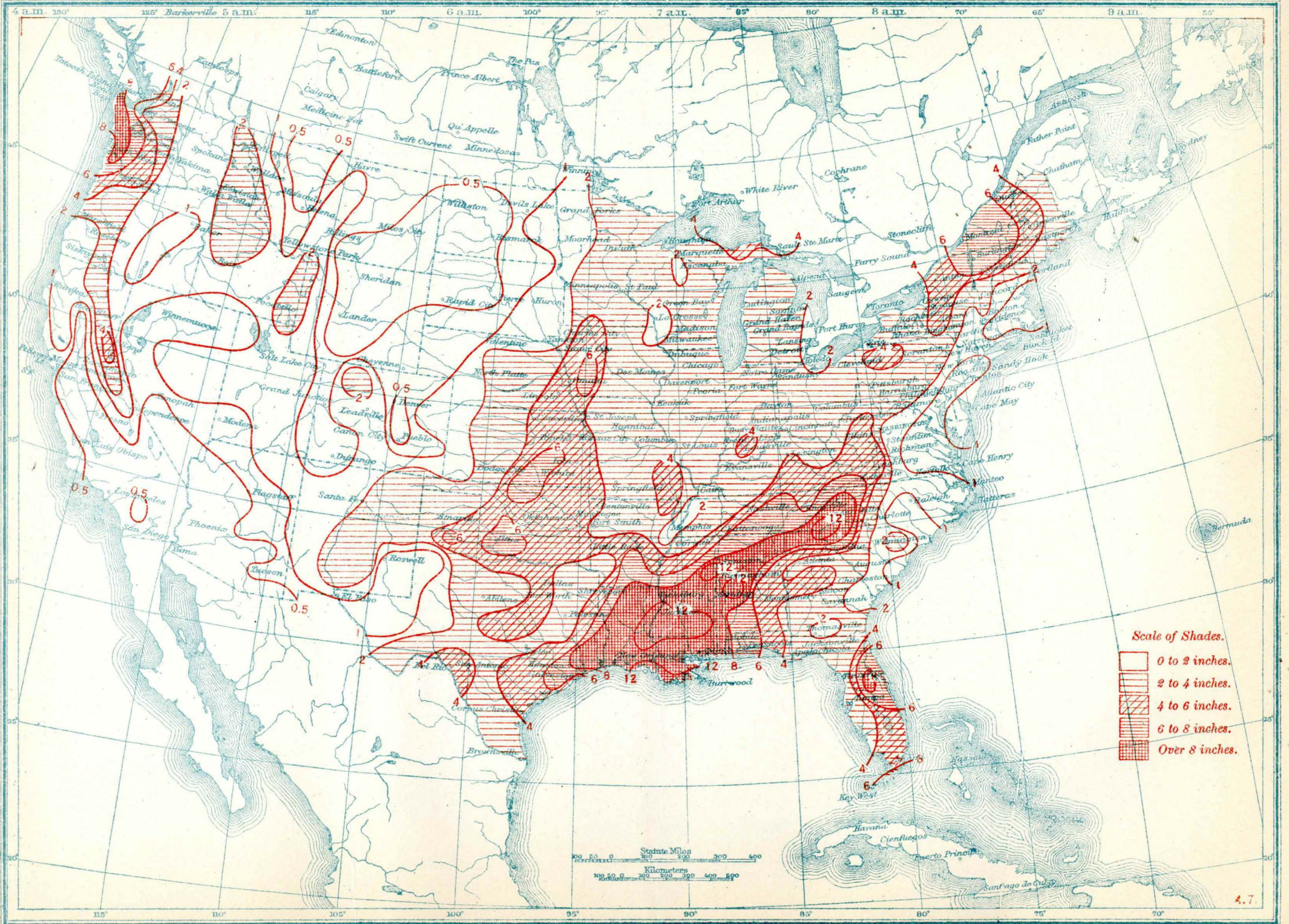
2 to 3

3 to 4

4 to 5

More than 5

Total Precipitation, Inches, October, 1918.



Scale of Shades.

- 0 to 2 inches.
- 2 to 4 inches.
- 4 to 6 inches.
- 6 to 8 inches.
- Over 8 inches.

Statute Miles 0 100 200 300 400
Kilometers 0 100 200 300 400

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

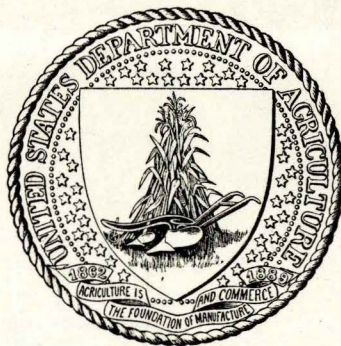
CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

NOVEMBER, 1918

BY
CHARLES D. REED
METEOROLOGIST

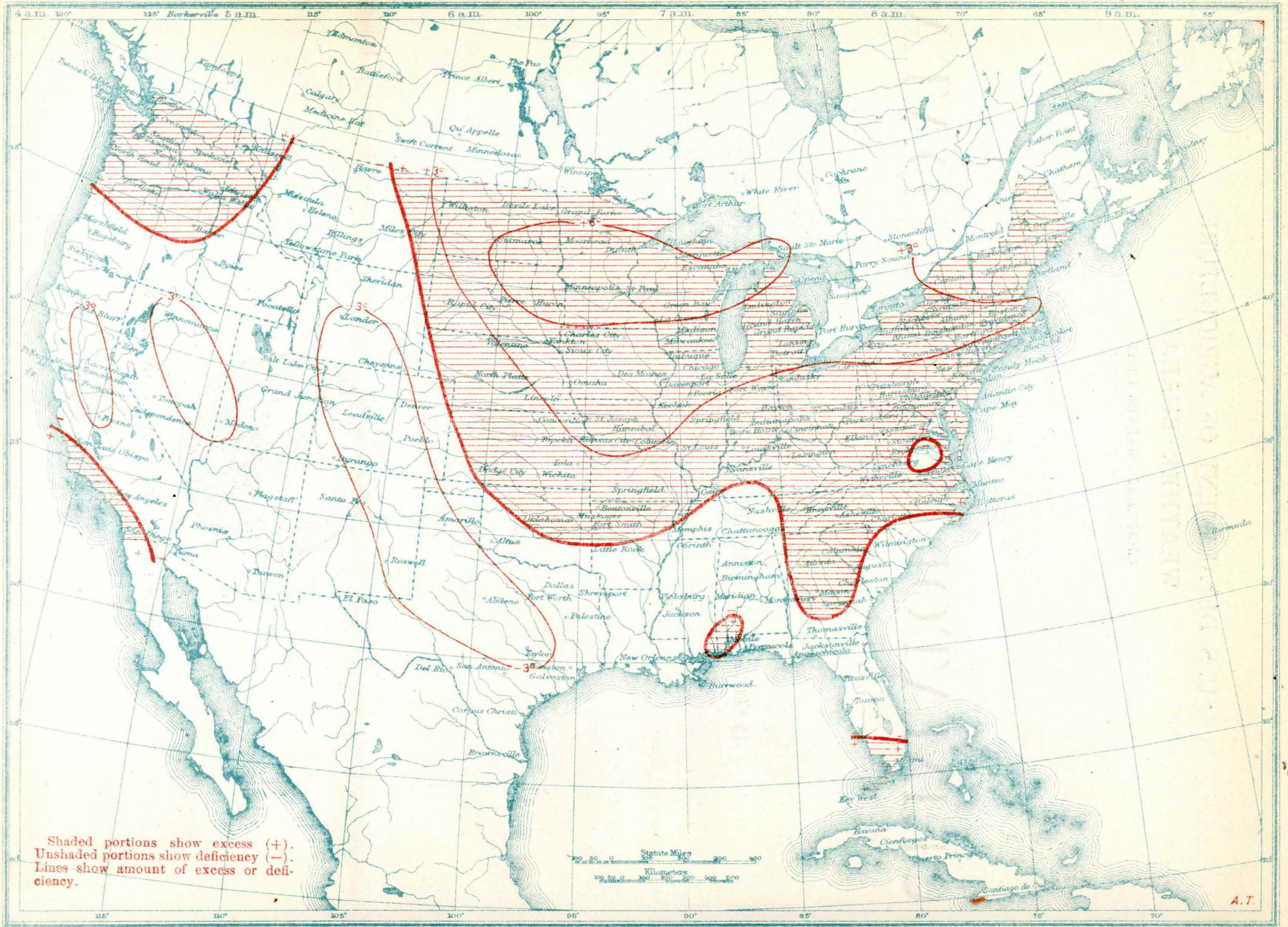


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

2

Departure of the Mean Temperature from the Normal, November, 1918.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION.

CHARLES D. REED, METEOROLOGIST

VOL. XXIX DES MOINES, IOWA, NOVEMBER, 1918 No. 11

GENERAL SUMMARY.

Mild temperature prevailed particularly from the 2d to the 19th, though cool, 23d-26th. Precipitation was well distributed both as to time and area, and was above normal in all but the east-central and some extreme northeast counties and portions of Boone, Dallas and Adair counties. Most of the precipitation occurred in the heavy rain and snow storm of Thanksgiving Day, the 28th. Part of the snow lay on the ground at the close of the month, except in the northwest.

Corn husking progressed rapidly, 91 per cent being finished; yield slightly below normal; quality, excellent, only 4 per cent being soft. There was abundant moisture and warmth for winter wheat which made good growth and is entering the winter in excellent condition, 95 per cent having become well established. Because of labor shortage, less than the usual amount of fall plowing was done.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.04 inches. The highest recorded was 30.70 inches, at Sioux City, on the 23d, and the lowest was 29.03 inches, at Davenport, on the 28th. The monthly range was 1.67 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 102 stations was 39.9°, or 4.9° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 38.1°, or 5.3° higher than the normal; Central, 40.0°, or 4.9° higher than the normal; Southern, 41.5°, or 4.4° higher than the normal. The highest monthly mean was 43.8°, at Keokuk, and the lowest was 36.0°, at Mason City and Sibley. The highest temperature recorded was 76° at Bloomfield, Fairfield, Keosauqua, Ottumwa, Stockport and Washington, on the 6th, and the lowest, zero, at Mason City, on the 25th. The temperature range for the State was 76°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 84 per cent and at 7 p. m. 71 per cent. The mean for the month was 78 per cent, which is 4 per cent above the normal. The highest mean was 84 per cent at Charles City, and the lowest, 74 per cent, at Dubuque and Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 109 stations, was 2.11 inches, or 0.60 inch above the normal. By divisions the averages were as follows: Northern, 2.36 inches, or 0.95 inch greater than the normal; Central, 1.84 inches, or 0.31 inch greater than the normal; Southern, 2.13 inches, or 0.55 inch greater than the normal. The greatest amount, 5.10 inches, occurred at Northwood, and the least, 0.70 inch, at Cedar Rapids. The greatest amount in 24 consecutive hours, 2.07 inches, occurred at Sibley on the 16th.

SNOWFALL.

The average fall for the State was 4.4 inches, which is 1.9 inches more than the normal. The heaviest fall was 9.5 inches at Fayette. Practically the entire fall of snow occurred on the 27th and 28th when one of the largest November snows on record occurred over a large portion of the State. The snowfall was light over the northwest and south-east portions, a few stations reporting only traces.

WIND.

The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 49 miles per hour, from the northwest, at Sioux City, on the 17th.

SUNSHINE.

The average per cent of the possible amount of sunshine was 52, or 4 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 44; Davenport, 49; Des Moines, 51; Dubuque, 55; Keokuk, 59; Sioux City, 50; Omaha, Neb., 53. There was an unusual period of almost continuous cloudiness 15th-23d.

MISCELLANEOUS PHENOMENA.

- Aurora*: 10th, 11th, 29th, 30th.
- Fog*, dense: 2d, 3d, 4th, 5th, 7th, 10th, 15th, 16th, 17th, 26th.
- Hail*: 7th, 16th, 18th, 21st.
- Halo*, lunar: 12th.
- Halo*, solar: 2d, 12th.
- Rainbow*: 16th.
- Sleet*: 17th, 20th, 21st, 27th, 28th.
- Thunderstorms*: 3d, 6th, 8th, 16th, 17th, 18th.

COMPARATIVE DATA FOR THE STATE—NOVEMBER.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	38.6	+3.6	78	-2	1.46	-0.05	3.55	0.71	-----	8	15	8	7
1891	30.5	-4.5	84	-24	1.70	+0.19	3.64	0.06	-----	7	10	8	12
1892	33.3	-1.7	70	-3	1.10	-0.41	3.16	0.05	1.8	4	11	8	11
1893	34.0	-1.0	86	-13	1.17	-0.34	2.56	0.05	4.6	4	16	8	6
1894	32.7	-2.3	72	-5	0.92	-0.59	2.42	T	0.4	4	9	11	10
1895	34.3	-0.7	86	-12	1.51	0.00	3.01	0.45	4.9	6	9	8	13
1896	29.6	-5.4	82	-15	1.83	+0.32	4.51	0.16	2.9	6	9	8	13
1897	34.3	-0.7	81	-19	0.66	-0.85	2.24	T	1.2	5	12	8	10
1898	32.2	-2.8	78	-17	1.50	-0.01	3.61	0.33	8.7	6	14	8	8
1899	43.9	+8.9	86	8	1.20	-0.31	2.97	0.13	0.5	5	12	8	10
1900	33.5	-1.5	79	-6	1.06	-0.45	3.35	T	3.7	6	12	7	11
1901	35.8	+0.8	77	2	0.86	-0.65	2.30	0.20	2.6	3	18	6	6
1902	41.2	+6.2	79	4	2.13	+0.62	4.19	0.16	1.8	7	9	7	14
1903	34.2	-0.8	76	-5	0.52	-0.99	1.74	T	1.1	3	13	8	9
1904	41.0	+6.0	80	4	0.15	-1.36	0.50	0.00	0.5	1	20	6	4
1905	38.4	+3.4	70	-12	2.84	+1.33	5.30	0.90	0.6	5	16	7	7
1906	35.4	+0.4	76	-5	2.03	+0.52	3.86	0.35	4.4	8	9	7	14
1907	36.7	+1.7	68	-4	1.03	-0.48	4.22	0.05	0.9	4	17	6	7
1908	39.3	+4.3	80	5	1.56	+0.05	3.21	0.21	1.4	5	14	7	9
1909	42.4	+7.4	84	-3	5.39	+3.88	11.48	2.07	6.8	10	10	7	13
1910	33.4	-1.6	76	5	0.34	-1.17	1.02	T	0.7	3	13	9	8
1911	29.9	-5.1	79	-8	1.42	-0.09	4.99	0.11	1.6	6	11	8	11
1912	40.1	+5.1	77	6	0.98	-0.53	2.38	0.00	T	2	18	8	4
1913	44.1	+9.1	78	10	1.18	-0.33	3.49	0.20	0.4	6	11	7	12
1914	41.0	+6.0	80	-4	0.22	-1.29	0.95	0.00	T	2	19	6	5
1915	40.2	+5.2	33	-5	1.94	+0.43	4.86	0.30	1.2	6	11	10	9
1916	37.3	+3.3	30	-8	1.61	+0.10	3.65	0.05	3.6	5	16	6	8
1917	40.7	+5.7	77	3	0.28	-1.23	1.02	T	1.4	3	14	6	10
1918	39.9	+4.9	76	6	2.11	+0.60	5.10	0.70	4.4	7	13	5	12

T indicates an amount too small to measure, or less than .005 inch precipitation and less than .05 inch snowfall.

