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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, 1920

BY

CHARLES D. REED

METEOROLOGIST

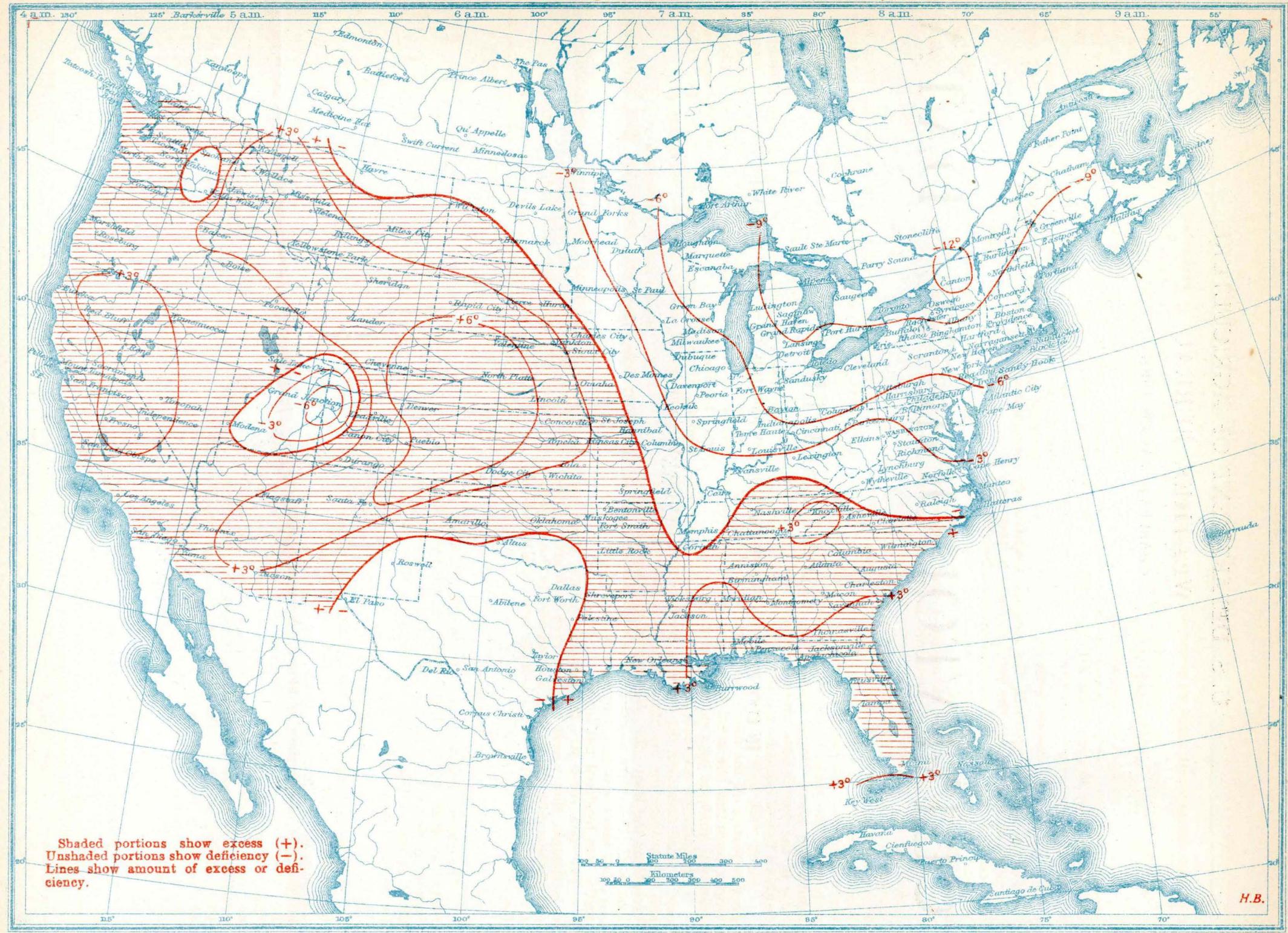


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DES MOINES, IOWA
WEATHER BUREAU OFFICE



Departure of the Mean Temperature from the Normal, January, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist

Vol. XXXI Des Moines, Iowa, January, 1920. No. 1

GENERAL SUMMARY

For the State as a whole, the January temperature was below normal, though the deficiency was neither uniform nor general. Over a considerable area adjoining the Missouri River the temperature was above normal, and in the extreme southwest and extreme west-central portions the excess amounted to nearly 4 degrees. Eastward from this area the temperature gradually became colder and over the northeastern portion, along the Mississippi River, there was a deficiency of nearly 5 degrees. There were no protracted cold periods or very severe weather, neither was there any mild weather, except for short intervals. The usual January thaw was absent and as a result the snow cover remained during the entire month over about 75 per cent of the State, but at the close of the month bare ground was general over the southern tier of counties and along the Missouri River.

Stock were able to graze in corn fields during the greater portion of the month and favorable weather conditions permitted the usual farm work, but marketing of grain was hindered by a shortage of railroad cars.

Precipitation was deficient over the entire State, except a small area over the extreme north-central portion, and the average for the State, 0.42 inch, was with three exceptions the least for January in the past 31 years. Practically the entire amount fell in the form of snow or sleet but there was less drifting than usual and railroad traffic was hindered but little.

The snow cover was favorable for winter grain and it is thought that wheat and rye were uninjured at the end of the month except over a small area in the extreme southeastern portion. An unusually large crop of ice of fine quality was harvested.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.29 inches. The highest recorded was 30.87 inches, at Sioux City on the 24th, and the lowest was 29.61 inches at Des Moines on the 16th. The monthly range was 1.26 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 99 stations, was 16.7° , or 1.2° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 13.1° , or 1.5° lower than the normal; Central, 16.2° , or 2.0° lower than the normal; Southern, 20.8° , or 0.1° lower than the normal. The highest monthly mean was 23.9° , at Glenwood and Thurman, and the lowest monthly mean was 10.0° , at Charles City. The highest temperature reported was 58° at Thurman on the 29th, and the lowest was -26° at Elkader on the 4th. The temperature range for the State 84° .

HUMIDITY.

The average relative humidity for the State at 7 a.m. was 86 per cent and at 7 p.m., 77 per cent. The mean for the month was 82 per cent, which is just normal. The highest mean was 88 per cent at Charles City, and the lowest, 72 per cent, at Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 106 stations, was 0.42 inch, or 0.63 inch less than the normal. By divisions the averages were as follows: Northern, 0.46 inch, or 0.38 inch less than the normal; Central, 0.41 inch, or 0.70 inch less than the normal; Southern, 0.40 inch, or 0.79 inch less than the normal. The greatest amount, 1.05 inches, occurred at Northwood, and the least, a trace at Denison. The greatest amount in any 24 consecutive hours, 0.64 inch, occurred at Oskaloosa on the 24th.

SNOW

The average snowfall for the State was 4.6 inches, or 2.3 inches below the normal. The greatest amount, 12.7 inches occurred at Forest City, and the least, a trace at Denison.

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 56 miles per hour from the northwest, at Sioux City, on the 20th.

SUNSHINE AND CLOUDINESS.

The average percentage of the possible amount of sunshine was 47, or 3 per cent lower than the normal. The percentage of the possible amount at the several regular Weather Bureau stations was as follows: Charles City, 40; Davenport, 54; Des Moines, 46; Dubuque, 55; Keokuk, 51; Sioux City, 35; Omaha, Neb., 49. Clear days average 12, partly cloudy 8, and cloudy 11.

MISCELLANEOUS PHENOMENA

Fog, dense: 6th, 9th, 15th, 16th, 20th, 22d, 25th, and 31st.

Glaze: 15th.

Halos, lunar: 1st, 2nd, 7th, 11th, 22d, 26th, 28th.

Halos, solar: 8th, 22d, 26th, 28th.

Sleet: 6th, 15th, 16th, 22d, 23d.

COMPARATIVE DATA FOR THE STATE—JANUARY

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipita-	Clear	Partly cloudy	Cloudy
1890.....	19.7	+1.8	61	-27	2.03	+0.98	3.46	0.35	.....	4	13	7	11
1891.....	26.0	+8.1	58	-4	1.75	+0.70	3.99	0.61	.....	5	16	9	6
1892.....	15.3	-2.6	56	38	1.09	+0.04	3.13	0.10	6.9	6	11	9	11
1893.....	9.3	-8.6	54	-34	0.74	-0.31	3.20	0.13	6.9	6	5	9	8
1894.....	19.3	+1.4	69	-37	1.09	+0.04	2.24	0.31	6.0	4	15	7	9
1895.....	13.6	-4.3	68	-31	0.85	-0.20	2.65	0.09	8.7	2	10	10	11
1896.....	23.4	+5.5	68	-20	0.48	-0.57	2.10	T.	2.8	3	10	12	12
1897.....	17.2	-0.7	66	-30	2.01	+0.96	6.16	0.15	8.2	7	12	12	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	0.91	-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	-3.3	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	3	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
1919.....	26.8	+8.9	64	-32	0.24	-0.81	0.86	T.	2.8	2	20	5	6
1920.....	16.7	-1.2	58	-26	0.42	-0.63	1.05	T.	4.6	4	12	8	11

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

CLIMATOLOGICAL DATA FOR JANUARY, 1920

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit						Precipitation in inches.			No. 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 inch or more	Clear	Partly cloudy	Cloudy	
<i>Northern Division</i>																			
Algona	Kossuth	1213	47	12.0	-2.3	38	12	-18	25	37	0.42	-0.38	0.24	5.2	4	18	2	11	nw.
Allison	Butler	1045	8	11.6	.....	38	12†	-17	25	32	0.65	.....	0.20	6.5	4	10	7	14	nw.
Alta	Buena Vista	1513	29	14.5	+0.4	44	29	-10	25	29	0.28	-0.38	0.08	3.5	6	8	13	10	nw.
Alta (near)	Buena Vista	24	.....	.....	.....	.....	.....	.....	.....	.....	0.13	-0.50	0.05	1.2	3	.....	.....	.....	.....
Alton	Sioux	1305	15	15.6	+0.4	44	29	-8	9	33	0.34	.....	0.20	3.4	5	8	18	5	nw.
Belmond	Wright	1295	10	11.6	.....	37	29	-16	25	34	0.53	.....	0.16	5.5	10	6	13	12	nw.
Britt	Hancock	1236	23	11.6	-2.1	38	29	-12	2†	32	0.24	-0.40	0.11	2.4	6	7	19	5	s.
Charles City	Floyd	1015	29	10.0	-1.4	38	29	-15	25	32	0.65	-0.32	0.39	8.4	8	9	14	nw.	
Decorah	Winneshiek	875	27	10.6	-3.3	39	26	-24	4	36	0.98	-0.24	0.20	12.6	8	16	3	12	nw.
Elkader	Clayton	751	41	12.0	-3.4	40	26	-26	4	45	0.47	-0.87	0.13	4.7	6	16	5	10	n.
Estherville	Emmet	1298	25	11.2	-1.5	43	29	-15	25	34	0.30	-0.31	0.15	3.5	3	12	19	0	nw.
Fayette	Fayette	1003	30	11.2	-2.3	40	26	-20	25	38	0.47	-0.77	0.17	5.0	5	.....	.....	.....	.....
Forest City	Winnebago	1226	26	12.4	-0.4	48	29	-16	25	36	1.02	+0.24	0.44	12.7	8	12	9	10	nw.
Humboldt	Humboldt	1095	32	14.6b	-1.4	42d	29	-14	25	37d	0.32	-0.47	0.15	4.0	4	9	5	17	n.
Inwood	Lyon	1474	16	15.2	+1.4	48	29	-9	21	34	0.12	-0.42	0.04	1.2	5	17	6	8	s.
Le Mars	Plymouth	1224	24	17.8	+1.6	48	29	-7	28	37	0.14	-0.41	0.12	1.4	2	7	18	6	se.
Mason City	Cerro Gordo	1148	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milford (near)	Dickinson	1430	12	12.1	.....	44	29	-15	25	34	0.69	.....	0.30	7.4	7	7	14	10	nw.
New Hampton	Chickasaw	1169	23	10.7	-2.6	37	29	-16	2†	34	0.40	-0.50	0.16	5.0	4	17	3	11	nw.
Nora Springs	Floyd	1064	7	12.9	.....	41	29	-20	25	40	0.36	.....	0.15	2.4	7	11	8	12	se.
Northwood	Worth	1222	24	.....	.....	.....	.....	.....	.....	.....	1.05	+0.01	0.25	10.5	7	.....	.....	.....	.....
Pocahontas	Pocahontas	1248	16	14.6	-0.9	42	29	-13	25	35	0.30	-0.35	0.07	4.0	7	10	8	13	nw.
Postville	Clayton	1180	21	10.2	-4.2	37	26	-19	2†	34	0.99	-0.17	0.30	9.8	10	5	13	13	ne.
Rock Rapids	Lyon	1358	21	15.2	+2.6	45	29	-10	21	31	0.19	-0.32	0.11	2.0	3	19	6	6	nw.
Sanborn	O'Brien	1553	6	14.6	.....	45	29	-12	25	31	0.44	.....	0.40	4.4	3	6	11	14	nw.
Sioux Center	Sioux	1426	21	.....	.....	46	29	-14	25	33	0.50	-0.09	0.20	5.0	5	.....	.....	.....	.....
Spencer	Clay	1319	6	13.4	.....	46	29	-14	25	33	0.42	.....	0.30	4.5	2	13	10	8	sw.
Storm Lake	Buena Vista	1440	31	16.3	+1.0	44	29	-10	25	31	0.11	-0.57	0.04	1.1	5	15	3	13	n.
Washa	Cherokee	1157	22	17.4	+1.0	46	29	-14	9	40	0.20	-0.32	0.10	3.0	3	8	9	14	nw.
Waverly	Bremer	948	24	11.2	-3.8	41	26	-18	25	42	0.63	-0.37	0.16	6.3	7	15	2	14	nw.
West Bend	Palo Alto	1197	27	13.0	-1.7	42	26	-16	25	38	*0.36	-0.57	0.09	6.5	6	13	8	10	nw.
Means and Extremes				13.1	-1.5	48	29	-26	4	45	0.46	-0.38	0.44	5.1	5	11	9	11	nw.
<i>Central Division</i>																			
Ames	Story	926	44	15.4	-2.7	43	26	-13	25	36	0.22	-0.71	0.06	3.8	8	17	5	9	n.
Audubon	Audubon	1301	26	.....	.....	40	26	-10	25	30	0.32	-0.59	0.17	3.3	2	7	12	12	nw.
Baxter	Jasper	998	20	15.4	-2.6	40	26	-10	25	30	0.32	-0.59	0.17	3.3	2	7	13	13	nw.
Belle Plaine	Benton	886	30	15.2	-2.3	41	13†	-15	25	34	0.96	-0.69	0.31	8.9	7	13	5	13	nw.
Boone	Boone	1134	15	15.7	-1.1	41	26†	-9	25	32	0.24	-0.55	0.10	1.0	4	14	9	8	n.
Carroll	Carroll	1265	30	16.8	-0.2	43	29	-8	25	31	0.16	-0.65	0.11	5.5	2	12	6	13	nw.
Cedar Rapids	Linn	733	38	15.8	-1.4	40	26†	-14	25	33	0.55	-0.77	0.34	5.5	3	16	2	13	n.
Clinton	Clinton	593	47	15.6	-5.0	42	29	-13	4	40	0.74	-1.09	0.30	8.1	10	12	5	14	nw.
Davenport	Scott	580	49	17.2	-3.6	42	12	-6	4	29	0.44	-1.13	0.23	5.0	7	12	7	12	nw.
Delaware	Delaware	1083	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denison	Crawford	1180	26	18.0	+0.2	43	29	-7	9	37	T	-0.61	T	T	0	12	5	14	n.
Des Moines	Polk	861	40	18.4	-2.0	45	29	-5	25	29	0.44	-0.77	0.29	4.7	7	9	10	12	n.
Dubuque	Dubuque	639	47	13.4	-4.9	40	26	-13	4	34	0.63	-0.86	0.21	11.5	7	7	12	12	nw.
Fort Dodge	Webster	1126	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grinnell	Poweshiek	1031	26	16.0	-2.9	41	7†	-19	25	40	0.56	-0.71	0.40	5.6	2	.....	.....	.....	.....
Grundy Center	Grundy	976	29	14.8	-2.1	41	26	-15	25	37	0.32	-0.60	0.08	4.0	4	12	8	11	nw.
Guthrie Center	Guthrie	1077	25	16.9c	-2.7	42c	26	-12c	25	36c	0.30	-0.50	0.18	3.5	2	.....	.....	.....	.....
Harlan	Shelby	1182	21	17.0	-1.7	40	26	-11	9	30	0.02	-0.65	0.02	....	1	26	2	3	n.
Independence	Buchanan	921	56	13.2	-2.4	40	26	-14	4	35	0.31	-0.91	0.14	5	18	0	13	n.	
Iowa City	Johnson	733	59	16.9	-0.7	43	29	-8	4	35	0.84	-0.81	0.49	9.0	5	13	5	13	nw.
Iowa Falls	Hardin	1107	27	12.8	-1.0	38	26	-16	25	33	0.48	-0.73	0.20	4.8	6	11	6	14	nw.
Jefferson	Greene	1052	21	16.2	-1.7	41	29	-11	25	34	0.20	-0.60	0.10	2.0	3	11	9	11	nw.
LeClaire	Scott	576	20	18.8	.....	48	29	-11	25	43	0.49	-0.81	0.14	4.6	7	.....	.....	.....	.....
Little Sioux	Harrison	1040	15	20.3	+1.1	49	29	-7	9	36	0.15	.....	0.10	1.5	2	10	10	11	se.
Logan	Harrison	928	53	21.2	+1.8	47	29	-6	9	35	0.11	-0.95	0.11	1.0	1	9	13	9	nw.
Maquoketa	Jackson	688	19	15.1	-3.1	40	12	-17	25	40	0.90	-0.42	0.61	8.0	5	13	5	13	n.
Marshalltown	Marshall	947	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Monroe	Jasper	922	8	18.8	.....	48	29	-11	25	43	0.81	.....	0.43	7.5	2	13	3	15	nw.
Muscatine	Muscatine	554	60	.....	.....	48	30	-14	4	31	0.56	-1.33	0.21	8.6	8	.....	.....	.....	.....
Olin	Jones	760	22	14.8	-4.1	39	30	-14	4	31	0.48	-0.90	0.24	6.0	2	14	8	9	nw.
Onawa	Monona	1051	20	20.6	.....	48	26†	-3	2†	36	0.08	-0.92	0.04	1.0	2	11	8	12	s.
Perry	Dallas	975	19	15.6b	-3.1	42b	29	-15b	25	37b	0.21	-0.92	0.19	2.1</					

CLIMATOLOGICAL DATA FOR JANUARY 1920.

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)	
<i>Southern Division</i>															
Afton.....	Union.....	1212	26	21.6	+0.6	27	29	-4	25	29	0.20	-0.64	0.20	2.5	1 13 10 8 nw. S. R. Brown
Albia.....	Monroe.....	959	22	19.4	0.0	49	29	-9	25	32	0.37	-0.92	0.37	5.0	1 14 4 13 sw. F. H. Holmes
Atlantic.....	Cass.....	1164	29	18.8	-0.6	43	29	-7	9†	31	0.52	-0.26	0.20	5.1	1 8 5 18 ne. Thos. H. Whitney
Bedford.....	Taylor.....	20	22.2	+1.0	51	29	-5	9†	31	0.55	-0.45	0.30	5.3	4 15 7 9 nw. E. E. Healy	
Bloomfield.....	Davis.....	881	13	22.0	.....	52	29	-6	25	34	0.30	-1.63	0.30	4.0	1 6 18 7 nw. V. G. Warner
Bonaparte.....	Van Buren.....	565	29	21.0	-1.0	47	29	-6	25	30	0.24	-1.36	0.22	2.2	2 16 4 11 nw. Bruce R. Vale
Burlington.....	Des Moines.....	544	24	21.8	-0.6	44	29	-2	4†	30	0.38	-1.35	0.30	4.0	3 18 4 9 ne. Mrs. Edna M. Donnelly
Centerville.....	Appanoose.....	1013	15	22.5	.....	49	29†	-10	25	35	0.31	.....	0.29	3.3	2 14 6 11 se. Leo J. Allen
Chariton.....	Lucas.....	1042	25	20.6	-0.1	48	14†	-4	25	32	0.49	-0.67	0.38	6.0	2 9 13 9 ew. C. C. Burr
Clarinda.....	Page.....	1009	30	23.4	+3.7	51	29	-1	9	30	0.24	-0.71	0.10	2.5	3 13 8 10 nw. A. S. Van Sandt
Columbus Jet.....	Louisa.....	595	19	19.7	-2.3	42	12†	-6	25	30	0.44	-0.80	0.32	4.8	5 16 5 10 nw. J. B. Johnston
Corning.....	Adams.....	1117	28	21.6	+1.9	50	29	-6	9	42	0.30	-0.59	0.20	3.0	2 16 2 13 nw. Jerome Smith
Corydon.....	Wayne.....	1101	27	21.1	-0.7	44	12†	-7	25	32	0.37	-0.96	0.36	4.1	2 13 9 9 nw. May C. Miller
Creston.....	Union.....	1312	15	19.6	+1.6	50	29	-4	25	34	0.45	.....	0.25	4.5	2 9 16 6 nw. Mrs. T. E. Hubbard
Cumberland.....	Cass.....	21	.....	.....	.....	.....	.....	.....	.....	.....	0.20	-0.68	0.20	2.0	1 12 9 10 nw. J. H. Reppert
Earlham.....	Madison.....	1126	18	18.1	-1.0	43	26†	-16	25	38	0.32	-0.93	0.18	3.5	4 12 9 10 nw. Geo. Phillips
Fairfield.....	Jefferson.....	780	36	20.7c	-1.1	48c	29	-11c	25	37c	0.47	-1.08	0.40	4.9	3 20 ne. Prof. R. M. McKenzie
Glenwood.....	Mills.....	1100	23	23.9	.....	52	29	-8	9	38	0.40	.....	0.30	4.0	2 10 1 20 ne. Dr. Geo. Mogridge
Greenfield.....	Adair.....	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indianola.....	Warren.....	969	28	19.2	-1.2	45	29	-6	25	29	0.42	-0.79	0.30	4.2	4 13 5 13 nw. Prof. J. L. Tilton
Keokuk.....	Lee.....	614	49	22.5	-1.2	49	29	0	25	31	0.38	-1.31	0.28	3.8	3 11 8 12 n. U. S. Weather Bureau
Keosauqua.....	Van Buren.....	644	28	21.1	+0.2	48	29	-9	25	33	0.20	-1.14	0.15	2.0	2 13 6 12 se. J. H. Landes
Knoxville.....	Marion.....	920	25	18.9	-2.1	47	29	-15	25	39	0.45	-0.75	0.30	4.5	3 14 3 14 nw. W. J. Casey
Lacona.....	Warren.....	21	.....	.....	.....	.....	.....	.....	.....	.....	0.70	-1.02	0.40	7.0	3 6 16 9 J. B. Alter
Lanoni.....	Decatur.....	1100	13	22.2	+0.7	51	29	-6	25	32	0.21	.....	0.17	3.5	2 17 4 10 nw. Ed. D. Moore
Lenox.....	Taylor.....	1250	25	22.0	+1.6	51	29	-3	25	31	0.31	-0.39	0.20	3.1	4 16 7 8 nw. J. L. Hurley
Mt. Ayr.....	Ringgold.....	1236	27	22.1	+0.3	50	29	-6	25	31	0.36	-0.71	0.30	4.6	3 12 9 10 s. Alex Maxwell
Mt. Pleasant.....	Henry.....	729	39	20.8	-1.3	47	29	-6	25	33	0.49	-1.02	0.25	5.0	5 14 4 13 nw. John H. Jericho
Murray.....	Clarke.....	1216	29	20.4	0.0	48	29	-6	25	31	0.20	-0.68	0.17	1.8	2 10 10 11 nw. M. T. Ashley
Oakland.....	Pottawattamie.....	.....	19.9	.....	.....	40	12†	-10	9	35	0.30	.....	0.20	3.0	2 17 3 11 s. M. E. Gray
Oskaloosa.....	Mahaska.....	825	44	18.8	-1.2	46	29	-11	25	39	0.84	-0.12	0.64	9.1	6 10 8 13 nw. Roy R. Robinson
Ottumwa.....	Wapello.....	849	25	18.8c	.....	50c	30	-12c	25	36c	0.60	-0.99	0.60	2.0	1 n. Eugene O. Field
Pella.....	Marion.....	877	27	18.4	-2.0	44	29	-19	25	40	0.44	-0.58	0.33	5.0	2 16 2 13 nw. J. H. Ver Steeg
Sigourney.....	Keokuk.....	877	24	18.4	-2.4	44	29	-15	25	36	0.44	-0.88	0.35	4.2	3 14 5 12 nw. W. E. Utterback
Stockport.....	Van Buren.....	754	18	20.0	-2.0	48	29	-12	25	35	0.30	-1.07	0.25	2.5	2 13 8 10 nw. C. L. Beswick
Thurman.....	Fremont.....	23	24.0	+3.1	58	29	-4	2†	36	0.75	+0.13	0.30	8.0	5 3 21 7 nw. C. R. Paul	
Washington.....	Washington.....	769	38	19.0	-1.6	47	29	-7	25	32	0.52	-0.98	0.38	5.5	4 14 7 10 nw. Wm. A. Cook
Winterset.....	Madison.....	1129	29	19.8	-1.1	47	29	-6	25	30	0.48	-0.48	0.30	5.0	2 23 5 3 nw. H. S. Ely
Omaha, Nebr.....	.....	1040	49	23.2	+2.7	53	29	4	21	28	0.28	-0.37	0.21	2.9	4 10 9 12 nw. U. S. Weather Bureau
Means and extremes.....	.....	.....	20.8	-0.1	58	29	-19	25	42	0.40	-0.79	0.64	4.1	3 13 8 10 nw.	
State Means and Extremes.....	.....	.....	16.7	-1.2	58	29	-26	4	45	0.42	-0.63	0.64	4.6	4 12 8 11 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.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

Stations	Barometric Pressure Inches (Sea level)				Relative Humidity (Per cent)				WIND				Sun- shine.			
	Mean	Highest	Date	Lowest	Date	Mean	7 A. M.	Noon	7 P. M.	Lowest	Date	Total	Average h'ry velocity,	Maximum	For cent of possible.	Departure from normal.
												movement	mill.	From	Date	
Charles City	30.30	30.83	24	29.63	16	90	78	85	58	29	5,144	6.9	25	sw	12 40 -12	
Davenport	30.30	30.79	25	29.62	16	92	75	79	48	5	6,318	8.5	27	sw	12 54 + 8	
Des Moines	30.27	30.83	24	29.61	16	82	74	78	55	14	5,739	7.7	29	sw	12 46 - 3	
Dubuque	30.32	30.82	25	29.66	16	86	76	80	56	1	5,264	7.1	25	nw	20 55 + 6	
Keokuk	30.31	30.80	28	29.62	16	76	62	67	29	16	6,012	8.1	32	s	12 51 + 2	
Sioux City	30.28	30.87	24	29.63	15	84	77	78	47	12	8,825	11.9	56	nw	20 35 - 20	
Omaha, Neb	30.28	30.83	24	29.64	15	81	66	73	43	22	6,687	9.0	39	ne	19 49 - 6	
Means and extremes	30.29	.....	.....	.....	.....	86	73	77	.....	.....	8.5	.....	.....	47	— 3
extremes	.....	30.87	24	29.61	16	29	16	.....	.....	56	nw	20	.....	.....	.....
Normals and records	30.14	1	25th	§	34	85	78	1	19th	.....	8.7	1	6th	50	.....
records	.....	31.09	1905	28.71	1906	.....	25	1892	.....	72	nw	1903	.....	.....	.....

*Sioux City. §Dubuque. †Local mean time, ‡and other dates

DAILY PRECIPITATION FOR JANUARY, 1920.

Stations	Watersheds	DAY OF MONTH																																		
		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	Total			
<i>Northern Division</i>																																				
Algona.....	Des Moines.....					.12	.04																											0.42		
Allison.....	Cedar.....			T	.20	.15																												0.65		
Alta.....	Raccoon.....				.05	.08																												0.28		
Alta (near).....	Raccoon.....			T	.03	.05	.05																										0.13			
Alton.....	Floyd.....			T	.05	.20																												T 0.34		
Belmond.....	Iowa.....			T	.10	.10	.03																										0.53			
Britt.....	Iowa.....			T	.11	.04	.02	T																									0.24			
Charles City ***	Cedar.....			T	.01	.32	.17	.02	T																								0.65			
Decorah.....	Mississippi.....				.13	.20	.17																										0.98			
Elkader.....	Mississippi.....			T	.10	.05																											0.47			
Estherville.....	Des Moines.....			T	.04	.17																											0.30			
Fayette.....	Mississippi.....				.07	.44	.04	.16	.08																							0.47				
Forest City.....	Cedar.....			T	.15	.08	T																										1.02			
Humboldt.....	Des Moines.....			T	.02	.01		T																									T 0.32			
Inwood.....	Big Sioux.....			T	.02																													0.12		
Le Mars.....	Floyd.....																																		0.14	
Mason City.....	Cedar.....			T	.02	.03	.10																										T 0.69			
Milford.....	Little Sioux.....				.04	.08	.16	T																									0.40			
New Hampton.....	Wapsipinicon.....				.03	.15	T	T																									0.36			
Nora Springs.....	Cedar.....				.05	.20	.25	.20	.10																							1.05				
Pocahontas.....	Des Moines.....			T	.07	.05	.04																										.50 0.30			
Postville.....	Mississippi.....				.30	.03	.10	.10																									0.99			
Rock Rapids.....	Big Sioux.....			T	.06	.02																											T 0.19			
Sanborn.....	Floyd.....			T	.02	.40																											0.44			
Sioux Center.....	Little Sioux.....				.30	.01																											0.42			
Spencer.....	Raccoon.....				.04	.01	.01																										T 0.11			
Storm Lake.....	Little Sioux.....				.10	.05																											0.20			
Washta.....	Cedar.....				.06	.16	.15																										0.63			
Waverly.....	Des Moines.....				.08	.07	.15																										0.36			
<i>Central Division</i>																																				0.22
Ames.....	Skunk.....			T	.04	.02																													T 0.32	
Audubon.....	Nishnabotna.....			T	T	T	.17	T																										0.96		
Baxter.....	Skunk.....			T	.10	.13																												T 0.24		
Belle Plaine.....	Iowa.....			T	.08	.10																												0.16		
Boone.....	Des Moines.....			T	.11																														0.55	
Carroll.....	Raccoon.....			T	T	.15																												T 0.44		
Cedar Rapids.....	Cedar.....				.08	.08	.03																										0.74			
Clinton.....	Mississippi.....				.08	.08	.03																										0.44			
Davenport***	Mississippi.....				.02	T	.12	.01	T	T																							0.43			
Delaware.....	Mississippi.....			T	T	T	T	T																										T 0.43		
Denison.....	Missouri.....				T	T	.07	T	T																									0.44		
Des Moines***	Des Moines.....				T	T	.07																											0.63		
Dubuque ***	Mississippi.....				.06	T	.12	T	T	T																							0.43			
Fort Dodge.....	Des Moines.....			T	.05	.05	.04																										0.56			
Grinnell.....	Iowa.....			T	T	T	.16																											0.32		
Grundy Center.....	Cedar.....			T	.08	.08																												0.30		
Guthrie Center.....	Raccoon.....				.12																														0.02	
Harlan.....	Nishnabotna.....				.04	.06	.14																											0.31		
Independence.....	Wapsipinicon.....				.04	.06	.14																											0.84		
Iowa City.....	Iowa.....			T	.07	.12																												0.48		
Iowa Falls.....	Iowa.....			T	.05	T	.20	T																										0.49		
Jefferson.....	Raccoon.....			T	.05	.12																												T 0.20		
Le Claire II -	Mississippi.....			.01	.01		.12																										0.49			
Little Sioux.....	Little Sioux.....				.05	.10																												0.15		
Logan.....	Missouri.....					.11																												0.11		
Maquoketa.....	Maquoketa.....				.05		T																													

DAILY PRECIPITATION FOR JANUARY, 1920.—Continued

Stations	Watersheds	DAY OF MONTH																															
		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	Total
<i>Southern Division</i>																																	
Afton.....	Grand							T																									0.20
Albia.....	Des Moines							T																									0.37
Allerton.....	Chariton																																0.52
Atlantic.....	Nishnabotna	.03	.02				.02	.20																								0.55	
Bedford.....	Missouri	.10		T				.10	.05																							0.30	
Bloomfield.....	Mississippi																																0.24
Bonaparte.....	Des Moines								.04	.04																						0.38	
Burlington.....	Mississippi																																0.31
Centerville.....	Chariton			T					T	.02																						0.49	
Chariton.....	Chariton									.11																						0.24	
Clarinda.....	Nodaway		.05							.09																						0.44	
Columbus Jet.....	Iowa			.01				T	.05	.04																					0.37		
Corning.....	Nodaway				T	T				.20																						0.37	
Corydon.....	Chariton								T																								0.45
Creston.....	Missouri	T							.25																								0.20
Cumberland.....	Nodaway								.20																								0.47
Earlham.....	Des Moines			T					T	.05	T																					0.40	
Fairfield.....	Skunk			T					T	.06	T																					0.42	
Glenwood.....	Missouri		T						.30																							0.38	
Greenfield.....	Nodaway																																0.20
Indianola.....	Des Moines			T					.10	T																						0.45	
Keokuk ***.....	Mississippi	.01	T	T				T	.09		T																					0.21	
Keosauqua.....	Des Moines				T				.05																								0.45
Knoxville.....	Des Moines			T					.10																								0.70
Lacona.....	Des Moines								.20																								0.21
Lamoni.....	Grand							T	.04																								0.31
Lenox.....	Missouri	.03							.06	.02																						0.36	
Mt. Ayr.....	Grand			T	T				T	.05	.01																					0.49	
Mt. Pleasant.....	Skunk								.05																								0.20
Murray.....	Grand			T	T				T	T	.03																					0.84	
Oakland.....	Nishnabotna			T					.20	T																						0.60	
Oskaloosa || |.....	Des Moines				T				.06	.08	T																					0.44	
Ottumwa || |.....	Des Moines					T				.11																							0.44
Pella.....	Skunk				T	T					T																						0.30
Sigourney.....	Skunk			T	T				.05	.04																						0.48	
Stockport.....	Skunk								.05	T																							0.28
Thurman.....	Missouri	.20		T					.30	.05																						0.75	
Washington.....	Skunk								.02	.07																						0.52	
Winterset.....	Des Moines								.18																								0.48
Omaha, Nebr.***.....	Missouri	.02		T	T	.01	.21	T	T																							T	

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.

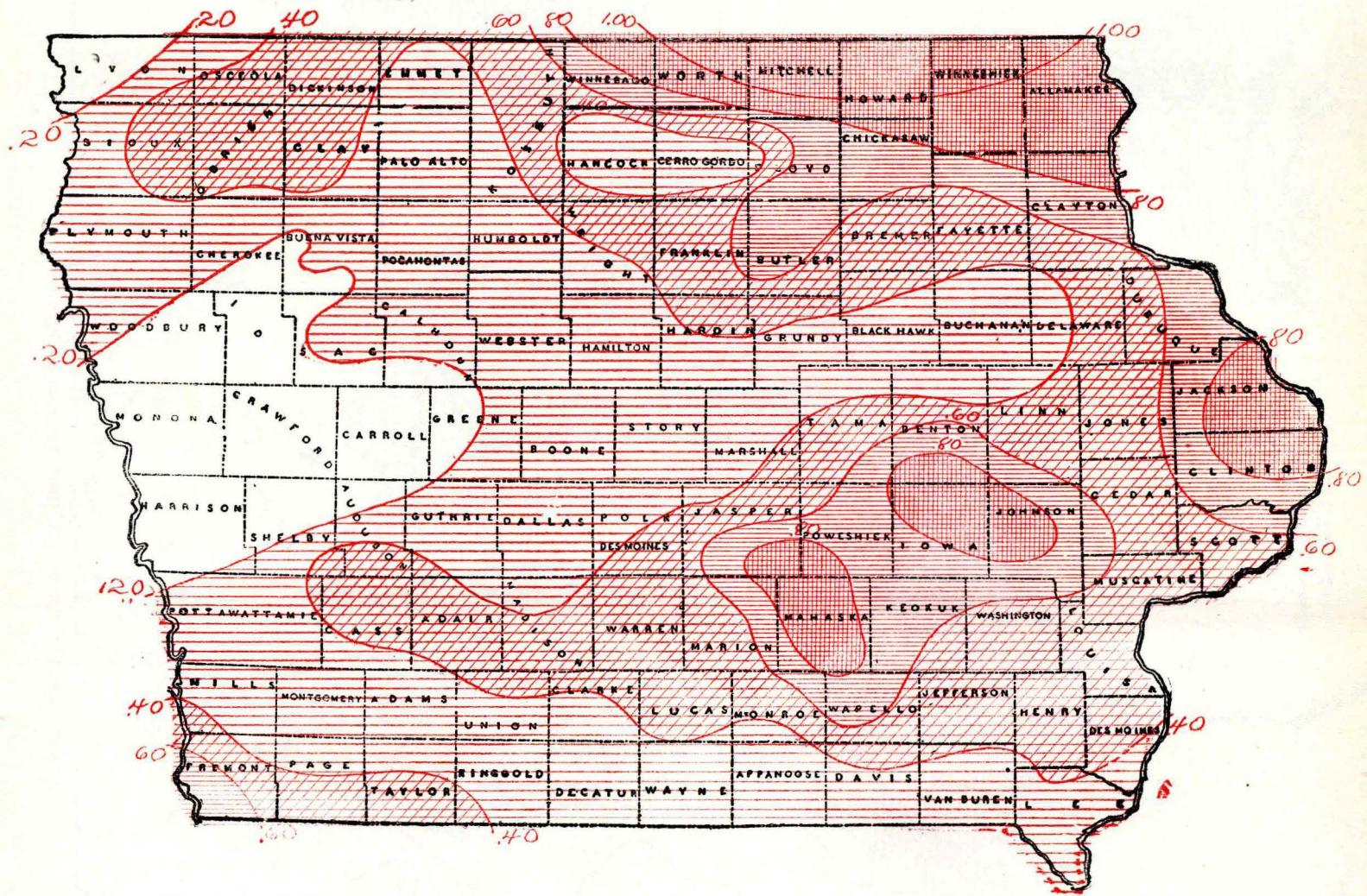
Daily Maximum and Minimum Temperatures for the Month of January, 1920.

Stations	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	Mean	
<i>Northern Division.</i>																																	
Algona.....	Maximum..	12	3	14	11	23	30	29	16	16	30	25	38	35	25	23	21	10	10	14	15	14	18	17	14	19	37	18	20	37	35	23 21.0	
	Minimum..	-5	-10	-2	-10	0	22	11	0	-13	11	0	14	12	19	12	10	-2	0	0	-6	-10	-6	9	-3	-18	12	-3	-8	18	20	9 3.1	
Alta.....	Maximum..	9	7	20	16	26	30	22	15	24	32	30	39	30	32	23	23	11	15	27	13	18	22	15	11	19	38	11	27	44	32	25 22.8	
	Minimum..	-4	-6	4	-3	8	18	10	2	-2	20	14	17	15	15	12	10	2	4	3	3	-7	0	6	-5	-10	10	1	3	20	22	12 6.2	
Alton.....	Maximum..	8	9	22	17	28	32	24	16	23	33	28	42	34	33	25	24	16	17	26	14	15	22	15	10	20	39	15	27	44	33	25 23.7	
	Minimum..	-2	-5	6	0	15	20	14	3	-8	18	12	20	14	15	16	15	4	4	3	-6	5	8	3	-6	15	2	-6	15	18	15 7.5		
Belmond.....	Maximum..	2	1	6	16	21	30	28	15	15	31	25	36	31	32	23	21	10	10	12	14	12	18	18	14	18	36	16	20	37	32	33 20.4	
	Minimum..	-10	-12	-4	-13	3	21	13	0	-12	8	9	9	11	14	11	8	-1	0	2	2	-11	-6	12	-9	-16	14	-1	-7	15	21	20 2.9	
Charles City.....	Maximum..	1	0	10	9	23	28	24	18	16	32	23	36	26	16	18	21	8	10	13	15	10	19	18	14	17	38	8	18	38	29	23 18.7	
	Minimum..	-8	-13	-6	-13	0	23	8	2	-11	11	4	4	13	9	14	6	-1	0	4	-4	-9	9	-11	-15	10	-1	-9	14	12	6 1.3		
Decorah.....	Maximum..	10	-2	9	6	20	30	29	25	17	32	24	36	35	17	16	20	10	10	17	15	11	13	19	15	14	39	33	19 23.0				
	Minimum..	-11	-14	-7	-24	-12	16	19	10	-8	2	0	0	13	10	11	10	1	-1	5	5	-12	-15	10	5	-19	14	2	-11	11	15 4.9		
Forest City.....	Maximum..	4	4	12	12	22	31	30	23	19	31	28	37	32	20	24	20	12	12	12	18	21	20	15	18	35	14	21	48	34	29 21.9		
	Minimum..	-6	-12	-6	-8	-2	20	10	3	-11	8	12	8	11	11	7	8	-3	-2	0	8	-9	-3	10	-5	-16	14	-4	-7	12	23	7 2.8	
Inwood.....	Maximum..	6	8	26	18	30	30	26	20	25	35	30	45	30	27	30	21	15	16	17	12	14	20	14	12	26	45	19	29	48	33	25 24.3	
	Minimum..	-5	3	2	3	18	24	14	2	-2	20	10	20	12	8	10	2	2	3	2	0	-9	2	6	-5	-6	11	0	-3	18	14	15 6.2	
Mason City.....	Maximum..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Minimum..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milford (near).....	Maximum..	8	6	17	16	27	30	31	17	21	29	28	30	26	22	22	10	9	14	12	13	15	13	7	19	38	11	24	44	35	19 21.0		
	Minimum..	-4	-9	-4	-6	9	16	14	-2	-11	7	9	9	10	13	12	8	-2	-1	0	-11	-2	6	-6	-15	10	-3	-5	18	11	10 3.2		
New Hampton.....	Maximum..	5	-3	7	8	18	28	27	18	18	32	25	36	33	16	15	17	18	8	10	15	12	17	17	15	14	36	33	18	37	21 19.5		
	Minimum..	-12	-16	-7	-16	-4	18	17	7	-5	5	4	11	7	12	8	-3	-2	4	4	-11	-5	12	2	-16	14	-1	-9	12	22	3 1.9		
Northwood.....	Maximum..	0	0	8	7	22	29	23	17	20	29	27	.....	.....	.....	.....	.....	.....	.....	10	14	17	14	36	12	17	30	32	20 3.0			
	Minimum..	-8	-15	-2	-10	0	22	9	1	-11	14	1	.....	.....	.....	.....	.....	.....	.....	11	-8	-12	19	12	-3	-11	12	12	3 1.9			
Pocahontas.....	Maximum..	14	12	20	15	25	31	29	17	23	33	28	38	34	28	26	25	12	14	16	15	16	21	18	13	22	39	17	25	42	34	24 23.4	
	Minimum..	-3	-6	1	-7	6	25	14	3	-10	14	13	15	17	17	10	1	4	4	5	-9	10	0	-13	10	0	-3	20	21	10 5.8			
Postville.....	Maximum..	6	-4	5	7	19	26	28	27	20	31	23	35	32	14	15	19	14	8	10	18	10	14	15	13	12	37	35	16	35	29	22 19.1	
	Minimum..	-14	-19	-12	-19	-7	17	17	10	-2	7	8	13	10	4	8	4	-2	-4	3	6	-12	-9	11	0	-15	12	1	-10	11	20 1.2		
<i>Central Division.</i>																																	
Belle Plaine.....	Maximum..	12	3	15	14	27	30	31	22	15	33	31	38	41	24	25	27	15	12	15	21	12	24	21	18	19	41	34	18	40	34	24 23.7	
	Minimum..	-4	-6	-3	-10	4	24	19	3	-3	13	12	11	18	16	8	14	1	2	9	10	-5	4	17	1	-15	17	8	-3	16	21	9 6.7	
Boone.....	Maximum..	11	7	17	15	25	30	30	15	20	34	30	38	29	27	24	24	11	21	12	15	13	21	18	18	20	41	36	23	41	39	28 23.6	
	Minimum..	-3	-6	-1	-7	6	24	14	7	-5	17	15	18	17	18	11	11	2	4	8	9	-5	2	15	4	-9	20	4	-2	20	23	10 7.8	
Carroll.....	Maximum..	13	10	21	20	32	31	29	19	24	31	33	40	34	34	30	26	17	20	17	17	18	22	40	35	26	43	39	27 26.1				
	Minimum..	-3	-4	1	-3	8	21	18	6	-5	10	15	19	18	15	10	16	3	7	8	7	-5	-1	5	10	-8	10	-2	20	13	7.5		
Davenport.....	Maximum..	12	2	12	11	27	31	33	21	25	29	30	42	33	22	23	23	16	18	20	23	21	28	25	19	21	26	21	42	37	23 24.4		
	Minimum..	-1	-5	0	-6	2	24	21	14	15	13	16	21	13	17	16	17	5	4	11	11	3	7	17	6	-4	17	10	1	16	14	12 9.9	
Des Moines.....	Maximum..	16	12	20	15	28	31	28	18	24	35	33	41	34	33	28	29	15	20	30	21	18	26	23	19	44	15	25	36	26	23 26.3		
	Minimum..	1	0	3	0	9	27	15	11	1	19	20	19	22	22	15	15	13	8	12	8	0	7	16	2	-5	15	8	3	22	19	13 10.6	
Dubuque.....	Maximum..	4	-2	7	8	26	30	31	22	23	29	26	39	31	17	21	11	12	15	21	15	20	16	18	40	25	19	37	28	23 21.0			
	Minimum..	-6	-10	-3	-13	-8	24	22	14	9	9	12	7	15	12	13	11	2	1	9	8	-2	-4	14	3	-7	15	7	-4	14	8	5 5.8	
Fort Dodge.....	Maximum..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Minimum..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grinnell.....	Maximum..	21	9	11	14	24	32	41	22	22	31	40	40	36	29	31	27	20	13	18	21	14	23	22	21	21	20	41	39	20	41	38	28 26.1
	Minimum..	-6	-5	-8	4	12	20	5	-6	6	9	0	11	17	13	19	1	5	12	12	-4	6	17	2	-19	12	6	-2	17	9	5 8.8		
Guthrie Center.....	Maximum..	17	12	21	18	28	31	30	17	24	35	35	39	33	37	30	27	17	26	24	16	18	25	20	18	24	42	32	25	25	38	25 25.8	
	Minimum..	-1	-2	-5	8	25	12	8	-9	15	13	18	18	18	12	15	4	10	10	10	-4	2	16	1	-12	21	7	14	8.0c	14 8.0c			
Independence.....	Maximum..	12	-1	8	8	23	30	25	17	31	28	37	37	22	21	24	20	10	14	18	14	20	18	16	40	38	16	38	36	27 22.5			
	Minimum..	-8	-12	-4	-14	-20	14	8	1	4	11	11	14	11	14	11	14	-1	7	2	-8	-3	14	7	-11	14	3	-9	11	17	5 3.9		
Iowa City.....	Maximum..	14	4	14	13	26	30	31	25	26	30	30	41	37	25	26	24	21	18	22	25	23	23	20	41	39	27	25	41	27 25.6			
	Minimum..	-4	-5	-8	2	24	22	11	5	5	12	6	19	17	16	21	21	4	4	11	12	-3	0	17	0	12	13	8	2	7	6	12 8.2	
Iowa Falls.....	Maximum..	7	2	15	12	22	28	18	18	34	27																						

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

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

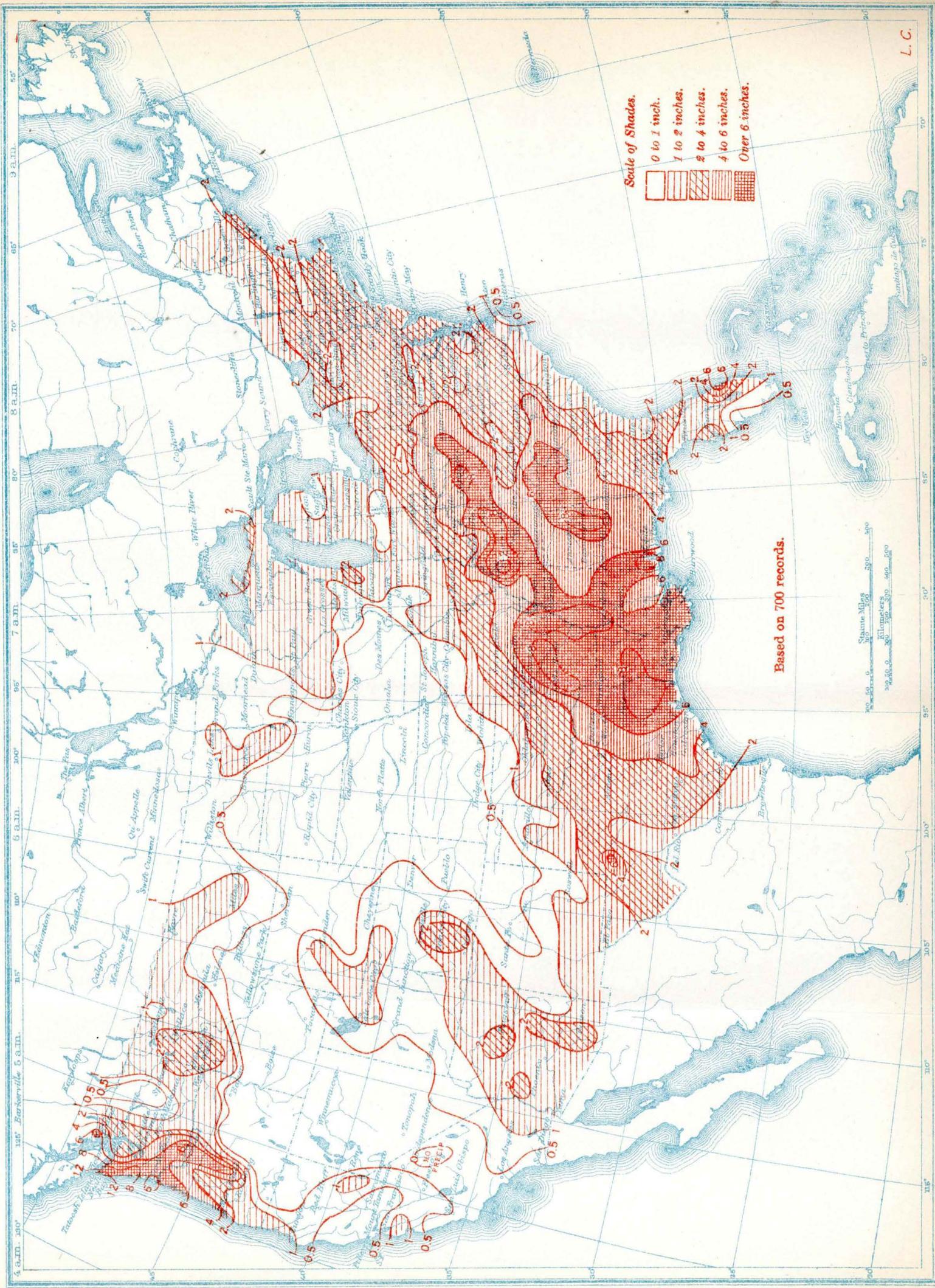
TOTAL PRECIPITATION, JANUARY 1920.