Climatological Data for November, 1918

Stations.	Counties.	Elevation—feet.	No. of records—years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.				Observer.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Wettest daily range.	Total.	Departure from normal.	Excesses in 24 hours.	Total snowfall, unmelting.	Wet or more than 1/4 inch.	Partly cloudy.	Cloudy.		Remaining direction of wind.	
<i>Northern Division</i>																				
Algona††	Kossuth	1,213	45	38.0	+ 5.3	65	14	12	24	29	1.30	0.00	0.80	5.2	2	16	4	10	sw	W. E. Laird.
Allison	Butler	1,045	6	38.6	—	69	6	10	24†	32	1.50	—	0.75	5.5	4	11	5	14	sw	J. A. Bell.
Alta	Buena Vista	1,513	27	37.2	+ 4.8	64	14	10	24†	29	2.29	+0.91	0.92	2.5	10	13	6	11	nw	David E. Hadden.
Alta (near)	Buena Vista	232	22	—	—	—	—	—	—	—	2.25	+0.68	0.81	1.3	7	—	—	—	nw	Warren Minard.
Alton	Sioux	1,305	13	37.2	+ 4.6	63	4	10	24	31	2.03	—	0.73	0.5	6	10	7	13	nw	W. S. Slagle.
Belmond	Wright	1,206	8	39.2	—	70	6	9	29	34	2.94	—	0.87	7.5	11	10	7	13	nw	Geo. P. Hardwick.
Britt	Hancock	1,236	21	38.0	+ 6.1	67	14	8	29	32	1.82	+0.43	0.62	4.5	7	9	8	13	sw	L. M. Goodman.
Charles City	Floyd	1,015	27	37.8	+ 4.8	69	6	12	30	32	1.80	+0.41	0.63	7.0	8	9	7	14	nw	U. S. Weather Bureau.
Decorah	Winneshek	875	25	39.3	+ 5.6	67	6	6	29	37	1.72	-0.11	0.60	8.0	9	15	1	14	nw	Wm. F. Baker.
Elkader	Clayton	727	39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Estherville	Emmet	1,298	23	37.2	+ 5.7	64	14	12	24	39	1.93	+0.54	0.76	2.0	5	14	14	2	s	A. O. Peterson.
Fayette	Fayette	1,063	28	38.8	+ 6.1	72	6	6	30	35	2.40	+0.82	1.60	9.5	9	16	2	12	sw	R. Z. Latimer.
Forest City	Winnebago	1,226	24	38.2	+ 6.5	66	14	10	24†	33	2.39	+0.96	0.68	5.0	6	9	6	15	nw	Eugene Secor.
Humboldt	Humboldt	1,095	30	39.2	+ 4.9	68	14	10	29	34	2.26	+0.67	0.83	7.0	4	11	7	12	sw	H. C. Snitkey.
Inwood	Lyon	1,474	14	37.6	+ 5.8	62	4†	5	23	30	2.61	+1.77	1.24	0.3	11	12	5	13	s	F. B. Hanson.
Lake Park	Dickinson	1,479	5	37.4	—	65	3	8	24	43	1.62	—	0.80	1.0	4	12	3	15	nw	A. E. Woodruff.
Lansing	Allamakee	632	12	—	—	—	—	—	—	—	2.30	+0.72	0.80	6.8	10	—	—	—	—	—
Le Mars	Plymouth	1,224	22	38.4	+ 5.3	64	4†	9	24	36	1.66	+0.59	0.63	0.8	6	11	7	12	nw	Chas. R. Serene.
Mason City††	Cerro Gordo	1,148	21	36.0	+ 3.1	74	5	0	25	47	2.73	+1.05	0.82	4.0	10	12	5	13	nw	G. A. C. Clarke.
New Hampton	Chickasaw	1,169	21	38.8	+ 5.8	66	6†	8	30	32	1.95	+0.32	0.78	6.0	6	14	6	10	w	Northern Sugar Corp.
Nora Springs	Floyd	1,064	5	41.0	—	72	6	10	30	86	3.87	—	1.48	3.5	9	12	5	13	s	Arthur Betts.
Northwood	Worth	1,222	22	36.1	+ 4.1	66	6	7	30	32	5.10	+3.34	1.50	8.0	6	11	6	13	sw	Chas. Dwell.
Pocahontas	Pocahontas	1,248	14	38.2	+ 5.4	67	15	10	24†	32	1.65	-0.01	0.48	4.5	8	10	9	11	s	F. E. Hronek.
Postville	Clayton	1,180	19	38.4	+ 5.1	68	6	7	30	30	1.49	-0.16	0.80	8.0	8	12	5	13	nw	F. L. Williams.
Rock Rapids	Lyon	1,358	19	36.8	+ 5.3	61	14	7	23	37	2.71	+1.65	1.41	0.2	9	13	5	12	nw	J. K. Medberry.
Sanborn	O'Brien	1,553	4	36.8	—	62	14	9	24	32	2.90	—	1.11	2.1	8	12	6	12	nw	Jas. W. Dow.
Sibley	Osceola	1,212	25	36.0 ^b	+ 5.6	60 ^b	6	7 ^b	24	33 ^b	3.79	+2.87	2.07	0.4	5	—	—	—	—	—
Sioux Center	Sioux	1,426	19	38.0	+ 6.1	66	15	7	23	30	3.18	+2.38	1.65	0.5	7	12	2	16	s	H. F. Olds.
Storm Lake	Buena Vista	1,440	29	38.5	+ 4.9	62	14	12	24	29	1.91	+0.78	0.79	2.0	7	16	1	13	nw	J. de Ruyter.
Washta	Cherokee	1,157	20	38.6	+ 5.2	66	14	10	29	37	2.92	+1.79	1.95	2.0	6	16	2	12	nw	Geo. H. Fracker.
Waverly	Bremer	948	22	40.2	+ 6.1	73	6	7	30	39	1.65	+0.66	0.68	6.5	7	12	5	13	nw	H. Arnold.
West Bend	Palo Alto	1,197	25	38.4	+ 5.9	71	6	8	24†	32	1.85	+0.41	0.81	5.0	5	14	12	4	nw	Jos. Dorweiler.
Means and extremes				38.1	+ 5.3	73	6	5	23	43	2.36	+0.95	2.07	4.1	7	12	6	12	nw	
<i>Central Division</i>																				
Ames††	Story	926	42	35.2 ^b	- 0.2	65 ¹	14	10 ¹	24	34 ¹	1.74	+0.41	0.94	6.5	4	—	—	—	nw	Iowa State College.
Audubon	Audubon	1,301	24	37.2 ^a	+ 2.3	65 ^a	5	10 ^a	24†	34 ^a	2.12	+0.76	0.94	6.7	6	—	—	—	n	V. M. Jones.
Baxter	Jasper	998	18	40.1	+ 4.0	70	6	10	30	31	1.49	+0.09	0.72	7.0	7	9	12	9	nw	Rev. Paul Traeger.
Belle Plaine	Benton	886	28	40.4	+ 5.0	72	6	10	30	31	1.54	-0.19	0.74	7.7	7	18	2	10	se	O. C. Burrows.
Boone	Boone	1,134	13	38.3	+ 3.7	66	15	12	24†	23	1.24	-0.13	0.40	5.5	7	11	8	11	nw	Carl F. Henning.
Carroll	Carroll	1,265	28	39.5	+ 6.1	68	6	11	24	34	1.57	+0.32	0.51	5.0	6	13	6	11	nw	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	36	41.6	+ 6.6	72	6	17	30	30	0.70	-0.71	0.33	3.2	3	17	1	12	s	R. S. Toogood.
Clinton	Clinton	593	45	39.0 ^g	+ 3.0	68 ^g	14	13 ^g	24	40 ^g	1.61	-0.33	1.08	0.6	6	15	2	13	nw	H. Burde.
Davenport	Scott	580	47	42.2	+ 4.7	66	6	17	24	26	1.89	+0.13	1.17	T.	8	15	2	13	w	U. S. Weather Bureau.
Delaware	Delaware	1,083	27	39.9	+ 6.3	68	6	11	29†	31	1.23	-0.41	0.68	4.5	5	17	1	12	s	Nettie E. Ball.
Denison	Crawford	1,180	24	39.8	+ 5.1	67	6	11	29	35	1.75	+0.57	0.75	4.0	5	15	3	12	s	Emma Brogden.
Des Moines	Polk	861	39	41.6	+ 4.8	70	6	16	24	29	2.10	+0.62	1.29	7.2	11	10	8	12	s	U. S. Weather Bureau.
Dubuque	Dubuque	639	45	41.2	+ 5.2	67	6	16	24	30	1.10	-0.71	0.81	2.0	7	13	6	11	nw	U. S. Weather Bureau.
Fort Dodge	Webster	1,126	18	39.8 ^b	+ 6.2	71 ^c	6	13 ^b	24	32 ^c	2.06	+0.58	0.60	3.0	7	—	—	—	sw	J. F. Monk.
Gilman	Marshall	1,052	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Grinnell	Poweshiek	1,023	24	41.2	+ 4.7	70	6	11	30	33	2.10	+0.38	0.80	7.5	7	14	4	12	nw	D. W. Brainard.
Grundy Center	Grundy	976	27	40.6	+ 5.2	72	6	13	24	37	2.05	+0.65	1.10	7.0	4	12	7	11	nw	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	23	40.3	+ 4.6	70	6	5	29	34	1.72	+0.29	0.68	8.4	8	9	11	10	sw	C. T. Harney.
Harlan	Shelby	1,182	19	38.0	+ 3.6	67	6	8	29	33	1.35	+0.16	0.65	3.0	5	18	1	11	n	E. L. Tilton.
Independence	Buchanan	921	54	39.6	+ 5.1	71	6	10	30	34	0.82	-0.56	0.45	4.5	5	17	1	12	nw	Dr. H. A. Lindsay.
Iowa City	Johnson	683	57	41.3	+ 6.4	73	6	13	26	35	2.10	-0.16	1.19	2.5	6	12	7	11	nw	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	25	38.9	+ 6.3	68	6	6	29	32	2.19	+0.65	0.90	8.3	7	14	3	13	nw	J. B. Parmelee.
Jefferson	Greene	1,052	19	39.6	+ 4.6	70	6	10	29	33	1.48	—	0.50	4.0	6	13	5	12	sw	Will I. Lyon.
Le Claire	Scott	576	18	—	—	—	—	—	—	—	2.22	+0.27	0.98	T.	7	—	—	—	—	
Little Sioux	Harrison	1,040	13	39.6	+ 3.8	68	14	7	29	38	3.26	—	1.48	6.0	10	13	3	14	nw	Margaret T. Disney.
Logan	Harrison	928	51	38.8	+ 3.1	71	5†	9	29	44	3.37	+2.10	1.70	5.0	8	13	6	11	sw	Geo. H. Gibson.
Maquoketa	Jackson	688	17	40.8	+ 4.5	68	6	13	24	42	1.99	+0.54	1.45	2.0	5	17	2	11	sw	Mary Jean Stern.
Marshalltown	Marshall	947	26	41.2	+ 6.6	72	6	10	29	35	2.38	+0.91	1.68	5.5	9	15	3	12	nw	Ira H. Stephens.
Monroe	Jasper	922	6	42.9	—	69	6	12	30	32	1.40	—	0.85	7.2	4	15	3	12	nw	C. W. F. Kothenbeutel.
Muscataine	Muscataine	554	58	—	—	—	—	—	—	—	1.88	-0.48	0.90	1.0	6	—	—	—	—	
Olin	Pones	760	20	40.3	+ 5.2	68	6†	14	30	37	1.35	-0.11	0.60	4.0	3	18	3	9	nw	

Climatological Data for November, 1918—Continued.

Stations	Counties	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days				Observers		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation (0.01 in. or more).	Clear.	Partly cloudy.		Cloudy.	Revolving direction of wind.
<i>Southern Division</i>																				
Afton	Union	1,212	24	41.5	+ 4.5	68	5	14	24	24	1.57	+0.08	0.40	4.0	7	15	3	12	sw	J. E. Deitrick.
Albia	Monroe	959	20	42.2	+ 5.4	71	6	12	29	31	1.83	+0.13	0.92	5.0	6	16	2	12	sw	F. H. Holmes.
Allerton	Wayne	1,122	16	40.5	+ 2.4	69	5	12	30	33	1.57	-0.18	0.65	7.9	7	16	2	12	s	James C. Huston.
Atlantic	Cass	1,164	27	39.8	+ 4.2	67	6	6	29	31	2.25	+1.03	0.72	5.6	9	11	5	14	sw	Thos. H. Whitney.
Bedford	Taylor	18	18	40.2	+ 3.6	70	5	5	29†	31	2.25	+0.83	0.78	6.2	8	15	2	13	nw	E. E. Healy.
Bloomfield	Davis	881	11	42.6	---	76	6	17	24†	33	2.42	+0.50	1.10	4.5	8	13	7	10	w	V. G. Warner.
Bonaparte	Van Buren	565	27	42.1	+ 3.9	75	6	16	24†	33	2.49	+0.66	1.03	---	6	19	2	9	nw	Bruce R. Vale.
Burlington	Des Moines	544	22	43.3	+ 5.1	70	6	18	24	34	2.64	+0.75	1.20	T.	6	16	4	10	sw	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	13	41.9	---	73	6	15	29†	32	2.22	---	1.10	7.0	11	16	3	11	nw	Leo J. Allen.
Chariton	Lucas	1,042	23	39.8	+ 2.7	70	5	6	29	35	1.76	+0.29	0.76	5.0	5	13	9	8	w	C. C. Burr.
Clarinda	Page	1,069	28	41.8	+ 5.8	70	5†	10	30	41	2.20	+0.76	0.68	7.4	9	15	2	13	nw	A. S. Van Sandt.
Columbus Jet	Louisa	595	17	42.6	+ 5.1	72	6	16	24	28	2.24	+0.38	1.33	1.0	5	20	3	7	nw	J. B. Johnston.
Corning	Adams	1,117	26	40.6	+ 4.9	68	5†	12	30	38	2.83	+1.46	0.90	6.0	5	16	2	12	nw	Jerome Smith.
Corydon	Wayne	1,101	25	41.4	+ 3.2	70	5	13	24	31	1.82	+0.38	0.91	5.0	8	13	6	11	nw	May C. Miller.
Creston	Union	1,312	13	41.7	+ 6.5	70	5	10	29	39	1.24	---	0.55	5.5	10	9	4	17	nw	Mrs. T. E. McConnell.
Cumberland	Cass	19	19	40.7	+ 5.9	69	7†	7	29	36	1.88	+0.83	0.53	5.0	6	13	4	13	sw	J. H. Reppert.
Earlham	Madison	1,126	16	40.7	+ 5.9	69	7†	7	29	36	1.72	+0.06	0.82	6.0	6	15	3	12	nw	Geo. Phillips.
Fairfield	Jefferson	78	14	42.4 ^c	+ 4.5	76 ^c	6	17 ^c	27	42 ^c	2.86	+0.60	1.22	2.5	6	---	---	---	nw	Prof. R. M. McKenzie.
Glenwood	Mills	1,106	21	41.4	---	68	5†	15	24	31	3.05	---	1.15	4.0	6	13	5	12	nw	Dr. Geo. Mogridge.
Greenfield	Adair	26	26	39.8	+ 3.7	69	6†	12	24†	29	1.08	-0.06	0.38	1.2	4	12	10	8	nw	Frank A. Ward.
Indianola	Warren	961	26	40.9 ^a	+ 3.8	69 ^a	6	15 ^a	29†	27 ^a	1.52	+0.04	0.80	8.0	5	13	2	15	nw	Prof. J. L. Tilton.
Keokuk	Lee	614	47	43.8	+ 4.4	75	6	20	24	30	2.91	+1.06	1.38	0.6	6	13	7	10	w	U. S. Weather Bureau.
Keosauqua	Van Buren	644	26	42.1	+ 4.9	76	6	14	26	34	2.11	+0.54	1.04	3.0	7	16	2	12	nw	J. H. Landes.
Knoxville	Marion	926	23	41.2	+ 3.3	69	5†	14	24†	37	1.90	+0.38	0.81	6.5	7	12	4	14	nw	W. J. Casey.
Lacona	Warren	19	19	41.4	+ 4.5	71	5	13	24†	32	1.83	+0.14	0.60	7.0	12	6	16	8	nw	J. B. Alter.
Lamoni	Decatur	1,100	11	42.0	+ 4.1	74	5	15	24†	38	2.18	---	1.09	6.5	7	16	1	13	nw	Edward D. Moore.
Lenox	Taylor	1,250	23	40.0	+ 3.5	69	5	9	30	28	1.93	+0.53	0.60	4.5	5	13	4	13	s	J. L. Hurley.
Mount Ayr	Ringgold	1,236	25	41.2	+ 3.3	69	5	10	29	30	1.82	+0.30	0.78	6.7	8	17	2	11	s	Alex Maxwell.
Mt. Pleasant	Henry	729	37	42.7	+ 4.9	75	6	16	24	35	2.41	+0.62	1.22	1.0	5	17	2	11	sw	John H. Jericho.
Murray	Clarke	1,216	27	41.4	+ 4.5	71	5	13	24†	32	2.05	+0.74	1.03	7.5	8	11	8	11	s	M. T. Ashley.
Northboro	Page	1,120	6	41.8	---	72	6	12	29	31	2.30	---	0.80	6.0	5	15	2	13	nw	J. M. Darby.
Oskaloosa	Mahaska	835	42	42.1	+ 5.3	70	6	14	24	30	2.40	+0.85	1.19	5.5	5	15	2	13	nw	Roy R. Robinson.
Ottumwa	Wapello	849	23	41.6	---	76	6	17	23	30	---	---	---	1.5	5	10	9	11	sw	Eugene O. Field.
Pella	Marion	877	15	42.1	+ 4.7	69	5†	13	26	38	1.90	+0.22	1.01	5.8	8	17	0	13	nw	J. H. Ver Steeg.
St. Charles	Madison	1,070	17	42.1	+ 3.6	70	5	15	24	30	1.84	+0.19	0.83	7.0	5	13	1	16	nw	R. D. Minard.
Shenandoah	Page	---	---	---	---	72	5†	5 ^p	30	35	1.96	---	0.56	4.5	8	13	6	11	w	L. L. Hunter.
Sigourney	Keokuk	877	22	41.8 ^a	+ 4.9	72	6	14 ^b	26	33 ^b	2.45	+0.78	1.28	4.2	5	18	1	11	nw	W. E. Utterback.
Stockport	Van Buren	754	16	41.6	+ 4.1	76	6	13	26	38	1.96	+0.29	0.88	2.0	6	14	3	13	s	C. L. Beswick.
Thurman	Fremont	---	---	---	---	76	6	3	29	35	3.93	+2.32	1.51	6.7	6	9	8	13	nw	C. R. Paul.
Washington	Washington	769	36	42.0	+ 4.8	76	6	14	24	33	2.21	+0.54	1.18	2.2	6	11	9	10	nw	Wm. A. Cook.
Winterset	Madison	1,129	27	41.4	+ 4.8	70	5	12	30	30	1.89	+0.40	0.68	6.0	6	16	4	10	nw	H. S. Ely.
Omaha, Nebr.	---	1,040	47	41.6	+ 3.9	68	4	18	24	26	2.89	+1.83	1.50	4.2	9	13	5	12	nw	U. S. Weather Bureau.
Means and extremes State means and extremes	---	---	---	41.5	+ 4.4	76	6	3	29	42	2.13	+0.55	1.51	4.8	7	14	4	12	nw	---
---	---	---	---	39.9	+ 4.9	76	6	0	25	44	2.11	+0.60	2.07	4.4	7	13	5	12	nw	---

The departure from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.
 Reference letters, a, b, c, appearing in the table indicate the number of days missing; for example, b represents two days, etc.
 †Also other dates. ††Received too late to be included in means and summaries.
 T. Precipitation is less than 0.01 inch rain or melted snow.

ERRATA

Report for June, 1918: Page 69; acreage of oats in Johnson County, published 51,500, should be 51,500; total oats for the State, published 5,526,500, should be 5,426,500. Page 67; total oats acreage, published 5,526,500, should be 5,426,500; increase over last year, published 116,500, should be 16,500.

FINAL CROP REPORT OF THE STATE.

Total Yield of Soil Products and Value at Farm Prices, Dec. 1, 1918

Following is a summary of reports from crop correspondents of the Iowa Weather and Crop Service showing the average yield per acre and total yields of staple soil products, and the average price at the nearest station, December 1, 1918. This report does not include or take into consideration live stock, poultry or dairy products:

Corn.—The estimated acreage was 10,337,700, or 33,000 acres less than in 1917; average yield, 34.4 bushels per acre; total yield,

356,677,000 bushels; average price, \$1.23 per bushel; total value, \$438,712,710. Only 4 per cent of the crop was reported to be soft or immature and 91 per cent had been husked on December 1st. The crop this year is being referred to as "disappointing", yet the yield is only 2.1 bushels per acre below the average of the last 10 years and the total crop, 356,677,000 bushels has been exceeded but four times in 29 years. The quality is excellent and the feeding value of the 1918 crop is much greater than that of the 1917 crop bushel for bushel.

Oats.—The estimated area harvested was 5,426,500 acres, or about 16,500 acres more than in 1917. Average yield, 40.2 bushels; total yield, 217,592,500 bushels; average price, 64 cents; total value, \$140,043,200.

Spring Wheat.—Area harvested, 580,400 acres, or about 415,600 acres more than in 1917; average yield, 18.2 bushels per acre; total yield, 10,584,600 bushels; price per bushel, \$1.99; total value, \$21,063,354.

Daily Precipitation for November, 1918.