SCALE OF SHADES—IN INCHES.

	Less than 0.20		0.20 to 0.40		0.40 to 0.60		0.60 to 0.80		more than 0.80
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Total Precipitation, Inches, January, 1920.



U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IAWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

FEBRUARY, 1920

BY

CHARLES D. REED

METEOROLOGIST

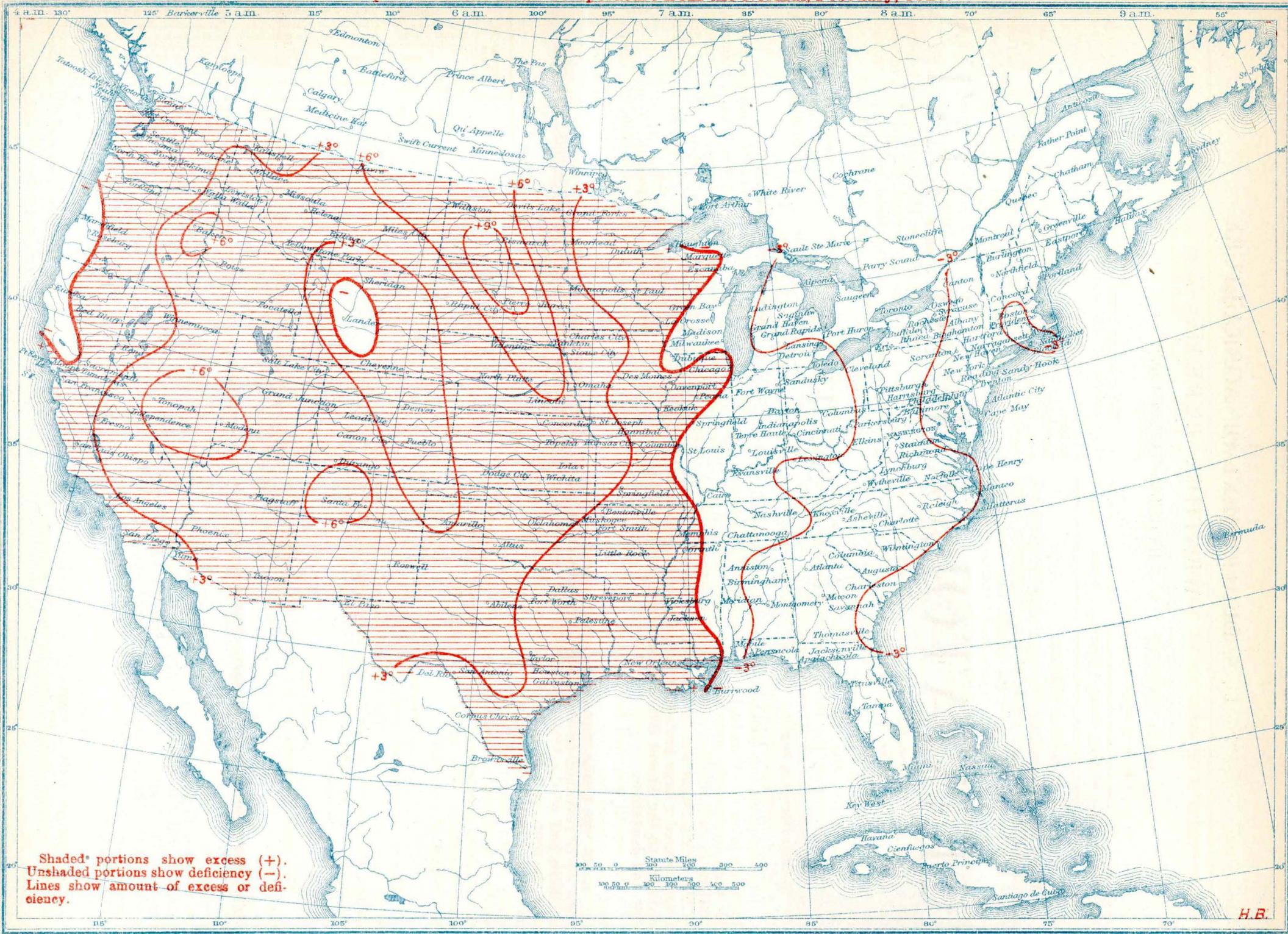


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E.C.

Departure of the Mean Temperature from the Normal, February, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist

Vol. XXXI Des Moines, Iowa, February 1920. No. 2

GENERAL SUMMARY

While the temperature averaged slightly above the normal during February there were no protracted warm spells and for the most part the month was uniformly cold. Zero weather was experienced throughout the State but over the southeastern portion zero, or below, was reached on but a single day. Another feature was the low maxima over the State. While the maximum for the State was 59° in the extreme southeastern portion, outside of a few southern counties, the maxima were well under 50°. The excess in temperature was pronounced in some of the southwestern counties and it gradually became less to the northeast until a deficiency was shown at a single station, Dubuque. An abnormal rise in temperature occurred on the 16th, from considerably below zero over most of the State in the morning, to well above 40° in the afternoon, making the range for the day more than 50° at a number of stations.

Precipitation was deficient, the average amount for the State being less than half the normal and the average for each division was practically the same. Only a few stations in each division reported a slight excess. Most of the precipitation was in the form of snow or sleet. Glaze covered a large portion of the southern and central divisions on the 3d and 20th making travel on foot difficult and dangerous.

The month was free from severe storms, the snow that fell drifted less than usual, and at no time during the month was traffic impeded by snow blockades. The snow cover remained on the ground over most of the northern half of the State throughout the month, but over the southern half it began to disappear early in the month and corn husking and grazing were possible generally as the month advanced. During the most severe weather considerable areas were without snow cover in the southern division and wheat is thought to have suffered materially. The roads were better than usual for this season of the year.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.15 inches. The highest recorded was 30.74 inches, at Dubuque, on the 3d, and the lowest was 29.48, at Charles City and Dubuque, on the 17th. The monthly range was 1.26 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 103 stations, was 24.0°, or 3.5° higher than the normal. By divisions, these tiers of counties to the division, the means were as follows: Northern, 20.8°, or 3.7° higher than the normal; Central, 23.7°, or 3.0° higher than the normal; Southern, 27.4°, or 3.8° higher than the normal. The highest monthly mean was 30.2°, at Clarinda, and the lowest monthly mean was 18.2°, at Postville. The highest temperature reported was 59°, at Keokuk on the 22d, and the lowest reported was -22°, at Elkader, on the 16th. The temperature range for the State was 81°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 85 per cent, and at 7 p. m. it was 76 per cent. The

mean for the month was 81 per cent, or 1 per cent higher than the normal. The highest monthly mean was 88 per cent, at Charles City, and the least was 72 per cent, at Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 108 stations, was 0.56 inch, or 0.59 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, 0.57 inch, or 0.63 inch less than the normal; Southern, 0.58 inch, or 0.77 inch less than the normal. The greatest amount, 1.75 inches, occurred at Lacona, and the least, 0.04 inch, at Mason City. The greatest amount in any 24 consecutive hours, 0.75 inch, occurred at Earlham, on the 4th, and Little Sioux, on the 5th.

SNOW

The average snowfall for the State was 4.1 inches, or 3.3 inches less than the normal. The greatest amount, 12.5 inches, occurred at West Bend, and the least, a trace, at Burlington, Corning, Lamoni and Mt. Pleasant.

WIND.

The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau Station was 42 miles an hour from the northwest at Sioux City on the 13th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 39, or about 17 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 28; Davenport, 45; Des Moines, 43; Dubuque, 43; Keokuk, 48; Sioux City, 29; Omaha, Neb., 34.

MISCELLANEOUS PHENOMENA

Fog: 1st, 2d, 3d, 6th, 7th, 8th, 13th, 20th, 21st, 22d,

Halos: (lunar) 11th, 12th, 27th.

Halos: (solar) 12th, 20th.

Parhelia: 14th.

Sleet: 3d, 4th, 5th, 8th, 9th, 17th, 20th, 21st, 22d.

Zodiacal Light: 16th, 18th.

COMPARATIVE DATA FOR THE STATE—FEBRUARY.

YEAR	Temperature			Precipitation			Number of Days			With precipitation .01 in.	Clear	Partly cloudy	Cloudy
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall				
1890	26.0	+5.5	67	-24	0.83	-0.32	2.18	0.11	.....	3	13	7	8
1891	19.4	-1.1	70	-31	1.16	+0.01	2.41	0.55	.....	6	6	7	16
1892	28.1	+7.6	68	-20	0.05	-0.24	2.18	0.12	5.0	6	10	8	10
1893	16.4	-4.1	60	-28	1.39	+0.24	2.91	0.06	8.1	3	16	8	4
1894	19.7	-0.8	60	-19	0.89	-0.26	2.41	T.	8.4	4	13	9	6
1895	16.4	-4.1	73	-33	0.49	-0.66	1.34	0.02	3.3	4	12	9	8
1896	27.4	+6.9	78	-13	0.71	-0.44	2.40	0.04	5.4	4	12	9	8
1897	24.7	+4.2	61	-24	0.89	-0.26	1.81	0.22	8.0	5	10	12	9
1898	24.2	+3.7	62	-18	1.20	+0.05	3.65	0.10	7.8	5	10	9	9
1899	12.2	-8.3	75	-40	0.89	-0.26	4.32	0.12	7.1	5	11	10	7
1900	14.8	-5.7	60	-27	1.30	+0.15	4.57	0.18	9.9	6	10	8	10
1901	17.5	-3.0	49	-21	1.01	-0.14	3.00	0.12	9.7	4	15	7	6
1902	17.6	-2.9	62	-21	0.73	-0.42	2.39	0.02	2.6	4	13	8	7
1903	19.8	-0.7	56	-21	1.18	+0.03	3.25	0.30	7.9	4	13	7	8
1904	14.8	-5.7	70	-26	0.41	0.74	1.99	T.	4.5	4	10	9	10
1905	12.8	-7.7	69	-41	1.57	+0.42	2.97	0.44	15.5	7	14	6	8
1906	23.6	+3.1	66	-32	1.29	+0.14	2.91	0.20	6.1	5	14	7	7
1907	25.0	+4.5	65	-31	0.71	-0.44	1.95	0.06	4.6	4	14	6	8
1908	24.3	+3.8	59	-16	1.69	+0.54	3.95	0.23	8.9	6	12	6	11
1909	26.2	+5.7	62	-26	1.54	+0.39	4.72	0.30	7.7	5	11	6	11
1910	17.8	-2.7	58	-21	0.46	-0.69	2.09	T.	4.0	3	14	8	6
1911	27.3	+6.8	71	-13	2.76	+1.61	5.46	0.50	7.0	6	12	6	10
1912	18.1	-2.4	57	-30	1.21	+0.06	3.25	0.04	11.2	5	10	9	10
1913	20.2	-0.3	70	-24	0.82	-0.33	2.39	0.07	7.3	4	14	7	7
1914	16.8	-3.7	59	-29	0.87	-0.28	1.99	0.32	9.2	6	10	9	9
1915	29.1	+8.6	62	-8	2.93	+1.78	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
1919	24.9	+4.4	65	-16	2.42	+1.27	4.12	1.32	9.9	8	11	5	12
1920	24.0	+3.5	59	-22	0.56	-0.59	1.75	0.04	4.1	5	9	6	14

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

CLIMATOLOGICAL DATA FOR FEBRUARY, 1920

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit						Precipitation in inches			No. 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)	Clear	Party cloudy	Cloudy			
<i>Northern Division</i>																				
Algona	Kossuth	1213	47	20.4	+2.8	38	7	-16	15	46	0.74	-0.35	0.32	9.3	4	12	3	14	nw.	W. E. Laird
Allison	Butler	1045	8	21.1		37	7	-15	15	44	0.25	0.25	2.5	0.15	2	5	5	19	nw.	J. A. Bell
Alta	Buena Vista	1513	29	21.3	+5.2	41	16	-13	15	51	0.73	-0.19	0.33	8.6	9	8	7	14	nw.	David E. Hadden
Alta (near)	Sioux	1305	15	22.0	+4.3	41	16	-12	15	48	0.45	0.10	4.5	9	9	5	5	15	nw.	Warren Minard
Alton	Wright	1205	10	20.4		37	5	-15	15	45	0.66	0.15	6.1	14	6	7	16	nw.	W. S. Slagle	
Belmond	Hancock	1236	23	19.8	+3.1	37	7	-15	15	45	0.27	-0.54	0.10	2.7	6	7	11	11	nw.	Geo. P. Hardwick
Britt	Floyd	1015	29	19.2	+4.1	35	2	-16	15	42	0.21	-0.80	0.08	3.2	7	4	7	18	nw.	L. M. Goodman
Charles City	Winneshiek	875	27	19.7	+2.1	37	2†	-16	15	42	0.29	-0.74	0.12	3.0	6	15	1	13	nw.	U. S. Weather Bureau
Decorah	Clayton	751	41	20.4	+1.1	38	2†	-22	16	51	0.46	-0.61	0.25	4.6	4	9	8	12	nw.	Wm. F. Baker
Elkader	Emmet	1298	25	19.6	+4.6	36	7†	-15	15	37	0.63	-0.15	0.20	6.5	5	10	14	5	nw.	D. C. Hale
Estherville	Fayette	1003	30	19.4	+2.0	38	2	-18	15	45	0.41	-1.35	0.24	5.0	2	8	7	14	nw.	A. O. Peterson
Forest City	Winnebago	1226	26	22.0	+6.9	42	7	-15	15	51	0.20	-0.64	0.10	... 3	3	8	6	16	nw.	R. Z. Latimer
Humboldt	Humboldt	1095	32	21.6	+2.4	38	5†	-15	15	44	0.81	-0.03	0.23	9.3	8	7	6	16	n.	W. R. Prewitt
Inwood	Lyon	1474	16	21.5	+5.3	41	16	-18	15	50	0.82	+0.07	0.25	8.2	10	5	14	nw.	H. C. Snitkey	
Le Mars	Plymouth	1224	24	23.7	+5.4	43	9†	-12	15	48	0.17	-0.60	0.11	1.8	3	8	5	16	nw.	F. B. Hanson
Mason City	Cerro Gordo	1148	23	20.6	+3.3	47	8	-16	15	42	0.04	-0.77	0.02	0.4	2	17	0	12	nw.	C. L. Trener
Milford (near)	Dickinson	1430	... 19.6			39	16	-14	14†	50	0.72	0.27	7.7	8	9	6	14	nw.	North. Sugar Corp.	
New Hampton	Chickasaw	1169	23	19.0c	+2.4	35c	2†	-18c	15	45c	0.30	-0.62	0.20	3.0	3	... 3	6	17	nw.	Dr. F. J. Smith
Nora Springs	Floyd	1064	8	21.9		38	2	-15	15	47	0.31	0.12	2.1	8	6	6	17	s.	A. F. Kemman	
Northwood	Worth	1222	24	[19.3b]	+3.1	39b	22	-17b	15	43b	0.25	-1.07	0.10	2.5	3	... 3	6	17	nw.	Arthur Betts
Pocahontas	Clayton	1248	16	21.0	+3.4	41a	5	-19	15	50a	0.79	-0.06	0.27	9.2	10	10	5	14	nw.	Chas. Dwelle
Postville	Lyon	1180	21	18.2	+0.5	38	2	-21	15	39	0.40	-0.74	0.25	3.9	6	8	5	15	nw.	F. E. Bronek
Rock Rapids	O'Brien	1358	21	21.4	+5.8	41	16	-15	15	48	1.04	+0.64	0.40	10.2	9	13	9	7	nw.	F. L. Williams
Sanborn	1553	6	21.8			41	16	-13	14	42	0.35	0.15	3.5	3	8	6	15	nw.	J. K. Meuserry	
Sioux Center	Sioux	1426	21	21.2a	+4.2	44a	16	-15a	15	52a	0.80	+0.10	0.20	8.0	6	... 3	8	12	n.	Jaz. W. Dow
Spencer	Clay	1319	6	20.8		41	16	-15	15	48	0.40	0.16	5.0	4	9	8	12	n.	J. de Ruyter	
Storm Lake	Buena Vista	1440	81	21.9	+4.8	41	16	-13	15	50	0.66	-0.09	0.40	6.5	6	8	1	20	n.	E. W. Little
Washta	Cherokee	1157	22	23.7	+5.0	46	1	-16	15	54	0.30	-0.52	0.10	3.0	4	9	2	18	n.	Geo. H. Fracker
Waverly	Bremer	948	24	21.2	+2.6	44	22	-15	15	43	0.77	-0.35	0.25	5.0	8	5	4	20	nw.	H. L. Felter
West Bend	Palo Alto	1197	27	19.9	+2.4	40	5	-18	15	52	0.93	+0.04	0.30	12.5	8	10	6	13	nw.	Jos. Dorweiler
Means and Extremes				20.8	+3.7	47	8	-22	16	54	0.52	-0.39	0.70	5.6	6	9	6	14	nw.	
<i>Central Division</i>																				
Ames	Story	926	44	23.1	+2.4	38	16	-11	15†	49	0.71	-0.20	0.28	8.4	6	8	7	14	n.	Iowa State College
Audubon	Audubon	1301	26																n.	V. M. Jones
Baxter	Jasper	998	20	23.0	+1.9	38	16	-11	15	46	0.31	-0.61	0.17	2.9	5	6	6	17	nw.	Rev. Paul Traeger
Belle Plaine	Benton	886	30	23.8	+3.0	40	2	-11	15†	48	0.40	-1.22	0.18	4.5	8	7	9	13	nw.	O. C. Burrows
Boone	Carroll	1184	15																n.	Carl F. Henning
Carroll	Linn	1265	30	23.4b	+4.4	45	17	-15c	15	49c	1.21	+0.14	0.45	8.0	5	14	3	12	nw.	Mrs. J. J. Wolfe
Cedar Rapids	Clinton	733	88	24.1	+4.3	41	2	-10	15	41	0.36	-1.06	0.16	3.6	3	10	4	15	w.	R. S. Toogood
Clinton	Scott	598	47	24.4	+1.5	40	2†	-12	15	39	0.34	-1.73	0.14	2.7	7	6	9	14	nw.	H. Burde
Davenport	Delaware	1083	29																n.	U. S. Weather Bureau
Delaware	Crawford	1180	26	24.8	+4.7	45	16	-13	15	52	0.65	-0.27	0.50	4.8	2	7	4	18	n.	Nettie E. Ball
Denison	Polk	861	40	25.8	+1.2	42	2	-7	15	44	0.74	-0.38	0.33	4.1	10	7	5	17	nw.	Emma Brogden
Des Moines	Dubuque	689	47	21.1	-0.5	41	2	-14	15	39	0.47	-0.97	0.24	6.7	6	5	5	18	nw.	U. S. Weather Bureau
Dubuque	Webster	1126	20	21.7	+4.1	40	9	-10	15†	35	0.45	-0.17	0.20	4.5	4	15	4	10	n.	U. S. Weather Bureau
Fort Dodge	Poweshiek	1031	26	23.3	+1.2	39	7†	-12	16	49	0.32	-0.79	0.16	4.0	3	12	4	13	nw.	Isadore Haugh
Grinnell	Grundy	976	29	22.6	+3.0	39	1†	-14	15	50	0.49	-0.40	0.20	4.5	6	13	4	13	nw.	J. C. Stocks
Grundy Center	Guthrie	1077	25	25.8	+4.2	42	18	-14	15	54	1.03	+0.01	0.29	3.8	6	11	6	12	nw.	M. G. Heiberger
Guthrie Center	Shelby	1182	21	25.2	+4.6	40	17	-12	15	41	0.80	-0.24	0.48	10.0	2	16	0	13	s.	C. T. Harney
Harlan	Buchanan	921	66	21.4	+2.1	40	3	-14	15	41	0.44	-0.62	0.21	5.0	3	10	7	12	nw.	E. L. Tilton
Independence	Johnson	733	59	24.3	+3.8	41	2	-13	15	46	0.33	-1.20	0.21	3.5	2	7	8	14	nw.	Dr. H. A. Lindsay
Iowa City	Hardin	1107	27	21.4	+4.6	37	7	-14	15	44	0.58	-1.06	0.20	5.8	7	8	4	17	nw.	Prof. J. F. Reilly
Iowa Falls	Greene	1052	21	23.4	+2.2	40	2†	-14	15	49	0.95	-0.50	0.56	8.5	5	8	5	16	nw.	J. B. Parmelee
Jefferson	Scott	576	20																n.	Will I. Lyon
LeClaire	Harrison	1040	15	27.0	+4.9	48	16	-11	15	53	1.05	-0.25	0.75	3.0	3	6	4	19	nw.	Margaret T. Disney
Little Sioux	Harrison	928	53	27.3	+5.3	48	16	-7	15	51	1.11	-0.11	0.65	7.0	3	7	5	17	nw.	Geo. H. Gibson
Logan	Jackson	688	19	23.0	+1.5	41	2	-15	15	43	0.24	-1.16	0.14	2.6	4	6	11	12	nw.	Mary Jean Stern
Maquoketa	Marshalltown	947	28	23.9a	+4.8	38a	2†	-12a	15	43a	0.88	-0.26	0.20	8.7	6	... 6	... 6	12	nw.	Ira H. Stephens
Marshalltown	Jasper	922	8	26.5		44	16	-10	15	50	1.02	-0.36	10.0	7	10	2	17	nw.	C. C. Pigman	
Monroe	Muscatine	554	60																n.	J. A. Dibel
Monroe	Jones	760	22	22.4	+0.5	38	2	-14	15	46	0.24	-1.								

CLIMATOLOGICAL DATA FOR FEBRUARY, 1920.

STATIONS	COUNTIES	Elevation—feet	Temperature, in Degrees Fahrenheit.								Precipitation, in Inches			Number of Days			OBSERVERS	
			Length of record —years	Departure from normal	Highest				Date	Lowest	Date	Greatest daily range	Total	Departure from normal	Greatest in 24 hours	Total snowfall, (unadjusted)	Number of days 01 in. or more	
					Mean	Highest	Date	Lowest										
Southern Division																		
Afton.....	Union.....	1212	26	28.4	+5.0	44	2†	6	15	45	0.69	-0.46	0.36	3	7	7	15	nw. S. R. Brown
Albia.....	Monroe.....	959	22	25.2	+3.1	46	2	9	15	47	0.65	-0.91	0.26	4.0	3	5	1	nw. F. H. Holmes
Atlantic.....	Cass.....	1164	29	26.4a	+4.7	45a	16†	9a	15	48a	0.90	-0.24	0.57	3.5	6	7	15	nw. Thos. H. Whitney
Bedford.....	Taylor.....	20	28.9	+5.0	49	8	6	16	50	0.94	-0.44	0.64	1.0	3	8	4	nw. E. E. Healy	
Bloomfield.....	Davis.....	881	18	28.2	+5.2	52	2	6	15	46	0.98	-0.44	0.51	4.5	5	5	15	nw. V. G. Warner
Bonaparte.....	Van Buren.....	565	29	27.8	+3.1	55	2	6	15	45	0.12	-1.29	0.07	0.2	3	10	9	nw. Bruce R. Vale
Burlington.....	Des Moines.....	544	24	29.0	+4.1	52	2	6	15	39	0.33	-1.65	0.16	T	3	14	4	nw. Mrs. Edna M. Donnelly
Centerville.....	Appanoose.....	1013	15	28.7	+4.8	48	2	5	15	48	0.29	.....	0.17	0.1	2	9	4	nw. Leo. J. Allen
Chariton.....	Lucas.....	1042	25	27.4	+4.0	44	16†	5	15	48	0.26	-0.94	0.16	2.0	2	7	9	nw. C. C. Burr
Clarinda.....	Page.....	1009	30	30.2	+8.4	52	8	4	15	48	0.90	-0.17	0.48	0.2	4	7	7	nw. A. S. Van Sandt
Columbus Jct.....	Louisa.....	595	19	27.2	+2.4	48	2	8	15	42	0.18	-1.41	0.14	1.0	3	13	7	nw. J. B. Johnston
Corning.....	Adams.....	1117	28	27.8	+6.2	46	10†	5	15	49	0.91	-0.25	0.66	T	2	12	1	nw. Jerome Smith
Corydon.....	Wayne.....	1101	27	27.2	+2.8	47	27	8	15	49	0.37	-1.09	0.20	0.8	6	7	6	nw. May C. Miller
Creston.....	Union.....	1312	15	.....	.....	.....	.....	.....	.....	0.94	.....	0.50	2.0	4	.....	.....	nw. Mrs. T. E. Hubbard	
Cumberland.....	Cass.....	21	.....	.....	.....	.....	.....	.....	.....	0.25	-0.86	0.25	.....	1	9	4	nw. J. H. Repart	
Earlham.....	Madison.....	1126	18	25.8	+4.0	42	16	-10	15	48	1.41	-0.01	0.75	2.5	5	8	3	nw. Geo. Phillips
Fairfield.....	Jefferson.....	780	36	26.0b	+1.2	46b	2	-7b	15†	48b	0.22	-1.46	0.11	1.3	4	.....	.....	nw. Prof. R. M. McKenzie
Glenwood.....	Mills.....	1100	23	29.7	+4.8	48	10	0	16	47	0.60	.....	0.30	1.0	3	9	1	nw. Dr. Geo. Mogridge
Greenfield.....	Adair.....	28	26.0	+4.5	42	16	5	14	46	.....	0.66	.....	.....	10	4	15	nw. J. E. Paterson	
Indianola.....	Warren.....	969	28	26.4	+3.3	42	16	7	15	45	0.53	-0.66	0.20	2.0	6	11	0	nw. Prof. J. L. Tilton
Keokuk.....	Lee.....	614	49	29.4	+2.8	59	22	3	15	40	0.19	-1.49	0.11	0.3	4	9	8	nw. U. S. Weather Bureau
Keosauqua.....	Van Buren.....	644	28	28.0	+4.7	55	2	5	15	46	0.24	-1.36	0.11	1.0	6	7	7	nw. J. H. Landes
Knoxville.....	Marion.....	920	25	26.4	+2.0	44	27	8	15	46	1.12	-0.08	0.80	6.5	6	8	15	nw. W. J. Casey
Lacona.....	Warren.....	21	.....	.....	.....	.....	.....	.....	.....	1.75	+0.10	0.45	3.0	8	6	9	nw. J. B. Alter	
Lamoni.....	Decatur.....	1100	18	28.2	+3.2	47	17†	6	15	49	0.16	-1.16	0.18	T	1	11	2	nw. E. D. Moore
Lenox.....	Taylor.....	1250	25	27.8	+5.0	46	10	5	15	48	0.40	-0.66	0.20	0.5	3	11	5	nw. J. L. Hurley
Mt. Ayr.....	Ringgold.....	1236	27	28.5	+3.9	49	27	6	15	48	0.60	-0.78	0.58	0.2	3	8	5	nw. Alex Maxwell
Mt. Pleasant.....	Henry.....	729	39	27.9	+3.0	54	2	7	15	43	0.21	-1.30	0.09	T	7	6	10	nw. John H. Jericho
Murray.....	Clarke.....	1216	29	27.1	+3.8	45	19	7	15	48	0.69	-0.33	0.37	0.5	6	5	5	nw. M. T. Ashley
Oakland.....	Pottawattamie.....	27.6	.....	.....	.....	46	16	6	15	48	0.30	.....	0.30	3.0	1	10	1	nw. M. E. Gray
Oskaloosa.....	Mahaska.....	825	44	25.8	+2.4	44	2	-10	15	46	0.94	-0.19	0.30	5.1	10	7	7	nw. Roy R. Robinson
Ottumwa.....	Wapello.....	843	25	25.6	.....	50	3	6	15†	43	0.38	-1.13	0.30	1.0	2	5	7	nw. Eugene O. Field
Pella.....	Marion.....	877	27	25.8b	+2.1	43b	27	8b	15	45b	0.22	-1.08	0.13	3.0	3	9	0	nw. J. H. Ver Steeg
Sigourney.....	Keokuk.....	877	24	25.4	+1.5	44	2	9	15	45	0.29	-1.22	0.14	2.4	6	9	4	nw. W. E. Utterback
Stockport.....	Van Buren.....	754	18	26.5	+1.4	54	2	7	15	49	0.20	-1.43	0.07	1.0	4	9	6	nw. C. L. Beswick
Thurman.....	Fremont.....	769	23	29.8	+6.7	51	8	3	15	46	0.95	-0.31	0.68	1.0	2	6	11	nw. C. R. Paul
Washington.....	Washington.....	1129	29	26.4	+2.4	45	2	9	15	44	0.25	-1.06	0.14	2.1	6	7	12	nw. Wm. A. Cook
Winterset.....	Madison.....	1040	49	28.9	+5.2	50	16	3	15	46	1.02	-0.01	0.49	.....	5	11	10	nw. H. S. Ely
Omaha, Nebr.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.83	+0.04	0.62	2.8	6	7	3	nw. U. S. Weather Bureau	
Means and extremes .....	.....	.....	27.4	+3.8	59	22	-10	15	50	0.58	-0.77	0.75	1.7	4	8	6	nw.	
State Means and Extremes .....	.....	.....	24.0	+3.5	59	22	-22	16	54	0.56	-0.59	0.75	4.1	5	9	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, 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.
Precipitation is less than .01 inch rain or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE-

§Sioux City, *Davenport, ¶Des Moines. †Local mean time.

THE WINTER OF 1919-20

The mean temperature for the three winter months was 18.6° , which is 2.2° below the normal for the State, and 9.5° lower than the mean for 1918-1919, which is the warmest of the 30 winters of record. The highest temperature reported was 59° at Keokuk, Lee County, on February 22d. The lowest temperature reported was 38° below zero at Thurman, Fremont County, on December 10th.

The average monthly precipitation for the State was 0.51 inch, and the average total precipitation was 1.52 inches, or 1.90 inches less than the winter normal, and the least amount recorded since State-wide records have been kept. The least amount recorded in any previous winter was 1.65 inches in the winter of 1898-1899. The precipitation was almost entirely in the form of snow and the greater portion of the State was continuously snow-covered throughout the winter. The average total snow-fall, unmelted, was 14.5 inches, or 6.0 inches less than the normal and 3.4 inches less than the average for the winter of 1918-1919.

The total number of days with .01 inch or more of precipitation was 13, or 5 less than the average for the winter of 1918-1919. The average number of clear days was 32, partly cloudy 21, cloudy 38, as compared 40 clear, 18 partly cloudy, 32 cloudy days during the winter of 1918-1919.

DAILY PRECIPITATION FOR FEBRUARY, 1920.

DAILY PRECIPITATION FOR FEBRUARY, 1920.—Continued

Stations	Watersheds	DAY OF MONTH																																
		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	Total	
<i>Southern Division</i>																																		
Afton.....	Grand.....				.30	.36																												0.69
Albia.....	Des Moines.....				.15	.26																												0.66
Allerton.....	Chariton.....				.20	.08	.57											T	T	.01													0.90	
Atlantic.....	Nishnabotna.....				.25	.64												T	T	T													0.94	
Bedford.....	Missouri.....				T	.01	.51	.01										T	T	T												0.98		
Bloomfield.....	Mississippi.....				T	.07	T											T	T	T													0.12	
Bonaparte.....	Des Moines.....					.10	T											T	T	T													0.23	
Burlington.....	Mississippi.....						.17											T	T	T													0.29	
Centerville.....	Chariton.....				.12	.17												T	T	T													0.26	
Chariton.....	Chariton.....					.16												T	T	T													0.90	
Clarinda.....	Nodaway.....				T	.40	.48											T	T	.01	T											0.18		
Columbus Jct.....	Iowa.....				T	.25	.66											T	T	.03	T											0.91		
Corning.....	Nodaway.....				T	.11	T	.20										T	T	.01	T											0.87		
Corydon.....	Chariton.....				T	.40	.50	T										T	T	.03	T											0.94		
Creston.....	Missouri.....																																	0.25
Cumberland.....	Nodaway.....					.25																												1.41
Earlham.....	Des Moines.....				.10	.75	.38	T										T	T	.02	T											0.22		
Fairfield.....	Skunk.....						.05	T										T	T	.11	T												0.60	
Glenwood.....	Missouri.....				.30	.10	.20	T										T	T	.03	T												**	
Greenfield.....	Nodaway.....					.12												T	T	.04	T												1.12	
Indianola.....	Des Moines.....				T	.06	.29											T	T	.02	T											0.58		
Keokuk ***	Mississippi.....				T	.02	.11	T										T	T	.04	T											0.19		
Keosauqua.....	Des Moines.....				T	.02	.11	.01										T	T	.02	T											0.24		
Knoxville.....	Des Moines.....				T	.12	.30											T	T	.10	T											1.75		
Lacona.....	Des Moines.....				T	.25	.45	.20										T	T	.20	T											0.16		
Lamoni.....	Grand.....				T	.16												T	T	.14	T												0.40	
Lenox.....	Missouri.....				T	.20	.10											T	T	.10	T											0.60		
Mt. Ayr.....	Grand.....				T	.04	T	.55										T	T	.03	T											0.21		
Mt. Pleasant.....	Skunk.....						.09											T	T	.02	T												0.69	
Murray.....	Grand.....					.08	.14	.37										T	T	.07	T											0.80		
Oakland.....	Nishnabotna.....							.30										T	T	.05	T												0.38	
Oskaloosa.....	Des Moines.....				T	T	.08	.26	T									T	T	.05	T											0.22		
Ottumwa ||	Des Moines.....							.08										T	T	.05	T												0.29	
Pella.....	Skunk.....							.13	T									T	T	.05	T												0.20	
Sigourney.....	Skunk.....							T										T	T	.06	T												0.95	
Stockport.....	Skunk.....							T										T	T	.02	T												0.25	
Thurman.....	Missouri.....							T	.27	.68								T	T	.01	T											1.02		
Washington.....	Skunk.....									.14								T	T	.03	T												0.83	
Winterset.....	Des Moines.....									.49								T	T	.08	T												0.25	
Omaha, Nebr.***	Missouri.....				T	.06	.12	.30	.32									T	T	.02	T											0.83		

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 the 24-hour period, midnight to midnight.

** Incomplete.

* Precipitation included in the next following measurement.

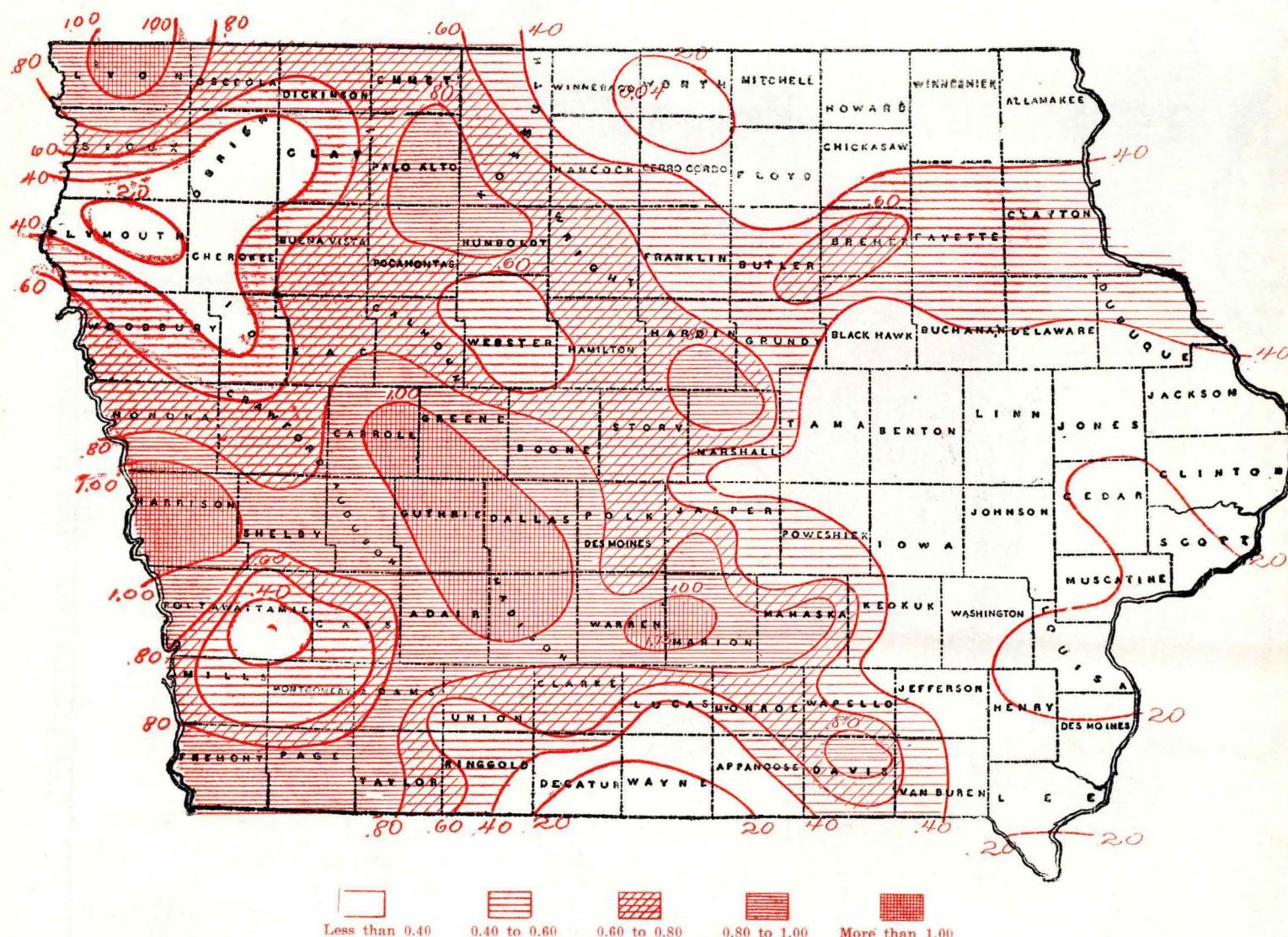
CLIMATOLOGICAL DATA: IOWA SECTION.

February, 1920.

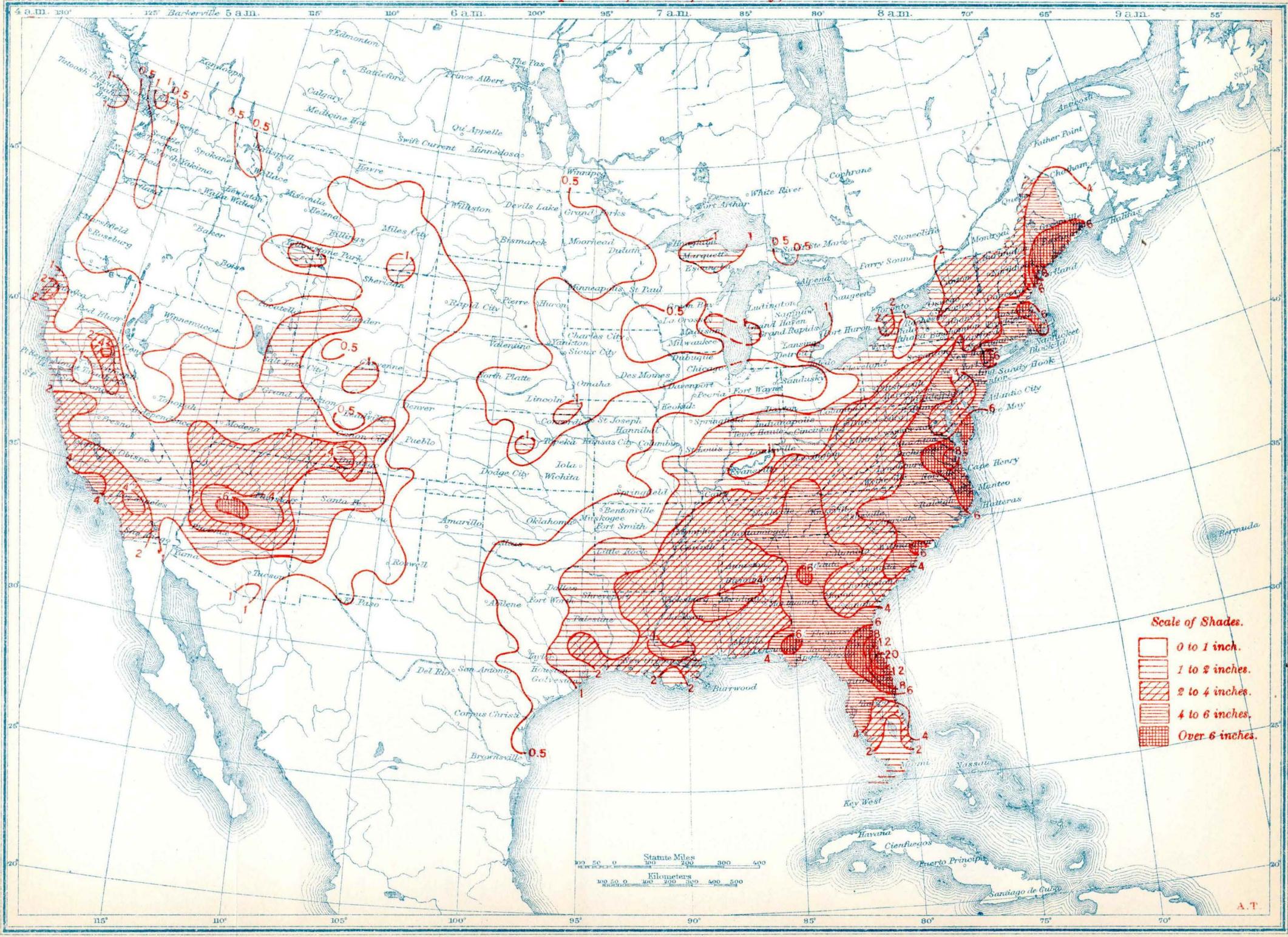
Daily Maximum and Minimum Temperature for the Month of February, 1920.

Stations	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	Mean
<i>Northern Division</i>																																
Algona.....	33	33	30	28	37	37	38	37	34	30	28	25	25	13	5	35	34	26	27	31	30	29	29	22	23	13	30	26	26	28.1		
Alta.....	19	25	20	25	24	25	22	25	15	18	8	-14	-16	-11	8	15	5	25	23	26	10	10	10	-5	0	12	0	0	12.7			
Alta.....	35	37	27	26	36	34	32	34	38	37	31	28	25	4	6	41	32	28	33	32	28	29	30	22	21	31	25	32	28.8			
Alton.....	25	23	19	21	23	30	27	26	26	16	13	4	2	-10	-13	-10	26	18	18	26	22	21	10	16	5	-6	8	9	6	13.8		
Alton.....	34	32	25	28	37	34	34	39	35	33	28	10	4	41	35	30	35	34	30	32	32	24	20	15	28	25	26	25	26	29.3		
Belmond.....	25	22	17	20	26	22	27	26	26	22	10	10	-10	-12	-7	27	20	22	28	21	17	8	15	8	-7	6	10	4	4	14.8		
Belmond.....	31	35	32	33	37	35	35	32	32	30	24	21	25	8	2	34	32	27	25	31	30	31	21	23	16	31	25	26	25	27.4		
Charles City.....	31	35	30	29	33	33	34	33	34	28	23	19	26	-1	2	32	32	25	24	32	27	29	21	18	14	29	24	28	26	26	26.0	
Decorah.....	31	37	36	31	34	34	37	35	35	30	20	22	25	16	3	29	32	24	26	33	32	33	31	26	22	12	31	28	28	23	23.0	
Decorah.....	16	15	23	21	25	28	29	27	29	27	12	10	12	12	-11	-16	-13	14	10	-10	21	22	23	17	13	2	-4	-8	11	0	11.4	
Forest City.....	41	34	32	30	37	36	42	35	35	30	28	28	24	8	4	30	32	31	29	38	30	32	29	24	27	27	32	28	31	30.1		
Inwood.....	21	26	21	26	25	24	28	27	23	18	13	8	8	-10	-15	-11	20	17	10	24	23	23	11	10	11	3	3	10	2	13.8		
Inwood.....	35	35	30	27	36	33	33	32	40	39	33	27	13	5	41	37	30	34	33	28	30	32	30	24	18	29	26	30	30.1			
Mason City.....	32	33	47	32	35	36	40	34	37	32	30	23	25	19	0	32	32	22	27	32	36	28	30	23	14	34	33	25	32	29.5		
Mason City.....	8	28	21	20	22	28	29	28	26	12	12	7	1	-11	-16	-10	20	12	-1	21	22	21	10	10	7	2	7	2	1	11.7		
Milford (near).....	34	34	26	26	36	35	33	33	38	35	31	21	25	6	4	39	33	26	29	31	29	29	22	21	16	31	27	29	27.8			
New Hampton.....	20	20	16	20	23	30	28	25	24	13	12	2	5	-14	-11	23	15	18	26	11	17	6	7	-8	0	10	1	1	11.3			
Northwood.....	33	33	28	28	37	37	38	35	33	31	....	27	0	0	31	31	25	28	31	28	39	28	21	21	12	29	23	27	27.2b		
Pocahontas.....	36	37	30	27	41	38	36	35	35	34	29	26	26	8	5	38	32	28	31	33	30	32	20	22	24	15	30	30	29.0a			
Postville.....	27	38	34	29	33	32	35	36	35	34	29	26	19	26	15	1	25	23	22	30	29	29	22	19	13	29	26	25	26.1			
Postville.....	13	27	22	19	24	26	27	28	25	10	10	7	11	-14	-21	-14	19	8	-3	20	17	22	8	-2	-8	-5	9	-4	10.3			
<i>Central Division</i>																																
Belle Plaine.....	30	40	37	31	33	36	36	37	39	31	31	29	33	12	5	37	38	26	31	37	34	32	31	37	32	19	39	29	30	31.4		
Boone.....	15	26	25	23	28	28	31	31	26	19	20	9	12	-5	-11	26	14	9	9	27	26	26	16	12	9	10	4	18	6	16.2		
Boone.....	38	41	30	27	38	35	35	36	38	38	34	32	32	15	4	40	45	30	37	36	33	31	32	25	25	20	34	28	31	31.7		
Carroll.....	21	22	21	21	24	30	29	28	28	18	17	4	12	-9	-5	-9	8	20	19	24	25	....	18	-2	10	18	8	15.0e			
Davenport.....	43	45	34	31	32	34	36	39	39	32	36	27	35	11	4	36	40	26	34	36	38	33	26	22	18	40	28	31	31.9			
Des Moines.....	38	42	35	28	35	36	38	37	38	37	32	32	32	7	4	42	39	29	35	37	33	34	34	28	27	19	39	28	32	32.0		
Dubuque.....	29	41	34	31	31	34	35	37	37	30	27	19	30	6	0	31	31	25	28	27	16	22	21	12	6	7	16	8	17.9			
Dubuque.....	37	36	30	26	35	34	39	35	40	35	29	25	25	18	6	25	37	27	30	34	30	32	26	35	35	33	32	32	32.0			
Fort Dodge.....	20	10	22	24	30	28	19	18	15	15	8	11	-8	-10	-5	14	18	26	26	10	20	11	13	-2	5	5	5	14	13.8			
Grinnell.....	31	37	35	31	35	35	39	36	35	32	30	28	31	25	10	37	37	30	31	35	35	31	32	25	25	19	39	30	29	31.2		
Guthrie Center.....	40	40	32	28	36	35	35	38	39	34	35	32	35	5	4	41	39	42	40	37	36	32	25	28	35	37	30	32	33.4			
Independence.....	30	38	40	31	32	35	36	35	35	32	28	26	28	18	2	32	34	28	26	31	31	26	24	12	3	0	16	9	14.3			
Iowa City.....	35	41	36	31	33	35	36	39	37	32	33	28	33	18	4	37	38	31	33	36	36	35	35	27	22	20	40	34	30	31.9		
Iowa City.....	11	26	27	21	28	29	31	30	24	19	11	17	-4	-13	-9	28	15	5	26	28	17	14	9	5	4	20	7	16.7				
Iowa Falls.....	32	36	32	29	34	36	37	33	33	29	28	24	28	11	5	10	-5	-11	-12	28	13	10	21	26	26	14	33	27	28	28.2		
Little Sioux.....	39	42	28	31	39	35	35	42	43	43	40	45	38	17	7	48	47	37	42	40	36	33	27	23	26	37	33	37	35.0			
Marshalltown.....	25	28	20	24	28	30	30	29	26	21	21	18	13	7	-11	-5	28	26	26	30	25	15	19	18	1	16	16	16	19.0			
Marshalltown.....	33	38	35	31	34	35	37	37	38	33	31	26	31	13	3	37	37	38	31	35	34	32	33	26	24	17	36	28	30.8a			
Olin.....	22	29	26	23	27	29	30	31	29	21	18	7	12	-7	-12	-7	25	18	10	27	25	25	26	14	16	13	3	18	17.0a		
Olin.....	30	38	35	30	32	36	34	37	37	30	25	23	20	3	20	33	37	33	34	36	33	32	24	21	19	8	3	7	15	6	30.2	
Sioux City.....	38	37	27	29	36	33	35	35	44	44	34	35	32	3	5	48	38	34	36	36	30	33	21	24	24	26	31	31	31.6			
Sioux City.....	27	24	19	24	29	31	28	30	30	23	21	17	3	-7	-12	-4	27	27</														

TOTAL PRECIPITATION, — FEBRUARY, 1920.



Total Precipitation, Inches, February, 1920.



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

CLIMATOLOGICAL DATA

IAWA SECTION

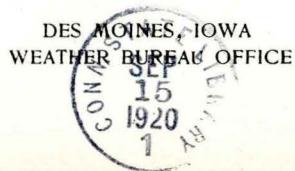
IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

MARCH, 1920

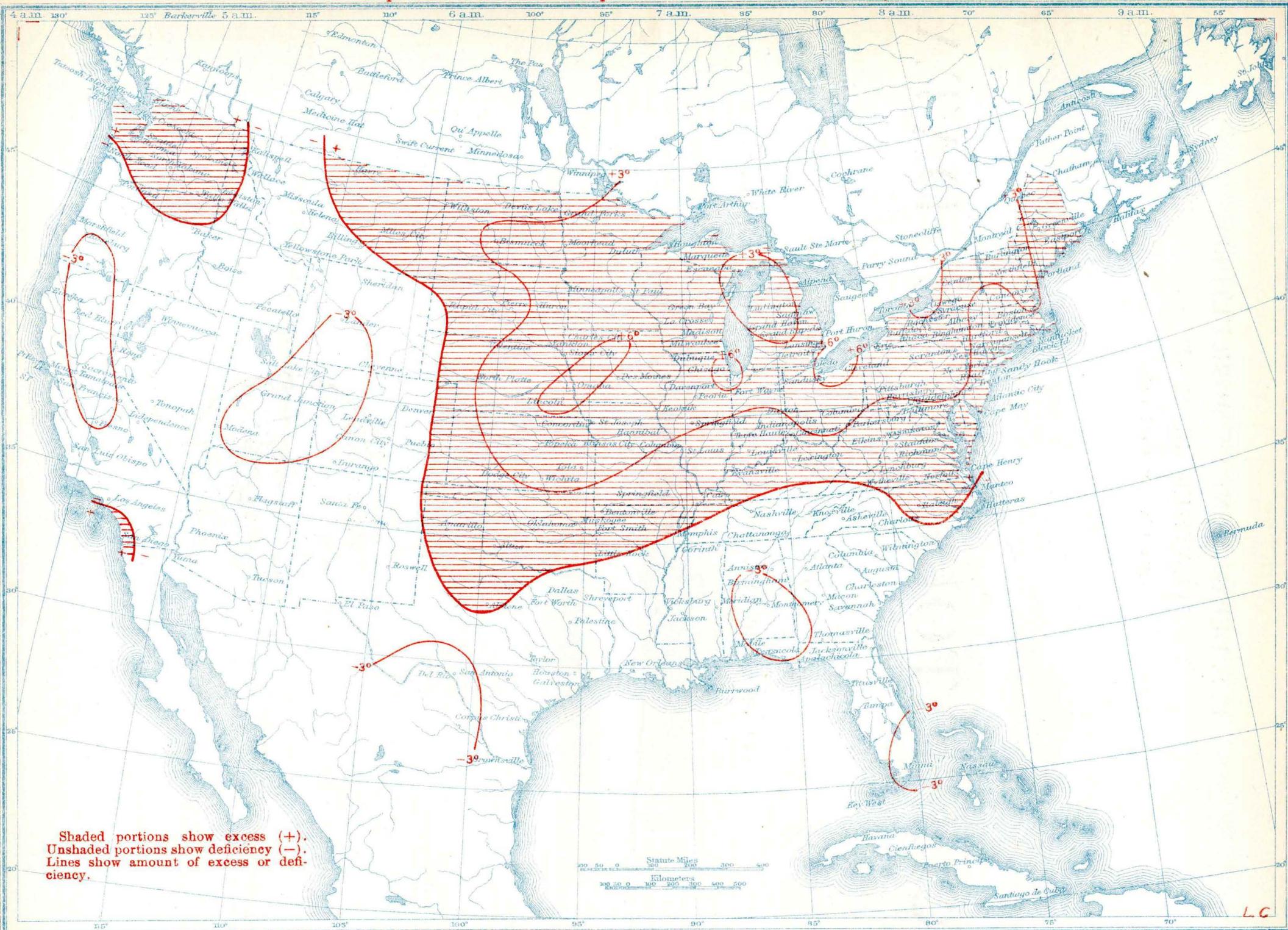
BY
CHARLES D. REED
METEOROLOGIST



PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY



Departure of the Mean Temperature from the Normal, March, 1920.



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

L.C

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist

Vol. XXXI Des Moines, Iowa, March, 1920 No.3

GENERAL SUMMARY.

March was warm, wet and windy. The month opened with the temperature above normal but this was followed by a cold spell that continued from the 4th to the 7th, inclusive, and during this period temperatures of zero, or lower, were recorded throughout the State. The rest of the month was warm with but an occasional day with the temperature below normal. The ground thawed rapidly after the first week and by the end of the third week the frost was generally out of the ground.

For the state as a whole, this was the wettest March of record. Only a small area in the southwestern portion had a deficiency. The distribution both as to time and amount was uniform, and except a few points in the northwestern portion, the precipitation was mostly rain. The heaviest amounts were recorded in the south-central portion.

The snow cover remained on the ground over the northern portion until about the middle of the second week and over a large portion of the northern section the ground was continuously snow covered since the last week in November. As a result of this heavy snow blanket some stations reported that there was no frost in the ground during the entire winter. The snow that occurred later in the month remained on the ground for only short periods.

Stormy weather was the outstanding feature, due to the passage of an unusual number of energetic general storm centers through, or near the boundaries of the State. The highest wind velocity and lowest barometer reading ever recorded in the State in March occurred at Sioux City, and the total wind movement was high for the entire State. Much damage resulted from the wind which in many cases blew in violent gusts. Many barns, wind mills, silos and telephone poles were blown down and in the cities many plate glass windows were broken. The greatest damage from the wind occurred in the northeast portion where the property loss was between \$75,000 and \$100,000. (See page 33).

Conditions were not favorable for farm work over most of the State, being too wet, but at the close of the month some progress had been made and considerable seeding of small grain had been accomplished. Roads were muddy and in poor condition the greater portion of the month.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.87 inches. The highest recorded was 30.60 inches, at Sioux City and Omaha, Neb. on the 6th; and the lowest was 28.85 inches, the lowest of record for the State for March, at Sioux City, on the 15th. The monthly range was 1.75 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 100 stations, was 38.0° , 4.7° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 34.5° , or 1.0° higher than the normal; Central, 38.6° , or 5.0° higher than the normal; Southern; 41.0° , or 5.1° higher than the normal. The highest monthly mean was 42.8° , at Cl-

rinda, and the lowest monthly mean was 32.0° , at Northwood and Rock Rapids. The highest temperature reported was 80° , at Little Sioux and Onawa, on the 31st. The lowest temperature reported was -21° , at Inwood on the 5th. The temperature range for the State was 101° .

HUMIDITY

The average relative humidity for the State at 7 a. m. was 79 per cent, and at 7 p. m. it was 65 per cent. The mean for the month was 72 per cent, or about 2 per cent lower than the normal. The highest monthly mean was 80 per cent, at Charles City, and the lowest was 64 per cent, at Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 104 stations, was 3.02 inches, or 1.25 inches more than the normal. By divisions the averages were as follows: Northern, 2.81 inches, or 1.28 inches more than the normal; Central, 2.79 inches, or 0.92 inch more than the normal; Southern, 3.46 inches, or 1.54 inches more than the normal. The greatest amount, 5.70 inches, occurred at Albia, and the least, 0.47 inch, at Omaha, Neb. The greatest amount in any 24 consecutive hours, 2.50 inches, occurred at Keosauqua, on the 24th - 25th and at Lamoni on the 25th.

SNOW.

The average snow fall for the State was 2.4 inches, or 2.9 inches less than the normal. The greatest amount, 16.2 inches, occurred at Rock Rapids. Four stations reported no snow, and 24 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 65 miles per hour from the west, the highest of record for the month of March, at Sioux City, on the 16th.

COMPARATIVE DATA FOR THE STATE—MARCH.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890.....	28.0	-5.3	75	-24	1.57	-0.20	3.67	0.32	.....	10	6	8	17
1891.....	26.8	-6.5	66	-19	2.60	+0.83	4.58	1.33	.....	6	8	8	11
1892.....	31.9	-1.4	84	-6	2.22	+0.45	4.58	0.57	3.9	11	9	11	11
1893.....	31.8	-1.5	84	-8	2.14	+0.37	4.40	0.64	4.0	8	7	11	11
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	5	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	81	-13	2.06	+0.29	5.15	0.45	6.6	5	9	10	10
1901.....	34.2	+0.9	76	-8	2.64	+0.87	5.25	0.70	12.6	7	10	8	13
1902.....	39.1	+5.8	79	-12	1.45	-0.32	4.33	0.13	1.3	7	9	11	11
1903.....	38.8	+5.5	82	6	1.38	-0.39	3.90	0.15	3.9	7	11	7	13
1904.....	34.8	+1.5	78	3	2.18	+0.41	4.57	0.50	4.4	7	8	8	15
1905.....	41.5	+8.2	84	1	2.04	+0.27	3.70	0.89	4.1	7	8	8	15
1906.....	27.1	-6.2	65	-14	2.34	+0.57	4.55	0.58	8.9	10	8	7	16
1907.....	40.6	+7.3	92	-7	1.35	-0.42	5.05	0.23	4.1	6	14	7	10
1908.....	37.9	+4.6	85	-8	1.58	-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	0.28	9.8	6	12	10	9
1910.....	48.9	+15.6	92	-10	0.17	-1.60	1.37	0.00	T.	1	22	6	2
1911.....	39.4	+6.1	83	2	0.93	-0.84	4.84	T.	1.9	5	16	9	6
1912.....	24.9	-8.4	70	-19	2.01	+0.24	5.25	0.60	19.1	7	15	6	10
1913.....	31.9	-1.4	78	-23	2.48	+0.71	5.88	0.74	5.3	9	11	10	10
1914.....	34.7	+1.4	78	-5	1.69	-0.08	3.84	0.28	1.8	7	12	8	11
1915.....	39.3	-4.0	61	-5	0.96	-0.81	2.12	0.17	8.8	5	8	9	14
1916.....	35.2	+1.9	80	-18	1.57	-0.20	5.80	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
1919.....	37.5	+4.2	78	-11	2.33	+0.56	5.40	0.81	1.1	6	15	8	8
1920.....	38.0	+4.7	80	-21	3.02	+1.25	5.70	0.47	2.4	7	15	7	9

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

CLIMATOLOGICAL DATA FOR MARCH, 1920

STATIONS	COUNTIES	Elevation, feet	Length of record, years*	Temperature, in Degrees Fahrenheit						Precipitation in inches.				No. of Days		OBSERVERS		
				Mean	Highest	Date	Lowest	Date	Greatest daily range	Total	Departure from Normal	Greatest in 24 hours	Total snowfall (unmetted)	Precipitation .01 inch or more	Partly cloudy	Cloudy		
<i>Northern Division</i>																		
Algona	Kossuth	1213	47	34.2	+3.6	75	31	-11	7	36	1.49	0.00	0.54	6.0	4	16	5	10 se.
Allison	Butler	1045	8	35.6	.....	75	31	-8	7	35	2.50	.....	1.23	2.0	7	13	9	9 sw.
Alta	Buena Vista	1513	29	35.1	+5.0	76	31	-10	7	43	2.98	+1.46	0.78	3.8	9	15	8	8 s.
Alton	Sioux	1305	15	34.0	+2.7	73	27	-12	7	37	3.14	.....	1.16	6.0	6	11	12	8 nw.
Belmond	Wright	1205	10	34.3	.....	78	27	-9	7	38	2.40	.....	1.00	3.2	8	11	10	10 w.
Britt	Hancock	1236	23	33.6	+3.5	75	31	-12	5	37	2.09	+0.73	0.48	.....	10	17	6	8 s.
Charles City	Floyd	1015	29	34.4	+6.0	75	31	-8	7	34	2.85	+0.93	1.40	6.4	10	9	12	10 nw.
Decorah	Winneshiek	875	27	34.4	+4.2	74	31	-8	7	35	2.82	+1.02	0.58	4.5	8	20	3	8 s.
Elkader	Clayton	751	41	35.2a	+3.6	76a	31	-7a	7	40a	3.35	+1.50	1.04	T	11	....	....	n.
Estherville	Emmet	1298	25	33.0	+4.4	72	31	-12	5†	39	2.65	+1.36	0.75	7.0	7	10	16	5
Fayette	Fayette	1003	30	35.2	+4.6	76	31	-7	5†	35	3.18	+1.14	1.10	1.5	10	16	5	10 nw.
Forest City	Winnebago	1226	26	34.6	+5.7	76	31	-9	5†	38	2.70	+1.26	1.00	....	7	16	6	9 s.
Humboldt	Humboldt	1095	32	35.6	+3.3	78	31	-8	7	38	2.51	+1.04	0.70	3.0	7	14	10	7 s.
Inwood	Lyon	1474	16	32.8	+2.2	76	31	-21	5	41	2.62	+1.61	0.80	12.7	9	22	4	5 s.
Le Mars	Plymouth	1224	24	35.9	+3.8	76	27	-9	7	53	3.95	+2.74	1.22	5.2	7	19	7	5 se.
Mason City	Cerro Gordo	1148	23	35.2	+5.1	75	28†	-10	7	40	.....	.....	.....	....	17	5	9	se.
Milford (near)	Dickinson	1430	....	32.2	.....	70	27	-15	7	34	1.94	.....	0.56	2.8	6	11	14	6 nw.
New Hampton	Chickasaw	1169	23	35.0	+5.4	74	31	-9	5†	36	3.78	+1.85	1.00	4.5	9	13	10	8 w.
Nora Springs	Floyd	1064	8	36.7	.....	77	31	-7	7	36	3.61	.....	1.48	1.5	12	14	10	7 s.
Northwood	Worth	1222	24	32.0	+2.6	72	31	-10	5†	34	3.55	+1.79	0.65	9.5	10	16	5	10 sw.
Pocahontas	Pocahontas	1248	16	34.8	+3.8	77	31	-10	7	41	2.29	+1.01	0.50	3.3	10	16	6	9 sw.
Postville	Clayton	1180	21	34.2	+3.6	73	31	-11	5†	31	2.90	+0.99	1.05	2.5	8	13	8	10 sw.
Rock Rapids	Lyon	1358	21	32.0	+2.2	73	27	-20	7	40	3.16	+2.10	1.22	16.2	10	20	5	6 nw.
Sanborn	O'Brien	1553	6	33.4	.....	73	27	-16	5†	45	2.71	.....	0.89	6.0	6	17	10	4 sw.
Sioux Center	Sioux	1426	21	34.1	+3.3	73	27	-15	7	36	2.26	+1.00	1.08	7.0	6	20	4	7 w.
Spencer	Clay	1319	6	34.0	.....	74	27	-14	7	45	3.20	.....	1.04	....	7	15	11	5 sw.
Storm Lake	Buena Vista	1440	31	35.3	+4.5	71	27	-9	7	40	2.26	+0.94	0.60	0.7	7	18	6	7 s.
Washta	Cherokee	1157	22	35.8	+4.1	78	31	-11	7	41	2.22	+1.29	0.70	1.0	6	18	6	7 s.
Waverly	Bremer	948	24	36.5	+5.0	76	31	-5	7	36	3.27	+1.45	1.00	2.0	10	11	10	10 nw.
West Bend	Palo Alto	1197	27	34.7	+3.9	77	31	-14	7	41	2.87	+1.20	1.46	3.0	9	15	9	7 nw.
Means and extremes.				34.5	+4.0	78	27†	-21	5	53	2.81	+1.28	1.48	4.7	8	15	8	8 s.
<i>Central Division</i>																		
Ames	Story	926	44	38.4	+4.4	78	31	-2	7	37	2.29	+0.77	0.70	T	10	17	7	7 s.
Audubon	Audubon	1301	26	37.4	+3.8	76	31	-8	7	37	0.74	+0.88	0.19	0.5	7	13	14	4 s.
Baxter	Jasper	998	20	38.4	+4.5	76	31	-2	7	34	3.66	+1.70	0.75	T	11	10	7	14 sw.
Belle Plaine ??	Benton	886	30	39.0	+5.7	83	27	-2	7	43	3.52	+1.19	1.61	3.0	9	15	5	11 nw.
Boone	Boone	1134	15	38.8	+6.4	77	31	-4	7	35	1.49	+0.04	0.45	T	7	14	8	9 nw.
Carroll	Carroll	1265	30	38.6	+6.6	77	31	-7	7	37	1.31	+0.55	0.51	0	7	19	4	8 sw.
Cedar Rapids	Linn	733	38	39.6	+6.9	79	31	-0	7	37	2.98	+1.02	1.16	1.0	7	17	3	11 s.
Clinton	Clinton	593	47	39.6	+4.8	77	31	-4	7	38	4.12	+1.25	1.43	2.6	12	15	4	12 nw.
Davenport	Scott	580	49	40.3	+4.9	75	31	-0	7	35	4.45	+2.24	1.70	1.4	11	16	3	12 sw.
Delaware	Delaware	1083	29	39.2	+5.4	78	31	-7	7	34	2.33	+0.73	0.64	T	6	16	8	7
Denison	Crawford	1180	26	39.2	+5.4	78	31	-7	7	34	3.92	+2.27	1.27	0.2	10	13	4	14 sw.
Des Moines	Polk	861	40	39.8	+4.1	76	31	-3	7	31	3.04	+0.83	1.18	5.6	11	13	8	10 nw.
Dubuque	Dubuque	639	47	37.2	+4.0	75	31	-3	7	37	1.00	+0.73	0.35	0.5	7	15	8	8 s.
Fort Dodge	Webster	1126	20	37.4	+6.3	78	31	-5	7	37	1.00	+0.73	0.35	0.5	7	15	8	8 sw.
Grinnell	Poweshiek	1031	26	37.0	.....	75g	27†	-2h	7	34	3.00	+1.27	0.85	....	9	....	....	s.
Grundy Center	Guthrie	976	29	38.4a	+5.8	76a	31	-3a	5†	40a	2.75	+0.94	0.90	....	6	....	....	nw.
Guthrie Center	Shelby	1077	25	39.3	+4.9	78	31	-4	7	48	1.36	+0.23	0.48	....	7	14	11	6 nw.
Harlan	Buchanan	1182	21	39.2	.....	78	31	-5	7	....	....	....	....	....	22	2	7 s.	
Independence	Johnson	921	56	39.0	+6.6	75	31	-2	5†	42	2.06	+0.31	0.44	2.5	8	18	3	10 sw.
Iowa City	Hardin	733	59	39.2	+6.0	76	31	-1	7	37	4.22	+1.84	1.16	4.0	11	14	6	11 nw.
Iowa Falls	Greene	1107	27	36.6	+6.0	75	31	-6	7	34	2.76	+0.90	0.74	2.0	10	14	8	9 s.
Jefferson	Jefferson	1052	21	38.5	+4.6	77	31	-4	7	38	1.32	.....	0.40	T	8	13	10	8 sw.
LeClaire	Scott	576	20	.....	.....	....	....	....	....	....	4.87	+2.54	1.65	3.7	10	....	....	....
Little Sioux	Harrison	1040	15	39.6	+4.0	80	31	-8	7	38	1.64	.....	0.48	1.0	6	12	13	6 se.
Logan	Harrison	928	53	40.3	+5.1	77	31	-4	7	35	2.60	+0.86	1.40	T	7	16	10	5 sw.
Maquoketa	Jackson	688	19	37.6	+2.9	75†	31	-5	7	40	4.27	+1.92	1.34	5.3	9	16	6	9 nw.
Marshalltown	Marshall	947	28	38.6	+6.2	78	31	-2	7	41	3.90	+2.02	1.20	5.1	11	15	4	12 nw.
Monroe	Jasper	922	8	40.8	.....	78	31	-2	7	36	4.02	.....	1.17	1.8	8	15	3	13 s.
Muscatine	Muscatine	554	60	.....	.....	....	....	....	....	....	4.31	+1.67	1.45	1.5	....	....	....	....
Olin	Jones	760	22	38.5	+4.2	76	31	-2	7	40	2.85	+0.52	1.40	3.0	6	17	7	7 nw.
Onawa	Monona	1051	20	39.0	.....	80	31	-7	7	41	1.19	+0.47	0.59	0	3	20	6	5 s.
Perry	Dallas	975	19	39.2	+5.2	76	31	-2	7	35	1.64	+0.34	0.51	T	9	21	5	5 sw.
Rockwell City	Calhoun	1134	24	37.1	+4.0	78	31	-6	7	39	2.33	+0.63	0.95	1.5	8	14	5	12 w.
Sac City	Sac	1344	44	35.9	+3.6	78	31	-8	7	40	1.29	+0.20	0.60	1.0	6	15	7</td	

CLIMATOLOGICAL DATA FOR MARCH, 1920.

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, (unadjusted)	Total in or more 0.1 in. or more	Clear	Partly Cloudy	Cloudy		
<i>Southern Division</i>																			
Afton	Union	1212	26	41.4	+5.5	78	31	— 3	7	37	2.80	+0.88	0.75	T	9	16	7	8	sw.
Albia	Monroe	959	22	40.1	+0.1	77	27†	— 4	7	37	5.70	+3.93	2.07	T	7	12	6	13	sw.
Atlantic	Cass	1164	29	40.3	+5.8	78	31	— 5	7	39	1.12	+0.55	0.26	T	7	12	12	7	sw.
Bedford	Taylor .....	.....	20	41.8	+5.5	75	27†	— 4	7	42	3.08	+1.19	0.80	T	10	14	5	12	s.
Bloomfield	Davis	881	13	40.8	.....	77	27	— 2	7	41	4.79	+2.58	1.80	T	9	12	12	7	sw.
Bonaparte	Van Buren	565	29	41.0	+4.4	75	31	— 2	7	40	4.71	+2.40	1.70	T	8	16	4	11	s.
Burlington	Des Moines	544	24	42.4	+5.3	77	27†	— 0	7	38	3.45	+1.80	1.90	2.0	11	16	5	10	sw.
Centerville	Appanoose	1013	15	41.8	.....	76	27	— 2	7	38	5.30	.....	1.74	1.0	7	16	6	9	sw.
Chariton	Lucas	1042	25	41.8	+6.4	75	27	— 2	7	38	3.72	+2.11	1.48	T	6	14	8	9	sw.
Clarinda	Page	1009	30	42.8	+7.9	79	31	— 3	7	40	1.79	+0.04	0.59	1.0	7	16	6	9	sw.
Columbus Jct.	Louisa	595	19	41.0	+4.6	77	31	— 1	7	35	3.55	+1.49	1.46	2.0	7	19	4	8	s.
Corning	Adams	1117	28	39.4	+5.3	77	31	— 3	7	39	2.36	+0.56	0.75	T	6	19	3	9	sw.
Corydon	Wayne	1101	27	40.6	+3.8	76	27	— 5	7	38	4.68	+2.78	2.03	0.5	10	13	11	7	sw.
Creston	Union	1312	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	sw.
Cumberland	Cass	21	.....	.....	.....	.....	.....	.....	.....	.....	2.09	+0.35	0.84	.....	5	23	3	5	sw.
Earlham	Madison	1126	18	40.6	+6.2	77	31	— 5	7	40	2.58	+0.73	0.61	T	10	19	2	10	sw.
Fairfield	Jefferson	780	36	40.2b	+4.1	76b	27†	— 1b	7	37b	4.91	+2.56	1.97	2.1	8	nw.	Prof. R. M. McKenzie		
Glenwood	Mills	1100	23	42.5	.....	79	31	— 2	7	36	0.80	.....	0.40	T	6	17	5	9	nw.
Greenfield	Adair	28	40.0	+5.5	78	31	— 4	6†	35	1.96	+0.02	0.66	T	9	21	4	6	sw.	
Indianola	Warren	969	28	41.8b	+6.2	76b	27†	— 1b	7	42b	3.36	+1.80	1.06	0.1	12	nw.	Prof. J. L. Tilton		
Keokuk	Lee	614	49	42.6	+4.7	78	27	— 0	7	34	4.02	+1.65	1.53	3.3	10	11	10	10	s.
Keosauqua	Van Buren	644	28	41.6	+5.8	79	27	— 1	7	40	4.42	+2.10	2.50	1.5	8	14	5	12	sw.
Knoxville	Marion	920	25	40.8	+4.6	76	27†	— 2	7	36	4.93	+3.28	1.10	0.5	11	14	5	12	sw.
Lacona	Warren	21	.....	.....	.....	.....	.....	.....	.....	.....	3.55	+1.29	1.10	1.0	10	7	17	7	.....
Lamoni	Decatur	1100	13	41.3	+4.3	75	31	— 3	7	41	5.27	+3.66	2.50	0.2	9	16	6	9	s.
Lenox	Taylor	1250	25	41.0	+5.5	77	31	— 4	7	38	2.20	+0.62	0.63	0.1	11	14	11	6	s.
Mt. Ayr.	Ringgold	1236	27	41.2	+4.4	75	27†	— 4	7	38	3.96	+2.08	0.93	T	11	18	5	8	sw.
Mt. Pleasant	Henry	729	39	41.8	+5.1	78	27	— 0	7	39	4.88	+2.67	1.73	3.0	11	14	7	10	sw.
Murray	Clarke	1216	29	40.9	+5.3	76	31	— 3	7	36	3.69	+2.04	0.76	T	11	9	14	8	s.
Oakland	Pottawattamie .....	.....	40.4	.....	79	31	— 4	7	42	0.73	.....	0.50	0	3	16	9	6	s.	
Oskaloosa	Mahaska	825	44	40.3	+4.6	76	27	— 2	7	39	5.31	+3.51	1.70	3.2	11	15	5	11	nw.
Ottumwa	Wapello	849	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pella	Marion	877	27	39.8	+4.0	75	27†	— 2	7	36	3.07	+1.65	0.85	0.2	10	22	0	9	s.
Sigourney	Keokuk	877	24	40.0	+4.1	75	27†	— 1	7	35	4.74	+2.87	1.39	0.9	9	17	0	14	se.
Stockport	Van Buren	754	18	40.8	+4.5	77	27	— 3	7	39	5.17	+3.10	2.02	1.0	12	15	3	13	nw.
Thurman	Fremont	23	42.0	+6.3	79	31	— 4	7	39	0.84	+0.81	0.27	T	5	9	14	8	sw.	
Washington	Washington	769	38	40.6	+4.7	78	31	— 1	7	37	4.60	+2.56	2.11	5.0	11	11	11	9	sw.
Winterst.	Madison	1129	29	40.8	+5.4	78	31	— 3	7	34	2.54	+0.74	0.79	T	7	22	5	4	sw.
Omaha, Nebr. ....	.....	1040	49	41.6	+5.6	79	31	— 1	7	32	0.47	+0.92	0.28	0.5	6	12	12	7	nw.
Means and extremes .....	.....	.....	.....	41.0	+5.1	79	27†	— 5	7	42	3.46	+1.54	2.50	0.8	6	15	7	9	sw.
State means and extremes .....	.....	.....	.....	38.0	+4.7	80	31	— 21	5	53	3.02	+1.25	2.50	2.4	7	15	7	9	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.

Preference 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.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 60, or about 2 per cent higher than the normal. The per cent of the possible amount at the regular Weather Bureau Stations was as follows: Charles City, 53; Davenport, 60; Des Moines, 64; Dubuque, 65; Keokuk, 59; Sioux City, 59; Omaha, Neb. 61.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

Stations.	Barometric Pressure Inches (Sea level)			Relative Humidity (Per cent)			WIND			Sunshine.		
	Mean	Highest	Date	Lowest	Date	7 A. M. Noon † 7 P. M.	Total movement	Average h'ry velocity.	Maximum Wind	Date	Percent of possible sunshine from normal.	Departure from normal.
Charles City	29.85	30.48	6	28.98	28	86 66 75	40	31	7,946	10.7	42	nw
Davenport	29.89	30.48	7	29.03	26	82 60 67	27	31	7,939	10.7	40	sw
Des Moines	30.53	6	29.01	27	77 62 66	31	30	7,869	10.6	38	sw	
Dubuque	29.89	30.48	17	29.06	28	82 62 68	30	28	6,877	9.2	32	s
Keokuk	29.91	30.58	7	23.92	25	69 56 58	19	1	8,921	12.0	52	sw
Sioux City.	29.84	30.60	6	28.85	15	82 64 66	30	22	12,300	16.5	65	w
Omaha, Neb.	29.85	30.60	6	28.95	28	72 53 54	17	30	8,771	11.8	58	nw
Means and extremes	29.87	30.60	6	28.85	15	79 60 65	.....	.....	11.6	.....	60	+ 2
Normals and records	30.04	.....	21st	1919	80	67	18th	1919	9.9	.....	58	.....
	\$30.80	1919	28 85	1920	.....	.....	*5/1918	.....	65	w	16	.....

Charles City.

Des Moines.

Sioux City.

Local mean time.

MISCELLANEOUS PHENOMENA.

Aurora: 4th, 5th, 22d, 23d, (See page 33).

Birds: (migration of) Bedford, blue birds on the 10th; Boone robins and blue birds on the 12th, ducks flying north on the 19th; Corydon, robins on the 19th; Earlham, robins on the 1st, blue birds on the 11th, wild geese, ducks and black birds on the 13th, meadow larks on the 20th; Elkader, robins on the 15th; Jefferson, robins on the 8th; Milford, robins and meadow larks on the 18th, blue birds and red wing black birds 22d; Nora Springs, robins on the 22d; Oskaloosa, robins and blue birds on the 14th and 15th; Pocahontas, robins on the 9th; Postville, robins on the 14th; Rock Rapids, robins on the 13th; Whitten, robins on the 2d.

Dust: (red) 15th, 18th. (See page 33).

Fog: 1st, 10th, 11th, 21st, 25th.

Hail: 3d, 14th, 18th, 23d, 24th, 28th, 31st.

DAILY PRECIPITATION FOR MARCH, 1920

Stations	Watersheds	DAY OF MONTH																																			
		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	Total				
<i>Northern Division</i>																																					
Algona	Des Moines			.51															.09	.35														1.49			
Allison	Cedar			.25	.20												T	T	.08															2.50			
Alta	Raccoon			.03				.02													T	T													.102.98		
Alton	Floyd			1.16	.20			T																											3.14		
Belmond	Iowa			.45	.05			.01										T	.40	T														2.40			
Britt	Iowa			.41	.03			T													T	T													30.209		
Charles City ***	Cedar			.48	.03																														16.285		
Decorah	Mississippi			.37																																2.82	
Elkader	Mississippi			.02	.30																														T 3.35		
Estherville	Des Moines			.55	.10																														2.65		
Fayette	Mississippi			.08	.30																														3.18		
Forest City	Cedar			.30														T	.20																2.70		
Humboldt	Des Moines			.28	.15																														.582.51		
Inwood	Big Sioux			.80	.10		.01																												2.62		
Lansing ||	Mississippi			.37																																2.86	
Le Mars	Floyd			.72	.78		T																												3.95		
Mason City	Cedar																																				
Milford (near)	Little Sioux			.56																																	1.94
New Hampton	Wapsipinicon			.40																																3.78	
Nora Springs	Cedar			.23	.15																														40.3.61		
Northwood	Cedar			.40	.25																														3.55		
Pocahontas	Des Moines			.43	T																															2.29	
Postville	Mississippi			.20																																	
Rock Rapids	Big Sioux			.85	.12																															2.90	
Sanborn	Floyd			.85	.50																															2.71	
Sioux Center	Floyd			.40																																2.26	
Spencer	Little Sioux			1.04																																3.20	
Storm Lake	Raccoon			.35	.05		T																													17.2.22	
Washta	Little Sioux			.50																																T 3.27	
Waverly	Cedar			.03	.30																																
West Bend	Des Moines			.08	.15																															.082.87	
<i>Central Division</i>																																					
Ames	Skunk			.31	.07		T																													04.2.29	
Audubon	Nishnabotna			.18																																.020.74	
Baxter	Skunk			.16	.07		T																												T 3.66		
Belle Plaine	Iowa			.24	.15		T																												T 3.52		
Boone	Des Moines			.26																																1.49	
Carroll	Raccoon			.12																																1.31	
Cedar Rapids	Cedar			.24	T																															4.12	
Clinton	Mississippi			.02	.66																															4.45	
Davenport ***	Mississippi			.44	.57		.01										T	.24	.32															**			
Delaware **	Mississippi			**	**																																
Denison	Missouri			.40	T		T																													10.2.33	
Des Moines ***	Des Moines			.36			.02																												33.3.92		
Dubuque ***	Mississippi			.02	.24																														T 3.04		
Fort Dodge	Des Moines			.10	.05																														T 1.00		
Grinnell	Iowa			.01	.15												T	T	.47															3.75			
Grundy Center	Cedar			.40																																.071.36	
Guthrie Center	Raccoon			.22																																	
Harlan	Nishnabotna			.27														T	.44																		
Independence	Wapsipinicon			.02	.38		T																														
Iowa City	Iowa			.28	.38																															2.06	
Iowa Falls	Iowa			.19	.03																														T 2.76		
Jefferson	Raccoon			.60	.14		T																											T 1.32			
Le Claire ||	Mississippi			.48			T																														

DAILY PRECIPITATION FOR MARCH, 1920.—Continued

Stations	Watersheds	DAY OF MONTH																																
		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	Total	
<i>Southern Division</i>																																		
Afton	Grand	.44	.41	T	T					.08	.12								.24														2.80	
Albia	Des Moines	.15	.41							T	.56								.64														5.70	
Allerton	Chariton																																	
Atlantic	Nishnabotna	.23		T							.19								.03														.03 1.12	
Bedford	Missouri	.21	T	.27						.03	.41	T							T	.02													.67 3.08	
Bloomfield	Mississippi		T	.60		T					.05	.10	.30							.40	.06												4.79	
Bonaparte	Des Moines	T	.51	T						T	.15	.32							.35	.06													4.71	
Burlington	Mississippi	.03	.50		T					T	.56	.35							.50	.22													4.45	
Centerville	Chariton		T	.75	T														.45														5.30	
Chariton	Chariton	.15	T							T	.42								.32														3.72	
Clarinda	Nodaway	.21									.10	.15							T														.38 1.79	
Columbus Jct.	Iowa	.08	.58							T	T	T							.25	.13													3.55	
Corning	Nodaway	*	.35		T						.20								T														.40 2.36	
Corydon	Chariton		.31	.13	.01					T	T	.31							.24	T	T												4.68	
Creston	Missouri																																	
Cumberland	Nodaway	.28									.38										.52	.84												.07 2.09
Earham	Des Moines	.26	.06	T						.03	T								.21	.03													.46 2.58	
Hairfield	Skunk	.05	.20		T						.27								.41	.16													4.91	
Glenwood	Missouri	.40									.10	.04							.08														.80	
Greenfield	Nodaway	.25	.01	T						.13	T		T						.08														.14 1.96	
Indianola	Des Moines	.28	.13	.01						T	.18	.12						.37	.03	T													T 3.36	
Keokuk ***	Mississippi	.12	.30	T						.03	1.16	.04							.61	.06													4.02	
Keosauqua	Des Moines	.04	.38	T							.19	.26							.36	.07													4.42	
Knoxville	Des Moines	.30	.05	T							.10	.10							1.00	.20													.49 3.93	
Lacona	Des Moines	.33	.10								.01	.19							.40	.15													3.55	
Lamoni	Grand	.24	.08								.85								.18		.10													.5.27
Lenox	Missouri	.25	.10	.01							.10								.20	.10														.15 2.20
Mt. Ayr	Grand	.52	.10	T							.32	.85							.26	.01													T 3.96	
Mt. Pleasant	Skunk	.03	.63	T						.01	.08	.38							.40	.12													4.88	
Murray	Grand	.37	.15	T							.41	.25							.43	.03													3.69	
Oakland	Nishnabotna	.50										T							T	T													T 0.73	
Oskaloosa	Des Moines	.16	.36	.01						T	.72							.64	.11													.6.31		
Ottumwa || Des Moines		.45	.10								.45								.55	T													5.08	
Pella	Skunk	.08	.32	T							.04	.20							.26	.06													3.07	
Sigourney	Skunk	.09	.30	T							T	.65							.49	.17													T 4.74	
Stockport	Skunk	.10	.58	T							.10	.06	.35			T			.34	.08												5.17		
Thuuman	Missouri	T	.22	T	T							.27	.05						T	T													T 0.84	
Washington	Skunk			.60	T							.08	.20						.41	.18													4.60	
Winterset	Des Moines	.30									.03								.41														.19 2.54	
Omaha, Neb.*** Missouri		.28		.01							.03								T	T	T	T											.01 0.47	

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.