Stations.	Watersheds.	Day of Month.																														Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
<i>Northern Division</i>																																
Algona	Des Moines						.50																								.80	1.30
Allison	Cedar						.28								.40	.07		T.	T.	T.										.75	1.50	
Alta	Raccoon					.10	.08	.67							.13	.92	.10	.03			T.	.02							.04	.20	2.29	
Alta (near)	Raccoon					.20	.74							.15	.81	.15					T.	T.							.05	.15	2.25	
Alton	Floyd			T.	T.	.39	.66								T.	.73	.12	.08			T.	T.	T.						T.	.05	2.03	
Belmond	Iowa	T.	.08			T.	.57	.07							.87	.40	.13	.02	.02	.02	.02	.01						T.	.75	2.94		
Britt	Iowa	T.	.03			T.	.33	.19							T.	.62	.12	.08	T.	T.	T.	T.							.45	1.82		
Charles City***	Cedar		.10			.03	.30								.05	.33	.36			T.	T.	T.	T.						.04	.59	1.80	
Decorah	Mississippi		.21			.03	.05	.17							.09	.04	.23												.60	.30	1.72	
Elkader	Mississippi																															
Estherville	Des Moines		T.			.20	.10	.76									.70	T.												.17	1.93	
Fayette	Mississippi		.13			.04	.08	.07							.06	.14	.17	.11				T.								1.60	2.40	
Forest City	Cedar		T.			T.	.50	.11							.68	.55	.05					T.								.50	2.39	
Humboldt	Des Moines					.72									.54	.17														.83	2.26	
Inwood	Bib Sioux	T.	T.			.22	.03	1.24							.05	.43	.20	.40				.01	.01	.01					.01	2.61		
Lake Park	Little Sioux					.42									.80	.20						T.							.20	1.62		
Lansing	Mississippi		.26			.08	.15								.08	.10	.04	.20	.02	T.			T.						.57	.80	2.30	
Le Mars	Floyd					.26	.63								.03	.45	.24	T.		T.	T.	T.						T.	.05	1.66		
Mason City	Cedar		.06	.03		.04	.82	.09	.02						.04	.04	.59				T.								.40	2.73		
New Hampton	Wapsipineon					.26	.08								.16	.61	.06	T.											.78	1.95		
Nora Springs	Cedar		.08			.48									.04	1.48	.69	.03			.09	T.	T.	T.					.10	.88	3.87	
Northwood	Cedar		.25			1.50	.30	T.							T.	1.25	1.00			T.	T.	T.	T.						.80	5.10		
Pocahontas	Des Moines					.20	.30	.04							T.	.48	.08	.07				T.	T.	T.					.03	.45	1.65	
Postville	Mississippi		.18			.12	.10								.06	.12	.08	.07	T.	T.	T.	T.							.80	1.49		
Rock Rapids	Big Sioux		.02		.02	.41	1.41	.02							.05	.47	.29				T.	T.	T.						.02	2.71		
Sanborn	Floyd					.60	.57	.11							1.11	.16	.04						.01						.30	2.90		
Sibley	Big Sioux		T.			.88	.80								2.07						T.	T.		.02	.02	T.		T.	3.79			
Sioux Center	Floyd	T.			.02	.53	1.65								.32	.21					.20	.05						T.	3.18			
Storm Lake	Raccoon	T.				.07	.68	.07							T.	.06	.79	.03	T.	T.	T.	T.						T.	.21	1.91		
Washta	Little Sioux				T.	.25	.42								.05	1.95	.05				T.	T.	T.	T.					.20	2.92		
Waverly	Cedar					T.	.16	.09							.03	.20	.46			.03	T.	T.	T.						.68	1.65		
West Bend	Des Moines					.54									.81	*	.18	T.				T.						T.	.32	1.85		
<i>Central Division</i>																																
Ames	Skunk					.19									T.	.52	.09					T.						T.	.94	1.74		
Audubon	Nishnabotna					.45									.94	.06	.02											T.	.10	.55	2.12	
Baxter	Skunk				T.	.17	.06								.06	.30	.12	.06	T.			T.	T.					T.	.72	1.49		
Belle Plaine	Iowa					T.	.05								.02	.09	.54	.09	T.	T.	T.	.01						T.	.74	1.54		
Boone	Des Moines	T.				.21	.07								T.	.22	.14	.08	T.			T.	T.					T.	.40	.12	1.24	
Carroll	Raccoon					.32	.15								T.	.51	.06	.04											.49	1.57		
Cedar Rapids	Cedar		T.			T.	T.								T.	.05	.33					T.							.32	0.70		
Clinton	Mississippi					.17									.01	.01	.26	.08	T.	T.	T.	T.							1.08	1.61		
Davenport***	Mississippi				T.	.17	.01								.03	.39	.09	.03	T.	T.	T.	T.						.10	1.07	1.89		
Delaware	Mississippi					.02									.15	.10	.28												.68	1.23		
Denison	Missouri					.45	.04								.06	.75	T.				T.	T.						T.	.45	1.75		
Des Moines***	Des Moines			T.	.10	.12								.02	.01	.17	.31	.06		.01	T.	.01	T.					.20	1.09	2.10		
Dubuque***	Mississippi		.04			T.	.03								T.	.05	.15	.02	T.		T.	T.							.02	.79	1.10	
Fort Dodge	Des Moines		T.			T.	.40	.30							.15	.25	.18	.18				T.	T.						.60	2.06		
Gilman	Iowa					.03	.20	.05		T.					T.	.15	.60	.27					T.					T.	.80	2.10		
Grinnell	Iowa					.03	.20	.05		T.					T.	.15	.60	.27					T.					T.	.80	2.10		
Grundy Center	Cedar					.34	.22								.15	.19	.70											T.	1.10	2.05		
Guthrie Center	Raccoon					.35	.07								.05	.40	.10	.05				T.	T.	.02					.68	1.72		
Harlan	Nishnabotna					.65									.10	.28	.02												.30	1.35		
Independence	Wapsipineon		T.			.08									.04	.11	T.	.14	T.			T.							.45	0.82		
Iowa City	Iowa					T.	.15								.04	.08	.51	.13					T.						1.19	2.10		
Iowa Falls	Iowa		T.			.34	.22								T.	.50	.18	.02	T.	T.	T.	.03	T.					.90	2.19			
Jefferson	Raccoon		T.			.20	.10								.05	.43	T.	.20			T.	T.	T.				T.	.50	1.48			
Le Claire	Mississippi	T.				.03	.30								T.	.11	.48	.12					T.					.98	.20	2.22		
Little Sioux	Little Sioux				.05	.06	.58								.29	1.48	.17					.03		.10				.10	.40	3.26		
Logan	Missouri				.18	.72									.09	1.70	.11				.04		T.					.13	.40	3.37		
Maquoketa	Maquoketa					T.	T.	.10							T.	.05	.23	.16					T.						1.45	1.99		
Marshalltown	Iowa					.09	.06								.06	.24	.20	.03				.01		.01					1.68	2.38		
Monroe	Skunk					T.	.28	T.							T.	.14	.13		T.				T.						.85	1.40		
Muscatine	Mississippi					.21									.05	.30	.12	T.											.90	.30	1.88	
Olin	Wapsipineon					T.	T.								T.	T.	.35	.40											.60	1.35		
Onawa	Missouri				.23	.45									.45	1.68	.12					T.							.42	3.35		
Perry	Raccoon					.18	.03								.03	.16	.18	.13											.60	1.31		
Rockwell City	Raccoon		**		**	**	**								T.	.47	.05	.11						.05					.75	**		
Sac City	Raccoon					.47									.70							T.	T.						.05	.55	1.77	
Sioux City***	Missouri				.05	.20	.66	T.							.03	.12	.84	.33			T.	T.	.03	.06				.06	T.	2.38		
Tipton	Cedar		T.			.02	.15								.07	.33	.22												1.30	2.09		
Toledo	Iowa					.34									.12	.27	.22						T.						1.19	2.14		
Waterloo	Cedar					T.	.08								.17	.60	.27	.22				T.	T.									

Daily Maximum and Minimum Temperatures for the Month of October, 1918.

Table with columns for Stations, days 1-31, and Mean temperature. Rows are categorized by Northern Division, Central Division, and Southern Division, listing various Iowa locations and their daily temperature ranges.

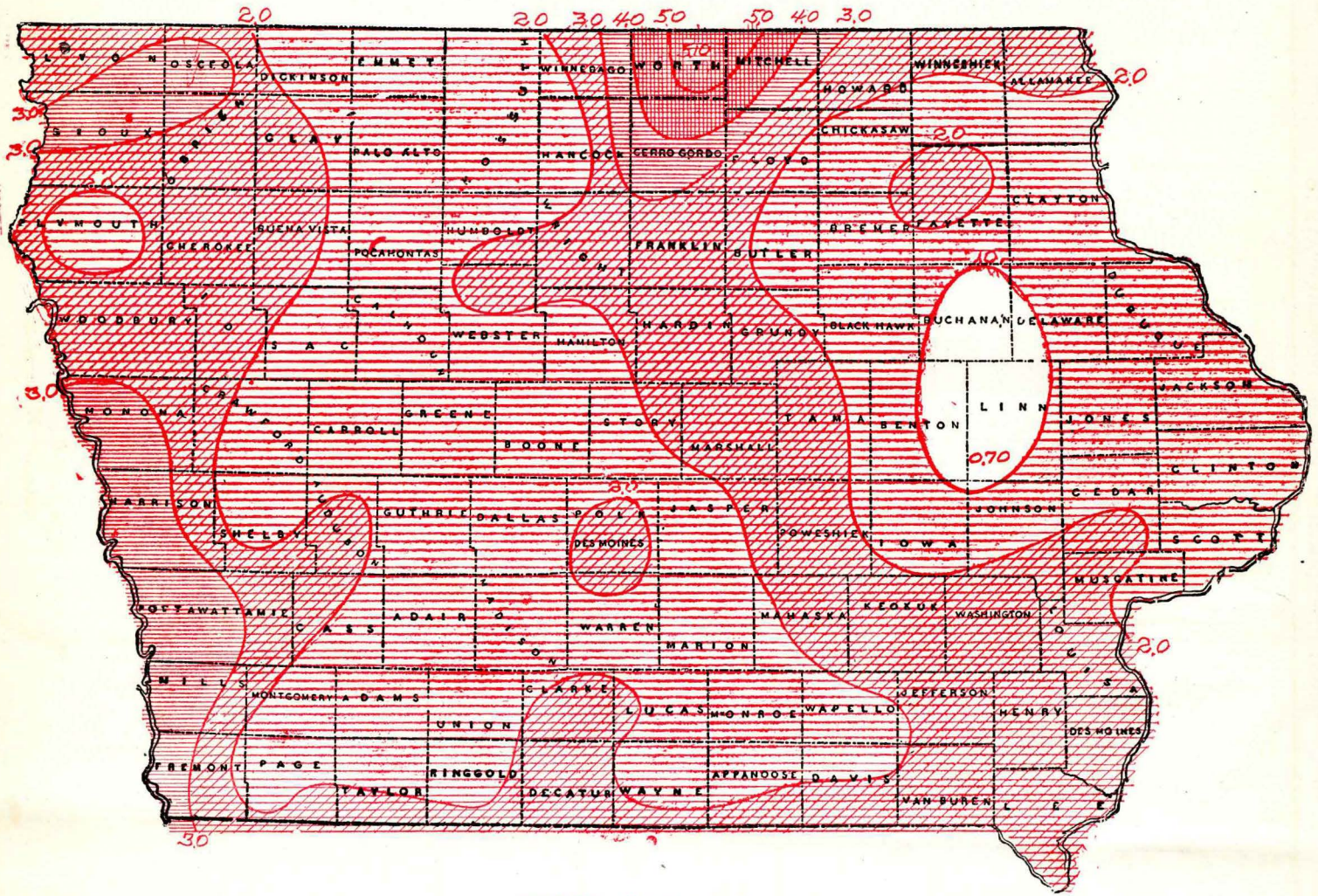
a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record.

§§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

TABULATED CROP SUMMARY FOR THE YEAR 1918

Counties	Corn		Oats		Spring Wheat		Winter Wheat		Barley		Rye		Flax Seed		Potatoes		Hay—Tame		Hay—Wild		Alfalfa	
	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Tons per acre	Total Tons	Tons per acre	Total Tons	Tons per acre	Total Tons
Adair	14	1,680,000	28	1,100,500	14	42,000	15	15,000	26	109,200	10	400	---	---	17	13,900	0.5	12,600	0.5	780	1.5	100
Adams	7	575,000	27	720,500	14	26,600	15	24,000	20	24,000	18	3,780	---	---	42	20,200	0.4	7,400	0.5	720	1.8	880
Allamakee	46	2,075,000	41	1,521,100	21	182,700	16	16,600	27	202,500	18	8,100	12	240	97	105,700	2.0	97,600	1.5	1,530	2.0	100
Appanoose	28	1,403,000	41	877,400	20	20,000	20	34,000	25	2,500	20	6,400	---	---	70	20,300	1.0	30,600	1.2	860	1.2	60
Audubon	29	2,656,000	32	1,200,000	16	80,000	18	16,200	30	255,600	22	660	---	---	73	56,900	0.8	20,000	1.1	2,180	2.0	2,080
Benton	43	6,334,000	44	3,775,000	16	32,000	18	3,600	34	272,000	20	18,000	---	---	70	77,000	1.6	50,900	1.5	3,000	3.0	210
Black Hawk	38	3,910,000	44	2,820,400	18	18,000	22	8,800	35	150,500	12	22,800	12	60	75	120,800	1.2	29,500	1.0	7,500	3.0	90
Boone	35	4,616,000	43	3,027,200	16	32,000	18	12,600	34	34,000	25	1,200	---	---	53	27,600	1.0	16,600	0.8	4,720	2.2	450
Bremer	38	2,307,000	39	1,864,800	18	36,000	18	3,600	32	41,600	19	9,100	---	---	92	121,400	1.7	18,000	1.1	21,450	3.0	90
Buchanan	38	3,966,000	42	2,054,400	17	59,500	20	4,000	38	106,400	19	17,290	12	240	116	116,000	1.3	35,900	1.2	12,640	3.0	30
Buena Vista	43	5,835,000	47	4,136,000	22	44,000	26	3,900	33	33,000	20	800	12	360	62	65,100	1.2	22,600	1.3	9,780	2.8	730
Butler	38	3,629,000	35	2,625,000	12	43,200	16	800	24	26,400	15	15,000	---	---	60	140,400	1.2	32,200	1.1	9,860	3.0	30
Calhoun	40	5,540,000	45	4,563,000	22	22,000	18	900	40	36,000	20	600	12	360	47	30,600	1.3	21,400	1.0	3,600	2.5	680
Carroll	38	4,571,000	42	2,805,600	19	163,400	26	13,000	36	82,800	20	400	12	180	75	124,500	1.2	27,200	1.2	7,780	4.0	1,800
Cass	12	1,550,000	28	1,108,800	14	99,400	16	48,000	20	200,000	9	2,070	---	---	20	22,400	0.5	12,200	0.5	620	1.5	820
Cedar	51	5,615,000	50	1,940,000	18	30,600	23	4,600	35	455,000	33	18,480	---	---	78	95,900	1.8	70,700	1.8	250	4.0	280
Cerro Gordo	39	3,830,000	40	2,956,000	16	48,000	15	750	26	52,500	31	3,100	12	1,080	109	140,600	1.6	45,900	1.2	11,970	5.0	600
Cherokee	44	5,496,000	47	3,684,800	23	1,100	22	1,100	37	88,500	20	800	---	---	108	102,600	1.4	31,800	1.0	7,900	3.0	6,900
Chickasaw	30	1,794,000	45	3,105,000	16	99,200	---	---	30	75,000	20	8,600	12	1,200	115	104,600	1.8	56,700	1.5	16,840	3.0	30
Clarke	24	1,541,000	34	873,800	17	34,000	16	36,800	35	7,000	17	1,870	---	---	90	26,100	0.8	17,300	1.0	30	1.5	40
Clay	42	4,893,000	47	3,666,000	17	18,700	20	2,600	34	91,800	---	---	10	4,050	65	44,200	1.5	30,400	1.5	20,580	3.5	2,280
Clayton	43	3,182,000	38	2,394,000	24	285,600	19	47,500	37	444,000	21	10,500	---	---	72	75,600	1.5	9,200	1.5	1,890	3.0	150
Clinton	44	4,875,000	43	1,960,800	18	167,400	19	152,000	33	330,000	19	32,110	---	---	64	59,500	1.4	67,500	1.5	2,380	3.6	300
Crawford	28	4,203,000	40	2,640,000	21	609,000	26	88,400	32	144,000	23	3,680	---	---	61	86,600	1.5	61,400	1.2	6,290	2.8	11,560
Dallas	29	4,046,000	46	2,778,400	18	21,600	21	252,000	35	42,000	20	1,600	---	---	41	21,700	1.3	21,300	1.3	3,110	2.7	940
Davis	34	2,030,000	46	1,035,000	19	28,500	21	52,500	32	3,200	12	7,920	---	---	73	46,600	1.3	56,200	---	---	1.2	50
Decatur	18	1,296,000	36	921,600	17	17,000	18	63,000	15	1,500	12	8,640	---	---	42	12,600	0.7	18,100	0.7	90	1.5	210
Delaware	30	2,613,000	42	2,503,200	15	34,500	20	1,800	25	220,000	20	30,800	---	---	50	56,000	0.8	26,600	1.1	7,900	3.0	180
Des Moines	50	3,285,000	44	1,196,800	21	25,200	24	120,000	28	8,400	21	44,300	---	---	100	72,000	1.4	25,600	1.4	100	3.0	720
Dickinson	37	2,427,000	41	1,869,600	15	90,500	20	2,000	33	46,200	16	320	9	5,400	95	55,100	1.6	20,500	1.1	13,260	3.0	630
Dubuque	42	2,827,000	43	2,214,500	21	193,200	20	10,000	38	167,200	19	5,700	---	---	85	179,400	1.3	68,600	1.4	8,400	3.0	270
Emmet	41	2,944,000	45	2,470,500	16	24,000	20	1,000	35	49,600	23	2,990	13	5,700	82	40,200	1.3	20,800	1.2	10,200	3.0	320
Fayette	40	3,520,000	47	3,481,000	20	152,000	25	5,000	33	287,000	22	8,500	5	160	92	113,200	1.8	96,500	1.2	12,240	3.0	120
Floyd	38	3,393,000	36	2,527,200	16	48,000	19	950	32	67,200	17	12,240	5	580	103	128,800	1.7	54,200	0.9	9,370	3.0	60
Franklin	35	3,976,000	42	3,540,600	17	34,000	20	1,000	26	65,000	15	1,800	12	120	89	135,300	1.5	57,600	1.1	3,310	3.0	300
Fremont	21	2,733,000	25	827,500	13	26,000	20	144,000	20	6,000	15	5,100	---	---	32	18,900	1.2	7,000	1.5	3,340	3.2	24,480
Greene	37	3,058,000	37	2,590,000	14	28,000	14	12,600	35	24,500	30	600	---	---	51	29,100	1.0	19,700	0.8	4,020	2.5	2,750
Grundy	36	3,827,000	37	2,656,600	13	15,000	16	1,600	32	96,000	22	880	---	---	51	83,100	1.5	34,800	1.0	5,520	3.0	90
Guthrie	26	2,870,000	31	1,438,400	16	62,400	20	20,000	25	37,500	18	360	12	60	36	22,700	1.0	21,700	1.1	3,650	2.8	780
Hamilton	34	4,400,000	40	3,548,000	17	17,000	14	5,600	29	29,000	22	440	11	110	58	41,800	1.0	21,300	1.0	6,100	3.0	450
Hancock	36	3,899,000	44	3,905,600	17	98,600	12	600	34	102,000	25	7,750	11	5,060	125	131,200	1.3	31,100	1.2	26,160	3.0	330
Hardin	37	4,033,000	42	3,003,000	16	52,800	16	800	30	75,000	15	1,500	---	---	55	51,700	1.4	36,700	1.0	5,360	5.0	550
Harrison	18	2,759,000	34	1,030,200	16	480,000	18	77,400	16	41,600	35	8,750	---	---	53	50,400	1.0	6,200	1.6	10,450	2.8	32,480
Henry	45	3,465,000	47	1,541,600	20	30,000	25	55,000	34	6,500	18	20,880	---	---	89	26,700	2.0	51,600	2.0	20	3.0	270
Howard	23	1,254,000	25	1,407,500	15	33,000	21	4,200	19	93,100	16	4,960	8	2,360	70	65,100	1.5	53,200	1.0	11,930	3.0	30
Humboldt	42	4,024,000	47	3,102,000	19	32,300	19	2,850	35	63,000	25	750	12	900	95	47,500	1.1	18,600	0.9	5,130	2.2	460
Iowa	33	3,184,000	37	1,816,700	18	59,400	20	16,000	29	58,000	20	32,000	---	---	52	59,300	1.6	37,300	0.5	200	2.0	60
Jackson	48	2,808,000	42	1,222,200	18	59,400	18	28,800	29	75,400	19	14,440	---	---	150	192,000	1.5	79,400	1.5	1,420	2.5	150
Jasper	41	6,556,000	42	2,738,400	20	240,000	21	42,000	29	23,200	45	6,750	12	180	64	51,200	1.2	35,300	1.5	7,500	4.0	400
Jefferson	42	2,864,000	45	1,300,500	18	28,800	19	38,000	36	7,200	14	9,940	---	---	101	39,400	1.9	54,000	---	---	3.2	60
Johnson	45	5,122,000	46	4,000,000	19	45,600	24	24,000	37	56,700	20	26,400	---	---	76	78,300	1.6	62,100	1.0	550	3.0	180
Jones	46	3,272,000	40	1,488,000	15	81,000	18	9,000	30	193,000	10	6,500	---	---	800	287,000	2.0	89,600	2.0	440	3.2	60
Keokuk	43	4,777,000	41	1,652,000	20	210,000	25	35,000	32	9,600	19	7,800	---	---	78	60,100	1.7	60,700	1.7	70	3.2	130
Kossuth	39	7,192,000	42	5,989,200	18	66,000	12	1,200	35	129,500	25	2,500	9	14,040	92	165,600	1.4	43,300	1.0	29,340	3.0	750
Lee	41	4,446,000	39	955,500	21	33,600	23	62,100	27	13,500	18	137,340	---	---	84	102,500	1.4	40,000	---	---	2.7	620
Linn	45	4,964,000	52	3,078,400	19	152,000	17	3,400	35	115,500	23	15,410	---	---	62	90,500	1.3	52,100	1.2	2,470	3.0	420
Louisia	47	2,961,000	45	1,147,500	15	15,000	24	187,200	---	---	17	38,760	---	---	112	47,000	1.5	23,600	1.4	210	5.0	250
Lucas	3	1,872,000	39	980,700</																		