*Presumption included in the next following measurement.

RIVERS

The interior rivers were frozen until toward the middle of the month, a general break up occurring from the 12th to the 16th. Moderately high stages prevailed after the breakup but the flood stage was not reached except on the Des Moines from below Tracy to some distance below Ottumwa, due to the formation of ice gorges. Heavy rains in the lower Des Moines watershed on March 24-25 caused flood stages from below Tracy to the mouth. At Ottumwa a crest stage of 12.3 feet, 2.3 feet above flood stage, occurred on the 26th. The Mississippi River was frozen until a break started on the 11th and by the 19th the ice had almost disappeared. During the first part the stages of this river were moderate but after the break occurred rising stages prevailed and by the end of the month the worst flood of record, so early in the season was approaching. Nearly stationary, but moderate stages prevailed on the Missouri the first of the month but during the last half there were rapid fluctuations with high stages for the season.

Daily Maximum and Minimum Temperatures for the Month of March, 1920.

Stations	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	Mean	
<i>Northern Division</i>																																	
Algona	34	36	31	25	13	6	15	33	44	44	50	39	44	54	54	47	38	40	41	41	52	69	60	56	45	57	70	65	52	64	75 45.0		
Alta	16	8	20	-10	-10	-2	-11	11	25	30	31	18	20	30	39	22	16	25	30	29	25	35	42	44	40	30	40	34	24	33	39 23.3		
Alta	42	40	33	20	11	7	20	39	54	51	53	33	43	61	54	34	39	35	45	40	58	69	59	56	43	63	74	57	55	64	76 46.0		
Alton	14	23	13	0	-7	-4	-10	14	28	35	26	19	22	32	24	22	15	32	28	29	28	38	47	42	33	30	41	32	24	37	33 24.2		
Alton	84	38	33	15	8	5	19	35	46	55	48	34	46	58	55	36	43	40	47	42	57	68	63	54	47	60	73	62	51	65	72 45.0		
Belmond	21	18	15	-2	-10	0	-12	10	21	32	28	20	23	32	35	22	18	32	28	25	42	45	40	32	29	41	32	21	29	35 22.9			
Belmond	36	40	33	21	9	10	18	34	50	43	50	32	44	55	41	36	35	40	42	42	51	68	57	56	55	58	78	57	50	65	75 44.5		
Charles City	8	14	20	4	-7	-2	-9	11	25	30	32	21	20	32	22	20	15	31	31	28	27	35	47	45	45	32	40	33	24	34	38 24.1		
Charles City	38	39	31	20	11	7	17	32	49	45	49	33	43	52	57	38	37	40	42	46	52	68	53	57	50	56	67	57	49	66	75 44.4		
Decorah	12	14	20	0	-6	-4	-8	17	23	29	33	18	29	38	16	15	31	31	28	24	35	46	48	36	34	38	32	26	34	41	24.3		
Decorah	33	34	35	29	16	10	19	31	44	42	45	38	39	46	57	45	45	37	43	41	46	50	66	55	58	53	65	65	63	46	74 44.8		
Forest City	12	4	23	12	-5	-4	-8	12	12	21	36	24	14	25	40	23	13	27	30	29	24	32	46	49	42	35	30	42	25	33	43 23.9		
Forest City	40	46	32	17	10	10	21	33	49	46	41	30	46	56	52	44	40	42	42	46	58	68	58	57	42	68	66	67	50	66	76 45.8		
Inwood	10	18	15	5	-9	-4	-9	12	20	32	22	19	31	44	20	12	30	30	27	28	36	45	42	34	32	21	34	38	33	28	38 23.4		
Inwood	35	34	30	12	7	12	19	35	47	51	41	36	47	58	48	36	35	43	43	57	70	63	54	53	74	72	60	53	68	76 45.3			
Mason City	0	3	11	-3	-21	-6	-20	8	21	30	26	17	21	32	20	11	32	30	28	25	38	38	38	33	33	38	32	18	30	36	20.3		
Mason City	36	37	34	30	9	7	17	31	46	42	52	49	54	44	53	44	36	40	41	44	52	68	61	56	48	56	67	75	52	66	75 45.9		
Milford (near)	11	14	24	4	3	-4	-10	11	21	27	34	29	31	19	41	21	12	33	30	27	22	35	47	45	35	22	36	35	24	32	41 24.6		
Milford (near)	38	32	31	16	9	7	16	34	47	46	40	30	45	53	51	36	37	35	40	40	49	54	58	52	41	58	70	61	52	61	69 43.0		
New Hampton	6	9	15	-3	-12	-3	-15	9	20	29	25	17	20	30	34	21	12	30	29	28	26	36	42	37	31	30	40	32	22	31	35	21.4	
New Hampton	37	38	32	31	15	9	18	34	49	43	48	39	42	50	52	44	39	40	40	46	52	67	58	56	55	66	60	47	65	74 45.4			
Northwood	7	17	23	9	-9	-5	-9	11	22	29	38	28	17	27	41	22	14	28	30	28	25	34	45	48	39	33	35	43	25	32	38 24.7		
Northwood	33	35	30	18	7	8	15	30	44	39	48	30	43	47	52	35	39	40	40	43	50	55	53	60	40	54	65	57	47	63	72 42.0		
Pocahontas	13	12	18	4	-10	-9	-10	9	18	26	30	20	17	27	27	19	12	29	29	27	25	31	44	55	69	59	56	45	61	73	56	54	66 77 45.7
Postville	4	11	19	0	-7	-2	-10	8	25	31	29	21	31	40	21	17	32	30	31	27	35	48	45	34	31	40	33	25	33	36	23.8		
Postville	34	38	32	30	13	9	14	34	43	41	45	42	38	46	58	45	36	38	38	45	50	66	56	52	55	65	60	45	63	73	44.0		
Postville	10	14	20	10	-11	-7	-11	11	18	25	38	23	14	27	42	26	12	28	30	26	27	36	45	49	43	34	34	43	24	33	46 24.5		
<i>Central Division</i>																																	
Belle Plaine	43	48	41	44	18	15	22	43	56	46	57	50	43	53	60	44	40	37	39	55	76	68	60	58	52	59	83	65	55	63	72 50.5		
Belle Plaine	13	18	31	12	1	4	-2	14	29	31	43	26	21	27	44	30	19	30	32	23	36	38	44	40	43	35	40	28	34	32	27.6		
Boone	41	43	40	28	28	19	25	54	60	47	58	35	51	59	56	47	38	37	43	41	52	67	52	57	73	66	55	69	77 49.9				
Carroll	18	22	23	6	-3	3	-4	19	30	34	34	23	19	31	47	28	19	31	29	25	38	48	51	38	32	42	36	27	35	44 27.8			
Carroll	41	48	39	32	18	14	21	44	53	52	61	36	48	64	58	44	42	37	51	43	58	71	64	61	68	77	50.3	68	77 50.3				
Davenport	49	54	51	43	18	13	17	40	51	53	56	47	40	53	62	48	40	43	44	53	68	63	57	60	56	73	64	51	66	75 50.1			
Davenport	18	29	29	10	4	3	0	12	34	30	46	28	22	31	48	28	21	32	33	31	30	40	49	51	46	39	31	43	45	50 30.5			
Des Moines	48	50	42	23	19	13	23	48	59	54	60	35	46	62	58	42	41	44	45	42	57	62	52	56	58	62	55	68	70	50 29.7			
Dubuque	38	40	39	39	15	11	20	36	51	50	43	38	49	62	46	39	35	47	46	52	67	57	56	64	66	61	64	65	75 46.6				
Ft. Dodge	39	42	35	33	15	10	20	40	55	48	50	40	46	60	57	49	47	45	45	45	52	62	60	47	60	73	72	55	68 48.7				
Ft. Dodge	11	12	30	3	3	2	-5	16	18	22	32	25	20	35	44	27	20	30	30	35	39	49	47	35	26	40	35	26	35	43 26.1			
Grinnell	48	42	38	22	13	22	43	62	51	62	39	48	60	50	40	45	45	45	45	55	55	55	55	55	55	55	55	55	55	55 50.5			
Guthrie Center	45	48	40	34	16	14	24	47	59	53	60	36	46	64	60	48	44	44	46	44	69	72	64	61	53	63	76	62	58	70 51.5			
Independence	20	21	31	5	0	5	-4	21	30	28	34	23	20	32																			

Daily Maximum and Minimum Temperatures for the Month of March, 1920.

Stations	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	Mean
<i>Northern Division</i>																																
Algona	34	36	31	25	13	6	15	33	44	44	50	39	44	54	54	47	38	40	41	41	52	69	60	56	45	57	70	65	52	64	75 45.0	
Alta	16	8	20	-10	-10	-2	-11	11	25	30	31	20	18	30	39	22	16	25	30	29	25	35	42	44	40	30	40	34	24	33	39 23.3	
Alton	42	40	33	20	11	7	20	39	54	51	53	33	43	61	54	34	39	35	45	40	58	69	59	55	43	63	74	57	55	64	76 46.0	
Belmond	34	38	33	15	8	5	19	35	46	55	48	34	46	58	55	36	38	36	43	40	57	68	63	54	47	60	73	62	51	65	72 45.0	
Charles City	8	14	20	4	-7	-2	-9	11	25	30	32	21	20	32	22	20	15	31	31	28	27	35	47	45	45	32	40	33	24	34	38 24.1	
Decorah	38	39	31	20	11	7	17	32	49	45	49	33	43	52	57	38	37	40	42	46	52	68	53	57	50	56	67	57	49	66	75 44.4	
Forest City	12	14	23	12	-5	-4	-8	12	12	21	26	24	14	25	40	23	13	27	30	29	24	32	46	49	42	35	30	42	25	33	43 23.9	
Inwood	10	18	15	5	-9	-4	-9	12	20	32	22	19	19	31	44	20	12	30	30	27	28	36	45	42	34	32	21	34	33	28	34	38 23.4
Mason City	35	34	30	12	7	12	19	35	47	51	41	36	47	58	48	36	36	35	43	43	57	70	63	54	53	74	72	60	53	68	76 45.3	
Milford (near)	11	14	24	4	3	-4	-10	11	21	27	34	29	31	19	41	21	12	33	30	27	22	35	47	45	35	32	36	35	24	32	41 24.6	
New Hampton	38	32	31	16	9	7	16	34	47	46	46	30	45	53	51	36	37	35	40	40	40	54	68	59	52	41	58	70	61	52	61	69 43.0
Northwood	7	17	23	9	-9	-5	-9	11	22	29	38	28	17	27	41	22	14	28	30	28	25	34	45	48	39	33	35	43	25	32	38 24.7	
Pocahontas	13	18	12	4	-10	-5	-10	9	18	26	30	20	17	27	27	19	12	29	29	27	31	44	40	40	34	30	23	33	34	30	45 22.0	
Postville	39	37	33	19	10	9	18	38	50	45	45	34	46	58	56	41	39	37	44	47	55	69	59	56	45	61	73	56	54	66	77 45.7	
	34	38	32	30	13	9	14	34	43	41	45	42	48	46	58	45	36	38	38	45	50	66	50	52	55	65	60	45	63	73 44.0		
	10	14	20	10	-11	-7	-11	11	18	25	38	23	14	27	42	26	12	28	30	26	27	36	45	49	43	34	34	43	24	33	46 24.5	
<i>Central Division</i>																																
Belle Plaine	43	48	41	44	18	15	22	43	56	46	57	50	43	53	60	44	40	37	39	55	76	68	60	58	52	59	83	65	55	63	72 50.5	
Boone	13	18	31	12	1	4	-2	14	29	31	43	26	21	27	44	30	19	30	32	23	36	38	44	40	43	35	40	40	28	34	32 27.6	
Carroll	41	43	40	28	19	25	54	60	47	58	35	51	59	56	47	38	37	43	41	56	70	62	59	52	57	73	66	55	69	77 49.9		
Davenport	49	54	51	43	18	13	17	40	51	53	56	47	40	53	62	48	40	43	44	53	68	63	57	60	56	73	64	51	66	75 50.1		
Des Moines	18	22	23	6	-3	3	-4	19	30	34	34	23	19	31	47	28	19	31	31	29	25	38	48	51	38	32	32	27	35	44 27.8		
Dubuque	38	40	39	39	15	11	20	36	51	50	43	38	49	42	62	46	39	35	37	46	52	67	58	57	56	64	66	64	61	68	75 46.6	
Ft. Dodge	39	42	35	33	15	10	20	40	55	48	50	40	46	50	57	49	40	40	45	45	55	72	62	60	47	60	73	72	55	68 48.7		
Grinnell	11	12	30	3	3	2	-5	16	18	32	22	25	20	35	44	26	17	20	30	35	39	49	47	35	32	40	35	26	35	43	26 21.1	
Guthrie Center	48	42	38	22	13	22	43	62	51	62	39	48	60	45	45	45	45	41	37	55	55	55	55	55	55	55	55	55	55	55 26		
Independence	45	48	40	34	16	14	24	47	59	53	60	36	46	64	60	48	44	44	46	44	69	72	64	61	53	63	76	62	58	70	78 51.5	
Iowa City	46	51	46	44	18	14	19	42	54	48	54	49	41	54	61	49	41	37	53	70	58	56	57	57	56	64	73	64	51	66 50.5		
Iowa Falls	15	19	31	14	3	5	-1	12	31	31	43	28	22	27	47	28	20	30	32	28	24	35	48	49	50	38	37	38	30	38	48 29.0	
Little Sioux	48	55	42	26	15	12	27	48	59	57	57	38	46	65	61	48	46	47	49	47	62	72	68	64	50	64	78	68	59	70	80 52.5	
Marshalltown	17	20	32	9	0	4	-2	13	32	32	41	24	22	32	45	27	19	30	32	29	27	31	46	50	40	34	40	37	27	38	45 28.2	
Olin	40	43	40	37	18	13	19	39	50	50	53	47	49	52	60	52	41	39	37	40	54	69	60	55	60	72	67	65	68	76 49.0		
Sioux City	45	45	34	8	9	6	25	41	57	57	50	33	48	62	55	34	41	39	44	42	59	70	64	57	49	60	76	57	54	67	75 47.2	
	20	21	8	-1	-9	-2	-6	20	32	36	27	21	26	35	34	24	20	33	31	30	32	43	49	40	35	31	46	32	27	37	43 26.3	
<i>Southern Division</i>																																
Albia	53	57	48	39	19	16	21	49	56	51	50	49	45	60	58	49	44	41	44	56	72	64	61	54	61	77	64	56	69	77 51.6		
Atlantic	18	26	32	8	0	3	-4	15	33	33	41	25	20	30	46	20	30	32	27	26	39	45	48	40	34	40	30	30	38	51 28.6		
Bloomfield	52	63	41	35	17	12	24	52	61	57	62	37	43	65	59	49	45	47	47	44	61	72	66	60	55	65	76	62	59	71	78 52.8	
Burlington	54	56	49	35	20	17	21	46	54	49	56	50	46	59	60	51	43	44	45	45	57	71	63	61	54	66	77	66	51	70 51.9		
Columbus Jct.	55	54	50	42	17	6	4	0	12	33	32	47	30	24	28	49	38	24	33	35	30	28	40	49	45	32	42	35	26	34	44 27.8	
Corning	55	58	49	35	20	16	25	52	59	45	58	39	42	54	54	45	42	51	47	43	59	71	68	59	51	63	75	59	59	70 51.6		
Fairfield	53	59	50	40	20	18	15	45	5																							

WEATHER NOTES, DUBUQUE, IOWA, MARCH, 1920.

By James H. Spencer, Meteorologist.

WIND STORM: The wind storm which began early on the morning of March 15th, and continued through the 15th and 16th, was one of the worst ever experienced in this section of the country from a cyclonic storm area. The barometer fell steadily at Dubuque on the 15th until 12.20 p. m., when a reading of 29.17 inches occurred. After that hour it rose steadily until noon of the 17th, when 30.48 inches was recorded. The Low was centered at Moorhead, Minn., at 7 p. m. of the 15th, a sea level reading of 28.68 inches being recorded.

Although the maximum velocity of the wind at Dubuque was only 32 miles per hour from the south at 11.42 a. m. of the 15th, due doubtless to the sheltered position of the anemometer below the bluffs to the westward, the wind blew a gale on both dates, and considerable damage resulted. This low maximum was also due to the fact that the wind blew in terrific gusts lasting only a fraction of a minute.

A large plate glass window at Tasker's Studio, corner 13th and Main streets, and another at Lange's Dying establishment, corner 12th and Iowa streets, were blown in. A number of windows and doors at the Lincoln School were destroyed. Most of the damage occurred during the night of the 15th-16th. At 10.52 a. m. of the 16th a brick wall that had remained standing since a recent fire was blown over. Three workmen were buried in the debris, and injured. Property damage in Dubuque was approximately \$5,000, a large portion of which was merchandise that was destroyed when the wall at Grimm's Drug Store blew over.

The damage in many portions of northeast Iowa was heavy, probably in excess of \$50,000. Numerous wind mills and a number of barns were blown down, and some live stock killed. In cities and towns plate glass windows were blown in. The following are typical reports from postmasters:

Guttenberg: "Damage in this vicinity was 12 wind mills blown down and smashed, many sheds and one barn blown down, many barns unroofed; estimated damage, \$10,000."

Oelwin: "The heavy wind damaged the Catholic Church here to the extent of \$3,000. Also blew in two large plate glass windows."

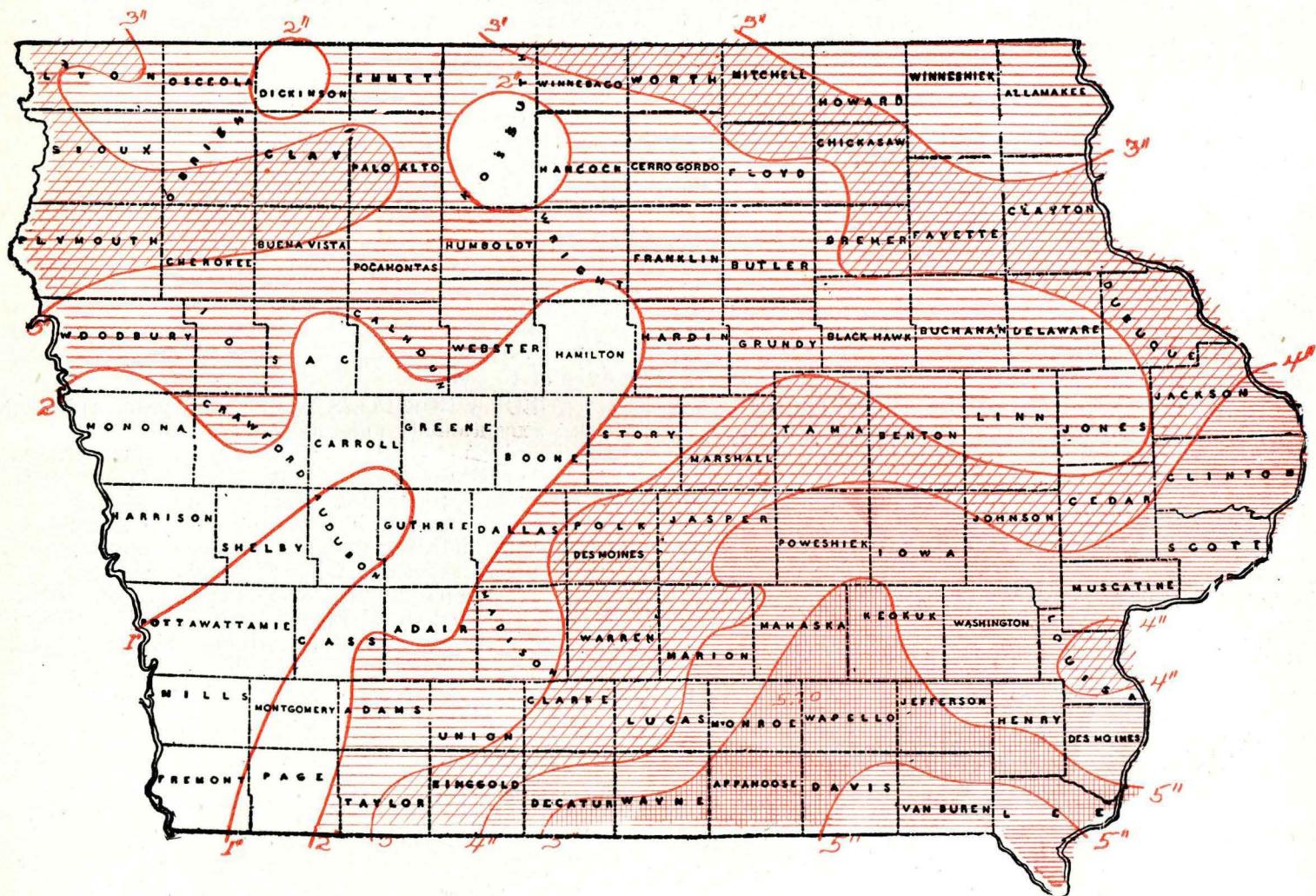
Lansing: "Anton Hanson's barn, in Taylor Township, blew down and 30 head of stock and hogs were killed. There was other minor damage."

DIRT STORM OR "DUSTFALL", March 19, 1920: A remarkably heavy deposit of dirt was brought down early this morning by the storm of rain or snow. Rain began around 2 a. m. and turned to snow before 5 a. m. Total amount of precipitation, 0.27 of an inch, of which amount about 1.0 inch was wet snow that partly melted as it fell.

As soon as exposed objects, such as roofs, porches, windows etc., became dry late in the morning of the 19th it was noticed that they were covered with a thick coating of dust which was plastered on like mud. Upon being swept up, it felt like toilet powder between the fingers, and was greyish in color. All exposed objects were quite uniformly covered. The dust covering on a black tin roof, for instance, was so heavy that little of the black paint was visible. The deposit did not blow off when fully dry, and even a broom would not remove it all. While not the first storm of a similar character recorded at this station, it was by far the heaviest for at least a period of 15 years.

AURORA BOREALIS, March 22, 1920: This aurora was exceptionally fine, and lasted from early evening until midnight or later, but was most brilliant around 9 p. m. Practically the entire sky was filled with whitish streamers that converged, fanlike, overhead and formed a crown near the zenith. A prominent feature of the aurora were distinct patches or groups of light, resembling thin whitish clouds (Ci.) of irregular shape. The aurora was similar to the wonderful aurora of March 9, 1918, except that on March 22, 1920, green and red effects were not prominent and streamers did not pulsate much.

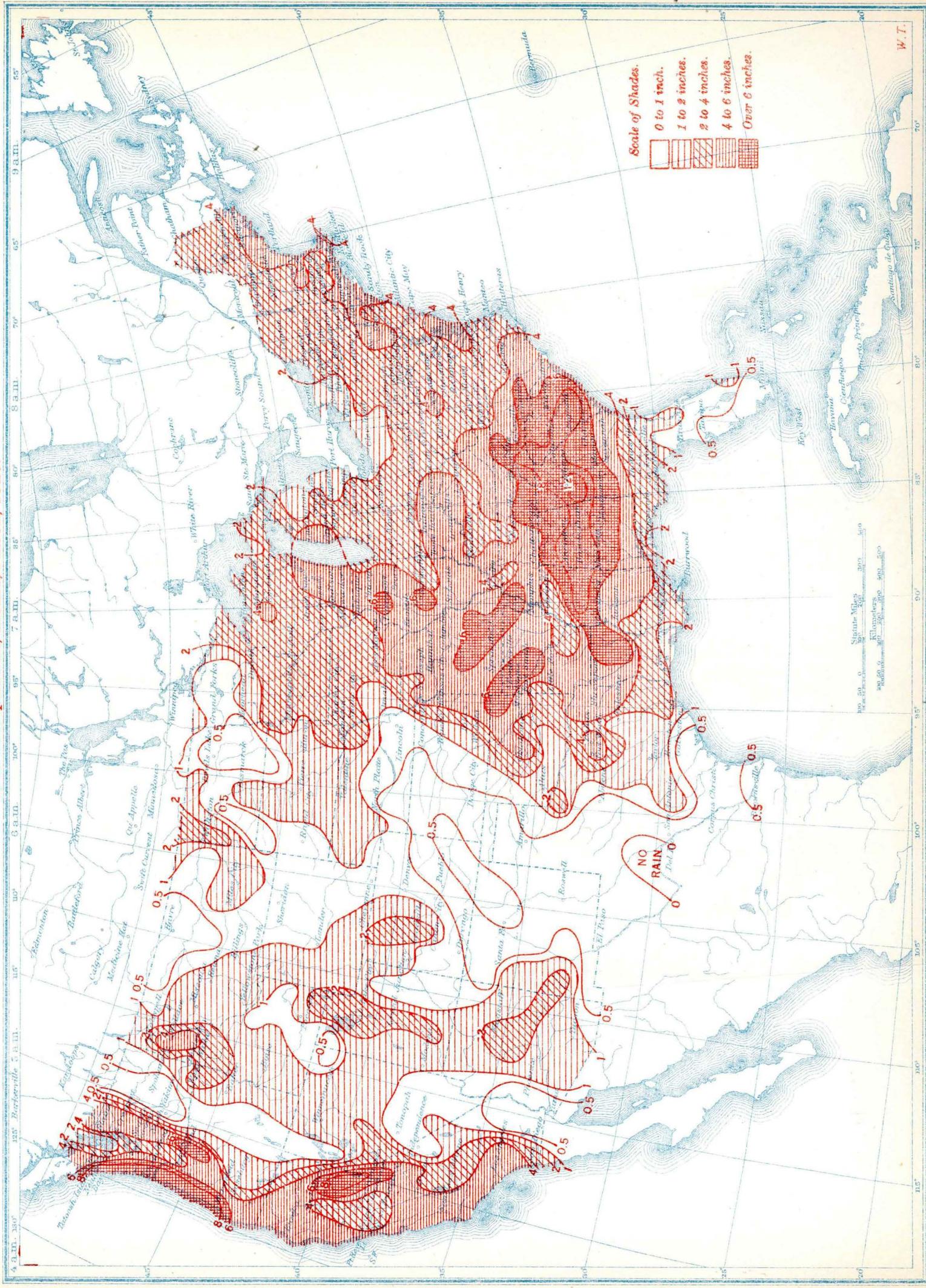
TOTAL PRECIPITATION,—MARCH, 1920.



SCALE OF SHADES—IN INCHES.

	Less than 2		2 to 3		3 to 4		4 to 5		More than 5
--	-------------	--	--------	--	--------	--	--------	--	-------------

Total Precipitation, Inches, March, 1920.



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, 1920

BY
CHARLES D. REED
METEOROLOGIST

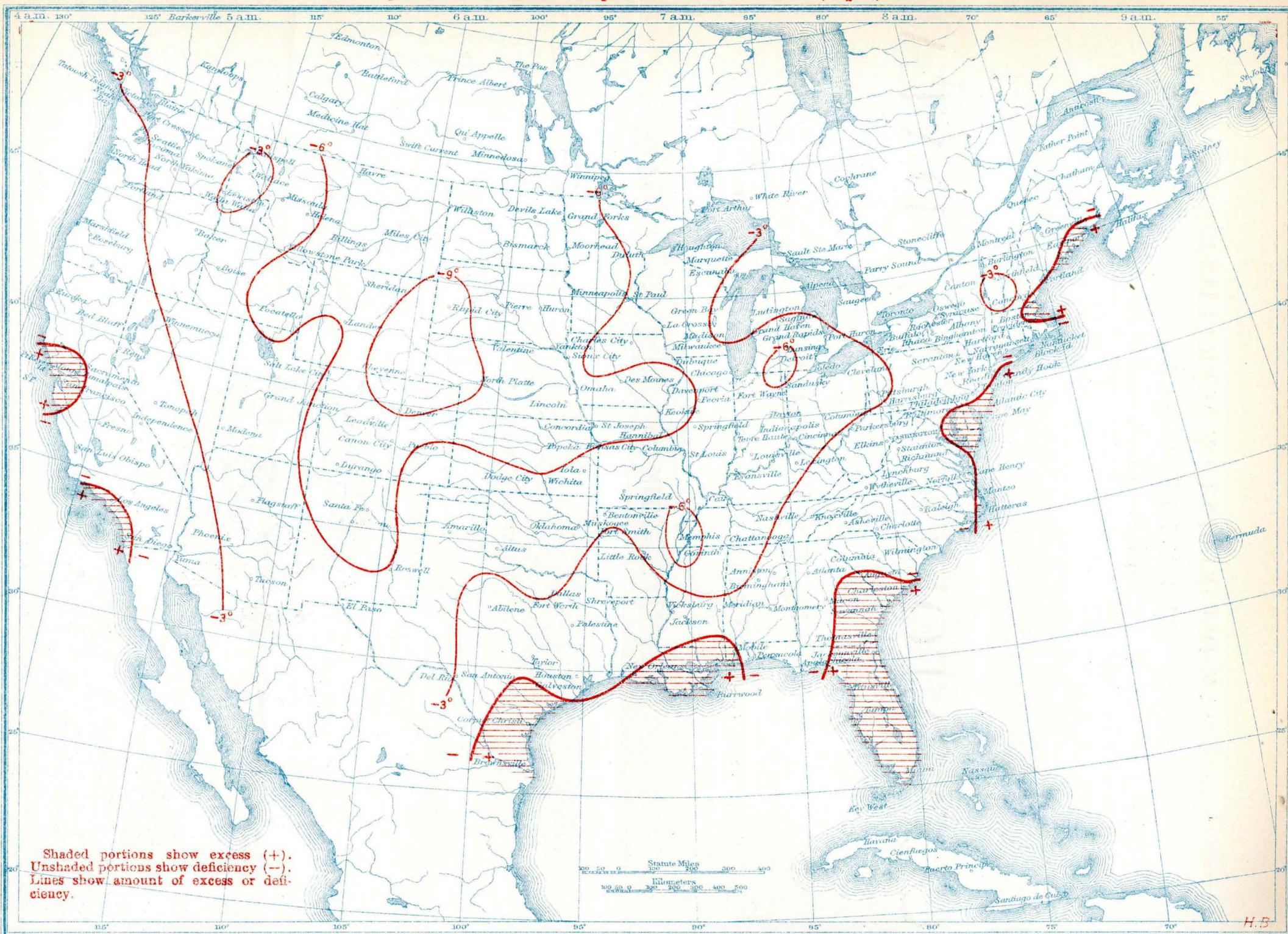


PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY

DES MOINES, IOWA
WEATHER BUREAU OFFICE



Departure of the Mean Temperature from the Normal, April, 1920.



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

H.B.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist

Vol. XXXI Des Moines, Iowa, April, 1920. No. 4

GENERAL SUMMARY

The month was cold and wet. Since 1890 there has been but one colder April and only four have had greater precipitation. The maximum temperature, 78° is the lowest of record and the minimum, 1°, is within 1° of the record for April. Killing frosts or freezing temperatures occurred on a large number of days over most of the State and on the 28th freezing temperatures were general but owing to the backward season there was practically no damage from frost. At points in the southern portion of the State the lowest April temperature ever recorded occurred on the 5th.

Precipitation was much above normal over the entire State except a few small areas. An unusual feature was a heavy fall of snow on the 3d and 4th, over most of the southern third of the State. The snow drifted badly and it was the worst storm of the winter in that part of the State. Trains were much delayed. Sleet occurred on a large number of days but the storm that occurred on the 11th was the most damaging. Telephone companies were the chief sufferers and the storm appeared to be the worst westward from Adair County to the Missouri River. Between Atlantic and Adair 215 telephone poles were reported down.

On the 19th between 3 and 4 p. m. an unusual downpour of rain in the vicinity of Leighton about 10 miles northwest of Oskaloosa raised the Skunk River 4.5 feet in 24 hours, washed out 300 feet of the C. R. I. & P. R. R. track northwest of Evans station, washed fields clean of recently plowed soil and eroded deep ditches where none had been before. The rain did not fall in ordinary drops but more like the discharge from a hose. Thunder and lightning were absent. Darkness at Oskaloosa was such from 3 to 3:15 p. m. that persons distant 100 feet could not be recognized and artificial lights were used in stores and on automobiles. The darkness was not like that of an ordinary storm cloud but more like the advance of evening. Soon after 3:15 p. m. the clouds lifted from the northwest and in 10 minutes daylight was normal. The rainfall at Oskaloosa was light. Hail fell at Leighton.

The month was unfavorable from an agricultural standpoint, being too cold for plant growth and too wet for plowing and seeding. The rain was especially heavy on the 18th and 19th, and amounted to considerably more than an inch over most of the State. During the rest of the month fields were very muddy and farm work was practically at a standstill. The oat acreage was greatly reduced on account of the protracted unfavorable conditions at seeding time and this was particularly the case in the southern portion of the State. No corn had been planted at the close of the month. The cold weather beneficially retarded fruit buds which at the close of the month had barely begun to swell and no foliage had appeared.

Unusual, complex optical phenomena were observed at Miller's Bay, West Okoboji Lake on April 8. F. L. D.

PRESSURE.

The mean pressure, (reduced to sea level), for the State was 29.85 inches. The highest recorded was 30.28 inches, at Dubuque on the 24th, and the lowest was 29.17 inches at Davenport and Dubuque on the 1st. The monthly range was 1.11 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 103 stations, was 42.4°, or 6.3° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 40.3°, or 6.4° lower than the normal; Central, 42.8°, or 6.1° lower than the normal; Southern, 44.1°, or 6.5° lower than the normal. The highest monthly mean was 46.8° at Centerville, and the lowest was 37.4°, at Estherville. The highest temperature reported was 78°, at Afton, Clinton, Keokuk and Olin, on the 21st, and the lowest was 2° at Bedford and Thurman on the 5th. The temperature range for the State was 76°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 80 per cent, and at 7 p. m. it was 61 per cent. The mean for the month was 70 per cent, or 4 per cent above the normal. The highest monthly mean was 74 per cent at Sioux City, and the lowest was 66 per cent, at Dubuque.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 107 stations, was 4.59 inches, or 1.73 inches more than the normal. By divisions the averages were as follows; Northern, 4.26 inches, or 1.58 inches more than the normal; Central, 4.49 inches, or 1.63 inches more than the normal; Southern, 5.02 inches, or 1.97 inches more than the normal. The greatest amount, 7.23 inches, occurred at Oakland, and the least, 1.93 inches, occurred at Forest City. The greatest amount in any 24 consecutive hours, 3.34 inches, occurred at Pella, on the 19th.

SNOW

The average snowfall for the State 2.0 inches, or 0.2 inch more than the normal. The averages by divisions were: Northern, 0.9 inch; Central, 0.6 inch; Southern, 4.6 inches. The greatest amount, 12.00 inches, occurred at Bloomfield.

COMPARATIVE DATA FOR THE STATE—APRIL.

YEAR	Temperature			Precipitation			Number of Days						
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precip. 0.01 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	93	13	2.15	-0.71	5.06	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	-0.19	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
1919.....	48.4	-0.3	81	20	4.78	+1.92	9.00	1.94	0.7	14	8	8	14
1920.....	42.4	-6.3	78	22	4.59	+1.73	7.13	1.93	2.0	12	8	9	13

T. indicates an amount too small to measure, or less than .065 inch rainfall and less than .05 inch snowfall.

CLIMATOLOGICAL DATA: IOWA SECTION.

April, 1920.

CLIMATOLOGICAL DATA FOR APRIL, 1920.

STATIONS	COUNTIES	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit			Precipitation in inches.			No. of Days			OBSERVERS						
				Mean.	Highest.	Lowest.	Date.	Greatest daily range.	Total.	Departure from Normal.	Greatest in 24 hours.	Total snowfall (Unmelted) inch or more.	Precipitation, 01 inch.	Clear.	Partly cloudy.	Cloudy.	Prevailing direction of wind.		
<i>Northern Division</i>																			
Algona	Kossuth	1213	47	40.2	-6.8	70	21	13	5	39	4.63	+2.12	1.60	0.5	10	5	15	nw.	
Allison	Butler	1045	8	40.6	.....	73	21	13	5	30	3.58	.....	0.86	T	12	2	9	19	ne.
Alta	Buena Vista	1513	29	39.6	-6.7	69	21	15	4	34	4.98	+1.94	1.50	T	13	7	12	11	nw.
Alton	1305	15	39.7	-7.1	65	21	14	4	33	4.54	.....	0.96	1.5	12	5	12	13	nw.	
Belmond	Wright	1205	10	40.4	.....	70	21	13	5+	29	4.63	.....	1.10	2.0	17	5	10	15	n.
Britt	Hancock	1236	23	39.6	-7.0	71	21	12	5	37	2.39	-0.03	0.89	0.6	12	14	6	10	nw.
Charles City	Floyd	1015	29	40.3	-6.0	71	21	15	5	25	3.31	+0.48	1.26	0.7	13	4	13	13	nw.
Decorah	Winneshiek	875	27	42.3	-4.6	73	21	14	5	34	3.72	+1.28	1.10	2.6	15	13	6	11	ne.
Elkader	Clayton	751	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Estherville	Emmet	1298	25	37.4	-7.7	69	21	11	5	31	4.37	+1.52	1.10	.....	10	8	13	9	nw.
Fayette	Fayette	1003	30	42.0	-4.4	74	21	15	5	40	7.04	+3.95	3.02	1.0	14	11	4	15	nw.
Forest City	Winnebago	1226	26	40.5	-5.4	71	21	12	2	38	1.93	-0.42	0.80	.....	6	6	10	14	nw.
Humboldt	Humboldt	1095	32	41.2	-7.0	71	21	14	5	31	4.47	+1.80	1.38	1.0	11	4	10	16	n.
Inwood	Lyon	1474	16	39.8	-6.8	63	28	12	4+	39	3.54	+0.95	0.74	0.8	12	13	4	13	e.
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	.....	3.89	+1.51	1.20	1.5	14	.....	.....	.....
Le Mars	Plymouth	1224	24	40.6	-6.8	66	21	14	4+	43	4.96	-2.09	1.17	2.1	10	5	9	16	ne.
Mason City	Cerro Gordo	1148	23	40.8	-5.6	70	21	13	2	37	2.96	+0.47	1.10	T	11	12	11	7	nw.
Milford (near)	Dickinson	1430	.....	38.8	.....	69	1	13	2	44	3.33	.....	0.68	0.7	12	4	15	11	ne.
New Hampton	Chickasaw	1169	23	40.8	-5.6	72	21	14	5	27	3.39	+0.97	0.78	T	9	8	9	13	nw.
Nora Springs	Floyd	1064	8	42.8	.....	75	21	14	5	32	3.36	.....	1.10	0.4	15	7	11	12	s.
Northwood	Worth	1222	24	38.0	-8.1	68	21	12	3	29	4.17	+1.70	1.00	2.5	12	9	7	14	nw.
Pocahontas	Pocahontas	1248	16	40.4	-6.6	72	21	12	5	33	4.47	-2.12	1.82	0.7	15	8	10	12	se.
Postville	Clayton	1180	21	41.0	-5.6	70	21	13	5	28	4.72	+1.74	1.06	1.0	13	8	8	14	nw.
Rock Rapids	Lyon	1358	21	39.8	-5.3	62	21+	12	4	37	4.67	+2.02	1.19	0.5	11	14	6	10	nw.
Sanborn	O'Brien	1553	6	39.0	.....	67	21	12	4	33	4.50	.....	1.00	0.5	11	8	9	13	ne.
Sioux Center	Sioux	1426	21	39.2	-7.3	66	1	12	4	42	5.35	+2.73	1.10	3.5	14	8	6	16	e.
Spencer	Clay	1319	6	40.2	.....	70	21	12	2+	39	4.34	.....	1.05	.....	12	11	7	12	nw.
Storm Lake	Buena Vista	1440	31	40.1	-6.7	69	21	15	2+	29	5.76	+2.92	1.57	0.1	13	11	6	13	nw.
Washta	Cherokee	1157	22	40.6	-6.5	69	21	13	5	37	4.80	+2.39	0.90	T	12	12	8	10	n.
Waverly	Bremer	948	24	41.7	-6.1	72	21	15	5	30	4.99	+2.13	1.29	0.4	13	9	5	16	nw.
West Bend	Palo Alto	1197	27	40.4	-6.8	72	21	11	5	34	4.94	+2.10	1.63	1.0	13	8	9	13	nw.
Means and Extremes		.....	.....	40.3	-6.4	75	21	11	5	44	4.26	+1.58	3.02	0.9	12	8	9	13	nw.
<i>Central Division</i>																			
Ames	Story	926	44	43.2	-6.4	73	21	20	2+	34	4.96	+2.10	1.26	.....	12	12	9	9	n.
Audubon	Audubon	1301	26	40.6	-8.1	71	21	12	5	34	4.06	-0.97	1.52	0.3	10	9	8	13	n.
Baxter	Jasper	998	20	42.4	-6.9	72	21	16	5	31	3.47	-0.41	0.83	T	14	5	9	16	nw.
Belle Plaine	Benton	886	30	43.6	-5.3	75	21	15	5	37	5.71	-2.44	1.80	0.6	16	9	6	15	se.
Boone	Boone	1134	15	42.3	-5.6	71	21	14	5	37	4.10	-1.34	1.12	T	11	6	11	13	nw.
Carroll	Carroll	1265	30	42.2	-5.0	71	21	15	5	33	4.84	+1.95	2.50	.....	14	14	4	12	nw.
Cedar Rapids	Linn	733	38	44.4	-4.4	76	21	19	5	29	3.24	+0.34	0.76	T	9	9	7	14	ne.
Clinton	Clinton	593	47	43.8	-5.9	78	21	16	5	40	3.15	-0.01	0.57	1.2	15	10	9	11	ne.
Davenport	Scott	580	49	44.0	-6.2	74	21	18	5	29	5.04	+2.16	1.72	1.0	18	7	7	16	e.
Delaware	Crawford	1083	29	41.9	-4.8	72	21	15	5	38	4.26	+1.40	1.82	0	8	3	15	12	ne.
Denison	Polk	1180	26	44.7f	-3.9	70f	21	17f	2	34 f	3.18	-0.23	1.10	T	9	12	8	10	n.
Des Moines	Dubuque	861	40	43.9	-6.7	72	21	18	5	30	4.09	-1.11	0.99	v.7	14	5	9	16	n.
Dubuque	Webster	639	47	42.8	-6.1	73	21	19	5	28	3.91	-0.99	1.84	0.3	16	7	8	15	nw.
Fort Dodge	Grinnell	1126	20	42.6	-4.6	73	1	17	4+	43	2.11	-0.52	1.00	0.7	11	3	17	w.	
Grinnell	Poweshiek	1031	26	42.3a	-7.5	74a	21	15a	5	30a	3.04	.....	1.76	1.2	13	10	11	9	nw.
Grundy Center	Grundy	976	29	43.6a	-5.2	74a	1	14a	5	38a	5.06	+1.99	1.10	1.1	13	10	11	9	nw.
Guthrie Center	Guthrie	1077	25	42.4	-7.2	73	21	12	5	37	4.15	+1.24	1.25	2.1	13	10	11	9	nw.
Harlan	Shelby	1182	21	.....	.....	.....	.....	13	5	35	5.74	+3.22	3.00	10	19	3	8	s.	
Independence	Buchanan	921	56	43.4	-4.4	74	21	17	5	43	4.64	-2.24	1.48	T	9	13	2	15	ne.
Iowa City	Johnson	733	59	44.3	-4.3	74	21	18	5	33	4.75	-1.57	1.22	0.5	12	7	7	16	nw.
Iowa Falls	Hardin	1107	27	41.4	-5.0	72	21	14	5	32	4.67	+1.54	0.89	1.4	16	9	6	15	nw.
Jefferson	Greene	1052	21	41.8	-7.3	73	21	12	5	35	4.20	.....	1.35	T	11	7	8	15	ne.
Le Claire	Scott	576	20	.....	.....	.....	.....	.....	.....	6.39	+3.46	1.22	1.7	16	.....	.....	.....	.....
Little Sioux	Harrison	1040	15	42.5a	-8.1	71a	21	13a	5	39a	5.78	.....	1.02	1.5	13	.....	.....	.....
Logan	Harrison	928	53	44.2	-6.2	70	21	18	5	36	4.30	+1.56	1.17	0.7	11	8	11	11	sw.
Maquoketa	Jackson	688	19	43.0	-6.2	73	21	15	5	40	3.62	-0.83	0.86	0.1	11	5	12	13	nw.
Marshalltown	Marshall	947	28	43.0	-5.3	74	21	12	5	31	4.02	+1.32	0.56	T	13	13	5	12	nw.
Monroe	Jasper	922	8	44.2	.....	73	21	17	5	34	5.70	.....	1.05	T	14	11	3	16	nw.
Muscatine	Muscatine	554	60	.....	.....	.....	.....	.....	.....	5.35	+2.02	1.20	2.6	14	.....	.....	.....	.....
Olin	Jones	760	22	44.0	-4.7	78	21	18	5	42	5.85	+3.20	1.50	T	10	10	11	9	nw.
Onawa	Monona	1051	20	42.5	.....	70	21	10	5	37	5.49	-2.98	1.53	.....	8	6	7	17	nw.
Perry																			