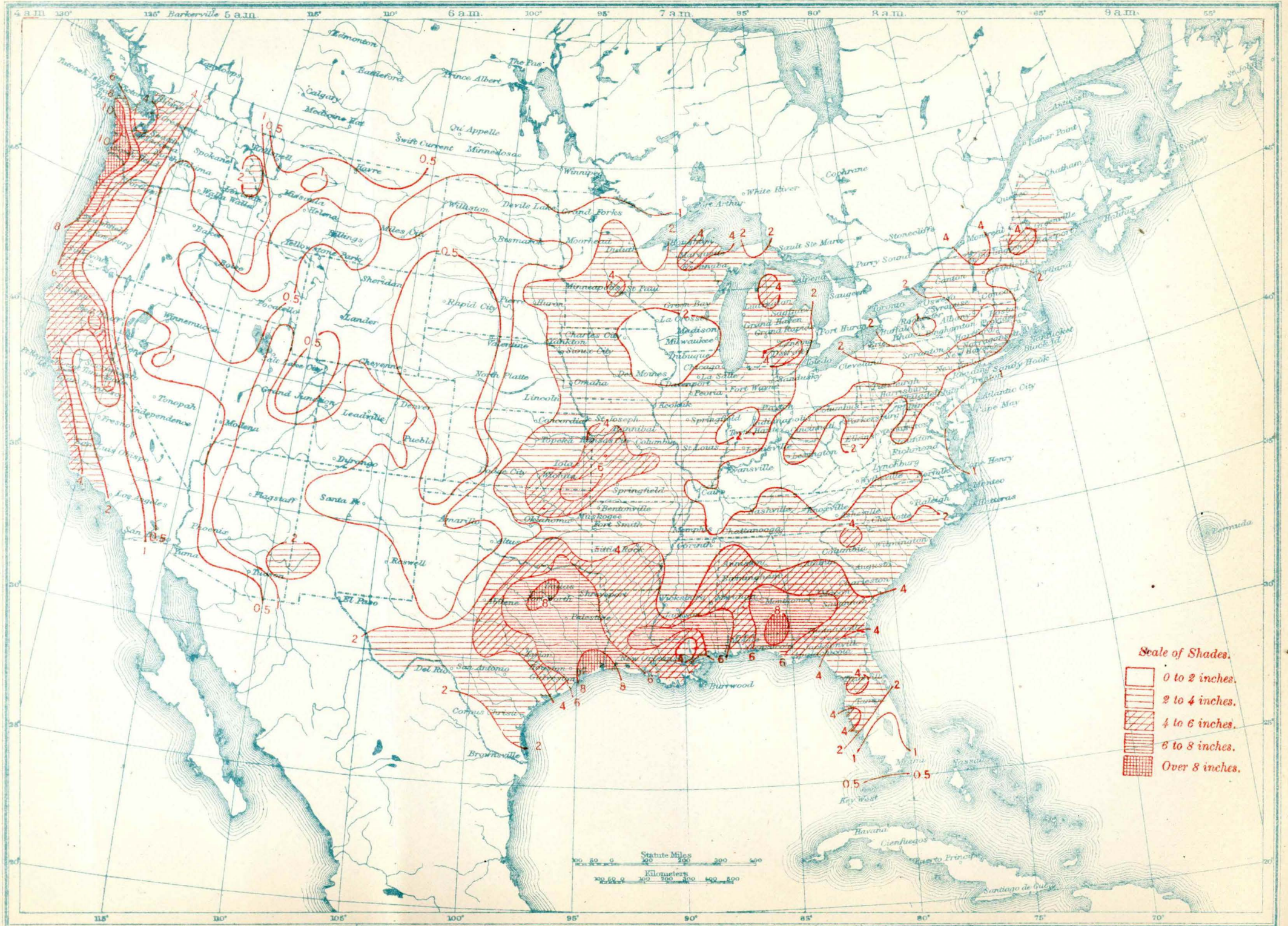
TOTAL PRECIPITATION NOVEMBER, 1918.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, November, 1918.



U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
CHARLES F. MARVIN, CHIEF

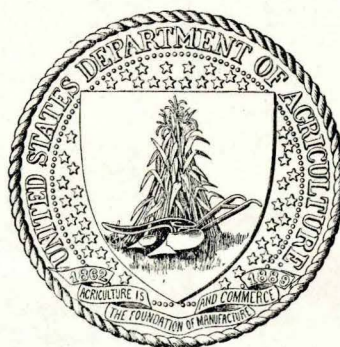
CLIMATOLOGICAL DATA

IOWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

DECEMBER, 1918
AND
Annual Summary for 1918

BY
CHARLES D. REED
METEOROLOGIST

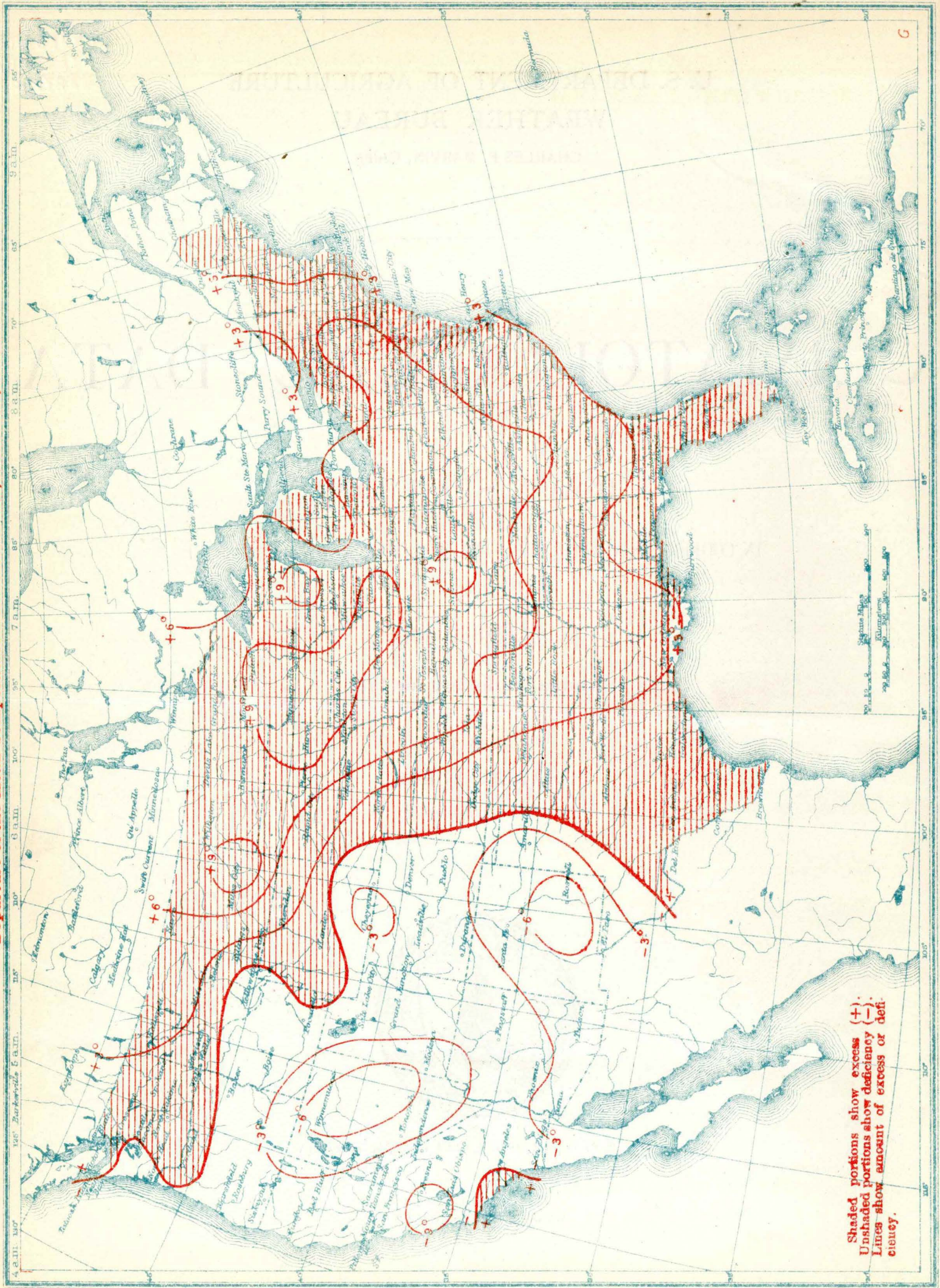


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DES MOINES, IOWA
WEATHER BUREAU OFFICE

51

Departure of the Mean Temperature from the Normal, December, 1918.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

IOWA SECTION

CHARLES D. REED, METEOROLOGIST

VOL. XXIX DES MOINES, IOWA, DECEMBER, 1918 No. 12

GENERAL SUMMARY.

This was the warmest December in the 29 years state-wide records have been compiled and was in striking contrast with December, 1917, which was the coldest. The excess in temperature was rather evenly distributed over the state and averaged 8.8 degrees. Precipitation was evenly distributed and averaged slightly above normal, the largest excesses being in the southeast counties, particularly portions of Mahaska, Louisa and Van Buren. Deficiencies occurred in the west-central counties and northeast to the Mississippi River.

Frost left the ground early in the month. The mild weather with precipitation above normal through the fall put roads in the worst condition in many years. As they were practically impassable for heavy traffic, comparatively little corn or other farm produce was marketed. Aside from this, outdoor occupations made unusual progress; fall plowing which had been delayed by labor shortage was brought up to or above normal, continuing in the north till the 21st, and in the south till the 24th; and corn husking was practically finished. Winter wheat made good growth and was pastured some in the southwest to check over-growth. Heavy snow covered the southeastern part of the state on the 24th, amounting to a foot or more in several counties. The ground was not frozen when the growing wheat was covered with this heavy snow blanket. While this is generally believed to be a favorable condition, some adverse opinion has been expressed. If the snow remains porous and does not become converted into an impervious ice sheet by thawing, harm can scarcely result. Fruit buds, though slightly swelled in the south, are believed to be generally safe. Dandelions bloomed in the extreme southeast. Fuel and feed were saved. Livestock subsisted out of doors and was in good condition generally, except hogs which were widely afflicted with influenza, which caused thinness but little mortality. A cold wave preceded by general snow was sweeping southeastward over the state at the close of the month.

PRESSURE.

The mean pressure (reduced to sea level) for the state was 30.04 inches. The highest recorded was 30.51 inches, at Dubuque, on the 18th and at Sioux City on the 23d, and the lowest was 29.29 inches at Sioux City on the 9th. The monthly range was 1.22 inches.

TEMPERATURE.

The mean temperature for the state, as shown by the means of 98 stations, was 32.7°, or 8.8° higher than the normal. By divisions, three tiers of counties to the division, the mean temperatures were as follows: Northern, 30.5°, or 9.3° higher than the normal; Central, 32.8°, or 8.7° higher than the normal; Southern, 34.7°, or 8.3° higher than the normal. The highest monthly mean was 37.8° at Keokuk, and the lowest monthly mean was 28.9° at Postville. The highest temperature reported was 68° at Columbus Junction, on the 8th, and the lowest temperature reported was -7°, at Maquoketa, on the 26th, and at Thurman on the 25th, the range for the state being 75°.

HUMIDITY.

The average relative humidity for the state at 7 a. m. was 86 per cent, and at 7 p. m. it was 79 per cent. The mean for the

month was 82 per cent, or about 2 per cent above normal. The highest monthly mean was 89 per cent at Charles City, and the lowest reported was 78 per cent, at Keokuk and at Omaha, Neb.

PRECIPITATION.

The average precipitation for the state, as shown by the records of 105 stations, was 1.30 inches, or 0.08 inch more than the normal. By divisions, the averages were as follows: Northern, 1.11 inches, or 0.04 inch more than the normal; Central, 1.24 inches, or 0.01 inch less than the normal; Southern, 1.55 inches, or 0.08 inch more than the normal. The greatest amount, 3.30 inches, occurred at Oskaloosa, and the least, 0.37 inch at LeMars. The greatest amount in any 24 consecutive hours, 1.55 inches, occurred at Oskaloosa, on the 24th.

SNOW.

The average snowfall for the state was 5.1 inches, or 1.1 inches below normal. The greatest amount, 16.3 inches, occurred at Columbus Junction, and the least, a trace, at 5 stations.

WIND.

The prevailing direction of the wind was from the northwest. The highest velocity reported was at the rate of 49 miles an hour from the northwest, at Sioux City, on the 31st.

SUNSHINE AND CLOUDINESS.

The average percentage of the possible amount of sunshine was 38 per cent, or about 10 per cent less than the normal. The per cent of the possible amount at the regular weather bureau stations was as follows: Charles City, 23; Davenport, 34; Des Moines, 40; Dubuque, 34; Keokuk, 54; Sioux City, 41; and Omaha, Neb., 40 per cent. The average number of clear days was 9; partly cloudy, 8; cloudy, 14.

COMPARATIVE DATA FOR THE STATE—DECEMBER.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	29.1	+5.2	72	-18	0.45	-0.77	1.40	0.00	-----	3	17	7	7
1891	32.3	+8.4	72	-14	2.41	+1.19	4.50	1.21	-----	6	14	9	5
1892	18.9	-5.0	68	-29	1.65	+0.43	3.04	0.20	10.9	8	9	8	14
1893	22.0	-1.9	70	-21	1.31	+0.09	2.80	0.46	7.6	7	10	9	12
1894	30.1	+6.2	73	-17	0.95	-0.27	1.75	0.25	1.3	3	15	6	10
1895	25.4	+1.5	63	-16	1.63	+0.41	5.74	0.00	4.1	5	11	9	11
1896	30.8	+6.9	70	-10	0.65	-0.57	1.79	T	1.6	4	10	8	13
1897	18.0	-5.9	60	-25	1.65	+0.43	3.22	0.61	15.9	6	11	7	13
1898	18.1	-5.8	60	-25	0.48	-0.74	1.70	T	3.9	3	15	8	8
1899	22.6	-1.3	75	-19	1.61	+0.39	4.28	0.10	4.3	5	12	9	10
1900	26.9	+3.0	63	-10	0.45	-0.77	2.70	T	2.4	4	13	6	12
1901	20.5	-3.4	64	-31	0.93	-0.29	2.75	0.65	5.4	6	10	9	12
1902	20.1	-3.8	59	-20	2.23	+1.01	5.51	0.67	12.9	8	9	6	16
1903	19.6	-4.3	58	-27	0.41	-0.81	1.96	T	3.7	4	11	9	11
1904	23.4	-0.5	67	-19	1.44	+0.22	3.68	0.06	12.3	5	12	7	12
1905	27.0	+3.1	62	-11	0.52	-0.70	1.69	T	4.2	3	19	6	6
1906	25.7	+1.8	65	-9	1.43	+0.21	2.81	0.37	1.4	6	11	7	13
1907	28.8	+4.9	62	-9	1.00	-0.22	2.28	0.05	4.7	5	10	7	14
1908	27.2	+3.3	67	-17	0.57	-0.65	2.07	0.65	3.8	3	15	8	8
1909	15.1	-8.8	60	-26	2.18	+0.96	6.10	0.89	13.7	11	10	5	16
1910	23.4	-0.5	57	-14	0.37	-0.85	1.39	0.01	3.0	3	15	7	9
1911	27.9	+4.0	60	-24	2.57	+1.35	4.43	0.62	12.6	7	13	6	12
1912	29.2	+5.3	64	-13	0.74	-0.48	1.75	0.10	1.1	3	18	7	6
1913	32.0	+8.1	65	-13	1.02	-0.20	4.73	0.00	1.3	4	15	5	11
1914	15.7	-8.2	63	-31	1.30	+0.80	2.24	0.57	11.1	9	10	6	15
1915	25.0	+1.1	56	-10	0.69	-0.53	1.70	T	4.6	5	11	8	12
1916	18.7	-5.2	67	-25	1.04	-0.18	2.00	0.35	6.7	6	15	8	8
1917	14.5	-9.4	62	-40	0.56	-0.66	1.70	0.14	6.7	6	10	9	12
1918	32.7	+8.8	68	-7	1.30	+0.08	3.30	0.37	5.1	8	9	8	14

T indicates an amount too small to measure, or less than .005 inch precipitation and less than .05 inch snowfall.