CLIMATOLOGICAL DATA FOR APRIL, 1920.—Continued

STATIONS	COUNTIES	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit				Precipitation in inches.			No. of Days	?prevailing direction of wind.	OBSERVERS						
				Mean.	Departure from Normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.									
<i>Southern Division</i>																			
Afton.....	Union.....	1212	26	43.8d	-6.8	78e	21	13d	5	41e	5.68	+2.33	1.35	4.0	13	10	7	13	nw.
Albia.....	Monroe.....	959	22	43.8	-5.8	74	21	10	5	34	4.58	+1.73	0.83	6.0	11	5	4	21	nw.
Atlantic.....	Cass.....	1164	29	43.0	-6.6	73	21	14	25	36	4.87	+1.94	1.63	0.5	13	13	7	10	nw.
Bedford.....	Taylor.....	.....	20	44.2	-6.1	72	21	2	5	35	5.47	+2.98	2.00	1.8	13	5	11	14	nw.
Bloomfield.....	Davis.....	881	13	45.0	.....	74	21	11	5	29	5.50	+2.37	1.26	12.0	12	5	15	10	ne.
Bonaparte.....	Van Buren.....	565	29	44.6	-6.7	75	21	8	5	36	6.13	+2.92	1.34	4.4	13	12	6	12	nw.
Burlington.....	Des Moines.....	544	24	46.2	-5.0	76	21	13	5	42	4.89	+1.65	1.10	9.0	15	10	8	12	ne.
Centerville.....	Appanoose.....	1013	15	46.8	.....	74	21	6	5	41	3.86	.....	0.87	4.0	12	7	7	16	se.
Chariton.....	Lucas.....	1042	29	44.6	-5.4	72	21	11	5	28	6.04	+2.92	3.05	3.0	10	10	6	14	nw.
Clarinda.....	Page.....	1009	30	45.6	-4.0	75	21	11	5	34	4.50	+1.67	1.07	9.4	15	9	10	11	ne.
Columbus Jct.....	Louisa.....	595	19	45.0	-5.7	75	21	15	5	31	4.50	+1.56	1.05	0.5	15	11	10	9	w.
Corning.....	Adams.....	1117	28	42.6b	-7.0	72b	21	19b	4	40b	2.74	-0.29	0.73	2.0	10	.....	.....	.....	ne.
Corydon.....	Wayne.....	1101	27	43.8	-7.4	74	21	7	5	32	5.79	+2.66	2.45	9.0	16	3	15	12	nw.
Creston.....	Union.....	1312	15	43.1	-5.2	72	21	11	5	34	4.92	.....	1.30	5.9	14	1	20	9	ne.
Cumberland.....	Cass.....	.....	21	.....	.....	.....	.....	.....	.....	3.99	+1.72	1.34	2.0	8	4	8	8	sw.	
Earlham.....	Madison.....	1126	18	42.2	-7.0	71	21	9	5	34	4.54	+1.68	1.18	4.0	14	11	5	14	nw.
Fairfield.....	Jefferson.....	780	36	44.1	-6.7	75	21	12	5	31	6.52	+2.87	1.90	6.0	14	12	5	13	nw.
Glenwood.....	Mills.....	1100	23	43.9	.....	72	21	12	5	39	5.80	.....	2.00	7.5	12	10	10	10	ne.
Greenfield.....	Adair.....	.....	28	42.2	-7.6	70	21	12	5	36	5.04	+1.92	1.09	3.0	13	15	8	7	nw.
Indianola.....	Warren.....	969	28	43.0	-7.5	66a	1†	17	5	35a	4.13	+0.92	1.09	1.0	11	4	4	22	nw.
Keokuk.....	Lee.....	614	49	45.7	-6.3	78	21	13	5	37	3.64	+0.30	0.80	8.6	15	4	10	16	ne.
Keosauqua.....	Van Buren.....	644	28	44.8	-5.7	76	21	7	5	32	5.82	+2.32	2.00	8.0	13	9	4	17	ne.
Knoxville.....	Marion.....	920	25	44.4	-7.2	73	21	15	5	32	4.67	+1.68	1.60	0.5	11	7	7	16	nw.
Lacona.....	Warren.....	.....	21	.....	.....	.....	.....	.....	.....	5.25	+2.55	1.19	5.0	15	4	14	12	.....
Lamoni.....	Decatur.....	1100	13	44.5	-6.5	72	21	7	5	36	4.45	+1.10	1.27	5.5	11	5	17	8	nw.
Lenox.....	Taylor.....	1250	25	44.2	-6.1	72	21	9	5	34	4.30	+1.36	0.91	2.7	15	9	9	12	nw.
Mt. Ayr.....	Ringgold.....	1236	27	44.1	-7.1	74	29	5	5	34	5.63	+2.48	1.54	8.0	14	7	9	14	ne.
Mt. Pleasant.....	Henry.....	729	39	44.4	-6.8	74	21†	11	5	29	4.09	+1.19	0.99	4.0	16	8	9	13	se.
Murray.....	Clarke.....	1216	29	44.0	-6.5	72	21	10	5	35	5.51	+2.28	1.38	2.0	15	4	10	16	nw.
Oakland.....	Pottawattamie.....	.....	43.5	.....	.....	72	21	12	5	36	7.23	.....	2.55	6.0	11	12	6	12	n.
Oskaloosa.....	Mahaska.....	825	44	44.0	-6.6	74	21	14	5	29	4.74	+1.98	1.16	3.3	18	7	10	13	nw.
Ottumwa ||||	Wapello.....	849	25	.....	.....	.....	.....	.....	.....	5.18	+2.43	1.20	7.0	12	8	4	18	w.	
Pella.....	Marion.....	877	27	43.6	-6.8	73	21	17	5	33	6.55	+2.72	3.34	1.0	13	12	1	17	nw.
Sigourney.....	Keokuk.....	877	24	43.8	-7.2	72	21	16	5	30	4.47	+1.19	1.24	1.8	15	10	4	16	nw.
Stockport.....	Van Buren.....	754	18	42.8	-7.7	75	21	3	5	38	5.83	+2.77	1.91	7.0	16	8	9	13	nw.
Thurman.....	Fremont.....	.....	23	44.2	-7.0	74	21	2	5	44	4.99	+1.86	1.82	5.5	9	1	18	11	ne.
Washington.....	Washington.....	769	38	44.6	-6.0	76	21	14	5	29	5.83	+3.21	1.65	2.0	13	4	12	14	nw.
Winterset.....	Madison.....	1129	29	43.7	-7.0	72	21	12	5	38	5.02	+1.42	1.39	2.0	14	13	8	9	nw.
Omaha, Neb.....	.....	1040	49	44.2	-6.3	72	21	20	4	28	3.39	+0.38	1.00	5.6	14	5	12	13	nw.
Means and extremes .....	.....	.....	44.1	-6.5	78	21	2	5	51d	5.02	+1.97	3.34	4.6	13	8	9	13	nw.	
State Means and Extremes .....	.....	.....	42.4	-6.3	78	21	2	5	51	4.59	+1.73	3.34	2.0	12	8	9	13	nw.	

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 45, or about 15 per cent below normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 36; Davenport, 44; Des Moines, 47; Dubuque, 57; Keokuk, 47; Sioux City, 43; Omaha, Neb. 45. Clear days averaged 8; partly cloudy, 9; cloudy, 13.

MISCELLANEOUS PHENOMENA

Aurora: 14th.

Birds: (Migration of) : Earlham, Mockingbirds and Wrens, 28th.

Fog: 20th.

Hail: 1st, 4th, 11th, 14th, 15th, 17th, 18th, 20th, 21st, 28th.

Halo: (lunar or solar) : 4th, 6th, 8th, 9th, 15th, 24th, 29th.

Sleet: 1st, 2d, 3d, 11th, 17th, 19th, 20th, 21st, 26th, 29th, 30th..

Thunderstorms: 1st, 10th, 11th, 12th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 26th, 29th, 30th.

Tornado: 1st.

‡Local mean time. †And other dates.

§Dubuque, *Davenport, ¶Omaha, Neb., ||Sioux City.

Normals and records \$30.78 | 1918* 28.80 | 1893 | | 11 | 1893 | | 74 | n | 1902 |

DAILY PRECIPITATION FOR APRIL, 1920.

Stations.	Watersheds.	DAY OF MONTH.																																		
		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	Total			
<i>Northern Division</i>																																				
Algona.....	Des Moines.....	.46	.090447	1.60	.193821	1.00	4.63		
Allison.....	Cedar.....	.39	.04	.....	.....	T	.....	.....	.....	.....	T	.70	.....	.....	.....	.....	.....	T	T	.64	.02	.11	.10	.08	.....	.....	.....	.86	.13	.....	.32	.....	3.58
Alta |||.....	Raccoon.....10	T	.0202	.80	.021533	1.50	.10	T13	.82	.0594	4.98		
Alton.....	Floyd.....	.0562	.5209	.04	.56	.11	T	.14	T	.96	.4020	.85	4.54		
Belmond.....	Iowa.....	.50	.031215	.650708	1.10	.12	.06	.0605	.58	.1805	.75	4.63	
Britt.....	Iowa.....	.07	.03	.....	.....	T	.....	.....	.....	.....	.12	.10	.....	.....	.....	.....	.....	.....	.....	.01	T	.89	.11	.....	.....	.....	T	.40	.03	T	.15	.38	2.39
Charles City***.....	Cedar.....	.51	.040125	T	.01	1.23	.18	.08	.0179	.0401	.15	3.31		
Decorah |||.....	Mississippi.....	T	1.10	.020218	3.72	
Elkader.....	Mississippi.....	
Estherville |||.....	Des Moines.....	1.10	
Fayette.....	Mississippi.....	1.05	.060232	.1505	7.04	
Forest City |||.....	Cedar.....	T	.04	T	4.37	
Humboldt.....	Des Moines.....	T	T	T	.....	1.00	.....	.....	.....	.....	.....	.....	T	.52	.09	.....	.....	.12	T	23	.38	.12	T	T	.13	.....	T	.40	.....	1.93			
Inwood |||.....	Big Sioux.....	.....	.08	.....	.....	T	.....	.....	.....	.....	.....	.....	.25	.....	.....	.....	.....	.02	.....	.08	.60	.33	T	.27	.18	.....	T	.04	.....	4.47			
Lansing |||.....	Mississippi.....	.02	1.18	.06	.....	T	.....	.....	.....	.....	.....	.....	.15	.....	.....	.....	.....	.....	.....	.13	.22	1.20	.02	.30	.09	.01	.....	T	.24	.18	.....	.09	3.89
LeMars.....	Floyd.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.06	1.17	.....	.....	T	T	.27	.30	.50	.04	.....	.17	.....	.....	.....	1.06	.....	.72	.67	4.96	
Mason City.....	Cedar.....	.51	T	.....	.....	T	.....	.....	.....	.....	.....	.....	.07	.25	.....	.....	T	T	.1.10	.02	.02	.23	.....	.....	.....	.....	.....	.57	.01	.....	.01	.17	2.96
Milford (near).....	Little Sioux.....	.05	.....	.....	.....	T	.....	.....	.....	.....	.....	.....	.50	.21	.....	.....	T	.....	.10	.51	.08	.07	.....	.....	.....	.....	.....	.68	.33	.....	.16	.62	3.33
New Hampton.....	Wapsipinicon.....	.75	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.40	.....	.....	.....	T	.....	.78	.24	.05	.12	.....	.....	.....	.....	.....	.58	.06	.....	.41	.....	3.39
Nora Springs.....	Cedar.....	.34	.050131	.04	T07	1.10	.15	.23	.0268	.12	.10	.03	.11	3.36		
Northwood.....	Cedar.....	.50	.20	T10	.50	T1.00	.4065	.0220	.1020	.30	4.17		
Pocahontas.....	Des Moines.....	.05	T0204	.67	T38	.08	.25	.82	.15	.0701	.15	.6808	.02	4.47		
Postville.....	Mississippi.....	.98	.14	.....	.....	.02	.....	.....	.....	.....	.....	.....	.55	.....	.25	.....	T	.....	.82	.06	.01	.21	.08	.01	.....	.....	.....	.56	.....	.....	.56	.....	4.72
Rock Rapids.....	Big Sioux.....	.05	T55	.34	T24	.62	4.67
Sanborn.....	Floyd.....	.05	.....	.....	.....	T	.....	.....	.....	.....	.....	.....	.32	.36	.....	.....	T	.....	.01	.50	.24	.....	.....	.....	.....	.....	.52	.72	.....	.72	.....	4.50	
Sioux Center.....	Little Sioux.....	.50	T	.....	.....	T	.....	.....	.....	.....	.....	.....	.68	T	.....	.....	T	.....	.02	.06	.08	.82	.20	.02	.....	T	.1.10	.45	.....	.47	.48	3.53	
Spencer.....	Stom'n Lake.....	.....	.....	T	.....	.01	.....	.....	.....	.....	.....	.....	.50	.10	.....	.....	T	.....	.05	0.01	1.00	.25	.....	.....	.....	.....	.....	.30	.70	.....	.07	.105	4.34
Washta.....	Little Sioux.....	.03	T	T10	.62	T1837	.57	.0729	.7618	.96	5.76		
Waverly.....	Des Moines.....	1.24	.14	.....	.....	T	.....	.....	.....	.....	.....	.....	.56	.15	.....	.....	T	.....	.09	.....	.17	1.29	.....	.02	.17	.04	.....	.....	.73	.12	.....	.27	4.99
West Bend.....	Des Moines.....	.04	.....	.....	.....	T	.....	.....	.....	.....	.....	.....	.38	.82	.....	.....	T	.....	.02	.04	1.63	.24	.....	.....	.....	T	.13	.49	.....	.08	.95	4.94	
<i>Central Division</i>																																				
Ames.....	Skunk.....	1.26	.0526	T34	1.25	.10	.02	.3552	.0513	.74	4.96		
Audubon.....	Nishnabotna.....	.02	.....	.01	.....	.....	.....	.....	.....	.....	.....	.....	.09	.....	.....	.....	T	.....	.01	1.49	.15	.02	.18	.13	.01	.....	T	.49	.05	.....	.25	3.47	
Baxter.....	Skunk.....	.80	.08	.....	.....	.....	.....	.....	.....	.....	.....	.....	T	.20	.....	.....	T	.....	.30	.01	T	.07	.83	.07	.18	.01	.....	T	.49	.05	.....	.36	5.71
Belle Plaine.....	Iowa.....	1.14	.0606	.19	T01	.40	.08	T	.19	1.80	.12	.06	.30	.0975	.10	T	.36	4.10	
Boone |||.....	Des Moines.....	.45	.55	T22	T04	T	.10	.12	.25	T	.06	.1542	.10	T	.68	4.84	
Carroll |||.....	Raccoon.....	.28	.03	.02	T	.04	T1820	.25	.3302	.0404	.1418	3.24		
Cedar Rapids |||.....	Cedar.....	.65	.76	.....	.....	T	.....	.....	.....	.....	.....	.....	.10	.....	.....	.....	T	.....	.30	.01	.55	.57	T	.01	.05	.....	.....	.05	.25	.....	.37	.....	3.15
Clinton.....	Mississippi.....	.25	.0812	T10	T01	1.02	T	.12	.12	.71	.01	.01	.0834	.1127	5.04		
Davenport ***.....	Mississippi.....	.39	.13	.03	.1406	T09	4.26	
Delaware.....	Missouri.....	1.82	.26	T	.09	T27	T	.53	1.10	T0564	.0221	.27	3.18	
Denison.....	Missouri.....	.....	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.43	.09	.....	.....	T	.....	.35	.....	T	.18	.95	.10	.01	.03	.....	.....	.01	.63	T	.31	4.09
Dubuque ***.....	Mississippi.....	.69	.02	.....	.....	T	.....	.....	.....	.....	.....	.....	.01	.18	.....	.....	T	.....	.19	.....	.02	.05	1.82	.01	.04	.....	.....	.50	.03	.....	T	.19	3.91
Fort Dodge |||.....	Des Moines.....	.13	.05	T	T	.07	T3215	1.00	.12	T0515	2.11		
Grimmell.....	Iowa.....	1.48	T25	T2535	.19	.46	.09	.18	.1075	.1030	.67		
Grundy Center.....	Raccoon.....	1.02	.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.04	.....	.....	.....	T	.....	.1.10	.08	.85	.35	.05	.15	.05	.....	.....	.60	.12	.....	.45	5.06	
Harlan.....	Nishnabotna.....	.10	.01	.02	.....	.....	.....	.....	.....	.....	.....	.....	.20	.....	.....	.....	T	.....	.04	1.85	.25	.....	.....	.15	.....	.....	.02	.85	.....	.18	.....	.20	4.15
Independence.....	Wapsipinicon.....	1.48	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.25	.....	.....	.....	T	.....	.04	1.4	T	.44	.98	.26	.....	.....	.81	.08	.....	.41	.....	4.64	
Iowa City |||.....	Iowa.....	.15	.72	T	T	.....	.....	.....	.....																							

DAILY PRECIPITATION FOR APRIL, 1920.—Continued.

Stations.	Watersheds.	DAY OF MONTH																																	
		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	Total		
Southern Division																																			
Afton.....	Grand.....	.87	T	.51	.091211	.2035	1.3536	.508010	.32	5.68	
Albia || |	Des Moines.....	.08	.....	.57	.....	.....	.....	.....	.....	.39	.10	.....	.....	T	.....	.55	.83	.72	T	T	.21	.....	.....	.47	.31	T	.....	.35	.....	4.58			
Allerton.....	Chariton.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Atlantic || |	Nishnabotna.....	.07	.....	.....	.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.04	1.41	1.63	.....	.16	.40	.....	.01	.31	.05	.....	.02	.16	.....	4.87
Bedford.....	Missouri.....	T	.02	.06	2.00	.10	.....	.....	.....	.....	.50	.12	.....	.....	.....	.....	T	.16	.60	1.26	.....	.....	.30	.....	.....	.80	.....	.10	.....	.20	.....	5.50	
Bloomfield.....	Mississippi.....	T	T	.25	.85	.....	.10	.....	.....	.18	.70	.....	.....	T	1.03	.....	.05	.70	T	.51	1.34	.31	.....	.05	.....	.....	.....	.77	.....	.10	T	.....	6.13
Bonaparte.....	Des Moines.....	.6812	.32	T16	T	1.10	.12	.40	.27	.18073223	.06	2.49
Burlington || |	Mississippi.....	.30	.18	.....	.80	.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Centerville.....	Chariton.....	T	.14	T	.500919	.301155	.87	.1120	3.86
Chariton.....	Chariton.....	T	.22	.14	T	.1238	3.05	.2224	6.04
Clarinda || |	Nodaway.....	.07	.02801205	.78	T	.20	1.07	.17	.03037807	4.50	
Columbus Jet.....	Iowa.....	.30	.02	T	.03	T	.....	.....	.....	.....	T	.25	.....	T	.03	.35	.....	.70	1.05	.17	.....	.12	.....	.....	.43	.....	.20	.01	.08	T	.....	4.50	
Corning.....	Nodaway.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.35	.56	T	.04	.20	T	T	T	.73	.....	.....	.....	.....	2.74
Corydon.....	Chariton.....	.10	.....	.27	.35	T	.08	.....	.....	T	.....	.....	.....	.....	.....	.....	.....	.17	.20	.....	.....	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.79
Creston || |	Missouri.....	.58	.06	.4316	T	T	.5823	1.30	.13	.11	.04	.34	T	.61	.13	4.92
Cumberland.....	Nodaway.....	.....	T	.10	.....	.....	.....	.....	.....	.....	.10	.....	.....	.....	.....	.....	.....	.....	.....	.15	1.34	.42	.....	.00	.....	T	.60	.....	.....	.....	.....	.....	3.99
Earlham.....	Des Moines.....	1.10	.08	.01	.03	T	T05	.56	T	.38	1.18	.05	.06	.11	T	T	.66	T	T	.21	4.54	
Fairfield.....	Skunk.....	1.66	.....	.10	.50	T	.....	.....	.....	.....	.10	.44	.....	.....	.10	.10	.....	.71	1.90	.02	.....	.14	.....	.....	.....	.....	.....	.36	.....	.07	T	.....	6.52
Glenwood.....	Missouri.....	.02	.....	.50	.....	.25	.....	.....	.....	.....	1.02	.....	.....	.....	.....	.....	.....	.04	.10	2.00	.42	.....	.02	.....	T	.35	.70	.....	.....	.....	.....	.....	5.80
Greenfield.....	Nodaway.....	.80	T	.....	.30	.....	T	.....	T	.....	.20	.41	.....	.....	.....	.....	.....	.09	.....	.08	.54	1.09	.05	T	.55	.04	.....	.69	.....	.....	.....	.....	5.04
Indianola.....	Des Moines.....	1.09	T	.06	.04	.....	.....	.....	.....	.....	T	.05	.....	.....	.....	.....	T	.21	T	.14	1.06	.12	.17	T	.....	T	.81	T	.....	T	.38	.....	4.13
Keokuk ***	Mississippi.....	.28	T	.13	.460819	.29	T	.40	.40	T	.42	.3502	T32	.0623	.01	3.64	
Keosauqua.....	Des Moines.....	.62	.....	.30	.40	T	T	.....	.....	.....	.11	.73	.....	.....	.08	.43	T	.35	1.65	T	.....	.11	T	.....	.....	.72	.12	T	.20	.....	.58	.....	4.87
Knoxville.....	Des Moines.....	.33	T	T	.05	T09	.40	T	.5030	1.60137808	.03	.47	4.67	
Lacona.....	Des Moines.....	.50	.10	.20	.20	.0109	.4016	1.19	.39	.33	.09	1.1009	.40	5.25	
Lamoni || |	Grand.....	15	T	.....	.35	.21	.....	.....	.....	.....	.24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.45
Lenox.....	Missouri.....	.81	.03	.10	.05	.....	.10	.....	.....	.....	.25	.10	.....	.....	.....	.....	T	.46	.91	.10	.03	.12	.02	.....	T	.77	.....	T	.....	.45	.....	4.30	
Mt. Ayr.....	Grand.....	.52	.01	.50	.12	.....	.19	T	.....	.....	.30	.10	.....	.....	.....	.....	T	.30	1.54	.02	.67	.06	T	.....	T	.95	T	.....	.35	.....	5.63		
Mt. Pleasant.....	Skunk.....	.....	.15	.03	.36	.....	.....	.....	.....	.....	.03	.38	.....	.....	.02	.24	T	.44	.99	.36	.....	.06	.06	.....	.....	.....	.62	.....	.08	.01	.26	.....	4.09
Murray.....	Grand.....	1.29	.01	.11	.05	.....	.05	.....	.....	.....	.02	.08	.....	.....	.....	.....	.....	.....	.17	1.38	.03	.35	.25	.....	.....	.82	.....	.....	.59	.....	.31	.....	5.51
Oakland.....	Nishnabotna.....	.18	T	.40	.....	.20	.....	.....	.....	.58	.....	.....	.....	.....	.....	.....	.....	.10	1.40	2.55	T	T	.36	.....	T	T	.82	.....	.....	.14	.50	.....	7.23
Oskaloosa.....	Des Moines.....	.33	.15	.04	.18	T07	.3602	.06	T	.71	1.16	.09	.03	.05	.0681	.14	T	.05	.43	4.74
Ottumwa || |	Des Moines.....	.....	.21	.96	T	.....	.....	.....	.....	1.09	.11	.....	.....	.....	.....	.....	.....	.10	.....	.57	.85	.....	.....	.15	.....	.....	.45	.24	.10	.35	.....	.....	5.18
Pella.....	Skunk.....	.16	T	T	.06	T	T	.....	.....	T	.33	.....	.....	.23	.10	.....	T	.42	3.34	.....	.27	.13	.....	.....	.80	.....	.13	.....	.13	.45	.....	6.55	
Sigourney.....	Skunk.....	.57	.01	T	.18	T	.....	.....	.....	.05	.25	.....	.....	T	.33	.....	.54	1.24	.01	.....	.04	.01	.....	.....	.67	.08	T	.04	.45	.....	4.47		
Stockport.....	Skunk.....	.41	.02	.35	.40	.....	T	.....	.....	.....	.15	.54	.....	.....	.02	.16	T	.46	1.91	.29	.....	.10	.02	.....	.....	.61	.11	T	.....	.28	.....	5.83	
Thurman.....	Missouri.....	T	T	.30	.05	.....	.....	.....	.....	.....	.58	T	.....	.....	.....	.....	.05	T	.82	.68	T	T	.....	.....	.38	.86	.....	.....	.27	.....	.....	4.99	
Washington.....	Skunk.....	1.65	.05	.....	.14	.....	.....	.....	.....	.....	.12	.....	.....	.....	.....	.....	.40	.....	.64	.82	.79	.....	.06	.....	.....	.60	.08	.....	.08	.40	.....	5.83	
Winterset.....	Des Moines.....	.37	T	.11	.02	.....	.....	.....	.....	.....	.75	.64	.....	.....	.08	T	.32	.83	.05	.40	.27	.....	T	.84	.....	.....	.01	.33	.....	.50	.....	5.02	
Omaha, Nebr.***	Missouri.....	.06	.....	.23	T	T	.09	.....	.....	.....	.75	.....	.....	.....	T	.04	.15	.66	.19	.....	.03	.09	.....	.04	.85	.16	.....	.05	.....	.05	.....	3	

CLIMATOLOGICAL DATA: IOWA SECTION.

April, 1920.

Daily Maximum and Minimum Temperatures for the Month of April 1920.

Stations	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	Mean
<i>Northern Division</i>																																
Algona.....	Maximum..	66	40	29	26	35	36	42	48	48	60	45	40	46	55	60	55	52	51	48	61	70	61	53	58	55	51	45	57	55	59	50.2
	Minimum..	27	15	15	14	13	17	21	23	24	36	30	26	22	26	34	33	32	40	38	41	40	41	41	33	30	30	40	42	30.1		
Alta.....	Maximum..	49	31	26	28	34	39	46	52	53	56	39	47	65	59	58	44	46	42	59	69	48	51	56	50	46	46	60	58	58	48.3	
	Minimum..	25	16	18	15	15	21	20	28	26	34	30	29	23	31	42	36	33	38	40	39	38	37	44	42	32	29	28	41	43	30.9	
Alton.....	Maximum..	58	33	28	28	35	39	46	52	54	58	40	45	63	58	55	46	48	46	55	65	57	50	55	50	45	48	61	56	59	48.9	
	Minimum..	25.	15	18	14	15	20	21	25	24	38	30	30	23	32	35	36	33	38	38	40	40	38	40	32	44	31	28	31	39	42	30.5
Belmond.....	Maximum..	60	38	28	27	35	39	43	50	50	57	45	40	48	50	60	55	49	51	45	60	70	60	58	60	56	53	42	57	58	60	50.1
	Minimum..	31	17	15	17	13	13	23	25	23	33	32	30	32	23	36	33	30	39	37	41	44	42	38	35	46	35	32	30	36	43	30.8
Charles City.....	Maximum..	52	30	29	27	32	35	39	47	47	57	42	39	46	51	62	55	51	52	46	60	71	55	50	59	59	50	43	55	62	60	48.8
	Minimum..	30	16	16	17	15	20	24	23	25	34	35	27	24	26	41	34	32	40	39	43	46	42	40	36	47	36	33	37	40	40	31.8
Decorah.....	Maximum..	69	42	32	32	33	34	37	46	49	64	55	43	48	54	60	58	54	56	53	62	73	67	51	61	55	47	57	62	62	52.9	
	Minimum..	41	17	15	18	14	20	22	23	24	31	31	28	22	25	38	31	27	38	38	41	44	47	40	41	45	41	37	34	44	31.7	
Forest City.....	Maximum..	52	50	30	27	38	36	44	44	45	58	46	41	45	55	54	59	50	58	48	61	71	57	50	60	58	50	45	55	59	50.0	
	Minimum..	28	12	13	15	15	17	23	25	24	36	32	30	22	29	35	33	31	40	37	41	44	45	37	40	44	36	32	30	41	43	31.0
Inwood.....	Maximum..	53	53	29	34	39	41	50	55	52	43	42	47	48	59	60	57	57	46	45	54	61	54	52	58	49	51	51	63	54	62	50.6
	Minimum..	26	14	15	12	12	16	19	26	22	34	30	24	20	29	36	35	32	39	37	40	31	42	40	32	26	26	41	36	28.9		
Mason City.....	Maximum..	68	50	40	28	35	35	38	46	48	56	49	41	46	53	60	55	53	52	51	59	70	65	59	59	57	44	54	58	60	51.6	
	Minimum..	32	13	14	15	14	17	22	20	21	32	32	34	21	22	39	31	30	40	37	40	42	37	35	45	35	32	31	35	43	30.0	
Milford (near).....	Maximum..	69	29	27	26	35	36	42	48	48	55	39	40	42	52	53	52	47	47	46	55	62	57	51	56	46	44	51	55	47.2		
	Minimum..	25	13	16	14	14	17	22	26	24	36	30	30	22	29	37	34	33	39	37	40	40	39	40	44	32	28	29	42	41	30.4	
New Hampton.....	Maximum..	64	37	29	28	33	34	40	46	49	57	50	39	48	50	61	54	51	49	58	72	64	49	58	60	55	42	55	63	60	50.2	
	Minimum..	37	15	15	17	14	18	22	25	23	34	32	28	22	25	39	31	30	38	37	40	45	44	40	38	44	32	36	44	31.3		
Northwood.....	Maximum..	55	28	30	25	35	28	37	44	48	56	41	38	45	53	57	52	51	42	47	56	68	59	54	49	46	46	53	56	59	46.9	
	Minimum..	28	13	12	15	15	15	22	22	22	31	31	26	21	24	38	31	29	28	35	38	42	37	36	44	32	30	37	41	29.2		
Pocahontas.....	Maximum..	54	38	29	28	37	38	46	52	54	58	44	40	48	59	61	55	45	49	44	59	72	60	54	58	56	48	45	53	60	50.2	
	Minimum..	28	15	18	16	12	20	19	27	22	37	32	31	22	29	35	35	33	39	38	41	39	39	35	45	34	30	39	42	30.7		
Postville.....	Maximum..	68	45	29	29	34	36	40	49	47	54	50	39	47	52	60	53	52	52	48	61	70	65	49	58	54	45	55	61	59	50.6	
	Minimum..	44	17	14	18	13	19	21	21	23	32	32	34	27	21	28	39	30	29	38	35	40	43	39	43	41	40	35	37	34	43	31.4
<i>Central Division</i>																																
Belle Plaine.....	Maximum..	65	39	32	31	40	40	49	54	55	65	52	42	50	54	72	55	53	51	53	65	75	69	52	60	62	54	45	60	61	60	53.8
	Minimum..	39	23	22	24	15	26	25	23	24	28	41	31	20	26	42	37	33	41	40	42	48	42	41	37	34	35	46	34	35	46	33.5
Boone.....	Maximum..	68	32	31	28	42	41	47	54	55	61	53	39	47	59	68	54	49	47	44	67	71	59	56	60	53	44	59	55	58	51.9	
	Minimum..	31	21	20	18	14	24	23	27	24	37	36	29	22	29	40	38	34	40	41	45	42	40	36	46	38	31	31	41	45	32.7	
Carroll.....	Maximum..	58	36	35	29	42	40	50	55	57	61	45	45	49	65	69	60	57	45	43	58	71	67	55	57	50	48	45	60	58	52.6	
	Minimum..	32	18	20	17	15	25	22	27	27	36	33	32	21	32	39	38	34	33	39	37	41	39	39	36	45	33	30	28	40	42	31.8
Davenport.....	Maximum..	70	42	34	32	33	40	46	51	50	56	52	48	60	69	65	55	50	49	45	64	74	68	50	57	55	46	44	52	52	52.1	
	Minimum..	42	26	26	18	26	29	30	29	27	37	40	30	26	25	37	35	35	35	41	46	45	44	43	45	44	43	35	38	42	35.8	
Des Moines.....	Maximum..	59	37	30	30	34	42	49	54	54	61	52	42	46	60	69	65	50	49	45	64	72	62	55	57	58	50	43	59	59	51.9	
	Minimum..	29	24	26	22	18	29	28	31	29	35	34	35	32	30	35	34	36	32	40	41	46	43	47	38	34	35	34	37	33.9		
Dubuque.....	Maximum..	65	44	34	33	34	36	46	49	56	56	47	40	48	52	63	52	52	49	48	57	62	53	51	46	55	62	60	50	50.9		
	Minimum..	44	22	23	23	19	26	25	26	28	34	30	28	24	28	38	34	34	42	43	44	43	44	41	38	38	34	36	44	34.7		
Fort Dodge.....	Maximum..	73	40	32	32	37	32	39	46	56	52	60																				

RIVERS

The interior rivers did not reach flood stage, except the Des Moines from Ottumwa to the Mississippi. Very little damage resulted. The Missouri was high for the season during much of the month but the flood stage was not reached except for a very brief period on the 5th and 6th from Omaha southward. On the Mississippi one of the worst floods of record occurred. The following are the flood stages at stations on the Mississippi River and the stage reached during the April flood: Lansing, flood stage 18.0 feet, highest stage reached 17.2 feet; Dubuque, flood stage 18.0 feet, highest stage reached 21.0 feet; Clinton, flood stage 16.0 feet, highest stage reached 19.0 feet; Le Claire, flood stage 10.0 feet, highest stage reached 13.4 feet; Davenport, flood stage 15.0 feet, highest stage reached 17.1 feet; Muscatine, flood stage 16.0 feet, highest stage reached 17.7 feet; Keokuk, flood stage 14.0 feet, highest stage reached 16.8 feet. The damage was reduced to a minimum by timely warnings. At Keokuk the damage was negligible, being principally inconvenience to railroads. A broken levee that protected Muscatine Island caused the inundation of about 23,000 acres of truck land. A complete report of the flood at Dubuque, where it was especially severe, is published below.

FLOOD OF MARCH-APRIL, 1920, DUBUQUE, IOWA DISTRICT

By James H. Spencer, Meteorologist.

Weather Bureau Office, Dubuque, Iowa, May 25, 1920.

This Mississippi River flood was the worst in this district since 1888, and has been exceeded in the last 50 years only by the floods of June, 1880, and May, 1888. It was the earliest spring flood of such magnitude of which there is any record in this section. For rapidity of rise, it is comparable, only with the flood of June, 1880. The total rise in each of these two floods continued over a period of more than two weeks, and was between 13 and 14 feet, but slightly greater in 1920.

In the flood of June, 1880, the period of maximum rise was 6.0 feet in three days during the first half of the 15-day period, while in the flood of 1920 the period of maximum rise was also 6.0 feet in three days, but occurred during the last half of the 15-day period. There is no previous record of such a rise as occurred in 1920 during the week immediately preceding the peak of the flood.

Most of the flood waters came from the headwaters of the Mississippi. The Wisconsin River was above flood stage during the same period, a maximum stage of 15 feet being recorded at Portage on March 31. This flood added about 1.5 feet to the peak of the Mississippi River flood between Dubuque and Pr. du Chien. Heavy and general rains on April 1 also added 0.5 or 0.6 feet to the peak between Pr. du Chien and La Crosse. With these exceptions the flood waters came wholly from the region north of La Crosse.

The following table shows the progress of the flood in the Dubuque river district:

	Lansing,	Pr. du Chien,	Dubuque	Portage
March 22	8.0	7.2	7.1	10.0
" 23	8.3	7.4	7.4	9.8
" 24	8.9	7.9	8.2	9.5
" 25	9.4	8.5	8.7	9.8
" 26	9.7	9.3	9.8	10.2
" 27	10.2	9.8	10.5	11.1
" 28	10.7	10.2	11.0	12.6
" 29	11.3	10.8	11.4	14.0
" 30	12.5	11.9	11.8	14.8
" 31	13.9	13.2	12.4	14.9
April 1	15.1	15.4	13.5	14.7
" 2	16.2	17.2	15.8	14.5
" 3	16.9	18.7	18.0	14.2
" 4	17.2	19.6	19.5	13.7
" 5	17.2	19.6	20.5	13.0
" 6	16.9	19.1	20.9	12.4
" 7	16.5	18.7	21.0	12.1
" 8	18.0	20.7	—	11.6

Flood stage at Lansing, Pr. du Chien, and Dubuque is 18.0 ft., and at Portage 14.0 feet.

In two particulars the floods of June, 1880, and March-April, 1920, were not comparable. The cause in 1880 was exceedingly heavy rains early in June over the headwaters of both the Mississippi and Wisconsin rivers. The cause in 1920 is probably indicated by the following paragraph from the National Snow and Ice Bulletin, Minnesota report, March 23, 1920: "Latter part of week abnormally warm and snow disappearing rapidly." Warm weather, the disappearance of snow in northern Minnesota, and the appearance of the flood at St. Paul were almost simultaneous. From Pr. du Chien to La Crosse the flood peak in 1880 was much higher than in 1920, but at Dubuque it was only 0.7 of a foot higher. The following table illustrates the difference:

	La Crosse	Lansing	Pr. du Chien	Dubuque
Peak, June, 1880.....	16.2	...	21.5	21.7
Peak, Mar.-Apr., 1920.....	14.2	17.2	19.6	21.0
Difference	2.0	...	1.9	0.7

WARNINGS.—On Monday, March 29, nine days before the peak of the flood Reached Dubuque, flood warnings were issued for the entire district from the vicinity of Dubuque, to immediately below La Crosse. On this date stage of water was 11.5 ft. at Dubuque, 10.8 ft. at Pr. du Chien, and 11.3 ft. at Lansing. Warnings were generally heeded, and movable property, such as cord wood in large quantities, live stock, farm machinery, etc., was removed from the islands and lowlands of the Mississippi throughout the section.

Later in the week when it became certain that a flood of great magnitude was approaching whatever could be done to prevent damage was done. Upon advise from this office some of the factories raised machinery to higher levels and a number of firms within the wholesale district of Dubuque removed their stocks from cellars and basements.

This office was able to render valuable service over more than a 10-day period. Information was given daily over the 'phone to several hundred people. On Sunday, April 4, the office was open from 6 a. m. until 10 p. m., and the phone was in use every moment of the time. We were able to advise many families not to move and many business houses not to move stocks or machinery after ascertaining how many inches more of a rise they could stand. On this date a northeasterly gale added to the difficulties of the railroads on the west bank of the Mississippi. After that date winds were generally more favorable.

THE FLOOD AROUND DUBUQUE.—The Seippel Lumber Co.'s plant at the extreme south end of the city, was badly flooded and lumber was saved only with difficulty. The Standard Oil plant in the same section also suffered some damage. The Jackson Vinegar Co., Schroeder-Kleine Co., Western Grocery Co., Ernsdorf Iron Co., International Harvester Co., Becker-Hazelton Co. and other firms in the lower end of town experienced flooded basements, necessitating the removal of stocks of merchandise.

For over a week the railroads fought the flood, and scores of carloads of material were used in building temporary dikes to keep the water from undermining the tracks. The same was true of the ice companies along the river bank, whose ice houses were threatened. While serious delays resulted, railroad traffic was not completely suspended, as trains ran through the water or detoured.

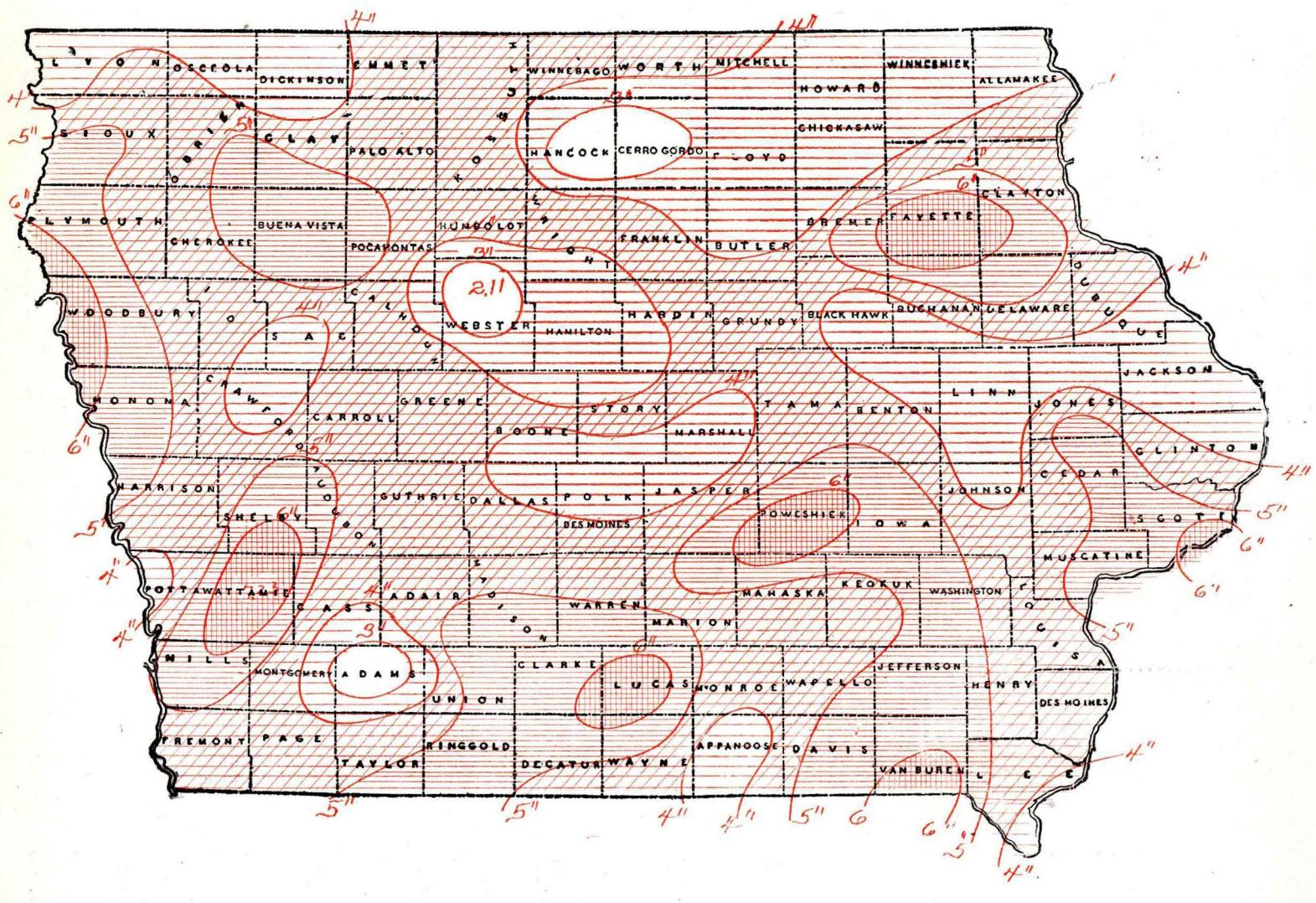
Water covered the tracks in front of the Illinois Central R. R. depot, and below the depot employees performed their duties in water half way to their knees or higher. The Mulgrew Ice and Coal plant east of the Illinois Central R. R. depot was deep in water and could not be used for about 10 days. Water covered half of Jones street as far west as the railroad tracks, and the buildings at the foot of Jones street were completely surrounded. The pressure from below forced up the concrete cellar floor of the Iowa Oil Co.'s building. The road on the south side of the harbor was a foot under water, and on the north side of the harbor all buildings of the Dubuque Boat & Boiler works were flooded above the first floor, necessitating the raising of machinery. The road immediately south and east of the C. M. & St. P. R. R. depot was flooded.

East of Washington street for practically the entire length sewers backed up and flooded the basements of scores of homes. The packing house region near the foot of 17th street was flooded, and partial suspension of business resulted. Water covered streets around the Metz Manufacturing Co.'s plant, but did not run over the curb. At Eagle Point the Pumping Station, the yards of the Dubuque Lumber Co., and the Bathing Beach Buildings were badly flooded. The water was several inches above the floor of Bathing Beach buildings. The road beyond the Eagle Point High Bridge was closed during the period of the flood, and a large amount of work had to be done to save it.