Climatological Data for December, 1918

Stations.	Counties.	Elevation—feet.	Length of record—years	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.					Number of Days.			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Precipitation 0.1 in. or more.	Clear.	Partly cloudy.			Cloudy.	
Northern Division																					
Algona	Kossuth	1,213	45	31.2	+ 9.9	50	5†	2	31	24	1.18	+0.21	0.55	0.2	5	11	4	16	sw.	W. E. Laird	
Allison	Butler	1,045	6	30.0	—	52	16	4	25	27	1.07	—	0.33	3.0	7	5	8	18	se.	J. A. Bell.	
Alta	Buena Vista	1,518	27	30.7	+ 9.7	59	8	2	31	30	0.96	+0.50	0.43	3.3	10	9	9	13	nw.	David E. Hadden.	
Alta (near)	Buena Vista		22								0.96	+0.07	0.30	T.	8					Warren Minard.	
Alton	Sioux	1,305	13	30.0	+ 8.7	56	8	2	31	29	1.16	—	0.55	1.2	9	10	10	11	nw.	W. S. Slagle.	
Belmond	Wright	1,205	8	30.6	—	53	8	2	25	25	1.22	—	0.55	2.1	10	3	6	19	se.	Geo. P. Hardwick.	
Britt	Hancock	1,236	21	30.0	+ 9.3	52	8	2	31	27	0.85	+0.02	0.25	0.7	11	7	2	15	n.	L. M. Goodman.	
Charles City	Floyd	1,015	27	30.0	+11.0	52	21	8	25	23	1.19	—0.09	0.38	4.9	9	4	6	21	se.	U. S. Weather Bureau.	
Decorah	Winnebago	875	25	30.0	+ 7.8	51	21	10	25†	21	1.13	—0.21	0.50	14.0	8	9	3	19	s.	Wm. F. Baker.	
Estherville	Emmet	1,298	23	29.6	+ 9.7	55	8	2	31	29	0.94	+0.13	0.60	T.	3	9	16	6	nw.	A. O. Peterson.	
Fayette	Fayette	1,003	28	29.6	+ 8.7	53	21	5	26	25	0.51	—1.02	0.20	2.5	5	10	5	16	se.	R. Z. Latimer.	
Forest City	Winnebago	1,226	24	30.0	+10.4	52	8	4	25	28	1.24	+0.27	0.62	2.0	6	8	3	20	e.	Eugene Secor.	
Humboldt	Humboldt	1,095	30	31.7	+ 8.5	56	8	3	31	27	1.73	+0.87	0.60	2.5	5	9	17	se.	A. C. Snitkey.		
Inwood	Lyon	1,474	14	29.1	+ 9.1	59	8	3	25†	31	1.02	+0.34	0.48	1.4	10	14	5	12	nw.	F. B. Hanson.	
Lansing	Allamakee	632	12								0.48	—0.48	0.11	2.0	8					Chas. R. Serene.	
LeMars	Plymouth	1,224	22	31.9	+ 9.4	60	7	1	31	31	0.37	—0.56	0.19	0.5	5	11	7	13	nw.	G. A. C. Clarke.	
Mason City	Cerro Gordo	1,148	21					4	2†	42†	1.33	—0.07	0.64	1.1	8	13	6	12	nw.	North'n Sugar Corp'n.	
New Hampton	Chickasaw	1,169	21	29.8	+ 8.9	50	16†	8	25	21	0.99	—0.14	0.50	2.5	8	9	4	18	se.	A. F. Kemman.	
Nora Springs	Floyd	1,064	5	32.8		56	16†	3	29	28	1.69		0.59	0.9	8	7	5	15	s.	Arthur Betts.	
Northwood	Worth	1,222	22								2.05	+0.81		2.0						Chas. Dwelle.	
Pocahontas	Pocahontas	1,248	14	31.2	+ 9.3	55	8	2	31	24	0.75	—0.11	0.30	0.7	8	9	8	14	nw.	F. E. Hronek.	
Postville	Clayton	1,180	19	28.9	+ 7.5	51	19	5	26	24	0.95	—0.51	0.28	3.1	12	4	10	17	se.	F. L. Williams.	
Rock Rapids	Lyon	1,358	19	29.3	+ 9.7	54	8	2	31	29	1.33	+0.75	0.51	2.1	11	13	8	10	nw.	J. K. Medberry.	
Sanborn	O'Brien	1,553	4	29.6		54	8	1	25†	29	1.39		0.77	0.5	8	7	9	15	ne.	Has. W. Dow.	
Sibley	Oceola	1,212	25			55*	8	3*	25†	31*	1.07	+0.27	0.96	1.7	3					J. H. Olds.	
Sioux Center	Sioux	1,426	19	30.6	+ 9.5	56	7	6	31	30	1.54	+0.65	0.62	2.0	7	11	2	18	nw.	J. deRuyter.	
Storm Lake	Buena Vista	1,440	29	32.2	+ 9.8	59	8	3	25	27	0.76	—0.06	0.31	0.5	6	13	5	13	nw.	Geo. H. Fracker.	
Washita	Cherokee	1,157	20	32.4	+ 9.9	57	8	1	25	30	1.35	+0.55	0.40	2.0	7	11	6	14	n.	H. L. Felter.	
Waverly	Bremer	948	22	32.0	+ 9.2	60	21	7	25	29	0.86	—0.40	0.23	2.5	10	7	9	15	nw.	H. Arnold.	
West Bend	Palo Alto	1,197	25	30.6	+ 8.8	54	8	0	25	31	1.31	+0.08	0.52	T.	4	8	7	16	nw.	Jos. Dorweiler.	
Means and extremes.					30.5	+ 9.3	60	7†	6	31	42	1.11	+0.04	0.96	2.1	8	9	7	15	nw.	
Central Division																					
Ames	Story	926	42	32.6	+ 8.2	54	21	4	25	24	1.20	—0.02	0.56	4.0	10	15	4	12	sw.	Iowa State College.	
Audubon	Audubon	1,301	24																	V. M. Jones.	
Baxter	Jasper	998	18	32.0	+ 7.7	54	8†	3	26	23	0.59	—0.41	0.15	2.7	6	4	7	20	nw.	Rev. Paul Traeger.	
Belle Plaine††	Benton	886	28	32.5	+ 8.6	62	9	0	26	28	1.17	—0.26	0.42	8.8	7	8	11	12	se.	O. C. Burrows.	
Boone	Boone	1,134	13	31.0	+ 7.9	46	7	3	25	20	0.74	—0.23	0.21	2.3	9	9	6	16	s.	Carl Fritz Henning.	
Carroll	Carroll	1,265	28	32.9	+ 9.7	62	8	0	25	27	1.04	+0.02	0.27	1.4	8	12	3	16	nw.	Mrs. J. J. Wolfe.	
Carroll Rapids	Linn	733	36	33.4	+ 9.4	60	9	2	26	23	1.34	—0.06	0.74	7.8	6	10	5	16	s.	R. S. Toogood.	
Clinton	Clinton	593	45	33.1	+ 7.4	58	8	1	26	28	1.86	+0.01	0.63	9.1	11	5	7	19	se.	H. Burde.	
Davenport	Scott	586	47	35.5	+ 8.3	64	9	8	26	23	1.89	+0.20	0.87	8.8	11	4	10	17	e.	U. S. Weather Bureau.	
Delaware	Delaware	1,083	27	31.4	+ 9.4	54	8†	0	26	25	1.32	—0.02	0.33	7.0	7	11	5	15	s.	Nettie E. Ball.	
Denison	Crawford	1,180	24	33.8	+ 9.3	59	8	0	25	26	0.55	—0.38	0.22	T.	3	12	2	17	n.	Emma Brogden.	
Des Moines	Polk	861	39	34.2	+ 8.5	58	8	5	25	26	1.35	+0.04	0.44	6.9	10	6	9	16	nw.	U. S. Weather Bureau.	
Dubuque	Dubuque	639	45	33.0	+ 8.5	55	8	5	26	23	1.90	+0.18	0.85	10.7	13	3	9	19	s.	U. S. Weather Bureau.	
Fort Dodge	Webster	1,126	18	31.4	+ 9.5	57	8	4	25†	32	1.40	+0.78	0.60	1.0	5	8	5	18	se.	J. F. Monk.	
Grinnell	Poweshiek	1,023	24	33.0	+ 7.5	57	9	4	26	27	1.14	+0.01	0.45	6.5	7	9	8	14	nw.	D. W. Brainard.	
Grundy Center	Grundy	976	27	32.4	+ 8.7	53	8	6	25†	30	1.30	+0.12	0.30	3.5	8	13	3	15	se.	M. G. Heiberger.	
Guthrie Center	Guthrie	1,077	23	33.6	+ 8.4	63	8	1	25	32	1.32	+0.14	0.25	3.0	10	12	7	12	sw.	C. T. Harney.	
Harlan	Shelby	1,182	19	32.6	+ 8.8	60	8	2	25	28	0.98	—0.08	0.50	2.0	6	20	2	9	s.	E. L. Tilton.	
Independence	Buchanan	921	54	30.9	+ 8.1	52	16†	1	26	29	0.98			9	2	20	2	20	s.	Dr. M. A. Fleming	
Iowa City	Johnson	683	57	33.9	+ 9.8	65	9	0	26	30	1.62	+0.01	0.54	9.5	10	4	13	14	sw.	Prof. J. F. Reilly.	
Iowa Falls	Hardin	1,107	25	30.8	+ 9.5	54	8	3	25	26	0.82	—0.55	0.27	1.4	8	9	6	16	nw.	J. B. Parmelee.	
Jefferson	Greene	1,052	19	33.6†	+ 9.4	58†	8	0†	25	28†	1.37		0.48	2.5	8	13	3	15	sw.	Will I. Lyon.	
LeClaire	Scott	576	18								1.99	+0.66	0.50	8.4	13					Margaret T. Disney.	
Little Sioux	Harrison	1,040	13	34.4	+ 9.0	64	8	5	25	33	0.89	+0.02	0.28	2.0	9	10	6	15	se.	Geo. H. Gibson.	
Logan	Harrison	928	51	35.2	+10.0	61	7†	2	31	35	0.82	—0.36	0.25	2.0	6	13	7	11	sw.	Mary Jean Stern.	
Maquoketa	Jackson	688	17	32.6	+ 7.8	59	8	7	26	31	1.75	+0.21	0.42	6.0	8	10	4	17	nw.	Ira H. Stephens.	
Marshalltown	Marshall	947	26	32.9	+ 9.8	57	16	5	26	29	0.81	—0.54	0.23	4.0	9	10	3	18	nw.	C. F. W. Kothenbeutel.	
Monroe	Jasper	922	6	32.5		55	16	3	26	24	1.74		0.61	7.6	8	8	3	20	s.	J. A. Dibel.	
Muscataine	Muscataine	554	58								1.53	—0.51	0.64	9.1	9					Wm. F. Molis.	
Olin	Jones	760	20	32.0	+ 7.0	53	22	4	26	24	1.40	—0.09	0.40	6.0	5	9	11	11	sw.	Dr. F. W. Port.	
Onawa	Monona	1,051	18	33.7		63	7	2	25	35	0.71	—0.44	0.40	T.	5	15	1	15	n.	Mrs. H. E. Colby.	
Perry	Dallas	975	17	32.4	+ 7.6	58	8	2	25	28	1.01	—0.18	0.25	2.6	9	9	8	14	nw.	Mrs. C. E. Anthony.	
Rockwell City††	Calhoun	1,134	22	32.4	+ 8.5	57	8	2	25	26	0.84	—0.21	0.22	1.8	11	9	4	18	nw.	A. W. Melsaac.	
Sac City	Sac	1,344	42	31.6	+ 7.8	57	8	2	25†	33	1.17	+0.02	0.50	1.2	7	9	9	13	s.	F. P. Kressler.	
Sioux City	Woodbury	1,135	29	32.2	+ 9.6																

Climatological Data for December, 1918—Continued

Stations.	Counties.	Elevation—feet.	Length of record—years.	Temperature, in Degrees Fahrenheit.						Precipitation, in inches.				Number of Days.				Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation .01 in. or more.	Clear.	Partly cloudy.		Cloudy.	Prevailing direction of wind.	
<i>Southern Division</i>																					
Afton	Union	1,212	24	34.2	+ 8.0	57	8†	4	25	24	1.30	-0.04	0.40	5.0	5	8	12	11	sw.	J. E. Deltrick.	
Albia	Monroe	959	20	35.2	+ 9.9	58	9	3	25†	30	1.42	+0.27	0.60	9.5	6	5	10	16	nw.	F. H. Holmes.	
Allerton	Wayne	1,122	16	33.4	+ 5.9	59	9	0	26	29	1.32	+0.04	0.40	7.2	6	12	8	11	s.	James O. Huston.	
Atlantic	Cass	1,164	27	33.6	+ 8.8	62	8	1	25	26	1.34	+0.14	0.32	3.3	14	5	8	18	sw.	Thos. H. Whitney.	
Bedford	Taylor	1,122	18	34.2	+ 9.2	60	9	1	25	26	1.04	-0.08	0.48	6.2	6	11	3	17	se.	E. E. Healy.	
Bloomfield	Davis	881	11	35.4	---	60	9	0	26	27	2.64	+0.87	1.00	13.0	9	1	20	10	w.	V. G. Warner.	
Bonaparte	Van Buren	565	27	35.6	+ 7.7	63	9	1	26	29	1.37	+0.02	0.50	16.0	7	14	3	14	e.	Bruce R. Vale.	
Burlington	Des Moines	544	22	37.3	+ 9.4	65	9	5	26	27	1.92	+0.14	1.00	10.0	6	12	7	12	sw.	Mrs. Edna M. Donnelly.	
Centerville	Appanoose	1,013	13	34.8	---	59	8	2	26	29	1.47	---	0.55	11.4	7	13	7	11	sw.	Leo. J. Allen.	
Chariton	Lucas	1,042	23	33.2	+ 6.8	58	9	0	25†	30	1.24	-0.08	0.50	6.0	4	8	12	11	se.	C. C. Burr.	
Clarinda	Page	1,009	28	34.9	+10.2	65	15	1	25	37	1.18	+0.01	0.44	4.5	5	8	11	12	nw.	A. S. Van Sandt.	
Columbus Jet	Louisa	595	17	35.2	+ 7.5	68	8	3	26	35	2.33	+1.02	1.02	16.3	8	19	2	10	s.	J. B. Johnston.	
Corning	Adams	1,117	26	34.2	+ 9.5	59	8	1	25	23	1.47	+0.13	0.50	8.0	6	11	0	20	nw.	Jerome Smith.	
Corydon	Wayne	1,101	25	34.6	+ 7.2	58	8†	1	25	28	1.57	+0.15	0.60	7.0	6	8	13	10	sw.	May C. Miller.	
Creston	Union	1,312	13	34.4	+ 9.7	59	10	1	25	29	0.66	---	0.27	2.5	4	---	---	---	---	---	Mrs. Tillie E. McConnell.
Cumberland	Cass	---	19	---	---	---	---	---	---	---	0.57	-0.53	0.37	2.0	2	11	9	11	sw.	J. H. Reppert.	
Earlham	Madison	1,126	16	33.5	+ 8.1	59	8	0	25	28	0.93	-0.48	0.18	4.0	7	10	6	15	nw.	Geo. Phillips.	
Fairfield	Jefferson	780	34	35.4 ^b	+ 8.2	65 ^c	9	6	26	34 ^d	2.36	+0.67	1.00	11.0	7	---	---	---	nw.	Prof. R. M. McKenzie.	
Glenwood	Mills	1,100	21	35.1	---	60	5†	1	25	29	1.35	---	0.42	5.1	7	9	6	16	ne.	Dr. Geo. Mogridge.	
Greenfield	Adair	---	26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Frank A. Ward.
Indianola	Warren	969	26	33.8	+ 7.5	59	8	3	25	26	1.39	-0.06	0.43	7.1	7	10	2	19	nw.	Prof. J. L. Tilton.	
Keokuk	Lee	614	47	37.8	+ 8.4	66	9	6	26	29	2.10	+0.23	0.98	14.5	10	8	14	9	sw.	U. S. Weather Bureau.	
Keosauqua	Van Buren	644	26	35.2	+ 3.5	64	9	2	26	29	2.60	+1.17	1.23	16.5	10	6	9	16	se.	J. H. Landes.	
Knoxville	Marion	920	23	33.9	+ 7.4	59	8	1	26	29	1.45	+0.08	0.40	7.5	6	9	7	15	nw.	W. J. Casey.	
Lacona	Warren	---	19	---	---	---	---	---	---	---	2.40	+0.70	0.60	9.0	7	6	18	7	---	---	J. B. Alter.
Lamoni	Decatur	1,100	11	34.2	+ 7.5	62	8	1	25	34	1.26	---	0.40	6.0	5	14	4	13	se.	Ed. D. Moore.	
Lenox	Taylor	1,250	23	34.6	+ 8.9	62	8	2	25	23	1.05	-0.08	0.30	3.2	9	9	11	11	s.	J. L. Hurley.	
Mount Ayr	Ringgold	1,236	25	34.1	+ 7.1	58	5†	2	25	28	1.37	-0.02	0.49	6.0	5	11	6	14	nw.	Alex. Maxwell.	
Mt. Pleasant	Henry	729	37	35.8	+ 8.0	65	9	1	26	30	1.99	+0.63	1.20	16.0	6	8	8	15	sw.	John H. Jericho.	
Murray	Clarke	1,216	27	34.2	+ 8.0	60	8	3	25	26	1.16	+0.04	0.30	5.5	7	6	6	19	sw.	M. T. Ashley.	
Northboro	Page	1,120	6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	J. M. Darby.
Oakland	Pottawattamie	1,150	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	M. E. Gray.
Oskaloosa	Mahaska	835	42	34.6	+ 8.5	61	8	1	26	27	3.30	+2.15	1.55	15.2	9	7	7	17	se.	Roy R. Robinson.	
Ottumwa	Wapello	849	23	35.2 ^a	---	62 ^a	8	0 ^a	31	30 ^a	2.15	+0.85	1.20	14.0	6	5	13	13	sw.	Eugene O. Field.	
Pella	Marion	877	15	34.1	+ 7.5	60	8	4	26	30	0.79	-0.29	0.35	7.0	5	12	4	15	s.	J. H. Ver Steeg.	
St. Charles	Madison	1,070	17	34.9	+ 7.4	61	8	4	25	28	1.24	-0.23	0.35	5.0	6	12	5	14	sw.	R. D. Minard.	
Shenandoah	Page	---	---	36.5 ^b	---	65 ^b	9	1 ^b	25	30 ^b	1.66	---	0.35	4.0	5	---	---	---	nw.	L. L. Hunter.	
Sigourney	Keokuk	877	22	34.0	+ 7.3	62	9	2	26	29	2.22	+0.99	1.36	15.2	9	10	9	12	nw.	W. E. Utterback.	
Stockport	Van Buren	754	16	34.8	+ 7.2	64	9	0	26	33	1.92	+0.64	1.00	13.0	9	9	7	15	s.	C. L. Beswick.	
Thurman	Fremont	---	21	34.6	+ 8.9	60	9	7	25	29	1.61	+0.26	0.65	5.0	6	7	12	12	nw.	C. R. Paul.	
Washington	Washington	769	36	35.0	+ 7.9	66	9	0	26	30	1.27	-0.09	0.36	8.5	9	8	12	11	sw.	Wm. A. Cook.	
Winterset	Madison	1,129	27	34.6	+ 8.5	60	8	3	25	25	1.36	+0.06	0.45	9.0	6	17	7	7	nw.	H. S. Ely.	
Omaha, Nebr.	---	1,040	47	34.8	+ 7.7	61	7	0	31	27	0.72	-0.19	0.22	3.2	8	5	11	15	nw.	U. S. Weather Bureau.	
Means and extremes	---	---	---	34.7	+ 8.3	68	8	7	25	37	1.55	+0.20	1.55	8.5	7	9	9	13	nw.	---	
State means and extremes	---	---	---	32.7	+ 8.8	68	8	7	25†	42	1.30	+0.68	1.55	4.9	8	9	8	14	nw.	---	

The departure from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means. Reference letters ^a, ^b, ^c, etc., appearing in the table indicate the number of days missing; for example, ^b represent two days, etc. †Also other dates. ‡Received too late to be included in means and summaries. T. Precipitation is less than 0.01 inch rain or melted snow.

ERRATA.

Report for January, 1918: page 4; Rock Rapids; temperature departure published -5.8°, should be, -9.8°; Denison; temperature departure published -12.8°, should be -11.9°. Report for February, 1918: page 16; Forest City; precipitation departure published +0.54 inch, should be +0.50 inch. Report for May, 1918: page 52; Algona; precipitation departure published +2.83 inches, should be +2.77 inches; page 53; Lenox; precipitation departure published +0.23 inch, should be +0.17 inch; Pella; precipitation departure published +0.54 inch, should be +0.50 inch. Report for June, 1918: Page 64; Cedar Rapids; temperature departure published +1.3°, should be -1.3°. Report for July, 1918: page 76; Baxter; temperature departure published +0.4°, should be -0.4°. Report for August, 1918: page 88; Decorah; precipitation departure published +1.30 inches, should be +1.28 inches. Report for September, 1918: page 100; Baxter; precipitation departure published -1.57 inches, should be -2.10

inches; Belle Plaine; precipitation departure published -2.10 inches, should be -1.57 inches; Denison; temperature departure published -5.5°, should be -5.1°. Report for November, 1918: page 111; Des Moines; sunshine per cent published 50, should be 52.

MISCELLANEOUS PHENOMENA.

- Auroras: 2d, 7th, 8th, 25th, 29th, 31st.
- Fog: 1st, 8th, 9th, 10th, 13th, 14th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 29th, 30th.
- Hail: 1st, 30th.
- Halos, (lunar or solar): 1st, 2d, 7th, 15th, 16th, 17th, 19th, 25th, 31st.
- Parhelia: 31st.
- Sleet: 1st, 30th.
- Thunderstorms: 2d, 8th, 9th.

Daily Precipitation for December, 1918.

Stations	Watersheds	Date of Month																															Total																															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31																																
<i>Northern Division</i>																																																																
Algona	Des Moines								.55				.40						.05		.16		.02												1.18																													
Allison	Cedar	.10						.33				T.	.23							T.	.11	T.		.10			.10							T.	T.	1.07																												
Alta	Raccoon	.02						.43					.20	.05					.10		.20	.17		T.			.06							.02	.20	1.45																												
Alta (near)	Raccoon	.12						.30					.12	.08					.12	.12	.04	.06	T.				T.								T.	T.	0.96																											
Alton	Floyd							.55					.05	.03					T.	.06	.28	.07	T.				.05							.02	.05	1.16																												
Belmond	Iowa	T.		T.				.55	T.			T.	.25					T.	T.		.15	.05	T.	.02	.03		.08	.02	T.			.04	.03	1.22																														
Britt	Iowa	.05	.01	T.				.23				.08	.25							T.	.12	.04		T.	T.		.03	.01							T.	T.	0.55																											
Charles City***	Cedar	.06	T.					.38				.20							T.	.01	.12	.04		T.	T.	.09	.12	.01					.03	.15	1.19																													
Decorah	Mississippi	.06	.03					.19				.09									.15	.13											.05	.50	1.13																													
Estherville	Des Moines										.60		.27								.07						T.	T.	T.	T.						T.	T.	0.94																										
Fayette	Mississippi	T.										T.	.08	.10							.05	T.	.03		.10		T.	T.	T.						T.	T.	0.51																											
Forest City	Cedar							.62				.33	.04							.05	T.	.09	.08		T.		.11									T.	T.	1.24																										
Humboldt	Des Moines				T.	T.		.60					.28							T.	.30	.08															T.	T.	1.73																									
Inwood	Big Sioux		T.					.48	.11			T.					T.	T.		.06								.02	.02							.05	.03	1.02																										
Lansing	Mississippi	.11	.07					.07					.06								T.	.20	.03	.02			.02	.02										T.	T.	0.48																								
LeMars	Floyd											T.							.02	.04	.19	.07	T.	T.			T.	T.									T.	T.	0.37																									
Mason City	Cedar							.64	.02			.33	.04							.02	.09	.08					.11												T.	T.	1.33																							
New Hampton	Wapsipicon	.12						.50	.04			T.								T.	T.	T.	.11	.04			.05	.05										T.	T.	0.99																								
Nora Springs	Cedar	.24						.59				.20	.12							T.	.16	.24					.11												T.	T.	1.69																							
Northwood	Cedar	T.	T.					.60	*			*								*	*	1.25				.03		.05	.05										T.	T.	2.05																							
Pocahontas	Des Moines							.30				.03	.13						.04		.16	.05			T.		T.	T.											T.	T.	0.75																							
Postville	Mississippi	.05						.28	.07			.04	.11								.04	.08	.03			.17		.05	.05											T.	T.	0.95																						
Rock Rapids	Big Sioux							.51				.09	.06							.10	.02	.28	.16	.02				.05													T.	T.	1.33																					
Sanborn	Floyd							.77				.06									.10	.14	.17	.11				.02	.02												T.	T.	1.39																					
Sibley	Big Sioux	T.						.96																				.06	T.													T.	T.	1.07																				
Sioux Center	Floyd							.62														.45	.17	.10	T.			.10	.05													T.	T.	1.54																				
Storm Lake	Raccoon							.31				T.	.13							T.	.05	.15	.10		T.			.02															T.	T.	0.76																			
Washta	Little Sioux	.02						.40		.25										.20	.20	.08	T.	T.																				T.	T.	1.35																		
Waverly	Cedar	.05	T.					.23				T.	.15								.04	.14					.05		.10	.04	T.	T.													T.	T.	0.86																	
West Bend	Des Moines		T.					*	.52			*	.30								.07		.42		T.		T.	T.	T.																T.	T.	1.31																	
<i>Central Division</i>																																																																
Ames	Skunk	T.						.56				.15	.07									.13	.03			.13		.02	.01																	T.	T.	1.20																
Audubon	Nishnabotna							.06				.08	.10									.08	T.				.15		T.	T.																			T.	T.	0.59													
Baxter	Skunk	T.						.20				.05	.15	T.							T.			T.			.42		T.	.11	T.																			T.	T.	1.17												
Belle Plaine	Iowa	.07						.21				.04	.19								.02	.15	.02	T.		.04		.03	T.																					T.	T.	0.74												
Boone	Des Moines			T.				.24				.27									.03	.04				.23	.05	.03	T.																						T.	T.	1.04											
Carroll	Raccoon	T.						.20				T.	.19	.06								T.	.07	T.			.74		T.	.08	T.																				T.	T.	1.34											
Cedar Rapids	Cedar							.23				.15	.26	.11								.02	.23			.63																									T.	T.	1.86											
Clinton	Mississippi	.01	T.	T.				.15				.16	.19	.02								.02	.12		.10	.77		T.	.01	T.																						T.	T.	1.89										
Davenport***	Mississippi	.01	T.	T.				.26				.20										.22			.22				.03	T.																						T.	T.	1.32										
Delaware	Mississippi	.06						.20				.13									T.	T.	.22		T.		T.		.03	T.																							T.	T.	0.55									
Denison	Missouri							.06				.20	T.									.18	T.	T.	.07	.30		.02	T.	T.																							T.	T.	1.35									
Des Moines***	Des Moines	.03			T.			.49				.14	.06	T.								.04	.06	T.	.10	.75		T.	.01	.01	T.																							T.	T.	1.90								
Dubuque***	Mississippi	.05	.01	T.				.60	.10			.04	.21									T.	.60			.05	T.	.05	T.	.05	T.																								T.	T.	1.40							
Fort Dodge	Des Moines							.12				.04	.21									.12	.60		T.	T.	.45		T.	.05	T.																							T.	T.	1.14								
Grinnell	Iowa							.30				.12	.14									.05	.30			.30		.05		.05	T.																								T.	T.	1.30							
Grundy Center	Cedar	.04						.25				.12	.14									.04	.24	.20	.04	T.	.12		.10																										T.	T.	1.32							
Guthrie Center	Raccoon	.02						.14				.05	.50								.03	.20			.10		.10		.10																													T.	T.	.98				
Harlan	Nishnabotna	.11						.18				.12	.24	.11								.05	.04			.54		.05	T.																														T.	T.	1.62			
Independence	Wapsipicon	.05						.27	T.			.19	.09									.06	.07	T.		.05		.07	.02	T.																																T.	T.	0.82
Iowa City	Iowa							.48				.15	.12									T.	.24	.14	T.		.10		.04																																	T.	T.	1.37
Iowa Falls	Iowa	T.						.23				.01	.45	.15								.01	.12	.12		.50	.30		.03	.01</																																		

Daily Precipitation for December, 1918—Continued.

Stations	Watersheds	Date of Month																															Total			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
<i>Southern Division</i>																																				
Afton.....	Grand.....	T.								T.		.20	.40						T.		T.	.20				.20								.30	1.30	
Albia.....	Des Moines.....	T.										.15	.27	.10							.10				.60		T.	T.	T.					.29	1.42	
Allerton.....	Chariton.....									T.		.17	.40	.11							.06				.40									.18	1.32	
Atlantic.....	Nishnabotna.....	.10								.08		.08	.12							.10	.01	.32	.17	.01	.01			T.	.03			.01		.20	1.34	
Bedford.....	Missouri.....											.02	.48							.03				T.	.30	.01								.20	1.04	
Bloomfield.....	Mississippi.....	.04										.24	.28	.16							.16	.01			1.00				.25	T.				.50	2.64	
Bonaparte.....	Des Moines.....	.02	T.		T.					T.		.18	.19	.13							.06				T.	.50		T.	T.	T.				.29	1.37	
Burlington 	Mississippi.....		.05									.45	.26								.16				.60	.40			T.	T.				.19	1.92	
Centerville.....	Chariton.....	T.										.26	.25	.05							.09				.55			.09						.18	1.47	
Chariton.....	Chariton.....										.12	.50	T.								T.				.42									.20	1.24	
Clarinda 	Nodaway.....											.11	.21								.10	.32			.44	T.								1.18		
Columbus Jet.....	Iowa.....	T.							T.	.20		.21	.28	.10							.09				1.02			.03	T.	T.	T.			.40	2.33	
Corning.....	Nodaway.....	T.										.19	.20							.08	.20				.30									.50	1.47	
Corydon.....	Chariton.....	T.										.16	.40	.08							.07				.60				T.					.26	1.57	
Creston 	Missouri.....								.10	.04		*	.25	.08							T.				.27				T.	T.					0.66	
Cumberland.....	Nodaway.....									T.		T.									T.				.37									.20	0.57	
Earlham.....	Des Moines.....	.04								.10		.13	.14								T.				.16			T.	T.					.18	0.93	
Fairfield.....	Skunk.....	T.										.18	.10	.19	.10									.51	.08		T.	1.00						.03	2.36	
Glenwood.....	Missouri.....	T.										.02	.25							.15	.42	T.			.01	.20			T.	T.				.30	1.35	
Greenfield.....	Nodaway.....																																			
Indianola.....	Des Moines.....	.20								.08		.10	.16	T.								.14	T.	T.		.43								.28	1.39	
Keokuk***	Mississippi.....	.01	T.							.04		.31	.24	.01								.15	.03		.20	.78	T.	T.	T.	T.				.33	2.10	
Keosauqua.....	Des Moines.....	.05							.04	.05		.24	.45	.08								.06	T.	T.	.03	1.20			T.	T.	T.				.40	2.60
Knoxville.....	Des Moines.....	T.								.08		.12	.38									.12				.40									.35	1.45
Lacona.....	Des Moines.....									.02		.15	.60	.45										.28		.60									.30	2.40
Lamoni.....	Grand.....	T.										.10	.40									.11				.35								.30	1.26	
Lenox.....	Missouri.....	T.								.10		.10	.30							.05		.10	.08		T.	.10								.20	1.05	
Mt. Ayr.....	Grand.....	T.										.11	.49									T.			.17										.40	1.37
Mt. Pleasant.....	Skunk.....											.18	.12									.05	.04			1.20									.40	1.99
Murray.....	Grand.....	.02								.11		*	.15	.20								T.	.18	T.		T.	.30		T.	T.					.20	1.16
Northboro.....	Tarkio.....																																			
Oakland.....	Nishnabotna.....																																			
Oskaloosa.....	Des Moines.....	.04			T.				.04			.48	.37	.10									.14	.04	T.		1.55		T.	T.	T.	T.	T.		.54	3.30
Ottumwa 	Des Moines.....	T.							.01			.30	.31									.13				1.20									.20	2.15
Pella.....	Skunk.....	T.			T.							.15	.18	T.									.05		T.	T.	.35		T.	T.	T.	T.	T.		.06	0.79
St. Charles.....	Des Moines.....	.03								.11			.35										.25				.30								.20	1.24
Shenandoah.....	Nishnabotna.....												.35							.01						T.	.20								.20	1.06
Sigourney.....	Skunk.....	.02			T.					.03		.11	.19	.21								.06	.02	T.		1.36	T.	T.	T.	T.					.22	2.22
Stockport.....	Skunk.....	.03								.02		.16	.18	.16								.06	.01			T.	1.00								.30	1.92
Thurman.....	Missouri.....	T.										T.	.32							.18		.65	T.	T.	.16	.08									.22	1.61
Washington.....	Skunk.....	.03							.01	.05			.28	.16									.09				.25								.36	1.27
Winterset.....	Des Moines.....	.05										.16	.16									.25				.29									.45	1.36
Omaha, Nebr.***	Missouri.....	.05							T.	T.		.03	.01								.06			.20	T.	T.	.04	.18		T.	T.				.15	0.72

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours at the time of observation.
 |||Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.
 ***Regular Weather Bureau Station; precipitation is for the 24 hour period, midnight to midnight.
 *Incomplete. T. Trace, or less than 0.01 inch.
 *Precipitation included in the next following measurement.

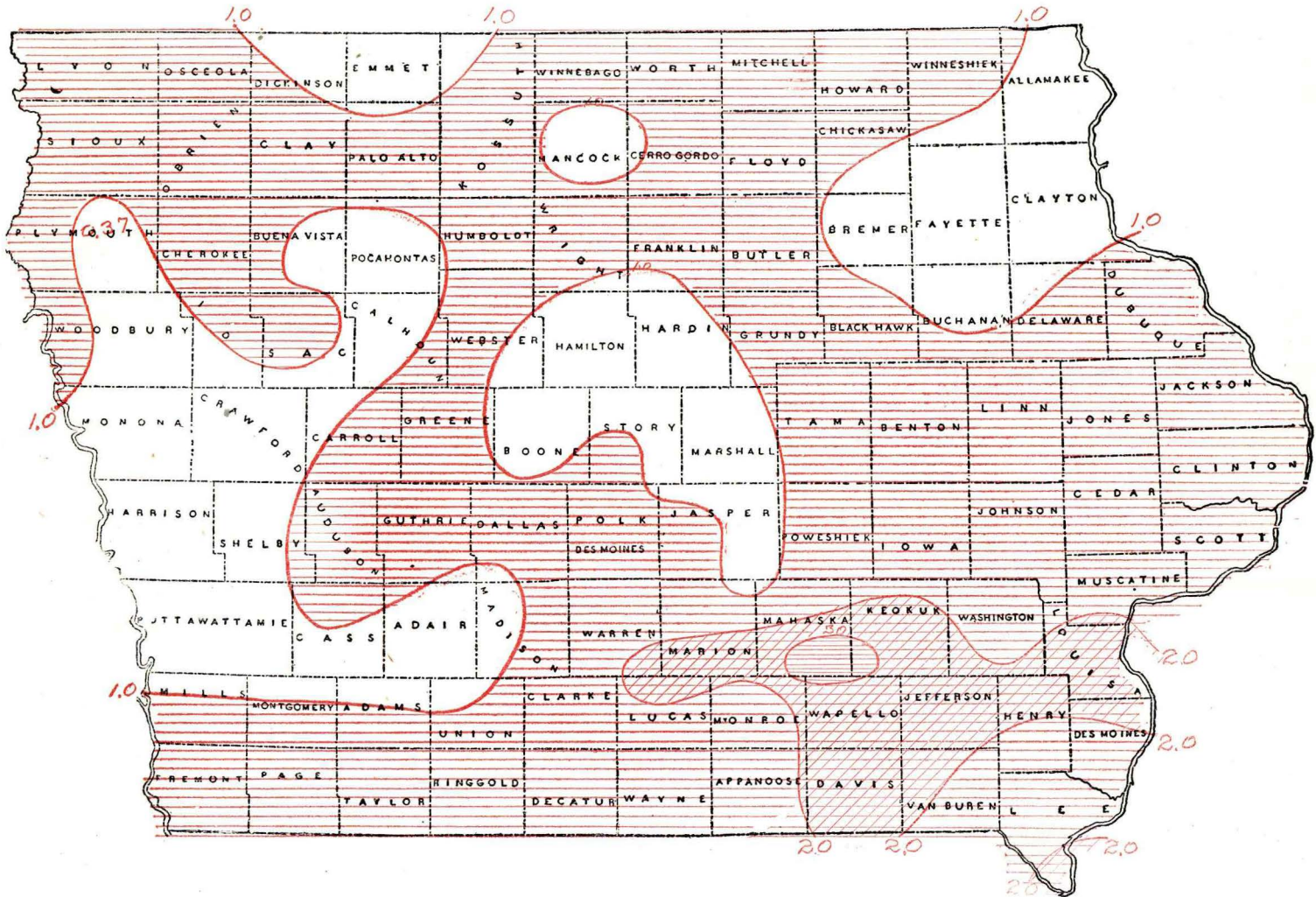
Daily Maximum and Minimum Temperatures for the Month of December, 1918.

Table with columns for Stations, days 1-31, and Mean. Rows are grouped by division: Northern, Central, and Southern. Each station entry includes maximum and minimum temperature values for each day.

a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from record.

§§Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

TOTAL PRECIPITATION, DECEMBER, 1918



SCALE OF SHADES—IN INCHES



APPENDIX

ANNUAL SUMMARY

GENERAL SUMMARY.

The mean temperature, 49.2°, is 1.8° above normal. All months were warmer than normal, except January, April, July and September which were deficient in temperature. The highest temperature, 113°, at Clarinda, on August 4, equaled the 29-year record for the state. The period, July 25 to August 13, was abnormally dry and hot and caused serious damage to the corn crop, particularly over the southwest one-third of the State. The total precipitation averaged 32.78 inches, or 0.81 inch above normal. The precipitation was considerably in excess of the normal in the north-central counties and markedly deficient in Pottawattamie and adjoining counties.

The season advanced rapidly in the spring, harvest began about 10 days early and conditions were favorable for all crops till the heat and drouth period above mentioned. Though September was cold, dry and unfavorable for fall seeding, a large acreage of wheat was seeded, and favorable conditions in the other fall months caused wheat and rye to make good growth and enter the winter in excellent condition. Corn was of excellent quality; 90 per cent was husked by December 1 and nearly all by the close of the year. Very little was marketed because of unusually bad roads. Generally favorable weather in all seasons, offset in large measure, the labor shortage.

SYNOPSIS BY MONTHS.

January was severely and almost continuously cold. Snow-fall averaged about normal, but was above normal in some of the Mississippi River counties and below normal in the southwest. The snow lay on the ground continuously over about the eastern one-third of the state. Wheat fields were generally blown bare of snow; corn husking proceeded slowly and not much went to market; rail traffic was impeded by the cold and snow. A brilliant meteor was observed in the western portion of the state about 6 p. m. of the 22d.

February opened severely cold with the ground heavily snow-covered in most of the state. The weather soon moderated, and the snow disappeared except in the northern counties by the 10th. Brief cold waves occurred on the 16th-17th and 19th-21st. Sleet and glaze storms occurred on the 8th and 14th. Though much of the area covered was without prior snow covering, no bad results to winter wheat were reported. Snow covering became general towards the close of the month. The mild weather relieved traffic and fuel conditions, which were very acute during the first week. The winter, up to February 5, was the coldest in the 28 years of state-wide records, with snow-fall above normal.

March was abnormally warm and sunshiny. Frost left the ground early in the month, not having penetrated deeply during the winter. Heavy snow fell in the northeast part of the state on the 13th-14th, with heavy rains southward along the Mississippi. Precipitation was very deficient in the south half of the state except the extreme southeast counties. A glaze storm on the 9th damaged telephone and telegraph wires

\$50,000 in the northern part of the state. Fall wheat wintered well. The farming season opened two weeks early with soil in fine condition. Spring seeding was finished in the south and the spring wheat acreage was greatly increased. The intended increase in acreage was somewhat limited by shortage of cars in which to ship seed. Husking the 1917 corn crop was practically finished. The lowest humidity of record in Iowa occurred on the 18th; at Des Moines it was 5 per cent. The rivers broke up quietly in the southern part of the state toward the close of February; central part about March 6; and northern part about March 18. A most spectacular aurora occurred March 7th.

Deficient temperature and precipitation characterized April, though a remarkable snowstorm occurred on the 19th-21st, totaling more than 2 feet in Taylor County. The general drouth till the 15th caused spring grains to germinate slowly and unevenly and killed much winter wheat and young grass. Field work progressed rapidly, 85 per cent of the corn ground being made ready for the planter and some planting being done. Seed corn was generally scarce and of low vitality.

Violent temperature fluctuations from freezing to 95 degrees occurred May 1st-4th. High southwest winds and low humidities during the warm period damaged winter wheat, meadows and pastures in the western part of the state. During the rest of May, warm and normally moist weather was ideal for grains and the planting and germination of corn. Only about 5 per cent of the corn acreage remained to be planted at the close of May. Grasses did not recover from the spring drouth, in the southwest. Unusually severe and extensive tornadoes occurred on the 9th and 21st.