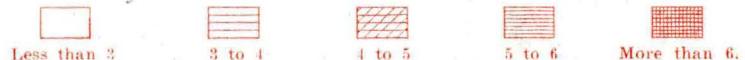
**STATISTICS OF MONEY LOSS BY FLOOD OF MISSISSIPPI RIVER,
DUBUQUE RIVER DISTRICT, APRIL, 1920.**

Tangible property that can only be restored by the outlay of cash, either to clean it up and to put in serviceable condition, or to restore the property where the loss was total. This item includes loss to buildings, factories, highways, bridges, etc. Total, about.....	\$70,000.00
Loss to railroads, chiefly expenditures in saving track or other property, about	\$18,000.00
Loss of crops that were housed, about	1,000.00
Loss of prospective crops, chiefly strawberries, about....	500.00
Loss of live stock and other movable property, about	5,000.00
Loss due to suspension of business, including wages of employees, about	5,500.00
Total loss, approximately	\$100,000.00
Money value of property saved by warnings, as reported to this office	\$125,000.00

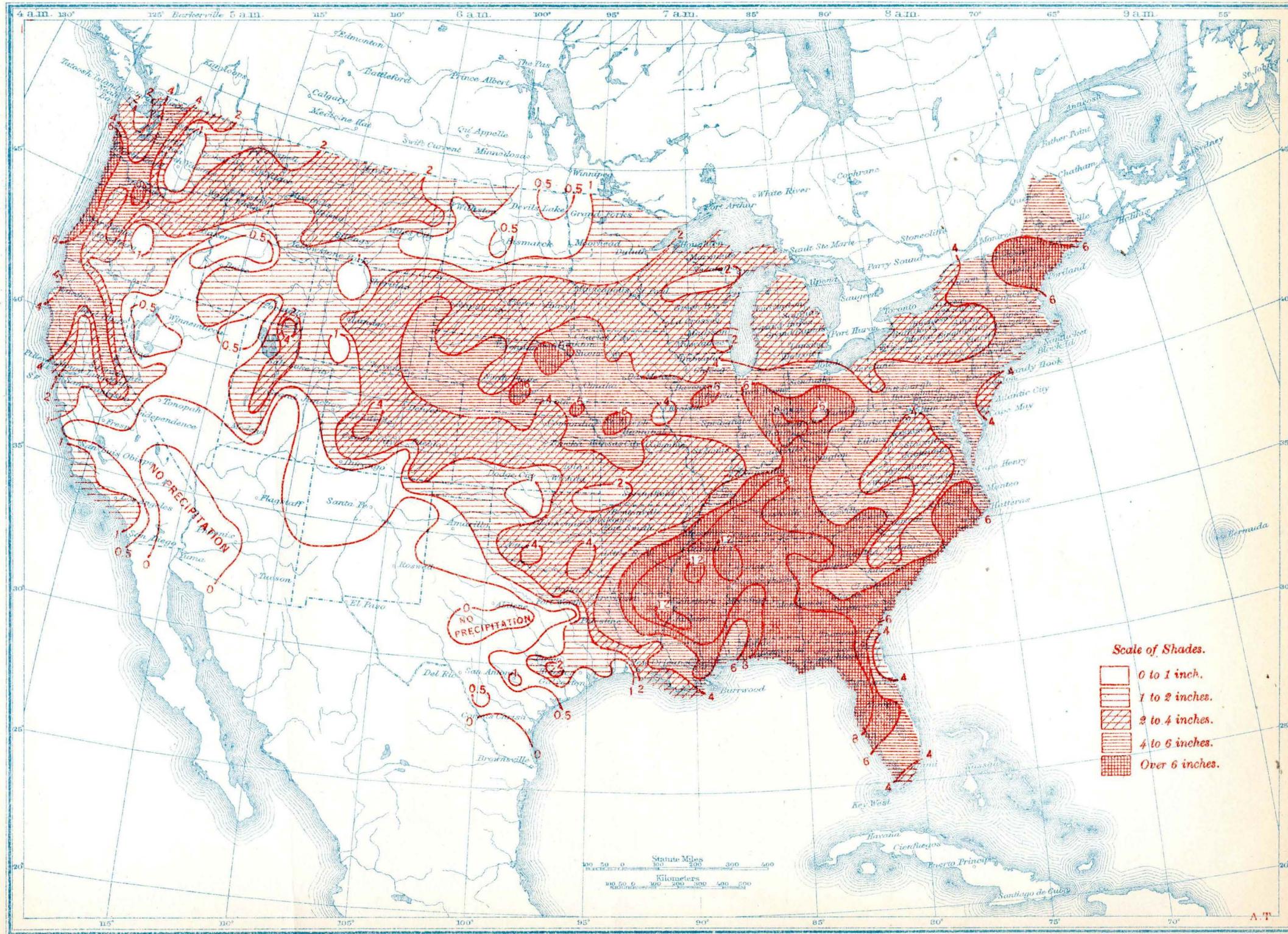
TOTAL PRECIPITATION,— APRIL, 1920.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, April, 1920.



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

CLIMATOLOGICAL DATA

IAWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

MAY, 1920

BY

CHARLES D. REED

METEOROLOGIST

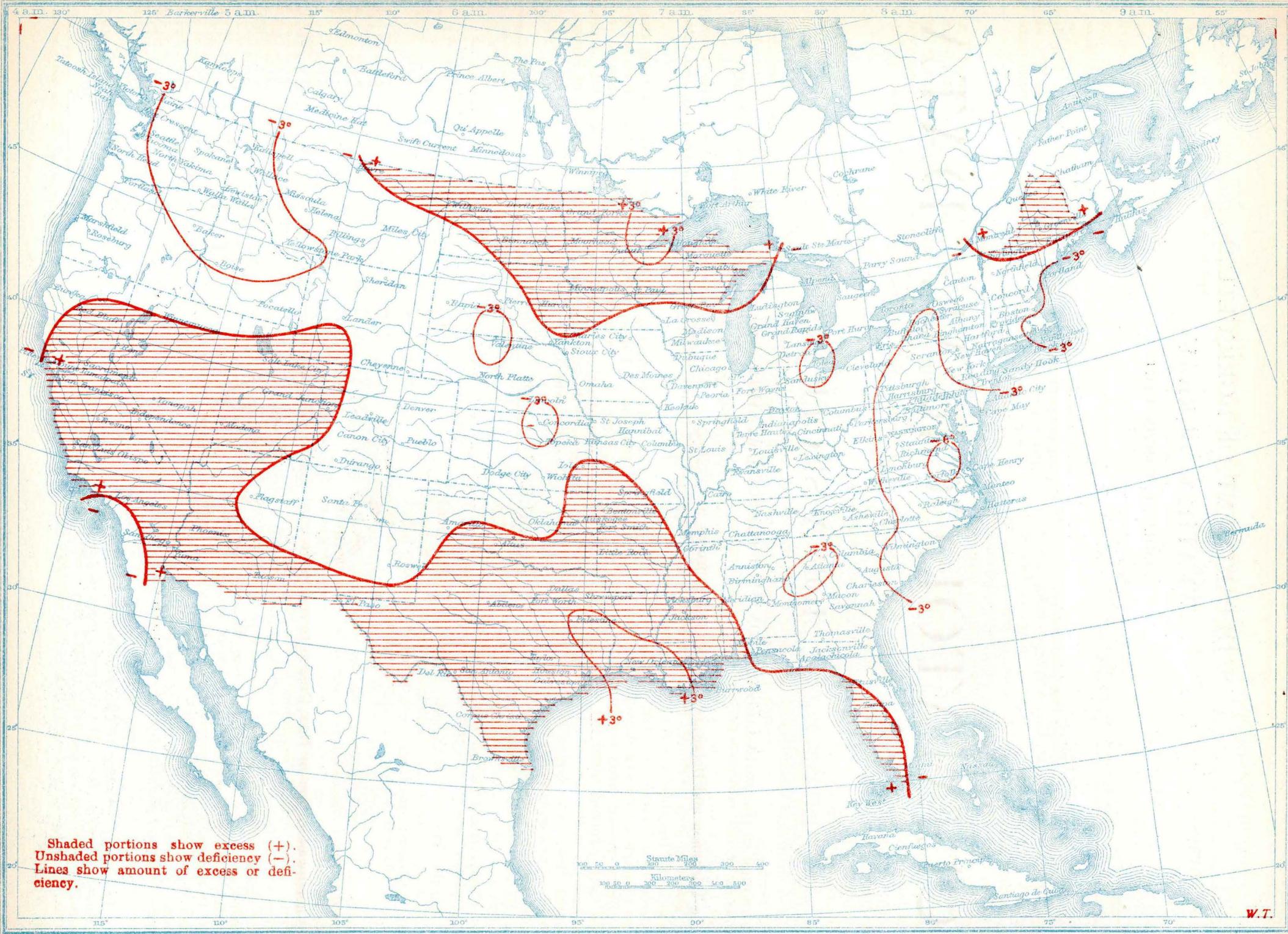


PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY



E.C.

Departure of the Mean Temperature from the Normal, May, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU
 IOWA SECTION
 CHARLES D. REED, Meteorologist.
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GENERAL SUMMARY

For the State as a whole the temperature averaged slightly below the normal, the deficiency being uniform over each division, though several stations in each division showed an excess. Except a warm period from the 7th to the 11th, the first 20 days were below the normal. Frost was general throughout the State on the 14th, with the temperature freezing or below over a large area but owing to the backward season very little damage resulted. After the 20th a warm period set in and all vegetation made rapid growth.

The precipitation was below normal over each division, the deficiency being slightly more than an inch in the northern division and nearly one and one half inches in the central division. Most of the rainfall occurred as heavy downpours in three principal periods, 10th,-12th, 16th,-19th, and 22d and 23d. This condition greatly interfered with field work and at the close of the month much corn was still to be planted in the southern division. The rainfall of the 22d-23d was particularly heavy and damaging in the northern portion of Benton, Linn and Jones Counties and in the southern portions of Blackhawk, Buchanan and Delaware Counties. All railroads in the affected area suffered from washouts, the Rock Island being the chief sufferer. A serious freight wreck occurred near Vinton, resulting from a train attempting to go through a submerged area. The engine and a number of cars crossed safely but 10 cars in the middle of the train were wrecked when the track gave way. Traffic was held up on this line till the 26th. Much damage also resulted from corn fields being washed out, basements flooded as well as considerable loss to stock. The loss to transportation is estimated to exceed \$100,000 and the loss to agricultural interests was much more. Many bridges and culverts were washed out. In Grant township, Linn county, every township bridge was washed out and to repair the damage will cost more than \$100,000.

On the afternoon of the 8th a small tornado occurred in Washington township, Chickasaw county. Several barns and small buildings were wrecked. On the afternoon of the 22d severe local storms having marked torndadic characteristics occurred at places in Allamakee, Crawford, Harrison, Howard, Polk and Story counties and caused considerable loss to farm property. An unmistakable tornado moved from southwest to northeast across the northwest corner of New Oregon township, Howard county, some distance southwest of the town of Cresco. Three or four barns and small buildings and several trees were destroyed. No persons were killed or injured. A small tornado moved from northwest to southeast near Dunlap, Crawford county. Its path of destruction was 8 or 10 rods wide and between 5 and 6 miles long. Large trees were uprooted and corn cribs and outbuildings blown down. There was no loss of life but Karl Benedict was blown down and slightly injured.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.04 inches. The highest recorded was 30.50 inches, at Dubuque, on the 14th, and the lowest was 29.56 inches, at Sioux City, on the 18th. The monthly range was 0.94 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 104 stations, was 59.4°, or 1.1° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 58.3°, or 0.7° lower than the normal; Central, 59.6°, or 1.1° lower than the normal; Southern, 60.3°, or 1.4° lower than the normal. The highest monthly mean was 61.8°, at Keokuk, and the lowest was 57.0°, at Northwood. The highest temperature recorded was 89° at Afton, Cedar Rapids and Humboldt, on the 22d, and the lowest was 29°, at Clinton and Maquoketa, on the 14th. The temperature range for the State was 60°.

HUMIDITY.

The average relative humidity for the State at 7 a.m. was 75 per cent, and at 7 p.m., 55 per cent. The mean for the month was 65 per cent, or about 3 per cent below the normal. The highest monthly mean was 76 per cent at Omaha, Neb., and the lowest was 58 per cent, at Dubuque.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 110 stations, was 3.26 inches, or 1.31 inches less than the normal. By divisions the averages were as follows; Northern, 3.45 inches, or 1.03 inches less than the normal; Central, 3.11 inches, or 1.48 inches less than the normal; Southern, 3.23 inches, or 1.41 inches less than the normal. The greatest amount, 5.73 inches, occurred at Keosauqua, and the least, 0.63 inch, at Fort Dodge. The greatest amount in 24 consecutive hours, 4.12 inches, occurred at Keosauqua on the 11th and 12th.

WIND

The prevailing direction of the Wind was from the southeast. The average hourly velocity was 7.8 miles, or 0.9 mile less than the normal. The highest velocity reported from a regular Weather Bureau station was at the rate of 46 miles an hour from the northeast, at Davenport, on the 12th.

COMPARATIVE DATA FOR THE STATE—MAY.

YEAR	Temperature				Precipitation				Number of Days.				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipitation .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	4.87	T.	16	14	9
1892.....	54.0	-6.5	88	29	8.77	+4.20	12.64	0.26	0	6	5	9	17
1893.....	56.6	-3.9	96	26	3.45	-1.12	5.82	1.65	0	9	13	9	8
1894.....	61.1	+0.6	96	22	1.87	-2.70	4.77	0.33	0	17	10	4	8
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.....	59.6	-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	+1.38	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.....	53.5	-7.0	96	14	3.48	-1.09	7.68	0.71	1.0	10	11	10	10
1908.....	59.4	-1.1	93	13	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	+2.30	11.98	2.72	T.	13	13	11	7
1919.....	58.2	-2.3	93	30	3.11	-1.46	7.14	0.73	0	9	13	11	7
1920.....	59.4	-1.1	89	29	3.26	-1.31	5.73	0.62	0	8	14	9	8

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

CLIMATOLOGICAL DATA FOR May 1920.

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit				Precipitation in inches				No. 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 inch or more	Clear	Partly cloudy	Cloudy			
<i>Northern Division</i>																			
Algona	Kossuth	1213	47	58.8	-0.5	87	22	32	14	35	2.70	-1.43	1.38	0	4	21	3	7	se.
Allison	Butler	1045	8	58.2	.....	85	31	33	14	38	4.38	.....	1.10	0	10	14	12	5	se.
Alta	Buena Vista	1513	29	58.7	-0.3	84	22	35	14	33	3.40	-1.62	2.08	0	8	13	11	7	se.
Alton	Sioux	1305	15	58.7	-0.8	84	25†	33	14	38	3.06	.....	0.94	0	7	10	11	10	se.
Belmond	Wright	1205	10	57.8	.....	87	22	32	14	40	2.77	.....	0.68	0	8	10	15	6	se.
Britt	Hancock	1236	23	58.1	-0.3	86	22	32	13	37	4.17	-0.55	1.46	0	8	22	4	5	s.
Charles City	Floyd	1015	29	57.9	-1.6	84	31	34	14	34	4.54	-0.40	1.95	0	10	10	15	6	se.
Decorah	Winneshiek	875	27	58.1	-1.9	85	30†	31	14	39	4.30	-0.31	1.43	0	9	19	4	8	se.
Elkader	Clayton	751	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Estherville	Emmet	1298	25	58.1	+0.5	85	22	30	14	37	2.80	-2.27	0.80	0	11	.....	.....	.....	s.
Fayette	Fayette	1003	30	57.4	-0.6	84	22†	30	14	39	2.82	-2.24	1.48	0	10	.....	.....	.....	ne.
Forest City	Winnebago	1226	26	59.5	+1.0	86	22	37	14	38	4.48	-0.01	1.39	0	7	14	10	7	s.
Humboldt	Humboldt	1095	32	60.6d	+1.2	89d	22	33d	14	39d	2.21	-1.19	1.69	0	8	.....	.....	.....	ne.
Inwood	Lyon	1474	16	57.9	-1.2	85	22	33	14	38	5.37	+1.47	2.23	0	10	15	10	6	e.
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	.....	3.63	-1.37	1.24	0	7	.....	.....	.....	.....
Le Mars	Plymouth	1224	24	60.0	+0.1	85	22†	39	12	35	4.12	-0.38	1.72	0	9	12	12	7	se.
Mason City	Cerro Gordo	1148	23	58.0	-0.8	88	22	31	2	38	3.84	-0.82	1.25	0	9	21	6	4	se.
Milford (near)	Dickinson	1430	.....	57.5	.....	85	22	35	15	35	2.20	.....	0.74	0	10	11	14	6	se.
New Hampton	Chickasaw	1169	23	57.6b	-0.9	85b	31	33b	14	33b	3.36	-0.81	1.22	0	8	.....	.....	.....	e.
Nora Springs	Floyd	1064	8	58.8	.....	85	22†	35	1†	36	3.34	.....	1.20	0	9	17	8	6	s.
Northwood	Worth	1222	24	57.0	-1.4	86	22	31	14	36	2.44	-2.65	0.70	0	10	14	9	8	sw.
Pocahontas	Pocahontas	1248	16	58.6	-0.7	87	22	32	14	37	1.94	-2.35	0.70	0	9	17	6	8	se.
Postville	Clayton	1180	21	56.6	-2.1	80	31	33	3	31	3.42	-1.88	1.20	0	9	14	9	8	ne.
Rock Rapids	Lyon	1358	21	57.5	-1.0	85	25†	30	14	39	3.29	-0.15	1.04	0	9	23	5	3	sw.
Sanborn	O'Brien	1553	6	58.1	.....	88	31	32	3	39	4.27	.....	1.72	0	7	12	12	7	se.
Sioux Center	Sioux	1426	21	58.0	-0.8	83	22	34	14	33	4.83	+0.34	1.45	0	9	16	9	6	s.
Spencer	Clay	1319	6	58.4	.....	86	22	33	14	39	3.82	.....	1.08	0	8	12	12	7	se.
Storm Lake	Buena Vista	1440	31	58.8	-0.5	84	22†	33	14	30	3.62	-0.42	1.64	0	8	20	6	5	se.
Washta	Cherokee	1157	22	58.1	-0.9	85	22	30	14	40	2.86	-2.29	0.95	0	9	15	12	4	n.
Waverly	Bremer	948	24	58.0	-1.9	86	22	31	14	37	2.67	-1.85	1.00	0	10	16	8	7	se.
West Bend	Palo Alto	1197	27	59.4	-0.2	88	22	33	14	37	2.47	-1.53	1.02	0	10	18	7	6	se.
Means and extremes	.....	.....	58.3	-0.7	89	22	30	14	40	3.45	-1.03	2.23	0	9	16	9	6	se.	
<i>Central Division</i>																			
Ames	Story	926	44	59.2	-2.0	85	22	35	14	35	3.05	-1.72	1.72	0	6	21	6	4	s.
Audubon	Audubon	1301	26	58.6	-1.6	85	22	35	14	35	2.38	-2.03	0.92	0	7	12	14	5	se.
Baxter	Jasper	998	20	59.5	-1.1	85	22	36	3†	33	4.10	-1.20	1.74	0	10	8	15	8	ne.
Belle Plaine ‡‡	Benton	886	30	60.0	-0.4	87	22	34	14	35	4.16	-0.47	2.29	0	8	14	12	5	s.
Boone	Boone	1134	15	60.0	+0.3	87	22	37	14	36	3.23	-1.89	2.04	0	9	14	9	8	s.
Carroll	Carroll	1265	30	59.8	+0.6	87	22	35	14	35	3.34	-1.33	1.58	0	7	.....	.....	.....	ne.
Cedar Rapids	Linn	733	38	60.6	-0.7	89	31	36	3†	35	1.90	-2.59	1.00	0	4	16	2	13	e.
Clinton	Clinton	593	47	59.6	-1.9	86	31	29	14†	40	2.04	-2.58	0.90	0	6	17	10	4	ne.
Davenport	Scott	580	49	60.5	-1.0	84	26	35	14	32	2.83	-1.36	1.59	0	8	10	12	9	e.
Delaware	Delaware	1083	29	57.0a	-1.9	80a	22	34a	3	35a	4.74	+0.24	2.45	0	5	.....	.....	.....	e.
Denison	Crawford	1180	26	60.0a	+0.1	86a	22	35a	14	31a	3.51	-0.69	1.00	0	6	.....	.....	.....	s.
Des Moines	Polk	861	40	61.2	-0.4	87	22	40	3	30	3.14	-1.42	2.65	0	6	5	7	19	e.
Dubuque	Dubuque	639	47	58.8	-2.0	82	31	35	3	31	2.86	-1.46	1.27	0	7	9	11	11	e.
Fort Dodge	Webster	1126	20	59.8b	+0.1	86b	25	33b	14	40c	0.62	-4.71	0.15	0	8	.....	.....	.....	se.
Grinnell	Grundy	1031	26	58.7b	-2.7	85b	22	34b	14	29b	2.54	-2.11	1.52	0	5	.....	.....	.....	se.
Grundy Center	Guthrie Center	976	29	59.7b	-0.8	84b	22†	39b	15	33b	4.66	-0.25	1.58	0	8	.....	.....	.....	ne.
Harlan	Shelby	1077	25	59.6	-1.8	87	22	32	14	36	2.77	-1.98	1.40	0	5	14	11	6	sw.
Independence	Buchanan	921	56	59.4	-0.2	84	22	34	14	33	3.12	-1.12	1.54	0	6	18	5	8	se.
Iowa City	Johnson	733	59	59.2	-1.7	84	22†	31	14	33	3.76	-0.69	1.71	0	9	12	10	9	e.
Iowa Falls	Hardin	1107	27	58.0	-0.5	83	22	33	14	35	2.69	-1.91	1.00	0	11	17	6	8	se.
Jefferson	Greene	1052	21	59.1	-1.9	86	22†	33	14	34	3.49	.....	1.49	0	5	15	7	9	se.
LeClaire	Scott	576	20	.....	.....	.....	.....	.....	.....	.....	3.24	-0.82	1.16	0	7	.....	.....	.....	ne.
Little Sioux	Harrison	1040	15	60.9	-1.1	87	22	33	14	36	2.65	.....	0.99	0	10	14	11	6	se.
Logan	Harrison	928	53	60.1	-1.5	86	22	36	14	33	3.46	-0.74	0.90	0	7	10	11	10	ne.
Maquoketa	Jackson	688	19	58.0	-2.3	82	31	29	14	41	3.49	-1.12	1.75	0	6	16	9	6	e.
Marshalltown	Marshall	947	28	59.8	-0.7	86	22	36	14	35	3.46	-1.05	1.49	0	8	.....	.....	.....	se.
Monroe	Jasper	922	8	60.0	.....	86e	22	36e	14	30e	3.01	.....	1.31	0	6	.....	.....	.....	s.
Muscatine	Muscatine	554	60	.....	.....	.....	.....	.....	.....	.....	3.72	-0.68	1.64	0	8	.....	.....	.....	se.
Olin	Jones	760	22	59.8	-0.7	85	31	32	14	36	2.67	-2.03	1.55	0	4	11	14	6	e.
Onawa	Monona	1051	20	60.7	.....	88	22	34	14	39	2.45	-2.51	0.94	0	5	12	8	11	se.
Perry	Dallas	975	19	60.2	-1.2	87	22	37	14	35	2.04	-3.01	1.00	0					

CLIMATOLOGICAL DATA FOR May 1920.

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	
<i>Southern Division</i>																			
Afton	Union	1212	26	59.4	-2.4	89	22†	31	14	42	2.40	-2.34	0.78	0	8	11	12	8	e.
Albia	Monroe	959	22	59.6	-1.6	87	22	32	14	35	2.60	-2.37	1.63	0	6	12	5	14	e.
Atlantic	Cass	1164	29	60.0	-1.1	86	22	32	14	38	2.70	-1.73	1.22	0	8	16	7	8	se.
Bedford	Taylor .....	.....	20	59.8	-0.9	84	22	35	14	38	2.60	-2.16	0.82	0	13	10	6	15	se.
Bloomfield	Davis	881	13	60.0	.....	85	26	34	14	32	3.89	-0.96	1.70	0	7	3	21	7	se.
Bonaparte	Van Buren	565	29	59.7	-2.3	83	22	34	14	31	3.99	-0.44	1.95	0	8	18	4	9	e.
Burlington	Des Moines	544	24	61.7	-1.1	85	26	34	14	29	5.49	+1.39	3.54	0	8	22	3	6	ne.
Centerville	Appanoose	1013	15	60.6	.....	86	22	34	14	36	1.57	.....	0.70	0	7	11	10	10	se.
Chariton	Lucas	1042	25	60.1	-0.5	85	22	37	14	30	2.52	-2.19	1.90	0	2	7	16	8	se.
Clarinda	Page	1009	30	61.6	+0.8	87	22	38	14†	41	3.78	-1.35	1.62	0	10	8	14	9	ne.
Columbus Jct.	Louisa	595	19	61.4	-1.0	86	22	36	3†	30	2.65	-1.45	1.40	0	6	24	4	3	e.
Corning	Adams	1117	28	58.4	-2.2	85	22	33	2	45	3.53	-1.69	1.57	0	10	13	8	10	se.
Corydon	Wayne	1101	27	59.6	-2.3	86	22	33	14	35	2.82	-1.69	1.22	0	9	10	10	11	e.
Creston	Union	1312	15	60.1	.....	84	22	38	14	31	3.34	.....	1.52	0	9	3	21	7	se.
Cumberland	Cass .....	.....	21	.....	.....	.....	.....	.....	.....	2.48	-1.74	1.14	0	7	22	3	6	sw.	
Earlham	Madison	1126	18	59.3	-0.6	87	31	32	14	37	3.07	-1.61	1.28	0	4	15	6	10	e.
Fairfield	Jefferson	780	36	61.2d	-0.5	85d	22	32d	15	34d	4.58	-0.69	1.93	0	6	.....	.....	.....	e.
Glenwood	Mills	1100	23	60.4	.....	85	22	39	14	37	40.5	.....	1.90	0	9	9	14	8	se.
Greenfield	Adair .....	.....	28	58.3	-3.0	87	22	34	14	34	3.35	-1.55	1.50	0	7	22	7	2	ne.
Indianola	Warren	969	28	60.7	-0.9	86	22	38	14	31	3.62	-0.87	2.13	0	6	10	5	16	ne.
Keokuk	Lee	614	49	61.8	-1.4	86	22	39	3	27	3.36	-0.89	1.78	0	7	6	11	14	ne.
Keesauqua	Van Buren	644	28	60.3	-1.9	86	22	32	14	35	5.75	+1.11	4.12	0	9	11	9	11	e.
Knoxville	Marion	920	25	60.2	-2.5	87	22†	32	14	37	2.58	-1.56	1.30	0	6	8	13	10	se.
Lacona	Warren .....	.....	21	.....	.....	.....	.....	.....	.....	3.56	-1.61	2.54	0	9	7	17	7	.....
Lamoni	Decatur	1100	13	60.6	-1.4	86	22	36	14†	35	1.69	-3.13	0.65	0	10	11	10	10	e.
Lenox	Taylor	1250	25	60.2	-1.1	87	22	33	14	35	3.14	-1.72	1.32	0	13	12	8	11	s.
Mt. Ayr.	Ringgold	1236	27	59.6	-2.6	84	22	37	14	34	1.79	-3.91	0.75	0	10	13	6	12	e.
Mt. Pleasant	Henry	729	39	60.6	-2.0	85	22†	33	14	36	4.09	-0.38	2.23	0	7	11	13	7	se.
Murray	Clarke	1216	29	61.0	-0.3	87	31	36	14	36	3.17	-1.73	1.15	0	6	6	11	14	e.
Oakland	Pottawattamie .....	.....	61.2	.....	87	22	40a	14†	38a	2.85	.....	1.50	0	7	16	6	9	s.	
Oskaloosa	Mahaska	825	44	60.3	-1.3	87	22	34	14	34	3.13	-0.69	1.49	0	8	7	12	12	se.
Ottumwa	Wapello	849	25	.....	88	22	33	14†	35	3.43	-1.21	1.84	0	6	15	4	12	ne.	
Pella	Marion	877	27	59.1	-3.1	85	22	33	14	37	2.87	-1.91	2.37	0	6	16	5	10	se.
Sigourney	Keokuk	877	24	59.7	-2.5	85	22	33	14	33	2.13	-2.15	0.80	0	7	16	7	8	ne.
Stockport	Van Buren	754	18	59.6	-2.2	84	22†	31	14	37	4.39	-0.11	2.44	0	10	15	8	8	s.
Thurman	Fremont	23	61.2	-1.5	87	22†	36	14†	37	4.35	-0.56	1.28	0	11	19	11	11	ne.	
Washington	Washington	769	38	60.6	-1.1	86	22	34	14	32	3.22	-0.81	2.44	0	5	9	13	9	se.
Winterset	Madison	1129	29	59.8	-2.5	86	22	35	14†	32	2.77	-1.87	1.36	0	6	18	7	6	ne.
Omaha, Nebr. ....	.....	1040	49	61.7	-0.8	85	22	41	14	29	2.55	-1.95	0.78	0	10	6	13	12	e.
Means and extremes.....	.....	.....	60.3	-1.4	89	22	31	14	45	3.23	-1.41	4.12	0	8	12	10	9	se.	
State means and extremes.....	.....	.....	59.4	-1.1	89	22†	29	14	45	3.26	-1.31	4.12	0	8	14	9	8	se.	

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.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

Stations.	Barometric Pressure Inches (Sea level)	Relative Humidity (Per cent)						WIND			Sunshine.						
		Mean	Highest	Date	Lowest	Date	7 A. M.	7 P. M.	Total movement	Average h'ly velocity.	Maximum Mile	Front	Date	Per cent of possible.	Departure from normal.		
Charles City	30.06	30.47	14	29.63	18	72	46	56	24	8	4,512	6.1	32	sw	22	64	— 4
Davenport ..	30.06	30.49	14	29.70	18	73	45	50	26	1	6,007	8.1	46	ne	12	62	— 2
Des Moines	30.02	30.43	14	29.60	18	72	50	53	30	8	5,797	7.8	33	sw	22	63	+ 2
Dubuque	30.08	30.50	14	29.66	18	72	45	46	24	6	4,349	5.8	20	s	22	71	+ 13
Keokuk.....	30.04	30.47	14	29.71	18	74	57	55	32	8	5,187	7.0	24	ne	12	60	- 4
Sioux City..	30.00	30.46	14	29.56	18	80	63	57	23	20	9,348	12.6	45	e	11	52	- 5
Omaha, Neb.	30.00	30.42	14	29.61	11	81	71	71	9	5,608	7.5	34	nw	22	51	- 10	
Means and extremes	30.04	.....	14	29.56	18	.....	75	54	55	.....	.....	7.8	.....	.....	[60]	— 2	
Normals and records	29.95	4th	.....	7th	77	59	3d	.....	8.7	.....	21st	62	.....	.....	.....	.....
* Dubuque, § Omaha. ¶ Sioux City. † Local mean time. ‡ And other dates.	.....	30.58	1910	29.02	1875	.....	\$10	1889	.....	8.4	1893	.....	.....	.....	.....	.....

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 60, or about 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, 64; Davenport, 62; Des Moines, 63; Dubuque, 71; Keokuk, 60; Sioux City, 52; Omaha, Neb., 51.

MISCELLANEOUS PHENOMENA

Aurora: 12th.

Fog: 17th, 25th, 31st.

Frost: 1st, 2d, 5th, 14th, 15th.

Hail: 2d, 11th, 14th, 21st, 22d, 26th.

Halos: (lunar or Solar): 3d, 5th, 6th, 13th, 14th, 15th, 19th, 23d, 25th, 26th, 27th, 31st.

Thunderstorms: 1st, 2d, 3d, 4th, 7th, 9th, 10th, 11th, 12th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 26th, 27th, 31st.

Rainbow: 22d, 31st.

DAILY PRECIPITATION FOR May, 1920

DAILY PRECIPITATION FOR MAY, 1920.—Continued

Stations	Watersheds	DAY OF MONTH																																		
		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	Total			
<i>Southern Division</i>																																				
Afton	Grand	.05	T	.33	T	.17					.46	.78																					2.40			
Albia ||	Des Moines				T	T					T	1.63	.31																				2.60			
Allerton	Chariton	.05					.05						1.22	.08																			2.70			
Atlantic ||	Nishnabotna												.15	.82																			2.60			
Bedford	Missouri	.15		.10		.09	.23						1.70	1.16																		3.89				
Bloomfield	Mississippi												T	.52	1.95	T																3.99				
Bonaparte	Des Moines												.02	2.94	.60																	5.49				
Burlington ||	Mississippi	T											.41	.70																			1.57			
Centerville	Chariton												1.90	.62																			2.52			
Chariton	Chariton												.16	.20	.17																		3.78			
Clarinda ||	Nodaway												.06																					2.65		
Columbus Jct.	Iowa												.50	1.40																			3.53			
Corning	Nodaway												.11	.16	.02																		2.82			
Corydon	Chariton												T	1.22	.91																		3.34			
Creston ||	Missouri												.05	.11																			2.48			
Cumberland	Nodaway												.84	1.12																			3.07			
Earlham	Des Moines												T																					4.58		
Fairfield	Skunk												.06																					3.35		
Glenwood	Missouri												.12																					3.62		
Greenfield	Nodaway												T																					3.36		
Indianola	Des Moines												.01																					5.73		
Keokuk ***	Mississippi												T	2.13	1.13	T																	3.56			
Keosauqua	Des Moines												T	.66	1.16	T																	3.17			
Knoxville	Des Moines												T	1.55	2.59	.02																3.17				
Lacona	Des Moines												.10																					3.13		
Lamoni ||	Grand												.16	.02																				3.43		
Lenox	Missouri												.06	.20	.13	.12																	3.43			
Mt. Ayr	Grand												.15	.03	.06	.17																	1.79			
Mt. Pleasant	Skunk												.14																					4.09		
Murray	Grand												.34	T	.05																			3.17		
Oakland	Nishnabotna												.17																					2.85		
Oskaloosa	Des Moines												.19																						3.13	
Ottumwa ||	Des Moines												.10																						3.43	
Pella	Skunk												.13																						2.87	
Sigourney	Skunk												.13																						2.13	
Stockport	Skunk												.12																						4.39	
Thurman	Missouri												.31																						4.35	
Washington	Skunk												.08																						3.22	
Winterset	Des Moines												.01																						2.77	
Omaha, Neb.***	Missouri												.07																						.01	2.55

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.

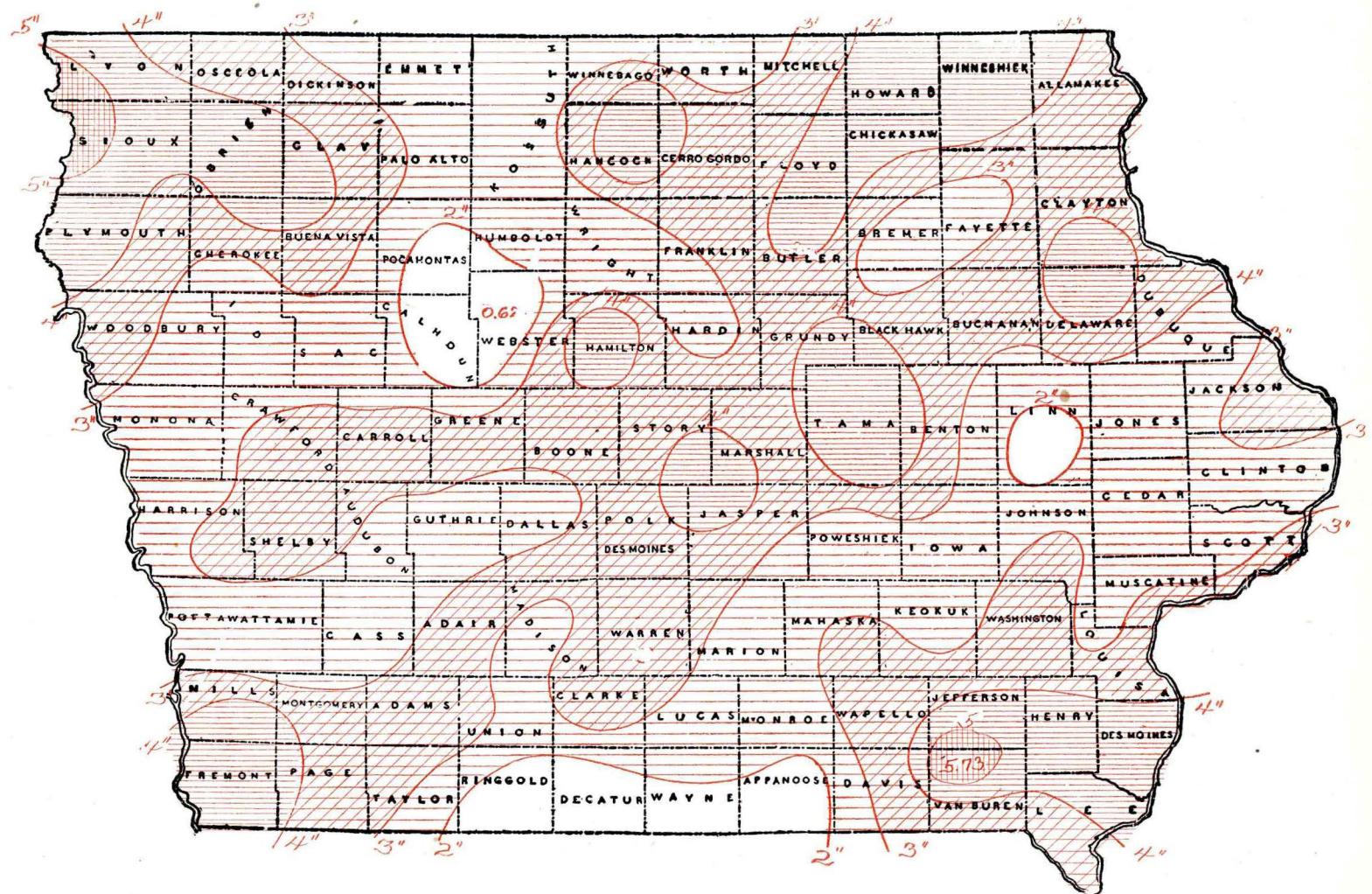
RIVERS

Moderate stages prevailed on the Mississippi with but slight fluctuations and a general falling tendency; on the Missouri moderate stages prevailed until after the heavy rains of the 11th-12th when a sharp rise occurred with a crest stage of slightly below the flood stage at Sioux City on the 16th and stages above the flood stage at Omaha on the 17th, 18th and 19th. The flood stage was also reached on the Des Moines River from the heavy rains on the 11th-12th from Tracy down. A crest of 14.4 feet was reached at Tracy on the 14th and 11.4 feet at Ottumwa on the 15th. The heavy rain of the 22d-23d caused destructive floods in the small streams especially in Benton and Linn Counties and the Maquoketa River was out of its banks on the 22d.

Daily Maximum and Minimum Temperatures for the Month of May, 1920.

Stations	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	Mean	
<i>Northern Division</i>																																	
Algona	60	65	64	64	67	67	70	71	78	76	69	52	56	62	66	55	67	77	73	75	81	87	71	80	82	76	67	75	78	82	81	70.8	
	40	37	36	35	39	50	50	50	44	55	46	40	40	32	45	40	40	44	45	45	47	63	49	45	58	59	60	45	56	60	46.8		
Alta.....	62	67	66	57	70	67	72	75	77	75	62	48	56	63	52	58	73	74	80	84	73	80	83	66	63	73	78	83	83	69.6			
	43	42	37	42	41	48	51	46	49	57	48	41	40	35	38	45	47	45	47	51	47	55	48	46	50	57	50	58	57	61	47.8		
Alton.....	61	66	65	57	68	66	69	78	78	74	70	50	55	63	64	58	61	74	72	74	82	83	72	83	84	76	65	75	79	84	82	70.6	
	44	41	42	44	42	49	50	40	44	44	48	40	39	33	38	46	45	42	40	43	47	63	48	47	60	60	48	45	59	60	61	46.8	
Belmond.....	60	63	61	52	65	66	73	78	78	75	72	50	51	61	66	60	60	72	73	72	76	87	73	78	81	76	74	75	76	80	81	69.9	
	37	40	36	42	38	44	49	42	53	53	45	41	37	32	37	47	46	43	45	46	51	47	50	48	55	51	50	47	54	52	56	45.6	
Charles City.....	63	63	62	56	66	67	72	75	78	77	58	52	58	62	68	55	53	72	73	70	80	82	72	76	79	77	68	74	75	81	84	69.3	
	35	43	37	43	38	42	50	42	44	56	44	44	39	34	37	45	45	46	47	50	48	58	52	47	55	57	51	48	54	54	57	46.5	
Decorah.....	62	65	66	60	68	70	72	75	79	69	63	54	60	68	71	68	55	73	72	73	70	81	80	80	83	80	74	78	80	85	85	71.9	
	32	36	36	43	33	37	45	39	40	49	44	44	37	31	34	46	46	48	46	50	42	55	54	47	52	54	54	46	50	49	55	49.4	
Forest City.....	63	68	65	58	72	69	71	75	76	72	63	54	64	67	70	61	59	71	74	73	86	73	75	81	73	68	75	75	82	81	70.6		
	41	40	38	43	39	48	52	48	52	54	45	43	39	37	42	47	45	45	47	46	42	60	58	51	58	59	48	48	57	59	70	48.4	
Inwood.....	60	66	64	55	66	66	70	79	78	72	67	50	56	61	60	56	64	69	79	72	82	85	72	81	84	70	67	72	78	83	78	69.7	
	42	40	42	44	40	50	46	41	44	57	49	40	39	33	35	46	45	42	41	49	55	42	46	60	55	44	44	53	60	53	59	46.1	
Mason City.....	60	63	61	57	65	68	72	75	79	72	51	57	61	66	63	52	72	74	70	82	88	72	76	88	75	70	80	83	80	83	70.2		
	33	31	35	41	36	41	41	47	46	41	54	47	40	37	31	32	43	43	46	43	46	43	46	43	46	42	42	44	47	51	52	58	45.4
Milford (near).....	58	63	61	55	65	66	70	72	76	73	69	50	59	53	65	53	59	71	75	68	81	85	66	76	82	73	71	81	78	68	60	68.0	
	38	42	40	42	50	51	51	45	47	51	45	39	36	41	35	46	44	46	43	44	48	62	48	49	58	59	48	49	55	46	40	60	47.0
New Hampton.....	61	60	56	67	68	74	70	79	79	64	52	57	63	70	60	53	72	72	79	82	72	72	71	75	77	81	71	75	77	83	85	69.5b	
	35	42	35	41	38	43	50	46	52	53	42	42	37	33	40	46	45	45	47	46	44	51	52	51	51	51	51	56	56	56	56	45.6b	
Northwood.....	63	62	60	56	67	69	73	74	78	75	59	53	56	62	68	59	57	73	75	70	79	86	72	78	83	76	80	84	86	89	76.9		
	36	38	35	41	36	41	47	46	44	51	40	40	36	31	36	45	43	43	46	43	45	54	59	57	52	53	53	54	55	54	54	54.4	
Pocahontas.....	62	66	63	54	67	68	72	79	78	74	71	50	57	63	68	59	57	72	72	74	82	87	73	81	80	72	69	76	80	84	83	70.7	
	42	42	38	42	39	48	48	50	49	49	40	39	32	38	46	45	45	47	46	44	52	57	59	49	49	55	54	54	54	56	56	46.6	
Postville.....	61	60	60	55	64	66	71	74	77	72	61	52	55	60	66	60	53	70	74	72	77	78	73	78	76	71	70	72	78	80	80	68.0	
	37	40	33	38	36	38	48	46	46	55	43	41	36	34	40	42	44	46	46	48	52	52	48	55	51	50	50	50	54	54	45.1		
<i>Central Division</i>																																	
Belle Plaine.....	68	68	62	54	70	73	72	78	80	82	72	51	57	68	70	60	58	72	72	74	80	87	79	78	81	81	77	73	80	82	81	72.3	
	36	45	44	41	45	40	49	44	45	55	51	43	40	34	38	47	49	44	45	54	47	60	57	52	52	55	55	52	51	52	47.7		
Boone.....	61	67	64	57	63	69	71	78	74	72	51	56	63	65	59	57	77	72	76	83	87	78	81	83	76	80	81	83	85	71.1			
	40	48	38	43	43	43	51	45	43	56	50	42	41	37	38	48	47	48	48	47	47	62	52	54	58	55	54	62	57	48.8			
Carroll.....	68	70	67	65	70	66	74	77	77	74	76	53	57	62	63	61	58	78	74	82	87	87	83	85	72.1	83	83	83	83	83	72.1		
	42	46	38	42	40	42	44	45	47	57	52	42	40	35	38	46	45	47	47	47	47	60	49	49	54	54	54	54	57	57	47.4		
Davenport.....	66	62	59	56	65	68	71	76	79	79	75	72	71	66	68	60	68	58	60	71	75	82	76	76	83	76	78	83	83	83	80.5		
	44	41	36	41	45	43	50	49	47	47	42	41	35	38	43	48	45	46	49	50	52	56	57	58	58	56	56	54	54	54	50.5		
Des Moines.....	63	66	62	58	67	64	71	77	78	78	60	55	62	67	58	58	72	76	75	75	77	79	74	75	76	71	70	79	81	84	70.4		
	44	40	35	45	40	42	44	44	40	45	44	40	32	35	47	46	48	48	44	46	45	46	50	55	54	54	54	54	54	54	54		
Dubuque.....	64	59	59	57	64	67	71	74	77	78	55	52	55	62	67	58	58	72	76	75	77	80	82	80	82	82	82	82	82	82	82	69.0	
	40	42	35	42	41	42	50	46	43	44	43	40	36	30	34	40	44	49	49	50	52	54	54										

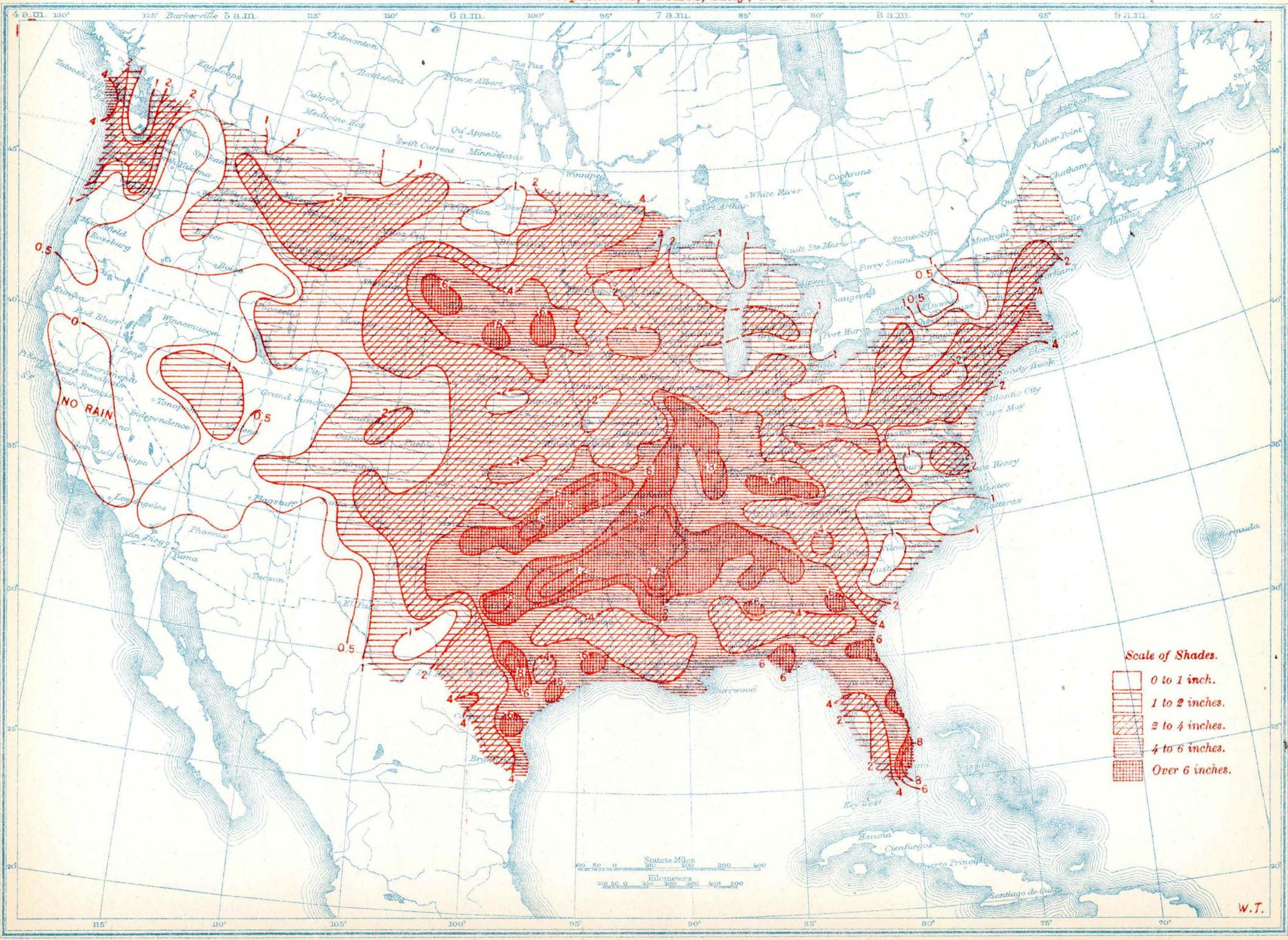
TOTAL PRECIPITATION,—MAY, 1920.