June was generally warm except in the northeast counties. Excessive rains, 2d-5th, caused unusual overflows from Webster and Hamilton Counties southeast over Poweshiek and Johnson Counties. In the southwest counties precipitation was deficient. Crops made excellent progress; rye harvest began in the southeast on the 25th and oats toward the close of the month; and some corn was laid by. A hailstorm of large extent caused much damage in portions of Polk, Marion and Mahaska Counties on the 27th.

With temperature generally moderate and intervals of several days between rainy periods, harvest progressed rapidly and the shocked grain cured well, except in the northeast and north-central counties where excessive rains toward the close of July caused delay and damage. The favorable weather offset the labor shortage. Thrashing was well under way in the southern counties at the close of July.

The deficient rainfall that proved so disastrous to the corn crop in the southwestern part of the state began to be apparent the last week in July. Abnormally high and in some localities unprecedented temperatures prevailed from July 25 to August 13. The highest temperature reported was 113 degrees at Clarinda on August 4, equaling the highest heretofore recorded in the state. The condition of corn on July 1 was next to the best of record, but the drouth and hot winds damaged the crop about 35,000,000 bushels in the southwest one-third of the state be-

tween July 25 and August 13, the greatest damage occurring August 4th-6th. Pastures failed and live-stock was put on winter feed in midsummer. Thrashing was about 10 per cent above normal on September 1.

Cool, dry weather in September was unfavorable for seeding and germination of winter wheat and rye. However, in Floyd, Wapello and surrounding counties there was an excess of rain. The dry weather favored the maturing of corn. Killing frosts 18th-21st covered all portions of the state except a distance about 50 miles west of the Mississippi and this belt was visited by frosts on the 27th. Due to the frost damage last year, seed corn available for planting this season was limited largely to the earlier maturing varieties and individual ears. This, together with a favorable season, left little corn subject to damage by the early frosts. That replanted because of the June floods and cut worm damage, suffered most. The fact that earlier maturing corn used for seed yields less, explains to some extent why the yield per acre this year was not as great as was expected. It illustrates the effect of a severe frost upon the crop of the following season. The frosts shortened the garden vegetable season about three weeks.

Warm weather with well distributed precipitation in October gave winter wheat a good start. Corn dried out rapidly, husking and cribbing began early and progressed rapidly. A large supply of seed corn, believed to be of excellent quality, was saved during the fall. An energetic storm crossed the state from south to north on the 27th, causing heavy to excessive rains 26th-28th. In the northwest part of the state 6 inches of snow fell on the 26th.

Mild temperature with well distributed rains continued in November, causing winter wheat to make excellent growth, 95 per cent of the largely increased acreage having become well established. A heavy rain and snow storm covered most of the state on Thanksgiving Day, the 28th. Corn husking progressed rapidly but fall plowing was below normal due to labor shortage.

December was the warmest in the 29 years of record, in striking contrast with December, 1917, which was the coldest. Frost left the ground early in the month, and with precipitation above normal through the fall, the roads became impassable for heavy traffic, so that little corn or other farm produce was marketed. Other outdoor occupations, such as fall plowing and corn husking, made unusual progress. Winter wheat made good growth and was pastured to prevent over-growth in the southwest. A heavy blanket of snow covered the growing wheat on the 24th over the southeast portion, the ground not being frozen. Fruit buds swelled slightly but were believed safe. Wild flowers bloomed till the 24th. Fuel and feed were saved. Livestock subsisted outdoors and was in good condition, except hogs which suffered from influenza. A cold wave preceded by general snow was sweeping southeastward over the state at the close of the month.

SUPPLEMENTAL PRECIPITATION TABLE.

STATIONS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
<i>Northern Division</i>													
Allison -----	1.41	1.10	0.99	2.40	10.65	5.18	6.41	3.04	2.14	3.12	1.50	1.07	39.01
Alton -----	1.10	0.65	0.87	1.20	6.20	4.70	3.28	5.15	1.58	3.48	2.03	1.16	31.40
Elkader -----	1.02	0.53	1.60	3.20	6.40	4.25	5.55	5.43	2.32	-----	-----	-----	-----
Humboldt -----	-----	-----	-----	1.01	5.43	5.83	2.40	1.05	0.87	3.44	2.26	1.73	-----
Lake Park -----	0.60	0.75	1.90	1.55	6.70	3.02	5.44	6.70	1.20	2.80	1.62	-----	-----
Mason City -----	0.92	0.60	-----	1.77	-----	3.78	5.06	-----	-----	3.15	2.73	1.33	-----
Nora Springs -----	1.79	0.42	1.42	2.37	10.02	4.36	7.01	7.42	2.89	4.27	3.87	1.69	47.53
Northwood -----	1.25	0.55	1.85	2.45	-----	-----	-----	-----	3.25	4.82	5.10	-----	-----
<i>Central Division</i>													
Denison -----	-----	0.30	0.13	1.42	8.23	4.16	1.52	2.33	0.77	4.01	1.75	0.55	-----
Gilman -----	1.65	1.69	-----	1.65	11.98	-----	4.16	-----	-----	-----	-----	-----	-----
Grinnell -----	1.04	1.95	-----	4.06	10.34	8.15	2.98	4.75	1.38	3.44	2.10	1.14	-----
Grundy Center -----	-----	0.48	0.65	2.41	8.24	9.94	2.95	2.09	1.82	4.15	2.05	1.30	-----
Jefferson -----	0.78	0.58	0.58	1.23	4.79	6.26	2.33	2.78	0.60	5.70	1.48	1.37	28.48
Maquoketa -----	1.60	-----	0.77	2.76	6.74	5.03	4.09	4.51	2.61	2.59	1.99	1.75	-----
Olin -----	-----	2.10	0.40	4.20	5.10	4.00	3.00	3.40	2.30	2.65	1.35	1.40	-----
Onawa -----	1.67	1.02	-----	-----	-----	-----	-----	0.83	0.67	4.69	3.35	0.71	-----
Rockwell City -----	1.05	0.63	0.60	1.44	7.59	6.40	2.79	2.57	1.35	4.92	-----	-----	-----
Sac City -----	1.80	-----	-----	1.89	5.23	3.57	2.90	1.83	-----	-----	1.77	1.17	-----
Whitten -----	-----	-----	0.04	2.22	6.95	8.47	2.42	1.52	1.46	3.81	1.80	-----	-----
<i>Southern Division</i>													
Albia -----	0.56	0.96	-----	3.65	6.06	7.01	0.26	5.09	4.43	2.98	1.83	1.42	-----
Creston -----	0.45	1.53	0.04	1.99	5.89	4.88	1.74	5.24	1.56	3.94	1.24	0.66	29.16
Fairfield -----	2.05	0.73	-----	3.68	10.00	8.19	4.03	2.85	-----	-----	2.86	2.36	-----
Fort Madison -----	-----	1.62	1.14	3.01	9.06	6.72	2.73	2.24	2.19	2.37	-----	-----	-----
Greenfield -----	0.92	1.15	0.03	1.23	6.48	4.74	1.05	-----	-----	-----	1.08	-----	-----
Knoxville -----	0.85	1.80	0.13	-----	4.10	6.52	1.48	4.24	2.40	2.87	1.90	1.45	-----
Northboro -----	0.26	1.44	0.15	2.01	5.49	1.98	2.54	3.58	2.54	6.27	2.30	-----	-----
Oskaloosa -----	-----	1.06	0.05	2.56	5.47	5.44	2.36	3.63	3.09	2.53	2.40	3.30	-----
Ottumwa -----	1.51	0.86	0.21	3.19	5.52	5.97	0.88	5.43	4.04	-----	2.21	2.15	-----
Shenandoah -----	-----	-----	-----	-----	-----	2.27	2.41	1.01	2.24	6.13	1.96	1.06	-----

COMPARATIVE DATA FOR THE STATE—Annual.

Year.	Temperature.				Precipitation in inches				
	Mean annual.	Highest.	Date.	Lowest.	Date.	Annual.	Greatest annual.	Least annual.	Av. snowfall.
1890.	48.0	110	July 13	-27	January 22	31.30	45.74	16.00	-----
1891.	47.3	106	August 9	-31	February 4	32.90	49.05	23.48	-----
1892.	46.6	104	July 11	-38	January 19	36.58	48.77	24.78	34.2
1893.	45.7	102	July* 13	-36	January 14	27.59	33.27	19.19	37.2
1894.	49.7	109	July 26	-37	January 25	21.94	29.81	15.65	19.2
1895.	47.2	104	May 28	-33	February 1	26.77	35.25	18.57	26.0
1896.	48.6	104	July 3	-20	January 4	37.23	51.60	28.68	22.6
1897.	47.8	106	July* 23	-30	January 25	26.98	36.18	20.21	38.8
1898.	47.7	103	August 20	-25	December 31	31.34	55.47	19.51	40.3
1899.	47.3	104	September 6	-40	February 11	28.68	42.06	21.79	23.4
1900.	49.3	103	August 3	-27	February 15	35.05	47.33	25.05	25.8
1901.	49.0	113	July 22	-31	December 15	24.41	37.69	16.35	38.5
1902.	47.7	98	July 30	-31	January 27	43.82	58.80	20.14	28.0
1903.	47.2	101	August 24	-27	December 13	35.39	50.53	26.41	19.4
1904.	46.3	100	July 17	-32	January 27	28.51	38.93	19.34	29.2
1905.	47.2	104	August 11	-41	February* 2	36.56	52.26	24.66	38.3
1906.	48.4	102	July 21	-32	February 10	31.60	44.34	20.63	32.8
1907.	47.4	102	July 5	-31	February 5	31.61	43.90	19.93	24.0
1908.	49.5	101	August 3	-18	January 29	35.26	49.98	24.11	22.7
1909.	47.4	103	August* 15	-26	February* 15	40.01	53.48	27.20	49.0
1910.	48.6	108	July 16	-35	January 7	19.87	27.99	12.11	23.4
1911.	49.5	111	July* 3	-35	January 3	31.37	46.77	19.74	35.3
1912.	46.4	104	September 8	-47	January 12	28.89	33.13	15.25	39.5
1913.	49.7	108	July* 16	-25	January 8	29.95	45.18	20.31	25.4
1914.	49.1	109	July 12	-31	December 26	31.93	44.11	23.30	27.5
1915.	47.8	99	May 14	-32	January 28	39.53	51.15	27.29	31.3
1916.	47.2	106	August 4	-34	January 13	28.90	46.34	22.48	29.5
1917.	44.8	106	July 30	-40	December 29	27.81	36.00	20.78	32.4
1918.	49.2	113	August 4	-36	February 4	32.78	47.53	25.03	33.4

*And other dates.

CLIMATOLOGICAL DATA FOR THE YEAR 1918.

STATIONS.	COUNTIES.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.					Number of Days.				Prevailing direction of wind.			
				Mean.	Highest.	Date.	Lowest.	Date.	Length of record, years.	Total.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall (unmelted).	Precipitation 0.01 in. or more.	Clear.		Partly cloudy.	Cloudy.	
																					Mean.
<i>Northern Division</i>																					
Algona	Kossuth	1,213	45	48.0	100	Aug. 12	-26	Jan. 31	45	30.61	6.90	May	0.09	Feb.	23.9		227	39	99	sw.	
Allison	Butler	1,045	5	47.4	100	Aug. 5	-30	Jan. 31	5	39.01	10.65	May	0.99	Mar.	29.8	90	137	113	115	nw.	
Alta	Buena Vista	1,513	27	46.9	99	Aug. 5	-33	Jan. 31	27	33.48	7.68	May	0.65	Feb.	33.6	94	163	127	75	nw.	
Alta (near)	Buena Vista		22						22	33.27	7.88	May	0.50	Mar.	27.7	76					
Alton	Sioux	1,305	13	47.2	96	July 19	-34	Feb. 4	13	31.40	6.20	May	0.65	Feb.	31.2	96	130	146	89	nw.	
Belmond	Wright	1,205	7	47.3	101	Aug. 5	-31	Jan. 31	7	42.58	10.48	May	0.63	Feb.	32.2	114	105	175	85	se.	
Britt	Hancock	1,236	21		97	Aug. 12	-28	Jan. 31	21		8.48	May	0.17	Feb.	20.3					s.	
Charles City	Floyd	1,015	27	46.2	98	Aug. 5	-27	Jan. 31	27	39.58	8.41	May	0.24	Feb.	38.7	102	105	148	112	nw.	
Decorah	Winneshek	875	25	45.8	97	Aug. 5	-31	Feb. 1	25	35.06	7.59	May	0.25	Feb.	48.8	100	193	57	115	nw.	
Elkader	Clayton	727	27		102	Aug. 13	-35	Feb. 1	39		6.40	May	0.53	Feb.							
Estherville	Emmet	1,298	23	45.0	92	Aug. 12	-29	Jan. 31	23	32.49	6.33	May	0.76	Jan.	28.5	82				nw.	
Fayette	Fayette	1,003	23	46.5	101	Aug. 5	-35	Feb. 1	23	36.61	7.71	Aug.	0.51	Dec.	37.3	88	195	69	101	sw.	
Forest City	Winnebago	1,226	24	45.6	100	Aug. 12	-29	Feb. 1	24	35.33	7.62	Aug.	0.34	Feb.	26.5					se.	
Humboldt	Humboldt	1,095	17		104	Aug. 5	-34	Jan. 11	17	29.97	6.44	June	0.33	Feb.						s.	
Inwood	Lyon	1,474	14	46.0	96	Aug. 4	-34	Jan. 11	14	29.97	6.44	June	0.33	Feb.						s.	
Lake Park	Dickinson	1,479	5		98	Aug. 4	-28	Jan. 11	5		6.70	MayAug.	0.60	Jan.						nw.	
LeMars	Plymouth	1,224	22	48.4	96	Aug. 4	-27	Jan. 11	22	25.86	7.77	May	0.37	Dec.	25.6	87				nw.	
Mason City	Cerro Gordo	1,133	21		96	July 20	-29	Jan. 31	21		7.82	May	0.60	Feb.						nw.	
New Hampton	Chickasaw	1,169	21	46.7	97	June 16	-26	Jan. 31	21	36.50	7.82	May	0.31	Feb.	24.0	98	178	79	109	s.	
Nora Springs	Floyd	1,064	5	48.3	102	Aug. 12	-33	Feb. 1	5	47.53	10.02	May	0.42	Feb.	18.4	111	172	102	91	s.	
Northwood	Worth	1,222	22				-30	Jan. 31	22				0.55	Feb.						se.	
Pocahontas	Pocahontas	1,248	14	48.0	103	Aug. 5	-30	Jan. 31	14	28.56	6.07	May	0.54	Feb.	30.0	92				se.	
Postville	Clayton	1,180	27	45.4	92	Aug. 5	-27	Jan. 31	27	34.08	8.05	July	0.60	Feb.	39.3	119	138	121	106	se.	
Rock Rapids	Lyon	1,358	19	46.6	95	June 10	-31	Jan. 12	19	32.90	6.04	July	0.40	Feb.	17.8	102	219	88	58	nw.	
Sanborn	O'Brien	1,553	4	46.8	95	June 10	-30	Jan. 11	4	35.32	6.75	May	0.82	Jan.	22.8	89	171	117	77	ne.	
Sibley	Osceola	1,212	25		94	Aug. 3	-34	Feb. 4	25	33.72	6.98	May	0.34	Feb.	31.3	90				nw.	
Sioux Center	Sioux	1,426	19		94	July 19	-33	Jan. 11	19	34.93	8.47	May	0.55	Feb.	30.7	88				s.	
Storm Lake	Buena Vista	1,440	22	48.4	98	Aug. 12	-28	Jan. 31	22	27.77	5.44	May	0.53	Feb.	20.1	88				s.	
Washta	Cherokee	1,157	13	48.2	98	Aug. 5	-36	Feb. 4	20	30.84	5.56	June	0.48	Mar.	34.0	74	208	75	82	s.	
Waverly	Bremer	948	22	47.6	102	Aug. 5	-33	Feb. 1	22	33.79	7.37	May	0.47	Feb.	31.2	92	99	161	105	nw.	
West Bend	Palo Alto	1,197	25	47.9	99	Aug. 5	-32	Jan. 31	25	31.82	7.24	May	0.31	Feb.	24.5	71				nw.	
<i>Central Division</i>																					
Ames	Story	926	41		104	Aug. 5	-26	Jan. 31	42	29.88	8.81	June	0.45	Mar.	44.5	90				nw.	
Audubon	Audubon	1,301	24		105	Aug. 4	-26	Jan. 11	24		6.23	May	0.15	Mar.						s.	
Baxter	Jasper	998	18	49.8	106	Aug. 5	-23	Jan. 31	18	34.90	9.65	May	0.28	Mar.	35.3	116	158	119	88	nw.	
Belle Plaine	Benton	886	28	48.9	102	Aug. 5	-24	Feb. 1	28	38.17	9.28	May	0.21	Mar.	50.5	107	172	98	95	se.	
Boone	Boone	1,134	13	48.9	107	Aug. 5	-25	Jan. 31	13	28.47	7.44	June	0.28	Jan.	24.2					s.	
Carroll	Carroll	1,265	28	48.2	108	Aug. 5	-29	Feb. 1	28	31.31	7.18	June	0.42	Jan.	17.9	81	218	53	94	nw.	
Cedar Rapids	Linn	733	36	49.3	107	Aug. 5	-22	Feb. 2	36	30.68	6.04	May	0.41	Mar.	30.4	77	175	56	134	s.	
Clinton	Clinton	593	44	49.3	102	Aug. 5	-21	Feb. 1	51	30.83	5.10	May	0.53	Mar.	48.9	115				sw.	
Davenport	Scott	580	46	50.6	101	Aug. 5	-18	Jan. 12	47	34.08	7.15	May	0.63	Mar.	31.8	120	128	104	133	e.	
Delaware	Delaware	1,083	27	47.0	99	Aug. 5	-26	Feb. 1	27	34.14	8.33	May	0.76	Jan.	31.2	102	181	99	85	s.	
Denison	Crawford	1,180	24	50.4	104	Aug. 5	-29	Jan. 31	24		8.23	May	0.13	Mar.						ne.	
Des Moines	Polk	861	39	51.4	110	Aug. 4	-20	Jan. 31	39	27.72	5.87	May	0.29	Mar.	36.1	109	117	121	127	sw.	
Dubuque	Dubuque	639	45	48.6	98	Aug. 12	-21	Feb. 1	45	39.61	8.64	May	1.10	Nov.	40.7	131	115	107	143	s.	
Fort Dodge	Webster	1,126	18	47.8	100	Aug. 5	-28	Jan. 31	18	34.14	8.23	June	0.55	Feb.	25.7	85				sw.	
Gilman	Marshall	1,052							25		11.98	May									
Grinnell	Poweshiek	1,023	24	50.4	107	Aug. 5	-22	Jan. 31	26		10.34	May					180	91	94	nw.	
Grundy Center	Grundy	976	27		103	Aug. 5			27		9.94	June	0.48	Feb.						nw.	
Guthrie Center	Guthrie	1,077	23	49.9	107	Aug. 4	-27	Feb. 1	23	29.42	6.50	May	0.21	Mar.	25.9	110	204	92	69	sw.	
Harlan	Shelby	1,182	19	49.5	107	Aug. 4	-26	Jan. 11	19	28.58	6.51	May	T.	Mar.	27.0	81				s.	
Independence	Buchanan	921	54	48.4	103	Aug. 5	-27	Feb. 1	51		7.66	May	0.51	Feb.		89	187	57	121	nw.	
Iowa City	Johnson	683	58	48.7	101	Aug. 5	-23	Feb. 1	55	40.26	8.36	June	0.33	Mar.	36.0	103	158	85	122	nw.	
Iowa Falls	Hardin	1,107	25	46.9	100	Aug. 5	-29	Jan. 31	25	40.18	10.10	June	0.82	Dec.	38.2	100	180	82	103	nw.	
Jefferson	Greene	1,052	15	49.5	103	Aug. 5	-27	Jan. 31	19	28.48	6.26	June	0.58	Feb. Mar.	23.5	92	160	89	116	sw.	
LeClaire	Scott	576							18	36.73	7.28	May	0.49	Mar.	43.5	116					
Little Sioux	Harrison	1,040	13	50.8	107	Aug. 4	-29	Jan. 31	13	32.60	7.84	May	0.26	Mar.	40.5	99				se.	
Logan	Harrison	928	51	51.4	108	Aug. 4	-27	Feb. 1	51	25.84	6.35	Oct.	0.21	Mar.	31.0	91	175	107	83	sw.	
Maquoketa	Jackson	688	17	48.5	97	Aug. 5	-24	Feb. 1	18		6.74	May			44.3					sw.	
Marshalltown	Marshall	947	26	48.5	104	Aug. 5	-25	Feb. 1	26	34.81	8.16	June	0.31	Mar.	27.7	104	217	39	109	nw.	
Monroe	Jasper	922	6	50.9	109	Aug. 4	-23	Feb. 4	6	39.11	10.19	June	0.07	Mar.	31.7	72	179	66	120	s.	
Muscataine	Muscataine	554							59	37.44	8.10	May	0.25	Mar.	33.3						
Olin	Jones	760	19	49.0	103	Aug. 5	-27	Feb. 1	19		5.10	May	0.40	Mar.						sw.	
Onawa	Monona	1,051	18		102	Aug. 12	-26	Jan. 31	18												
Perry	Dallas	975	17	49.9	107	Aug. 4	-27	Jan. 31	17	25.03	5.46	May	0.29	Mar.	20.4	102	192	102	71	nw.	
Rockwell City	Calhoun	1,134	21		103	Aug. 5	-32	Jan. 31	22		7.59	May	0.60	Mar.	29.1		</				

MEAN MONTHLY AND ANNUAL TEMPERATURES, WITH DEPARTURES FROM THE NORMAL, FOR 1918.