SCALE OF SHADES—IN INCHES.

	Less than 2.
	2 to 3
	3 to 4
	4 to 5
	More than 5.

Total Precipitation, Inches, May, 1920.



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

CLIMATOLOGICAL DATA

IAWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

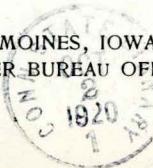
JUNE, 1920

BY
CHARLES D. REED
METEOROLOGIST



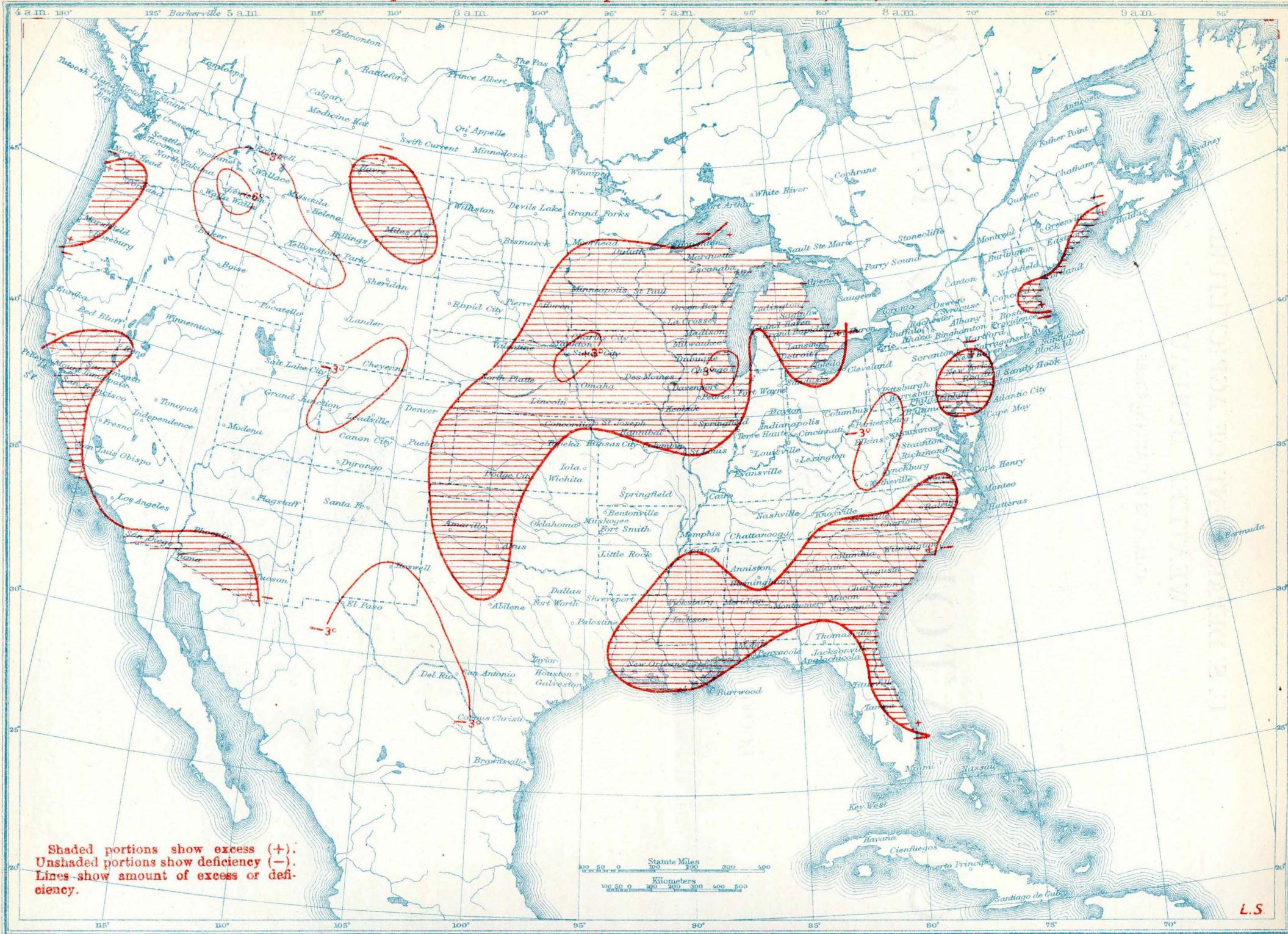
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DES MOINES, IOWA
WEATHER BUREAU OFFICE



E.C.

Departure of the Mean Temperature from the Normal, June, 1920.



L.S.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist.

Vol. XXXI Des Moines, Iowa, June, 1920. No. 6

GENERAL SUMMARY

June temperature averaged above the normal, though there was a slight deficiency in Jefferson, Wapello and Davis counties. There were four alternate cool and warm spells. The coldest weather of the month occurred at most stations on the 5th, and at a few stations in the northern division there was light frost. The most protracted warm spell began the latter part of the first week and continued till the first part of the third week. The second week of the month was the warmest June week since June 3-9, 1911, but humidities were 20 per cent lower than during a similar hot period last year, with the result that diseases of small grains were much less prevalent.

Precipitation average below normal for the State but there was a slight excess over the northern division and there were areas in the other two divisions that had an excess. The amounts were well distributed through the month but the greater portion occurred in two or three heavy showers over most of the State. The distribution as to amounts was uneven, stations relatively near each other showing wide positive and negative departures. The greatest deficiency occurred over the central and southwest portions and at the close of the month vegetation was needing rain badly over large areas in the drier sections, while at some points fields were too wet to be worked properly. Conditions generally were favorable and most field crops advanced to nearly normal by the end of the month.

Destructive winds occurred on the 1st, 8th, 9th and 15th. On the 1st high westerly winds caused slight damage in the vicinity of Plano and Centerville in Appanoose county. On the 8th strong southwest winds that reached hurricane force in places occurred generally in Plymouth county, the northern half of Woodbury county and portions of Cherokee, Sioux and O'Brien counties. The storm began about 10 or 11 p. m. and continued from one to two hours at many places. The most destructive wind was in the vicinity of Sioux City and around Pierson. Some crops were damaged but the principal loss was to buildings and machinery. At Sioux City the damage was estimated at \$100,000, but estimates are not available at other places. Strong to high northwest winds swept Fayette and portions of Chickasaw, Bremer and Clayton counties during the early morning of the 9th, causing about \$6,000 damage in western Fayette county and slight damage in other sections. High winds, of near hurricane force, at Anamosa, Jones county, on the 15th caused considerable damage.

A tornado occurred in the vicinity of Correctionville and Pierson, near the corners of Woodbury and Cherokee counties, from 11:00 to 11:30 p. m. of the 8th. The storm moved from southwest to northeast for a distance of about five miles and caused about \$60,000 damage. Also on the morning of the 9th, a slight tornado occurred at Westgate, Fayette county, causing damage estimated at \$8,000. No persons were killed or injured in either storm.

Hail occurred at many places during the month, mostly on the 7th and 8th. A table of the principal storms is published elsewhere in this report.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.93 inches. The highest recorded was 30.33 inches at Charles City, on the 3d, and the lowest was 29.46 at Charles City and Sioux City on the 15th. The

TEMPERATURE.

The mean temperature for the State, as shown by the records of 99 stations, was 70.7°, or 1.6° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 69.4°, or 1.8° higher than the normal; Central, 71.1°, or 1.8° higher than the normal; Southern, 71.5°, 1.2° higher than the normal. The highest monthly mean was 74.0°, at Burlington and Cedar Rapids, and the lowest was 67.4°, at Postville. The highest temperature reported was 99° at Cedar Rapids and Onawa, on the 13th, and the lowest was 40°, at Onawa on the 4th, Bedford, Earlham, Glenwood, Guthrie Center, Little Sioux and Thurman on the 5th, and Esterville on the 17th. The temperature range for the State was 59°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 75 per cent, and at 7 p. m. was 55 per cent. The mean for the month was 65 per cent, or 5 per cent below the normal. The highest monthly mean was 68 per cent at Charles City and the lowest was 61 per cent at Des Moines and Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 107 stations, was 3.56 inches, or 0.82 inch less than the normal. By divisions the averages were as follows: Northern, 4.50 inches, or 0.07 inch more than the normal; Central, 3.14 inches, or 1.18 inches less than the normal; Southern, 3.04 inches, or 1.35 inches less than the normal. The greatest amount, 8.48 inches, occurred at Britt, and the least, 1.25 inches, at Des Moines. The greatest amount in 24 consecutive hours, 3.10 inches, occurred at Washta, on the 7th.

WIND

The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was 72 miles an hour, from the southwest, at Sioux City, on the 8th.

COMPARATIVE DATA FOR THE STATE—JUNE.

YEAR	Temperature				Precipitation				Number of Days.				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890.....	72.7	+3.6	106	44	7.76	+3.38	16.53	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	15	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	+2.08	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	108	36	1.82	-2.56	6.28	0.06	.....	5	20	8	2
1912.....	66.2	-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	96	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
1919.....	71.9	+2.8	98	41	6.13	+1.75	12.25	1.82	.....	13	12	12	6
1920.....	70.7	+1.6	99	40	3.56	-0.82	8.48	1.25	.....	9	16	10	4

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

CLIMATOLOGICAL DATA FOR JUNE, 1920.

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit				Precipitation in inches			No. of Days			OBSERVERS					
				Mean	Departure from Normal	Highest	Lowest	Greatest daily range	Total	Departure from Normal	Greatest in 24 hours	Total snowfall (unmelted)	Precipitation .01 inch or more						
						Date			Total	Clear	Partly cloudy	Cloudy	Partly cloudy	Cloudy					
<i>Northern Division</i>																			
Algona	Kossuth	1213	47	69.3	+1.2	94	13	43	3	28	3.06	-1.38	2.03	0	5	23	4	3	se.
Allison	Butler	1045	8	70.0	.....	96	13	42	5	31	3.60	.....	0.78	0	8	7	21	2	sw.
Alta	Buena Vista	1513	29	68.8	+1.2	92	13	45	5	29	4.73	-0.18	1.44	0	11	14	11	5	s.
Alton	Sioux	1305	15	69.4	+1.7	94	27	45	5	30	3.39	.....	1.25	0	10	9	13	8	se.
Belmond	Wright	1205	10	70.0	.....	97	13	41	5	34	4.01	.....	1.06	0	15	11	17	2	s.
Britt	Hancock	1236	23	69.2a	+1.8	96a	13	43a	4	33a	8.48	+4.49	2.71	0	9	22	5	3	s.
Charles City	Floyd	1015	29	69.1	+0.4	95	13	43	5	29	4.43	-0.67	1.51	0	14	10	17	3	sw.
Decorah	Winnesheik	875	27	69.2	+0.7	94	13	44	18	35	4.34	+0.10	1.10	0	13	18	7	5	s.
Elkader	Clayton	751	41	70.6	+1.9	95	13	42	3	35	4.80	+0.85	1.15	0	9	19	7	4	e.
Estherville	Emmet	1298	25	68.4	+2.1	93	13	40	17	33	1.95	-2.76	0.60	0	7	18	11	1	s.
Fayette	Fayette	1003	30	69.2	+2.4	93	13	42	3	27	4.52	-0.19	0.86	0	10	17	9	4	sw.
Forest City	Winnebago	1226	26	69.2	+1.7	94	10†	43	17	34	7.51	+3.29	2.01	0	7	5	21	4	sw.
Humboldt	Humboldt	1095	32	70.4	+2.3	97	13	45	3†	31	5.65	+1.25	1.28	0	9	13	11	6	s.
Inwood	Lyon	1474	16	69.0	+1.4	93	13	42	2†	31	4.92	-0.23	2.85	0	14	20	5	5	s.
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	4.86	.....	1.02	0	12	.....	.....	.....	.....	.....
Le Mars	Plymouth	1224	24	70.2	+2.1	95	13	42	2	32	3.41	-0.95	0.95	0	10	16	11	3	se.
Mason City	Cerro Gordo	1148	23	68.6	+1.2	98	13	41	3†	33	4.39	-0.69	1.32	0	9	22	6	2	se.
Milford (near)	Dickinson	1430	.....	68.4	.....	93	18	46	5	27	1.43	.....	0.63	0	10	5	22	3	sw.
New Hampton	Chickasaw	1169	23	69.2	+2.0	95	13	44	3†	30	3.70	-0.24	1.12	0	7	18	8	4	sw.
Nora Springs	Floyd	1064	8	70.4	.....	96	12†	42	5	35	5.34	.....	2.04	0	10	15	12	3	s.
Northwood	Worth	1222	24	68.2	+1.4	94	13	43	3†	40	6.78	+2.16	1.15	0	11	11	12	7	sw.
Pocahontas	Pocahontas	1248	16	70.0	+2.9	96	14	44	3†	32	5.41	+1.10	1.45	0	12	16	12	2	s.
Postville	Clayton	1180	21	67.4	+0.8	89	13	44	3	26	4.23	-0.18	1.08	0	8	9	16	5	sw.
Rock Rapids	Lyon	1358	21	69.2	+1.2	94	13	41	5	35	5.23	+0.92	1.65	0	15	19	8	3	se.
Sanborn	O'Brien	1553	6	68.6	.....	94	13	42	5†	33	3.48	.....	1.50	0	9	14	12	4	se.
Sioux Center	Sioux	1426	21	68.4	+1.2	93	13	43	5	30	3.40	-0.56	1.22	0	11	18	5	7	s.
Spencer	Clay	1319	6	69.8	.....	97	13	43	5	35	2.01	.....	1.20	0	7	10	16	4	sw.
Storm Lake	Buena Vista	1440	31	69.5	+1.9	93	13	46	5	26	4.16	-0.22	1.09	0	12	21	6	3	s.
Washta	Cherokee	1157	22	69.3	+1.9	92	13	41	5	35	7.58	+3.50	3.10	0	12	11	15	4	s.
Waverly	Bremer	948	24	72.7	+5.0	96	13	43	5	29	3.56	-0.46	1.05	0	9	19	6	5	se.
West Bend	Palo Alto	1197	27	69.8	+1.6	97	13	41	5	34	5.06	+0.89	1.93	0	10	13	15	2	s.
<i>Means and extremes.</i>		.....	.....	69.4	+1.8	98	13	40	17	40	4.50	+0.07	3.10	0	10	15	11	4	s.
<i>Central Division</i>																			
Ames	Story	926	44	69.2	0	95	13	42	5	32	2.35	-2.19	0.85	0	9	.....	.....	.....	.....
Audubon	Audubon	1301	26	69.0	+0.8	93	13	44	5	30	4.75	+0.92	1.18	0	10	16	8	6	s.
Baxter	Jasper	998	20	71.1	+2.1	96	13	45	21	30	4.00	-0.17	1.77	0	10	13	10	7	sw.
Belle Plaine	Benton	886	30	71.9	+2.9	97	13	42	5	34	1.56	-2.49	0.96	0	5	13	10	7	s.
Boone	Boone	1134	15	71.6	+2.6	95	13	43	5	33	2.11	-2.57	0.83	0	9	15	7	8	s.
Carroll	Carroll	1265	30	70.3	+2.5	94	13	45	5	29	3.81	-0.97	1.29	0	9	19	8	3	sw.
Cedar Rapids	Linn	733	38	74.0	+3.4	99	13†	51	3†	32	3.11	-0.62	1.92	0	6	23	4	3	s.
Clinton	Clinton	593	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	.....	.....	.....	.....	.....
Davenport	Scott	580	49	72.3	+1.4	93	13	51	17	26	2.54	-1.57	1.34	0	6	11	14	5	sw.
Delaware	Delaware	1083	29	69.1	+1.3	92	13	45	3†	31	4.26	+0.31	1.75	0	9	15	13	0	.....
Denison	Crawford	1180	26	70.7	+2.6	93	13	46	5	30	3.46	-0.53	1.20	0	10	21	4	5	sw.
Des Moines	Polk	861	40	72.5	+2.1	95	13	50	5	25	1.25	-3.71	0.56	0	9	4	18	8	sw.
Dubuque	Dubuque	639	47	70.9	+1.3	95	13	50	17	26	5.24	+0.69	1.72	0	10	7	17	6	s.
Fort Dodge	Webster	1126	20	70.6	+2.0	98	13	45	3	34	1.64	-2.54	0.68	0	7	21	1	8	s.
Grinnell	Poweshiek	1031	26	69.2f	-0.8	94f	13	45f	6	31f	2.68	-1.64	1.53	0	.....	.....	.....	.....	s.
Grundy Center	Grundy	976	29	70.1	+0.3	94	13	40	5	35	2.79	-2.23	0.94	0	7	15	13	2	n.
Guthrie Center	Guthrie	1077	25	70.1	+0.3	94	13	40	5	35	2.44	-1.77	1.45	0	6	19	8	3	sw.
Harlan	Shelby	1182	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	.....	.....	.....	.....	.....
Independence	Buchanan	921	56	69.6	+1.9	94	13	45	3	30	5.69	+1.20	1.08	0	11	22	4	4	sw.
Iowa City	Johnson	733	59	71.0	+1.2	95	28	46	3	35	2.86	-1.59	1.39	0	8	13	13	4	sw.
Iowa Falls	Hardin	1107	27	69.4	+2.1	92	13†	42	5	30	2.72	-2.68	0.77	0	8	17	9	4	sw.
Jefferson	Greene	1052	21	70.5	+1.5	93	13	43	3	30	2.99	.....	1.66	0	8	15	7	8	sw.
LeClaire	Scott	576	20	.....	.....	.....	.....	.....	.....	2.76	-0.92	0.87	0	10	.....	.....	.....	.....	.....
Little Sioux	Harrison	1040	15	71.5	+1.2	97	13	40	5	36	1.90	.....	0.87	0	11	16	10	4	se.
Logan	Harrison	928	53	71.2	+1.2	96	12	45	5	28	3.23	-2.01	1.40	0	5	14	13	3	sw.
Maquoketa	Jackson	688	19	69.8	+1.4	95	28	45	6	32	4.65	-0.16	2.15	0	8	17	9	4	sw.
Marshalltown	Marshall	947	28	72.0	+2.8	96	13	46	3†	28	2.82	-1.44	1.87	0	11	.....	.....	.....	.....
Monroe	Jasper	922	8	72.6	.....	97	13	48	4	27	1.91	.....	0.73	0	5	21	4	5	s.
Muscatine	Muscatine	554	60	.....	.....	.....	.....	.....	.....	2.44	-2.03	1.00	0	9	.....	.....	.....	.....	.....
Olin	Jones	760	22	71.3	+2.1	97	28	42	18	36	3.30	-0.02	2.60	0	5	10	20	0	sw.
Onawa	Monona</																		

CLIMATOLOGICAL DATA FOR JUNE, 1920.

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	Greatest daily range	Total	Departure from normal	Greatest in 24 hours	Total snowfall, (unadjusted)	Precipitation 0.1 in. or more	Partly Cloudy	Cloudy	Prevailing direc- tion of wind		
<i>Southern Division</i>																		
Afton	Union	1212	26	95	13+	... 95	13+	... 45	3.41	-1.53	1.28	0	10	17	9	4 sw.		
Albia	Monroe	959	22	72.0	+2.5	95	13+	5	32	4.79	+0.67	2.56	0	6	16	5	9 sw.	
Atlantic	Cass	1164	29	70.7	+1.1	95	13	43	34	1.72	-3.40	0.37	0	9	22	3	5 sw.	
Bedford	Taylor	20	70.2	+0.6	92	13	40	5	36	2.78	-1.16	0.90	0	8	18	6	6 s.	
Bloomfield	Davis	881	13	71.3	...	94	14+	47	47	37	1.91	-2.00	0.94	0	7	12	15	3 sw.
Bonaparte	Van Buren	565	29	70.9	+0.5	94	28	47	18	28	4.32	+0.08	2.15	0	8	20	9	1 s.
Burlington	Des Moines	544	24	74.0	+2.1	95	14	521	6	261	4.83	+0.44	1.42	0	6	24	4	2 s.
Centerville	Appanoose	1013	15	72.4	...	96	10	46	5	33	2.97	...	1.28	0	7	18	7	5 sw.
Chariton	Lucas	1042	25	71.3	+2.6	92	13+	49	29	3.01	-1.27	1.50	0	3	13	12	5 sw.	
Clarinda	Page	1009	30	72.8	+2.8	98	13	43	5	35	1.35	-3.47	0.63	0	7	18	9	3 s.
Columbus Jct.	Louisa	595	19	72.6	+1.6	95	28	51	4+	30	2.23	-1.93	1.20	0	7	26	4	0 sw.
Corning	Adams	1117	28	70.0	+0.6	93a	13	42a	5	33a	3.54	-0.56	1.65	0	7	15	12	3 sw.
Corydon	Wayne	1101	27	71.0	+0.7	93	13+	45	5	31	3.69	-0.60	1.47	0	8	24	3	3 sw.
Creston	Union	1312	15	70.1	+1.6	90	13	45	5	27	4.11	...	1.12	0	8	15	12	3 sw.
Cumberland	Cass	21	...	...	...	...	...	...	...	3.61	-0.83	1.37	0	7	24	2	4 sw.	
Earlham	Madison	1126	18	70.0	+2.3	93	13	40	5	34	2.81	-1.43	1.02	0	7	17	9	4 sw.
Fairfield	Jefferson	780	36	70.6a	-0.1	94a	28	45a	18	31a	3.73	-1.04	0.99	0	9	...	...	sw.
Glenwood	Mills	1100	23	71.8	...	94	9+	40	5	34	2.32	...	1.15	0	6	15	9	6 sw.
Greenfield	Adair	28	...	...	...	...	...	43	5	31	7.17	+2.24	2.90	0	8	23	3	4 se.
Indianola	Warren	969	28	71.6a	+1.3	94a	13	47a	5	31a	1.27	-3.19	0.42	0	7	...	...	se.
Keokuk	Lee	614	49	73.4	+0.9	94	28	55	6	24	2.99	-1.36	1.59	0	6	12	12	6 s.
Kenosauqua	Van Buren	644	28	71.6	+0.3	95	28	44	19	40	3.58	-0.45	1.16	0	6	14	11	5 se.
Knoxville	Marion	920	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lacona	Warren	21	...	...	...	...	...	...	...	1.90	-2.57	0.80	0	10	9	13	8	...
Lamoni	Decatur	1100	13	71.1	+0.2	94	13+	44	5	32	4.02	-0.89	0.97	0	9	17	9	4 sw.
Lenox	Taylor	1250	25	71.0	+1.4	94	13	43	5	33	3.79	-0.27	1.30	0	9	16	10	4 s.
Mt. Ayr	Ringgold	1236	27	70.9	+0.3	91	13+	43	5	31	2.71	-2.13	0.84	0	10	16	9	5 s.
Mt. Pleasant	Henry	729	39	72.0	+0.6	96	28	48	18	38	2.92	-2.19	0.71	0	8	13	14	3 sw.
Murray	Clarke	1216	29	71.6	+1.6	93	13+	46	5	33	2.12	-1.82	0.73	0	9	8	17	5 s.
Oakland	Pottawattamie	...	...	71.3e	...	96	13	41j	5	35j	2.87	...	1.33	0	8	16	7	7 s.
Oskaloosa	Mahaska	825	44	72.2	+2.0	95	13+	46	5	30	2.80	-1.07	0.84	0	8	12	10	8 sw.
Ottumwa	Wapello	849	25	72.4	...	98	12+	46	21	39	3.72	-0.11	1.30	0	6	19	4	7 s.
Pella	Marion	877	27	71.0	+0.6	94	13+	44	5	30	1.42	-2.07	0.55	0	5	21	2	7 s.
Sigourney	Keokuk	877	24	70.9	+0.1	93	13+	47	5+	30	2.56	-1.33	1.07	0	5	18	5	7 sw.
Stockport	Van Buren	754	18	71.2	+0.6	93	28	44	18	33	2.89	-1.66	1.11	0	7	18	9	3 s.
Thurman	Fremont	23	72.9	+1.6	97	13	40	5	40	2.60	-3.01	0.76	0	5	4	18	8 sw.	
Washington	Washington	769	38	71.6	+0.6	94	28	49	5+	27	2.55	-1.33	0.77	0	9	12	15	3 sw.
Winterset	Madison	1129	29	71.4	+1.2	94	13	44	5	31	1.94	-3.09	0.55	0	9	22	7	1 sw.
Omaha, Nebr.		1040	49	73.1	+1.5	96	13	50	5	25	2.62	-2.43	1.09	0	9	11	12	7 s.
Means and extremes		...	...	71.5	+1.2	98	12+	40	5+	40	3.56	-0.82	3.10	0	9	16	10	4 sw.
State means and extremes		...	...	70.7	+1.6	99	13+	40	4+	40	3.04	-1.35	2.90	0	8	16	9	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, 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.

PRESSURE, RELATIVE HUMIDITY, WIND, AND SUNSHINE.

Stations.	Barometric Pressure Inches (Sea level)				Relative Humidity (Per cent)		WIND			Sun- shine.							
	Mean	Highest	Date	Lowest	7 A. M.	Noon	7 P. M.	Lowest	Total movement	Average h'ly velocity.	Maximum Miles	From	Date	Per cent of possible. Departure from normal.			
Charles City	29.96	30.33	3	29.46	15	78	55	59	38	3	4.512	6.3	26	s	25	64	-10
Davenport	29.98	30.29	3	29.51	16	73	49	51	33	18	5.073	7.0	26	sw	1	80	+10
Des Moines	29.95	30.26	3	29.48	16	72	53	50	32	19	6.190	8.6	32	sw	28	64	-3
Dubuque	29.99	30.29	3	29.53	16	78	54	56	30	4+	3.970	5.7	22	nw	1	70	+6
Keokuk	30.00	30.27	3	29.58	18	70	50	52	30	20	5.063	7.0	26	w	16	83	+10
Sioux City	29.93	30.30	3	29.46	15	78	55	56	37	11	8.884	12.3	72	sw	8	54	-9
Omaha, Neb.	29.94	30.28	3	29.52	15	76	57	58	32	13+	6.037	8.4	30	nw	21	66	-1
Means and extremes	29.95	30.33	3	29.46	15	75	53	55	30	7.9	...	...	69	0	...	...	...
Normals and records	29.93	10th	5th	79	60	30th	76	60	7.6	22d	69	...	...	...	...	...	...
	30.61	1913	\$29.04	1880	...	14	1894	14	85	w	1917	...	...	...	...	...	...

* Dubuque. ** Omaha. *** Sioux City. \$ Local mean time. † And other dates.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 69, or about normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows; Charles City, 64; Davenport, 80; Des Moines, 64; Dubuque, 70; Keokuk, 83; Sioux City, 54; Omaha, Nebraska, 66.

MISCELLANEOUS PHENOMENA

Fog: 2d, 22d, 23d.

Frost: 3d, 5th, 18th.

Hail: 1st, 6th, 7th, 8th, 9th, 10th, 15th, 16th, 21st, 22d, 26th, 29th, 30th.

Halos: (lunar or solar): 2d, 4th, 8th, 10th, 13th, 15th, 17th, 18th, 19th, 20th, 26th, 30th.

Thunderstorms: All days during the month except on the 3d, 5th, 17th, 18th, 19th, 23d, 27th.

RIVERS.

Moderate stages prevailed on the Mississippi with a general falling tendency the first half of the month and rising stages the last half. On the Missouri moderate falling stages prevailed the first half and moderate to high increasing stages the last half of the month, the crest stage from the 27th to the 29th was about 1 foot below the flood stage. On the interior rivers low stages for the season prevailed.

CLIMATOLOGICAL DATA: IOWA SECTION.

June, 1920.

DAILY PRECIPITATION FOR JUNE, 1920.

Stations	Watersheds	DAY OF MONTH																																
		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	Total	
<i>Northern Division</i>																																		
Algona	Des Moines	.75																																3.06
Allison	Cedar	1.08	T	.03		T	.38																									3.60		
Alta	Raccoon	.60		T	.02		T																									4.73		
Alton	Floyd	.42				.08	.09		.02																						3.39			
Belmond	Iowa	1.55	T		T	.20	T	.05																							4.01			
Britt	Iowa	.53				.01	.12		.21																						8.48			
Charles City	Cedar	.18				.02	.16		.34		.03																				4.43			
Decorah	Mississippi	1.15				T	.40		.30		.18																				4.34			
Elkader	Mississippi	.10				T	.05																									1.95		
Estherville	Des Moines	.86							.44		.44	T																			4.52			
Fayette	Mississippi	1.30	.20																													7.51		
Forest City	Cedar	.67				.16																										5.65		
Humboldt	Des Moines	.12	.05																													4.86		
Inwood	Big Sioux	.35				.14			.09																						4.92			
Lansing	Mississippi	.18																														4.34		
Le Mars	Floyd	.76	T	T	T	.52																										3.41		
Mason City	Cedar	.75				.10			.51																						4.39			
Milford (near)	Little Sioux	.11	.01	.05	T																											1.43		
New Hampton	Wapsipinicon	.47				T																										3.70		
Nora Springs	Cedar	.96				.04	.10																								5.34			
Northwood	Cedar	.80				.15	T	.80	1.10	T																				6.78				
Pocahontas	Des Moines	1.16				.10	.02																								5.41			
Postville	Mississippi	.30																														4.23		
Rock Rapids	Big Sioux	.28				T	.12		.04	T																					5.23			
Sanborn	Floyd	.25																														3.48		
Sioux Center	Floyd	.62				.18			.10																						3.40			
Spencer	Little Sioux	.02																														2.01		
Storm Lake	Raccoon	1.06				.02			.18																						4.16			
Washta	Little Sioux	1.57				T			.20	3.10																					7.58			
Waverly	Cedar	.45																														3.56		
West Bend	Des Moines	1.41																														5.06		
<i>Central Division</i>																																		
Ames	Skunk	.17																														2.35		
Audubon	Nishnabotna	.12																														4.75		
Baxter	Skunk	1.00																														4.00		
Belle Plaine	Iowa	T	.14																													1.56		
Boone	Des Moines	.03																														2.11		
Carroll	Raccoon	.34																														3.81		
Cedar Rapids	Cedar	.73																														3.11		
Clinton	Mississippi	.52				T																										2.54		
Davenport	Mississippi	1.75	.19																													4.26		
Delaware	Missouri	.05																														3.46		
Denison	Missouri	.20				T	.04	.26	T																						1.25			
Des Moines	Des Moines	1.10	T	.04																												5.24		
Dubuque	Mississippi	.30																														1.64		
Fort Dodge	Des Moines	.30																														2.68		
Grinnell	Iowa	.24				T																										1.53		
Grundy Center	Cedar	.63																														2.79		
Guthrie Center	Raccoon	1.45																														2.44		
Harlan	Nishnabotna																																	
Independence	Wapsipinicon	1.00																														5.69		
Iowa City	Iowa	.31																														2.86		
Iowa Falls	Iowa	.28																														2.72		
Jefferson	Raccoon	.12																														2.99		
Le Claire	Mississippi	.25	.87																													2.76		
Little Sioux	Little Sioux	.49																														3.23		
Logan	Missouri	1.40																														4.65		
Maquoketa	Maquoketa	1.28				T																									2.82			
Marshalltown	Iowa	.15				.03																									1.91			
Monroe	Skunk																																	
Muscatine	Mississippi	.05	.43																												2.44			
Olin	Wapsipinicon	.15	.10		</																													

DAILY PRECIPITATION FOR JUNE, 1920—Continued.

Stations	Watersheds	DAY OF MONTH																																	
		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	Total		
Southern Division																																			
Afton	Grand	.47	.10	.....	.....	.....	.....	1.28	.52	.....	.....	.....	.....	15	.....	.10	.....	.....	.....	.01	.02	.....	.....	.18	.....	.....	.....	.....	.58	.....	3.41		
Albia	Des Moines	2.56	.....	.....	.....	.....	.....	.15	.....	.....	.....	.....	.....	.....	15	.....	.15	T	.....	.....	.36	.....	T	.....	.....	.....	.....	.33	1.24	4.79			
Allerton	Chariton	.....	.....	.....	.....	.....	.....	.23	.30	.....	.....	.....	.....	.....	.....	.37	.....	.....	.....	.13	.01	.....	.22	.12	.01	.....	.53	.....	1.72				
Atlantic	Nishnabotna	.....	.....	.....	.....	.....	.....	.60	.57	.....	.....	.....	.....	.....	.04	.....	.05	.....	.....	.11	.....	.....	.....	.90	.....	.....	.....	.20	.....	2.78			
Bedford	Missouri	.31	.....	.....	.....	.....	.....	.18	.01	.....	.....	.....	.....	.....	.....	.01	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.75	.....	1.91			
Bloomfield	Mississippi	.01	.94	.....	.....	.....	.....	.18	.....	.....	.....	.....	.....	.....	.....	.04	.....	.....	.....	.35	.03	.....	.....	.....	.....	.....	.....	.....	2.15	.....	4.32		
Bonaparte	Des Moines	.20	.60	.....	.05	.....	.....	.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.26	.....	4.83	
Burlington	Mississippi	.59	1.42	.....	.....	.....	.....	.41	.15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.28	.....	2.97
Centerville	Chariton	.40	.44	.....	T	.....	.....	.33	.05	.....	.....	.....	.....	.....	.....	T	T	.02	.....	T	.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.50	.....	3.01
Chariton	Chariton	T	1.30	.....	.....	.....	.....	.21	.....	.....	.....	.....	.....	.....	.....	18	.01	.....	.....	.07	.....	.14	.49	.....	.30	.....	.....	.....	.....	1.20	.....	3.35	
Clarinda	Nodaway	.....	.16	.....	.....	.....	.....	.45	.....	.....	.....	.....	.....	.....	.....	.08	.....	T	.08	T	.15	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.20	.....	2.23
Columbus Jct.	Iowa	.15	.16	.....	.....	.....	.....	.14	1.65	.....	.....	.....	.....	.....	.....	.27	.....	T	.....	T	.14	.45	.....	.....	.....	.....	.....	.....	.....	.....	.54	.....	3.54
Corning	Nodaway	.32	.....	.....	.....	.....	.....	.14	1.65	.....	.....	.....	.....	.....	.....	.27	.....	T	.....	T	.14	.45	.....	.....	.....	.....	.....	.....	.....	1.06	.....	3.69	
Corydon	Chariton	1.41	.38	.....	.....	.....	.....	.12	.10	.....	.....	.....	.....	.....	.....	15	T	.11	.....	.08	.....	T	.....	.36	.....	.....	.....	.....	.....	.....	.47	.....	4.11
Creston	Missouri	.....	1.12	.....	.....	.....	.....	.96	.86	.....	.....	.....	.....	.....	.....	15	T	.11	.....	1.37	.....	.....	.32	.....	.....	.....	.....	.....	.....	.....	.77	.....	3.61
Cumberland	Nodaway	.....	T	.....	.....	.....	.....	T	.55	.....	.....	.....	.....	.....	.....	.44	.04	.12	.....	.21	.14	.04	.....	T	T	T	.....	.....	.....	.....	.....	.....	2.81
Earlham	Des Moines	.92	.....	.....	.....	.....	1.02	T	.....	.....	.....	.....	.....	.....	.....	T	.14	.....	.....	.44	.09	.....	.....	.....	.....	.....	.....	.....	.....	.84	.....	3.73	
Fairfield	Skunk	.99	.63	.....	.24	.01	.48	.....	.....	.....	.....	.....	.....	.....	.....	.01	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.15	.....	3.22	
Glenwood	Missouri	.....	1.11	.....	.....	.....	.....	2.90	.63	.....	.....	.....	.....	.....	.....	.06	.12	.12	.....	.15	.....	.30	T	.....	.....	.....	.....	.....	.....	.32	.55	.....		
Greenfield	Nodaway	1.11	.....	.....	.....	.....	.....	2.90	.63	.....	.....	.....	.....	.....	.....	.42	.....	.....	.....	.15	.09	.15	T	.....	.....	.....	.....	.....	.....	.73	.....	7.17	
Indianola	Des Moines	.16	.05	T	.....	.20	.....	T	.....	.....	.....	.....	.....	.....	.....	T	T	T	.....	.02	.65	.....	.....	.....	.....	.....	.....	.....	.....	.49	.....	2.99	
Kaokuk	Mississippi	1.54	.05	.....	T	.24	T	.....	.....	.....	.....	.....	.....	.....	.....	.01	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.16	.....	3.58	
Kenosauqua	Des Moines	.76	.48	.....	.....	.....	.....	.95	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.90
Knoxville	Des Moines	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.20	.20	.01	.....	.01	.22	.01	.....	.01	.....	.....	.....	.....	.....	.80	.....	4.02	
Lacona	Des Moines	.....	.02	.....	.....	.....	.....	.60	.....	.....	.....	.....	.....	.....	.....	.03	.....	T	.10	.17	.....	.13	.....	.94	.30	.....	.....	.....	.....	.....	.....	.....	4.02
Lamoni	Des Moines	.....	.68	.....	.....	.....	.....	.70	.97	.....	.....	.....	.....	.....	.....	.11	T	.10	.....	.30	T	.....	.....	.32	.....	.....	.....	.....	.....	.....	.47	.....	3.79
Lenox	Missouri	1.30	.10	.....	.....	.....	.....	.25	.84	.....	.....	.....	.....	.....	.....	.02	T	.05	.....	.02	.06	T	.....	.....	.....	.....	.....	.....	.....	.....	.84	.....	2.71
Mt. Ayr	Grand	.08	.10	T73	.49	T	T	.0606	.19	.1507	T71	2.92
Mt. Pleasant	Skunk	.44	.60	.....	.10	.....	.....	.42	.....	.....	.....	.....	.....	.....	.....	T	T	.06	.....	.01	.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.42
Murray	Grand	T	.09	.....	.....	.....	.....	.73	.30	.....	.....	.....	.....	.....	.....	.05	.43	.09	T	.....	.06	.....	.....	.....	.....	.....	.....	.....	.....	.52	.81	2.87	
Oakland	Nishnabotna	.....	T	.....	.....	.....	.....	.32	.....	.....	.....	.....	.....	.....	.....	T	.11	.....	T	.12	.24	.....	T	.....	.....	.....	.....	.....	.....	.....	.68	.....	2.80
Oskaloosa	Des Moines	.44	.84	.....	.05	.....	.....	.32	.....	.....	.....	.....	.....	.....	.....	T	.....	.11	.....	.05	.25	.44	.....	.....	.....	.....	.....	.....	.....	.....	1.20	.....	3.72
Ottumwa	Des Moines	1.30	.....	.....	.....	.....	.....	.48	.....	.....	.....	.....	.....	.....	.....	T	.....	.14	.....	T	.17	.01	.....	.....	.....	.....	.....	.....	.....	.55	.....	1.42	
Pella	Skunk	.....	T	.....	.....	.....	.....	.55	.....	.....	.....	.....	.....	.....	.....	T	.....	.14	.....	T	.25	.20	.....	.....	.....	.....	.....	.....	.....	.44	.....	2.56	
Sigourney	Skunk	T	1.07	.....	T	T	.....	.60	.....	.....	.....	.....	.....	.....	.....	T	T	T	.....	.04	.....	.20	.03	.....	.....	.....	.....	.....	.....	.....	.70	.....	2.89
Stockport	Skunk	.27	.54	.....	.....	.....	.....	1.11	.....	.....	.....	.....	.....	.....	.....	.34	.30	T	T	T	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.52	.....	2.60
Thurman	Missouri	T	.....	T	.....	.....	.....	.68	.....	.....	.....	.....	.....	.....	.....	.07	.....	.02	.08	.....	.04	.17	.....	.....	.....	.....	.....	.....	.....	.77	.....	2.55	
Washington	Skunk	.34	.60	.....	.....	.....	.....	.46	.....	.....	.....	.....	.....	.....	.....	.07	.....	.19	.....	.06	.10	.11	.....	.03	.05	.....	.....	.....	.....	.55	.....	1.94	
Winterset	Des Moines	.30	.....	.....	.....	.....	.....	.55	.....	.....	.....	.....	.....	.....	.....	T	.03	.03	.....	.04	.14	T	.....	.70	T	.....	.23	.34	.....	2.62			
Omaha, Neb.***	Missouri	1.09	.....	T	T	.....	.02	.....	.....	.....	.....	.....	.....	.....	.....	T	.....	.03	.....	.04	.14	T	.....	.70	T	.....	.23	.34	.....	2.62			

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.

Daily Maximum and Minimum Temperatures for the Month of June, 1920.