Table with columns for STATION, months (Jan. to Dec.), and Annual. Each month has two sub-columns for Temperature (Tem.) and Departure (Dep.). Rows are grouped into Northern Division, Central Division, and Southern Division.

MONTHLY MAXIMUM TEMPERATURES FOR 1918, WITH DATES.

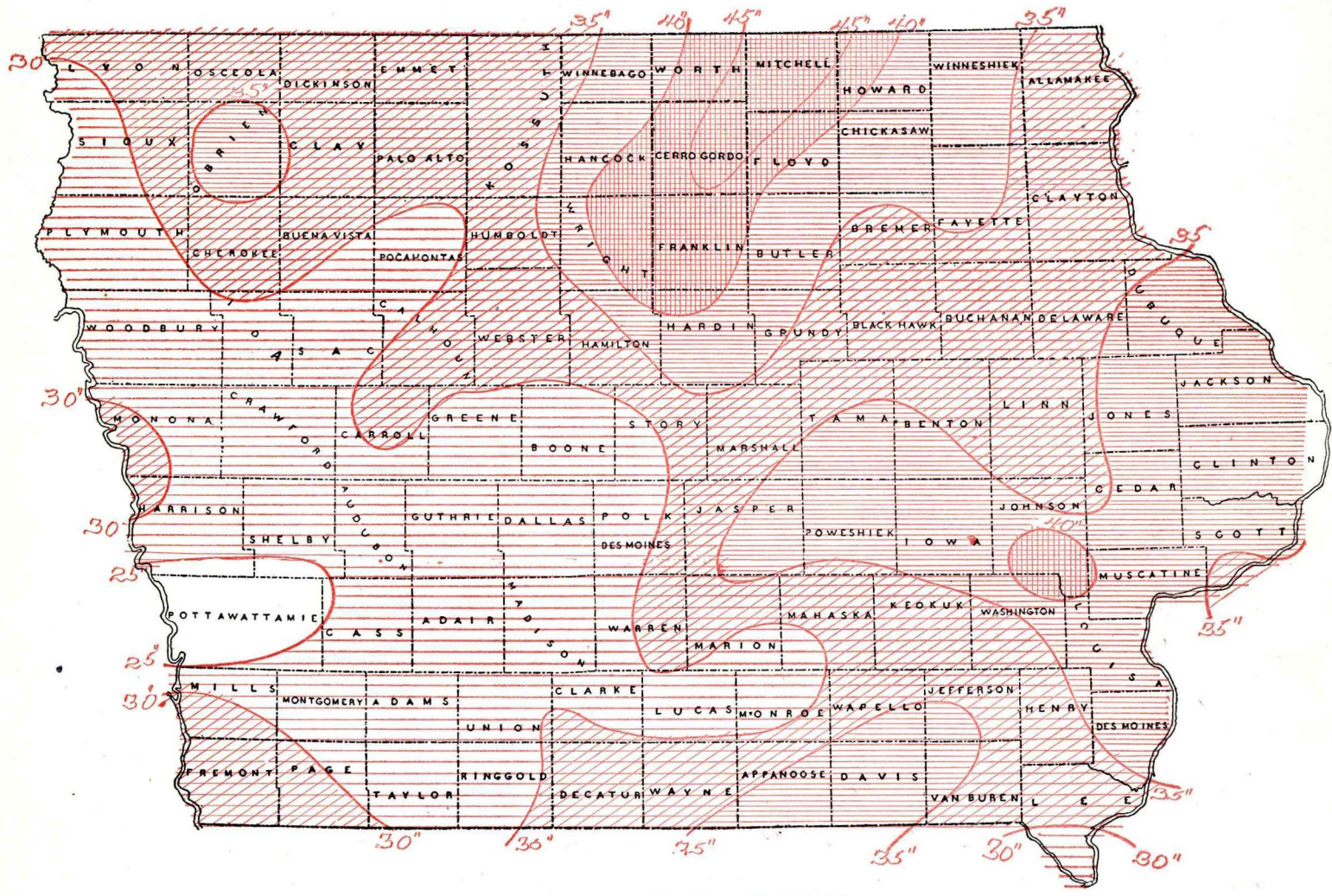
Table with columns for months (Jan-Dec) and rows for stations (Northern, Central, Southern Divisions). Each cell contains Max. temperature and Date.

Reference letters, a, b, c, etc., appearing in the table indicate the number of days missing; for example, b represents two days, etc. Also other dates.

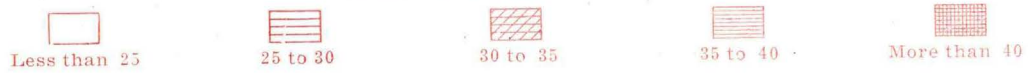
MONTHLY MINIMUM TEMPERATURES FOR 1918, WITH DATES.

STATIONS.	Jan.		Feb.		March		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.	
	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.	Min.	Date.
<i>Northern Division</i>																								
Algona	-26	31	-24	4	8	10	20	4†	30	1†	45 ^a	7†	50	8†	48	29†	30	20	28	31	12	24	2	31
Allison	-30	31	-25	1†	4	10	20	4	29	13	45	7	46	1	45	31	30	21	30	14†	10	24†	4	25
Alta	-33	31	-26	1	7	10	20	8†	31	9	45	7	50	1†	48	31	29	20	27	31	10	24†	-2	31
Alton	-29	11	-34	4	7	10	20	8	34	10	43	7	48	1	44	29†	27	20	26	29	10	24	-2	31
Belmond	-31	31	-28	1	3	10	19	4	30	1†	44	7	48	1	44	29	30	20†	30	31	9	29	2	25
Britt	-28	31	-28	1	2	10	18	8	27	13	-	-	45 ^a	1	44	29†	30	20†	26	31	8	29	2	31
Charles City	-27	31	-27	1	3	10	22	11	31	1	45	7	47	1	46	31	31	21	26	31	12	30	8	25
Decorah	-22	31	-31	1†	2	10	20	9†	27	1	44	7	49	1†	46	29	31	21	29	1†	6	29	10	25†
Estherville	-29	31	-29 ^d	1	1	10	19	8	29	13	43	7	49	1†	45	29	29	20	26	31	12	24	-2	31
Fayette	-24	31	-35	1	4	10	19	9†	25	1	44	7	47	31	44	29	29	21	27	1	6	30	5	26
Forest City	-28	31	-29	1	2	10	20	4†	28	13	43	7	45	1	44	29	30	20†	28	31	10	24†	4	25
Inwood	-34	11†	-32	1	9	6†	16	4†	29	1	44	7	47	10	44	29	23	20	28	26†	5	23	-3	31
LeMars	-27	11	-24	1	7	10	16	4	33	10	42	7	47	10	42	29	23	20	26	29	9	24	-1	31
New Hampton	-26	31	-26	1	4	10	24	4†	30	1	43	7	45	1	45	31	31	21	30	31	8	30	8	25
Nora Springs	-28	31	-33	1	1	10	22	4†	29	1	43	7	46	1	45	29	28	21	29	1	10	30	3	29
Pocahontas	-30	31	-25	4	6	10	16	4	32	1	43 ^a	7	41	1	42	29	29	20	30 ^a	25	10	24†	2	31
Postville	-27	31	-24	1	2	10	22	5†	31	1	44	22	47	1†	46	31	34	19	30	30†	7	30	5	26
Rock Rapids	-31	12	-30	4	7	10	16	4	34	1†	40	22	45	1	42	29	24	20	27	29	7	23	-2	31
Sanborn	-30	11	-26	4	5	10	17	4	32	10†	40	7	48	1	45	29	25	20	27	29	9	24	-1	25†
Storm Lake	-25 ^a	31	-22	1	9	10	20	8	36	1	45	7	51	1†	49	29†	30	20	29	25	12	24	3	25
Washta	-35	31	-36	4	10	10	15	3†	32	10	40	7	46	1	39	31	22	20	27	25†	10	29	1	25
Waverly	-28	31	-33	1	7	10	19	4	30	13	47	22	46	1	44	9	28	21	30	1	7	30	7	25
West Bend	-32	31	-29	4	7	10	17	8	30	13	47	22	46	1	44	9	26	20	24	31	8	24†	0	25
<i>Central Division</i>																								
Ames	-26	31	-26	1	8	10	20	11	28	1	47	7	48	1	44 ^a	29	-	-	-	-	10 ^h	24	4	25
Baxter	-23	31	-21	4	10	10	21	10	33	1	47	7	42	1	40	31	31	20	28	25	10	30	3	26
Belle Plaine	-23	31	-24	1	11	11	19	28	28	1	47	7	45	1	46	31	29	21	28	25	10	30	0	26
Boone	-25	31	-25	1	8	11	22	8†	33	1	46	7	49	30†	45	31	31	19	29 ^a	25	12	24†	3	25
Carrroll	-26	12†	-29	1	7	10	19	9	32	12	45	7	49	1	45	31	27	20	30	25	11	24	0	25
Cedar Rapids	-20	12	-22	2	11	1	26	9†	32	1†	50	7	52	31	52	1	36	21	32	25	17	30	2	26
Clinton	-19	18	-21	1	2	1	25	4†	27	1	50	8	46	31	53	29†	33	27	29 ^a	24	13 ^c	24	1	26
Davenport	-18	12	-14	4	14	1	27	9	35	1	52	22	53	31	54	31	35	20	33	25	17	24	8	26
Delaware	-22	31	-26	1	7	10	22	9†	29	1	44	22	46	1†	47	29†	34	20	28	25	11	29†	0	26
Des Moines	-20	31	-17	4	12	10	27	8	34	13	52	7	53	1	50	31	34	20	30	31	16	24	5	26
Dubuque	-16	31	-21	1	10	1	27	9	33	1	52	7	52	31	53	31	36	27	32	25	16	24	5	26
Fort Dodge	-28	31	-27	1	7	10	20 ^a	4	33	1	46	7	49	1	46	29†	31	20†	32	26	13 ^b	24	4	25†
Grinnell	-22	31	-20	1†	12	10	24	10	32	1	48	7	48	1	48	31	32	21	31	25	11	30	4	26
Guthrie Center	-26	31	-27	1†	8	10	14	9†	25	1	45	7†	44	1†	43 ^b	29	25	21	30	31	5	29	-	26
Harlan	-26	11	-25	1	11	10	23	4†	28	1	47	7†	46	1	43	29†	25	21	28	28	8	29	-	26
Independence	-25	31	-27	1	8	10	22	5†	28	1	45	7†	48	1†	47	29†	31	21	31	25†	10	30	1	26
Iowa City	-21	12†	-23	1	4	1	26	5†	28	1	50	8†	49	31	50	29†	31	0	28	25	13	26	1	26
Iowa Falls	-29	31	-29	1	7	10	19	9	26	1	46	7	47	1	43	29	27	21	30	1†	6	29	3	25
Jefferson	-27	31	-24	1	4	10	18	11	33	1	46	7	48	1	44	29†	28	21	27	31	10	29	0 ^c	26
Little Sioux	-29	31	-21	1	9	10	20	8	33	12	45	22	47 ^a	1	42 ^a	31	23	20	25	28	7	29	-5	25
Logan	-25	31	-27	1	15	6	24	5	35	13	49	7	48	1	44	31	27	20	29	28	9	29	2	31
Maquoketa	-17	12	-24	1	5	1	21 ^a	10	27 ^a	1	48 ^a	8†	46	31	50	29†	29	27	27 ^a	25	13	24	-7	26
Marshalltown	-22	31	-25	1	9	1†	19	10†	27	1	48	7	48	31	44	29	27	21	31	1†	10	29	5	26
Monroe	-22	12†	-23	4	12	10	21	10	32	1	49	7	51	1	42 ^b	31	33	20†	31	25	12	30	3	26
Olin	-20 ^h	29	-27	1	8 ^b	1	22	5	28	1	49	7†	45	31	41	29	31	27	28	25	14	30	-4	26
Perry	-27	31	-22	1†	6	10	21	9†	30	1	46	7	47	1	43	29†	29	20	28	25	7	29	2	25
Sioux City	-26	11	-20	4	12	6	23	4	35	10	49	7	53	10	49	29	29	20	28	28	13	24	-1	31
Tipton	-20	12	-18	1	10	1	24	10	31	1	50	2†	48	31	51	31	35	20	30	25	14	24	-1	26
Toledo	-25	31	-25	1	7	1	20	10	27	1	45	7	47	7	43	29	26	21	28	25	11	26	3	25†
Waterloo	-27	31	-30	1	9	10	21	11	27	1	46	7	48	29†	44	29	27	21	29	1	9	30	5	25
Wauke	-25	31	-22	1†	9	10	21	8	32	1	49	22	50	1	47	29†	28	20	27	25†	11	29	1	25
Webster City	-28	31	-30	1	6	10	18	4	28	1	45	7	45	1	41	29	26	21	30	31	8	29	2	25
Williamsburg	-22	31	-27	1	5	1	23	5	27	1	49	7	45	31	47	29	29	21	27	25	12	24†	3	29
<i>Southern Division</i>																								
Albia	-22	12	-20	1	11	10	21	10	34	1	48	7†	49	13	49	29†	30	20	27	25	12	29	3	25†
Allerton	-21	12	-22	1	9	1	22	9†	35	1	49	7	48	2	51	29†	31	20	28	25	12	30	0	26

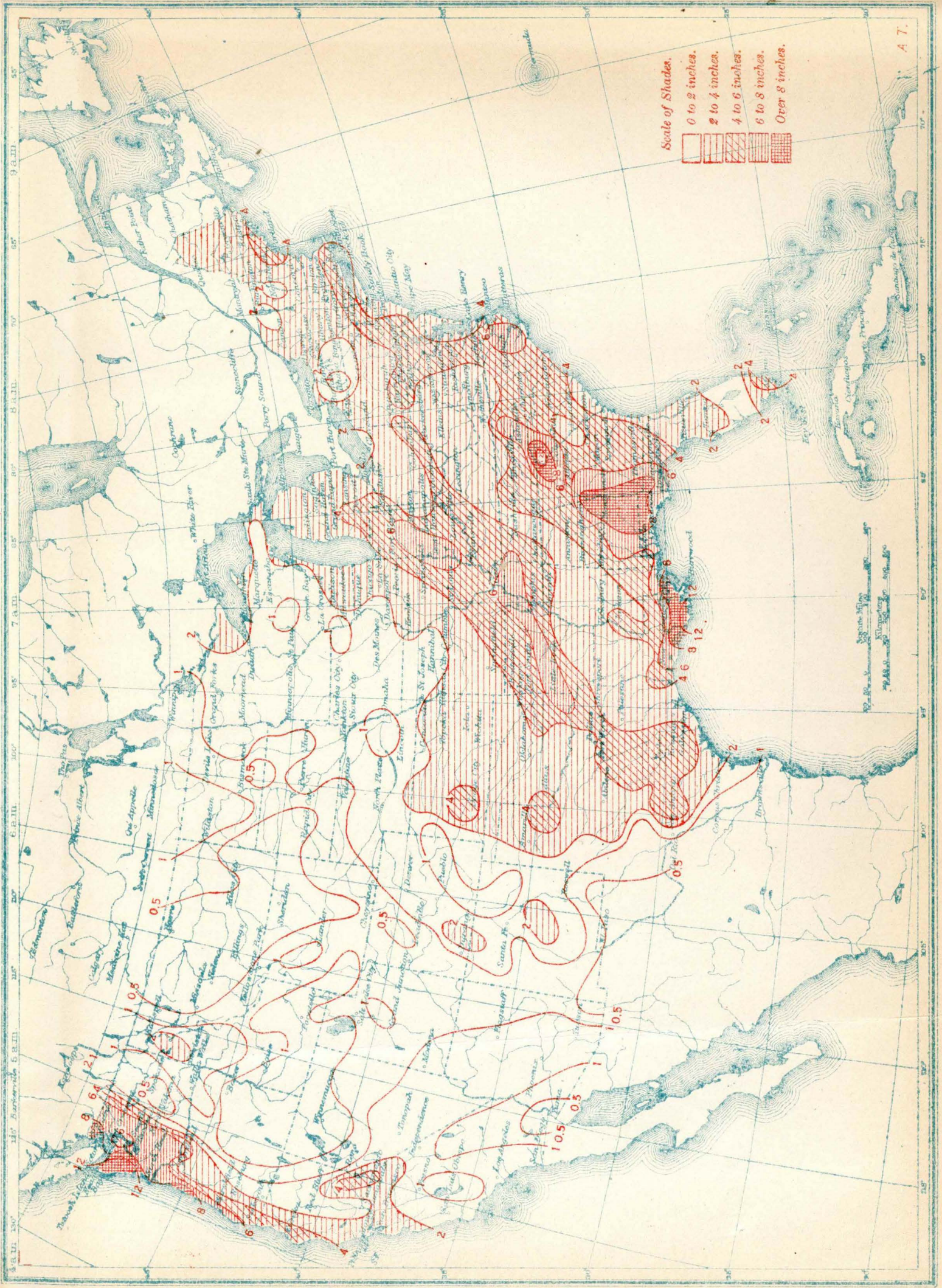
TOTAL PRECIPITATION, YEAR 1918



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, December, 1918.



Scale of Shades.
0 to 2 inches.
2 to 4 inches.
4 to 6 inches.
6 to 8 inches.
Over 8 inches.

STATE LIBRARY OF IOWA



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