Stations	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	Mean
<i>Northern Division</i>																																
Algona	Maximum..	77	67	65	72	68	77	85	87	90	90	90	92	94	88	81	71	70	71	71	69	72	75	80	82	83	90	80	80	90	79.2	
	Minimum..	60	51	43	50	45	54	60	64	62	68	70	70	72	68	65	65	55	45	50	55	55	49	50	56	61	68	70	69	66	62	59.4
Alta	Maximum..	69	68	62	65	74	76	86	88	91	88	90	92	89	82	66	67	69	73	67	68	73	77	82	80	85	88	88	83	85	78.6	
	Minimum..	58	48	47	49	45	54	59	65	67	68	70	71	67	65	53	48	43	52	56	51	54	53	57	62	67	69	68	66	62	58.9	
Alton	Maximum..	67	69	64	65	75	78	88	92	92	93	93	93	84	82	70	65	68	72	68	68	74	80	80	82	89	94	88	83	86	79.7	
	Minimum..	60	47	48	52	45	55	64	66	65	68	70	70	67	68	65	55	47	48	50	55	50	53	50	60	62	69	69	67	65	60	59.1
Belmond	Maximum..	79	71	66	70	71	76	88	90	96	92	93	94	97	86	86	71	66	72	76	75	73	76	80	81	81	84	92	91	84	84	81.4
	Minimum..	53	53	45	53	41	53	59	63	62	70	71	72	71	67	63	55	46	47	49	52	53	53	49	56	63	67	69	69	68	65	58.7
Charles City	Maximum..	76	68	65	69	75	72	84	88	89	91	93	95	85*	86	70	67	72	74	74	73	72	74	74	80	84	84	92	92	81	84	79.8
	Minimum..	60	49	44	47	43	52	60	59	63	70	71	72	72	69	67	54	46	48	50	53	54	53	50	51	62	69	70	69	66	62	58.5
Decorah	Maximum..	77	72	68	69	77	76	84	88	86	90	91	93	94	82	85	80	70	73	68	72	74	74	80	84	86	91	91	84	84	80.4	
	Minimum..	62	56	48	52	46	47	59	53	63	68	70	70	68	67	58	46	44	48	53	50	54	46	48	58	64	70	72	68	68	58	57.9
Forest City	Maximum..	73	66	62	65	69	75	84	87	89	94	94	93	94	87	85	85	65	70	74	70	74	73	75	78	80	82	84	82	83	84	79.9
	Minimum..	60	51	47	47	49	58	69	69	55	65	64	65	71	65	52	43	47	52	54	51	51	62	67	67	71	66	62	60	58.5		
Inwood	Maximum..	70	72	62	66	73	80	89	92	91	91	93	86	86	81	76	70	74	71	68	75	80	78	82	89	92	87	83	87	80.2		
	Minimum..	60	42	47	50	42	56	56	66	63	68	63	67	66	66	58	47	48	51	51	48	51	51	46	60	62	69	68	66	63	59	57.9
Mason City	Maximum..	75	68	67	70	75	86	90	92	93	94	95	98	88	85	71	68	73	73	75	75	75	81	85	85	95	81	82	85	80.7		
	Minimum..	60	52	41	50	41	50	58	58	60	60	68	70	73	70	65	48	44	45	46	49	54	49	45	50	61	66	69	69	66	59	56.5
Milford (near)	Maximum..	73	66	62	65	68	76	80	85	90	90	92	93	84	80	67	61	62	69	70	66	68	74	76	81	83	90	90	85	80	77.2	
	Minimum..	61	49	51	50	46	44	56	69	63	67	66	69	70	69	67	55	50	52	54	56	52	55	53	58	64	67	71	72	65	62	59.7
New Hampton	Maximum..	75	71	66	69	70	75	76	89	87	90	90	93	89	86	71	67	72	73	75	74	75	75	77	76	76	79	84	85	85	80.0	
	Minimum..	62	54	44	52	44	55	64	65	60	68	70	73	70	65	48	44	45	46	49	54	49	45	50	52	50	52	60	66	67	60	58.3
Northwood	Maximum..	77	68	66	65	70	76	87	89	91	90	90	91	94	82	86	67	67	71	75	75	77	76	76	79	84	85	85	85	85	80.2	
	Minimum..	60	51	43	50	43	49	47	58	60	55	67	69	69	67	64	53	44	46	48	52	53	53	49	51	54	67	66	67	67	61	56.1
Pocahontas	Maximum..	77	75	61	71	72	79	88	88	92	91	92	95	96	89	70	67	72	79	76	75	80	82	85	86	91	91	85	85	81.9		
	Minimum..	61	50	44	51	44	54	60	64	64	66	69	70	72	64	62	55	45	46	47	58	51	55	48	49	61	68	68	67	65	59	58.1
Postville	Maximum..	70	67	64	67	67	72	78	83	81	86	86	87	89	84	80	62	68	72	68	69	72	70	75	79	84	86	87	83	83	76.8	
	Minimum..	60	55	44	52	45	49	57	57	61	70	68	69	72	65	66	57	45	47	51	54	54	50	50	57	66	69	71	67	60	57.9	
<i>Central Division</i>																																
Belle Plaine	Maximum..	86	73	69	75	73	78	86	90	90	93	96	96	97	91	92	86	79	78	77	75	75	79	80	85	87	83	94	96	85	87	84.3
	Minimum..	67	59	48	47	52	50	65	66	65	70	70	69	72	70	71	60	49	46	47	51	54	49	51	51	63	67	69	68	61	59.5	
Boone	Maximum..	81	79	64	72	76	80	85	89	91	92	91	93	95	93	90	78	69	73	75	74	73	76	83	86	82	89	92	85	87	82.8	
	Minimum..	63	54	49	52	43	54	62	67	67	68	72	70	72	72	71	57	49	50	53	55	52	53	54	57	62	68	69	67	60	60.5	
Carroll	Maximum..	82	72	69	71	72	79	85	91	90	91	92	94	92	88	76	72	74	75	72	73	75	80	81	82	86	91	89	81	87	81.6	
	Minimum..	62	52	47	50	45	54	57	62	67	68	70	69	71	70	67	55	49	47	51	55	51	52	51	54	59	67	70	68	60	59.0	
Davenport	Maximum..	82	72	69	74	73	78	83	89	90	90	92	91	93	92	91	80	67	72	75	75	78	78	80	84	86	89	91	82	87	82.3	
	Minimum..	64	57	52	53	53	62	68	67	72	72	73	75	69	72	72	73	58	51	52	55	58	58	55	58	60	71	73	67	66	62	62.3
Des Moines	Maximum..	81	72	65	74	73	78	82	88	90	91	92	95	91	90	73	71	73	76	75	78	70	73	77	81	84	82	83	81.8			
	Minimum..	64	58	53	55	50	55	62	70	70	70	73	73	76	75	71	58	54	56	56	59	54	60	64	70	71	70	69	65	63.2		
Dubuque	Maximum..	78	70	68	71	72	76	82	88	88	91	92	95	90	89	79	75	72	75	76	70	75	75	80	84	87	91	84	80	80.9		
	Minimum..	61	55	50	56	52	52	60	62	67	72	72	72	75	66	70	57	50	51	52	58	51	54	55	60	69	70	71	67	64	60.9	
Elmwood	Maximum..	81	73	65	74	76	81	87	91</td																							

HAIL STORMS DURING APRIL, 1920.

Date	County	Township	Direction from	Area Covered	Character	Size of Stones	Damage	Width of Path
1	Iowa	Pilot		1 sq. mi.	Light	Small	None	1 mile
1	Van Buren	Bonaparte			Light			
1	Madison	Madison			Light			
1	Wright	Pleasant			Light			
1	Floyd	Rock Grove			Light			
1	Floyd	Saint Charles			Light			
1	Scott	Davenport			Light			
3	Mahaska	Adams	N. W.	30 sq. mi.	Light	$\frac{3}{8}$ inch	None	Wide
11	Floyd	Rock Grove			Light			
15	Henry	Center			Light			
17	Fremont	Scott			Light			
17	Boone	Des Moines			Light			
18	Taylor	Bedford			Light			
18	Taylor	Platte			Light			
19	Wayne	Corydon		1 sq. mi.	Heavy	$\frac{1}{4}$ to $\frac{1}{2}$ inch	None	1 mile
19	Van Buren	Jackson	E		Light	Small	None	
19	Mahaska	Lincoln			Light			
19	Marion	Lake Prairie			Light			
19	Van Buren	Union			Light			
20	Louisa	Columbus City			Light			
21	Marion	Lake Prairie			Light			
30	Palo Alto	West Bend			Light			

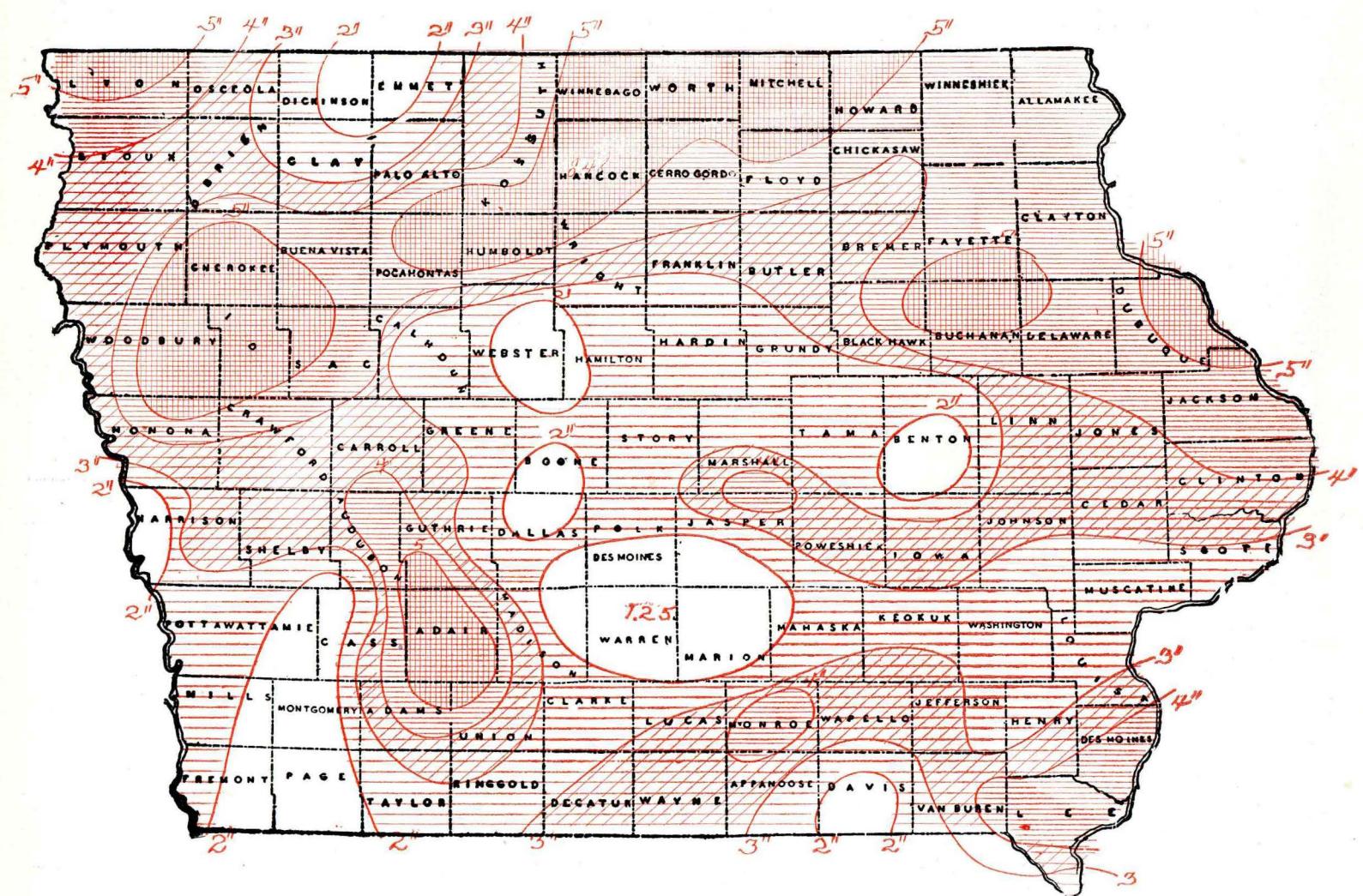
HAIL STORMS DURING MAY, 1920.

2	Fremont	Scott			Light	Small		
11	Sioux	Holland			Light			
11	Wright	Pleasant			Light			
12	Taylor	Bedford			Light			
18	Taylor	Bedford			Light			
22	Harrison	Lincoln	S. W.	10 sq. mi.	Light	$\frac{3}{4}$ inch	Considerable	2 miles
22	Polk	Jefferson	S. W.	Small	Light	Small	Light	Narrow
22	Jasper	Poweshiek	N. W.	3 sq. mi.	Heavy	$\frac{1}{2}$ inch	None	$\frac{1}{2}$ mile
22	Jones	Fairview	W.	Small	Light	Small	None	Narrow
22	Jasper	Independence			Light			
22	Cerro Gordo	Mason			Light			
22	Sioux	West Branch			Light			
26	Plymouth	America			Light			

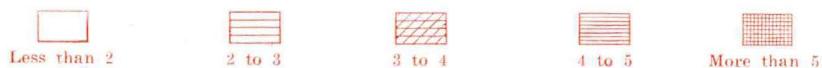
HAIL STORMS DURING JUNE, 1920.

1	Van Buren	Jackson	S.		Light	Small	Slight	
1	Wayne	Corydon			Light			
1	Sioux	West Branch			Light			
1	Cherokee	Willow			Light			
1	Dallas	Walnut			Light			
1	Scott	Davenport			Light			
6	Clarke	Ward	N. W.	4 sq. mi.	Light	$\frac{1}{2}$ to 1 inch	None	2 miles
6	Franklin	Oscceola	S. W.	30 sq. mi.	Light	$\frac{3}{8}$ inch	None	5 miles
6	Franklin	Grant	S. W.	7 sq. mi.	Light	$\frac{1}{4}$ to $\frac{1}{2}$ inch	None	2 to 3 miles
7	Guthrie	Stuart	S. W.	4 sq. mi.	Heavy	Large	\$9000	2 miles
7	Guthrie	Valley	N. W.	Large	Light	$\frac{1}{4}$ to $\frac{1}{2}$ inch	Slight	Narrow
7	Guthrie	Beaver (south)	E.	17 sq. mi.	Moderate	Large	Slight	4 to 5 miles
7	Guthrie	Beaver (Central)	N. E.		Light	Small	None	Wide
7	Audubon	Greeley	N. W.	20 sq. mi.	Heavy	$\frac{1}{4}$ to $\frac{1}{2}$ inch	Considerable	3 miles
7	Tama	Clark	W.	9 sq. mi.	Moderate	Large	Slight	1 mile
7	Tama	Onida	W.	9 sq. mi.	Light	Large	None	1 mile
7	Union	Jones	N. E.	4 sq. mi.	Light	$\frac{3}{8}$ inch	Slight	2 miles
7	Union	Highland	N. W.	6 sq. mi.	Light	$\frac{1}{2}$ inch	Considerable	Narrow
7	Union	Douglas			Light			
7	Harrison	Washington	S. W.	5 sq. mi.	Moderate	Small	None	2 miles
7	Adair	Lincoln	N. E.	1 sq. mi.	Heavy	$\frac{1}{2}$ inch	Considerable	Narrow
7	Crawford	Milford	N. W.		Moderate	1 to 2 inch	None	
7	Carroll	Washington	S. W.	28 sq. mi.	Moderate	$\frac{1}{2}$ inch	Considerable	5 miles
7	Buena Vista	Nokomis			Light			
7	Sioux	Nassau			Light			
7	Buchanan	Washington			Light			
8	Decatur	Fayette	N.	36 sq. mi.	Light	$\frac{1}{4}$ inch	None	Wide
8	Clarke	Doyle	W.		Light	Small	None	
8	Adams	Jasper			Moderate		Slight	
8	Crawford	Dennison	N. W.	6 sq. mi.	Light	Small	None	2 miles
8	Ida	Corwin	N. W.	6 sq. mi.	Moderate	$\frac{1}{4}$ to $\frac{1}{2}$ inch	None	
8	Audubon	Leroy	W.	12 sq. mi.	Heavy	Large	Slight	2 miles
8	Clayton	Highland	N. W.	10 sq. mi.	Light	$\frac{3}{8}$ inch	None	3 miles
9	Fayette	Bethel	N. W.	12 sq. mi.	Light	Small	Considerable	2 miles
9	Fayette	Union	W.		Light	$\frac{1}{4}$ inch	Considerable	
9	Fayette	Fremont	N. W.		Heavy	Large	Considerable	
9	Buchanan	Washington			Light			
10	Chickasaw	Stapelton	N. W.	10 sq. mi.	Light	Small	None	Narrow
10	Lyon	Lyon	W.	32 sq. mi.	Moderate	Large	Considerable	5 to 6 miles
10	Lyon	Richland			Light			
15	Mahaska	White Oak	N. W.	4 sq. mi.	Moderate	$\frac{1}{2}$ to 1 inch	Considerable	2 miles
15	Mahaska	Lincoln	N. W.	2 sq. mi.	Light	Small	None	1 mile
15	Obrien	Franklin			Light			
16	Grundy	Melrose	S. W.	32 sq. mi.	Light	Small	None	Wide
21	Polk	Allen	W.	16 sq. mi.	Light	3-16 inch	None	2 miles
21	Jefferson	Fairfield			Light	Small		
21	Keokuk	Sigourney			Light	Small		
22	Mahaska	Lincoln			Light	Small		
22	Marion	Lake Prairie			Light			
22	Lee	Jackson			Light			
26	Crawford	Dennison			Light	Small	None	
29	Wright	North Line of County			Light			
30	Boone	Des Moines			Light			

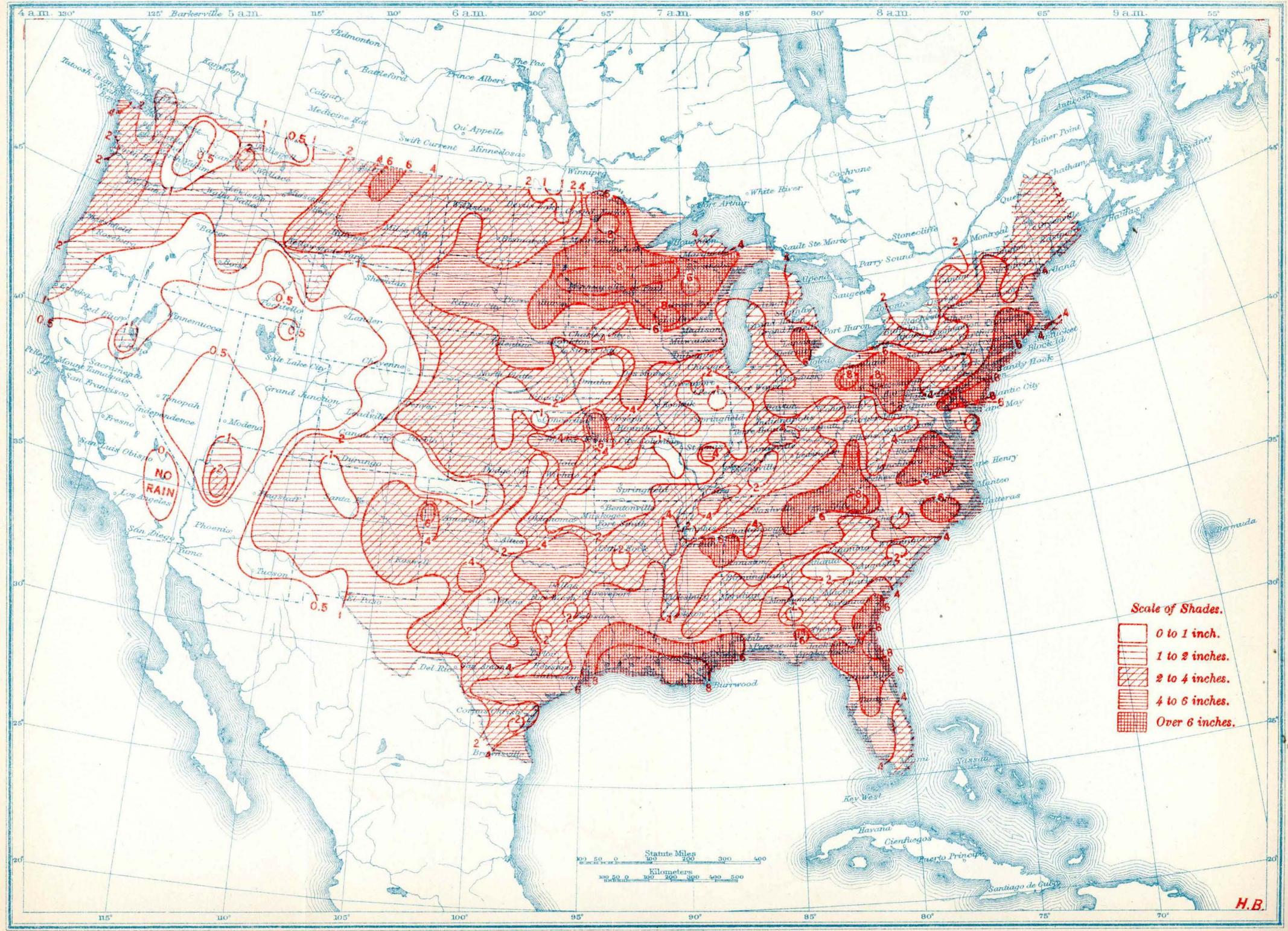
TOTAL PRECIPITATION, JUNE, 1920.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, June, 1920.



U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

CHARLES F. MARVIN, CHIEF

CLIMATOLOGICAL DATA

IAWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

JULY, 1920

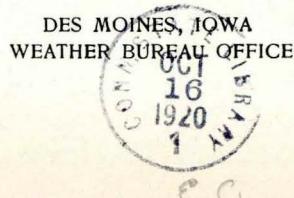
BY

CHARLES D. REED

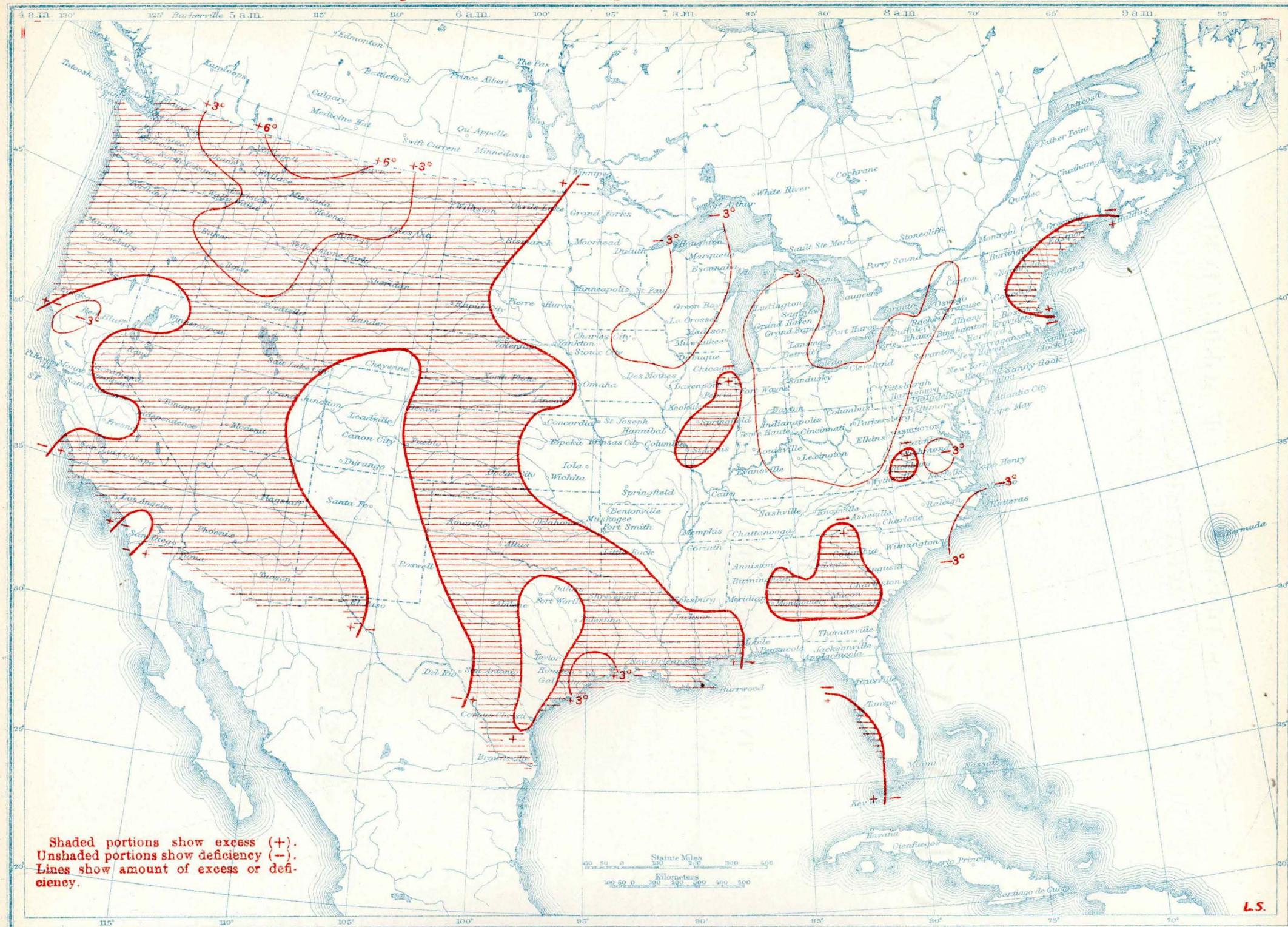
METEOROLOGIST



PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY



Departure of the Mean Temperature from the Normal, July, 1920.



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. XXXI Des Moines, Iowa, July, 1920. No. 7

GENERAL SUMMARY.

The temperature averaged below normal, the deficiency for each division being quite uniform, though a few stations in the western portion of the State showed a slight excess. The greatest deficiencies were confined almost entirely to the northeast section. The month was more pleasant than the average July, there being no protracted periods of hot, sultry weather and during the greater part of the month the temperature was below normal. Temperatures of 100°, or higher, were reported from but two stations.

The precipitation for the State as a whole showed a slight excess but the distribution was uneven, varying from slightly more than an inch to nearly 7.50 inches. The distribution as to time was also uneven, considerably more than half occurring during the first week and more than 80 per cent occurring during the first two weeks. During the last of the month only scattered thunderstorms occurred and rain was needed at the close of the month over the State generally. In large areas bordering the Mississippi and Missouri rivers the drouth was becoming serious.

During the afternoon of the 1st, from about 5:45 till 6:10 p. m. a tornado occurred in the southern portion of Adams County. The storm moved first from the northwest to southeast then turned and moved to the northeast, the total path being about 20 miles. The width of the storm was narrow and at points the funnel did not reach the earth, but where it was in contact with the earth everything in its way was destroyed, the loss to crops and buildings amounted to about \$100,000. There was no loss of lives but 4 persons were injured and the occupants of one residence had a remarkable escape from being burned to death in a wrecked house that caught fire and burned up.

Hail storms were unusually numerous, destructive and widely distributed over the State. The worst storm reported was in the northwest portion of Scott county on the 9th, and the damage there was estimated at about \$100,000. The principal damage was in a strip about 12 miles long, varying from about one and three-fourths to about 9 miles wide, extending from 3 miles southeast of New Liberty to about 3 miles south of Maysville. The path of greatest damage was about 6 miles long and about one and one-half miles wide. The stones varied from about 0.2 inch to 0.7 inch in diameter but some were said to be 1.5 inches. The damage from hail in other portions of the State was large. The storms reported shows losses to crops approximating \$1,000,000, but it is probable that the loss was considerably more than that amount. A table showing the hail storms during July is published elsewhere in this report.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.00 inches. The highest pressure recorded was 30.32 inches at Dubuque on the 26th, and the lowest was 29.64 at Des Moines on the 6th. The monthly range was 0.68 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 97 stations, was 72.3°, or 1.8°, 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, 72.3°, or 2.0° lower than the normal; Southern, 73.5°, or 1.7° lower than the normal. The highest monthly mean was 76.4°, at Omaha, Neb., and the lowest was 67.6°, at Postville. The highest temperature reported was 102°, at Clarinda, on the 23d, and the lowest was 45°, at Earlham, on the 27th. The temperature range for the State was 57°.

HUMIDITY

The average relative humidity for the State at 7 a. m. was 78 per cent, and at 7 p. m. it was 55 per cent. The mean for the State was 66 per cent, or 2 per cent lower than the normal. The highest monthly mean was 70 per cent, at Charles City and the lowest was 64 per cent at Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 104 stations, was 4.22 inches, or 0.26 inch more than the normal. By divisions the averages were as follows: Northern, 4.46 inches, or 0.58 inch more than the normal; Central, 3.59 inches, or 0.39 inch less than the normal; Southern, 4.61 inches, or 0.59 inch more than the normal. The greatest amount, 7.49 inches, occurred at Stockport, and the least, 1.11 inches at Dubuque. The greatest amount in 24 consecutive hours was 3.32 inches, at Albia, on the 13th.

WIND.

The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau Station was 57 miles per hour, from the west, at Sioux City, on the 4th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 73, or about 1 per cent below the normal. The per cent of the possible amount at the regular Weather Bureau Stations was as follows: Charles City, 69; Davenport, 83; Des Moines, 74; Dubuque, 72; Keokuk, 80; Sioux City, 64; Omaha, Neb., 77.

COMPARATIVE DATA FOR THE STATE—JULY.

YEAR	Temperature				Precipitation				Number of Days.				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipitation 0.01 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	5.33	+1.33	12.86	1.71	.....	9	16	10	5
1893.....	75.0	+0.9	102	47	5.33	-0.63	8.84	1.49	.....	7	19	10	2
1894.....	76.4	+2.3	109	39	6.63	-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	3
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	8
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.....	71.6	+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	2
1914.....	76.6	+2.5	109	43	2.27	-1.69	6.50	0.44	.....	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.....	71.3	-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
1919.....	77.4	+3.3	104	41	2.86	-1.19	7.82	0.39	.....	6	22	8	1
1920.....	72.3	-1.8	102	45	4.22	+0.26	7.49	1.11	.....	9	19	9	3

T. indicates an amount too small to measure, or less than .065 inch rainfall and less than .05 inch snowfall.

CLIMATOLOGICAL DATA FOR JULY, 1920.

STATIONS	COUNTIES	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit				Precipitation in inches.			No. of Days	OBSERVERS							
				Mean.	Departure from Normal.	Highest.	Lowest.	Date.	Greatest daily range.	Total.									
<i>Northern Division</i>																			
Algona	Kossuth	1213	47	70.2	-3.1	89	13	54	8†	30	6.89	+3.87	1.54	0	9	27	1	3	se.
Allison	Butler	1045	8	70.6	.....	94	29	51	26†	33	2.89	.....	1.10	0	9	19	7	5	nw.
Alta	Buena Vista	1513	29	71.2	-1.6	91	22	52	8	28	5.87	+1.12	1.35	0	12	18	11	2	s.
Alton	Sioux	1305	15	72.6	-0.4	98	22	52	14	35	4.29	.....	2.38	0	8	16	11	4	se.
Belmond	Wright	1205	10	71.7	.....	93	29	51	27	35	5.71	.....	1.59	0	12	15	14	2	sw.
Britt	Hancock	1236	23	72.0	-0.7	91p	22†	52p	26	30p	5.91	+1.92	1.23	0	14	.....	.....	.....	s.
Charles City	Floyd	1015	29	70.0	-3.5	91	22	52	26	30	2.92	-0.66	0.90	0	11	12	16	3	nw.
Decorah	Winneshiek	875	27	68.5	-4.9	88	23†	48	16†	34	2.87	-1.08	1.02	0	10	25	4	2	sw.
Elkader	Clayton	751	41	72.0	-2.4	95	29	50	27	38	3.03	-0.15	0.68	0	8	16	15	0	s.
Estherville	Emmet	1298	25	72.1	+1.4	90	22	52	14	26	6.37	+1.84	1.61	0	14	20	8	3	s.
Fayette ††	Fayette	1003	30	70.0	-2.1	91	29	49	26†	34	4.13	+0.17	1.95	0	10	22	7	2	sw.
Forest City	Winnebago	1226	26	70.2	-2.4	92	22	52	8†	30	5.09	+1.45	0.90	0	11	12	17	2	ne.
Humboldt	Humboldt	1095	32	72.2	-1.0	93	22†	51	27	35	6.89	+3.23	1.03	0	11	14	15	2	s.
Inwood	Lyon	1474	16	72.3	-0.6	100	22	49	14	35	2.75	-0.40	1.06	0	10	24	5	2	s.
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	.....	1.35	-3.04	0.38	0	6	.....	.....	.....	.....
Des Moines	Plymouth	1224	24	73.2	+0.5	98	22	51	28	40	2.84	-1.17	0.71	0	9	19	9	3	se.
Mason City	Cerro Gordo	1148	23	71.4	-1.5	95	22	49	26	33	5.24	+1.62	1.60	0	12	22	5	4	nw.
Milford (near) ††	Dickinson	1430	...	70.0	.....	88	22	52	8	29	3.96	.....	1.37	0	11	10	19	2	sw.
New Hampton	Chickasaw	1169	23	70.3	-1.9	91	29	52	27	32	3.59	-0.16	0.98	0	10	21	7	3	nw.
Nora Springs	Floyd	1064	8	71.2	.....	93	22†	51	26†	36	5.15	.....	1.52	0	13	17	12	2	s.
Northwood	Worth	1222	24	70.6	-1.3	90e	22	51e	26	31e	4.60	+0.61	1.50	0	10	16	10	5	sw.
Pocahontas	Pocahontas	1248	16	71.6	-0.9	92	20†	52	8†	36	5.36	+1.26	2.00	0	13	17	10	4	s.
Postville	Clayton	1180	21	67.6	-4.1	87	29	50	19	28	1.77	-2.75	0.46	0	8	19	9	3	sw.
Rock Rapids	Lyon	1358	21	71.6	-2.2	97	22	50	14†	41	4.60	+1.52	1.88	0	9	25	3	3	nw.
Sanborn	O'Brien	1583	6	71.3	.....	95	22	50	8†	36	4.28	.....	1.35	0	10	21	7	3	se.
Sioux Center	Sioux	1426	21	71.9	-0.4	97	22	51	8†	36	2.31	-2.08	1.16	0	8	.....	.....	.....	s.
Spencer	Clay	1319	6	72.0	.....	96	22	50	27	35	5.55	.....	2.75	0	11	18	10	3	sw.
Storm Lake	Buena Vista	1440	31	72.5	-0.4	92	22	53	8	33	5.92	+2.03	2.24	0	14	24	6	1	s.
Washta	Cherokee	1157	22	71.4	-1.3	94	22	50	18†	38	3.97	-0.28	1.23	0	11	21	6	4	s.
Waverly	Bremer	948	24	70.4	-2.6	93	29	49	28	37	5.14	+1.20	1.79	0	10	17	11	3	se.
West Bend	Palo Alto	1197	27	7f.8	-1.2	92	21†	50	8	32	6.09	+2.53	1.85	0	10	21	8	2	s.
Means and extremes...				71.2	-1.5	100	22	48	6†	41	4.46	+0.58	2.75	0	10	19	9	3	s.
<i>Central Division</i>																			
Ames	Story	926	44	.....	.....	.....	.....	.....	.....	.....	3.78	-0.56	1.10	0	9	12	9	10	sw.
Audubon ††	Audubon	1301	26	72.2	-1.1	94	22†	52	8†	32	2.65	-1.08	1.14	0	9	19	9	3	sw.
Baxter	Jasper	998	20	72.0	-1.6	94	29†	53	8†	31	3.65	-0.41	1.27	0	10	14	12	5	sw.
Belle Plaine	Benton	886	30	71.8	-1.6	93	21†	49	27	37	3.50	-0.48	1.51	0	8	18	11	2	s.
Boone	Boone	1134	15	73.0	-1.3	95	29	49	27	35	3.56	-0.38	1.06	0	11	18	12	1	s.
Carroll	Carroll	1265	30	72.4	-0.4	93	30	51	27	32	3.89	+0.28	0.82	0	12	22	7	2	sw.
Cedar Rapids	Linn	733	38	74.4	-1.2	96	21	54	26†	33	1.90	-1.79	0.84	0	7	18	4	9	w.
Clinton	Clinton	593	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Davenport	Scott	580	49	73.4	-2.0	96	23	54	5	27	2.19	-1.36	0.95	0	7	13	14	4	sw.
Delaware	Delaware	1083	29	68.8	-4.2	91	23	50	26	31	2.38	-1.31	0.75	0	8	16	13	2	s.
Denison	Crawford	1180	26	72.4	-1.1	93	22	50	28	35	3.20	-0.46	1.52	0	11	24	6	1	n.
Des Moines	Polk	861	40	73.8	-1.7	93	23	55	27	28	5.66	+1.80	1.38	0	12	17	9	5	sw.
Dubuque	Dubuque	639	47	71.2	-3.5	92	23	52	5	28	1.11	-3.19	0.91	0	8	14	11	6	nw.
Fort Dodge	Webster	1126	20	72.9	-0.7	95	22†	52	27	33	5.81	+2.13	2.30	0	18	22	1	8	e.
Grinnell	Poweshiek	1031	26	71.1a	-3.4	90a	21†	50a	11	30a	5.24	+1.13	2.63	0	8	.....	.....	.....	se.
Grundy Center	Grundy	976	29	71.1	-3.2	92	29	46	10	36	4.27	-0.33	0.94	0	9	20	8	3	n.
Guthrie Center	Guthrie	1077	25	72.6	-2.2	94	22	48	27	36	4.29	+0.01	1.65	0	8	21	8	2	sw.
Harlan	Shelby	1182	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Independence	Buchanan	921	56	70.8	-1.9	89	23†	51	19†	29	2.38	-2.04	0.64	0	9	20	6	5	sw.
Iowa City	Johnson	733	60	71.6	-3.1	94	23	51	27	35	2.79	-1.49	0.76	0	10	16	10	5	nw.
Iowa Falls	Hardin	1107	27	70.2	-1.7	90	29	48	27	33	3.98	-0.21	0.81	0	13	19	8	4	sw.
Jefferson ††	Greene	1052	21	72.4a	-1.6	93a	29	50a	27	39a	4.91	.....	1.18	0	7	.....	.....	.....	.....
LeClaire	Scott	576	20	.....	.....	.....	.....	.....	.....	.....	3.36	-0.43	1.25	0	5	22	11	3	se.
Little Sioux	Harrison	1040	15	73.6	-1.6	97	21†	49	8	38	1.39	.....	0.47	0	9	17	11	3	se.
Logan	Harrison	928	53	73.7	-1.0	94	22	52	27	32	2.34	-2.30	1.04	0	7	23	5	3	sw.
Maquoketa	Jackson	688	19	71.2	-2.0	91	23	50	5†	34	3.14	-1.13	1.85	0	5	20	7	4	sw.
Marshalltown	Marshall	947	28	72.4	-1.6	92	23	53	27	30	3.96	-0.21	0.90	0	11	14	17	0	sw.
Monroe	Jasper	922	8	75.2	.....	94	29†	55	8	29	5.85	.....	1.54	0	11	23	5	3	sw.
Muscatine	Muscatine	554	60	.....	.....	.....	.....	.....	.....	.....	2.19	-1.64	0.94	0	7	.....	.....	.....	.....
Olin	Jones	760	21	72.1	-1.6	94	23	52	26	35	2.38	-1.14	1.16	0	4	20	10	1	sw.
Onawa	Monona	1051	20	73.6	.....	97	22	51	8	36	3.34	-0.94	0.74	0	9	16	12	3	s.
Perry	Dallas	9																	

CLIMATOLOGICAL DATA FOR JULY, 1920.—Continued

STATIONS	COUNTIES	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit				Precipitation in inches				No. 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, .01 inch or more.	Partly cloudy	Cloudy	
Southern Division																		
Afton.....	Union.....	1212	26	72.3	-3.2	97	22	48	27	37	5.46	+1.41	1.46	0	9 22	6	3 sw.	S. R. Brown
Albia.....	Monroe.....	959	22	73.0	-1.7	95	23	51	27	34	7.25	-3.19	3.32	0	9 19	6	6 sw.	F. H. Holmes
Atlantic.....	Cass.....	1164	29	73.4	-1.3	96	21	49	27	34	3.55	-0.18	1.20	0	10 24	5	2 sw.	Joseph N. Reynolds
Bedford.....	Taylor.....	.....	20	73.6	-1.1	99	23	49	10†	35	1.62	-2.78	0.73	0	8 22	6	3 se.	E. E. Healy
Bloomfield.....	Davis.....	881	13	73.0	.....	94	2†	51	19	33	3.13	-1.43	1.30	0	10 19	6	6 sw.	Frank Battin
Bonaparte.....	Van Buren.....	565	29	73.0	-2.1	94	23	54	26†	29	6.73	+3.09	2.45	0	6 24	6	1 w.	Bruce R. Vale
Burlington.....	Des Moines.....	544	24	74.6	-1.4	96	23	56	26	30	2.99	-0.55	1.00	0	9 25	3	3 ne.	Mrs. Edna M. Donnelly
Centerville.....	Appanoose.....	1013	15	73.6	.....	95	23	51	27	35	5.92	.....	1.37	0	12 13	12	6 se.	Leo J. Allen
Chariton.....	Lucas.....	1042	25	73.2	-0.6	94	23	53	27	30	5.17	+0.71	1.65	0	6 16	13	2 sw.	C. C. Burr
Clarinda.....	Page.....	1009	30	75.2	0.0	102	23	50	27	36	3.65	-0.83	0.80	0	10 19	9	3 s.	A. S. Van Sandt
Columbus Jct.....	Louisa.....	595	19	73.6	-1.4	96	23	55	26	26	2.27	-1.64	0.73	0	9 27	3	1 nw.	J. B. Johnston
Corning.....	Adams.....	1117	28	73.0	-1.4	96	23	46	27	36	4.61	+0.60	1.96	0	6 24	4	3 ne.	Jerome Smith
Corydon.....	Wayne.....	1101	27	73.6	-1.9	97	23	51	27	32	5.92	+2.15	1.75	0	11 19	9	3 nw.	May C. Miller
Creston.....	Union.....	1312	15	73.2	-0.6	91	23	55	27	23	5.22	.....	1.24	0	12 7	23	1 sw.	Dr. H. M. Stanley
Cumberland.....	Cass.....	.....	21	.....	.....	.....	.....	.....	.....	3.82	-0.37	1.55	0	7 22	8	1 sw.	J. H. Report	
Earlham.....	Madison.....	1126	18	71.6	-1.7	93	21	45	27	36	3.90	-0.13	0.98	0	6 26	1	4 sw.	Geo. Phillips
Fairfield.....	Jefferson.....	789	36	72.0	-4.0	93	23	52	27	33	4.52	+0.66	1.69	0	12 16	6	9 nw.	Prof. R. M. McKenzie
Glenwood.....	Mills.....	1100	22	75.2	.....	95	21	52	27	35	5.75	.....	2.80	0	8 22	7	2 ne.	Dr. Geo. Mogridge
Greenfield.....	Adair.....	.....	28	.....	.....	.....	.....	.....	.....	2.89	-1.19	0.91	0	8 23	6	2 se.	J. C. Patterson	
Indianola.....	Warren.....	969	29	73.9	-1.2	93	21	56a	10	28a	7.46	+3.72	2.06	0	8 18	9	4 s.	Prof. J. L. Tilton
Keokuk.....	Lee.....	614	49	75.3	-1.7	97	23	57	7	28	3.84	-0.19	1.26	0	8 9	17	5 sw.	U. S. Weather Bureau
Keosauqua.....	Van Buren.....	644	28	73.3	-2.4	96	23	49	27	37	4.92	+0.92	1.20	0	10 22	3	6 se.	J. H. Landes
Knoxville.....	Marion.....	920	25	73.2	-2.5	95	23	49	27	35	7.47	+3.46	1.53	0	12 9	21	1 se.	W. J. Casey
Lacona.....	Warren.....	.....	21	.....	.....	.....	.....	.....	.....	6.12	+2.52	1.64	0	11 7	16	8	J. B. Alter	
Lamoni.....	Decatur.....	1100	13	73.8	-2.3	99	23	53	10	35	3.67	-0.29	1.79	0	9 20	9	2 s.	E. D. Moore
Lenox.....	Taylor.....	1250	25	74.6	-0.3	96	23	54	8†	32	4.32	-0.04	1.85	0	6 22	6	3 s.	J. L. Hurley
Mt. Ayr.....	Ringgold.....	1236	27	73.2	-2.8	97	23	54	8†	32	4.07	-0.60	1.90	0	9 21	6	4 sw.	Alex Maxwell
Mt. Pleasant.....	Henry.....	729	39	73.6	-2.2	96	23	52	12	37	6.86	+3.44	2.86	0	8 11	17	3 sw.	John H. Jericho
Murray.....	Clarke.....	1216	29	73.8	-1.2	94	21†	53	27	31	3.96	-0.20	1.33	0	9 17	10	4 s.	M. T. Ashley
Oakland.....	Pottawattamie.....	1105	1	73.8b	.....	95	21	50c	27	35c	4.23	.....	1.63	0	8 23	4	4 s.	M. E. Gray
Oskaloosa.....	Mahaska.....	825	44	72.9	-1.7	94	23	53	27	30	4.51	+0.90	1.51	0	10 12	11	8 sw.	Roy R. Robinson
Ottumwa |||	Wapello.....	819	25	72.9	.....	93	30	52	27	34	5.29	+1.86	1.14	0	9 19	1	11 w.	Henry E. Eilers
Pella.....	Marion.....	877	27	71.6	-3.6	94	23	49	27	35	4.19	+0.56	1.13	0	10 24	3	4 nw.	J. H. Ver Steeg
Sigourney.....	Keokuk.....	877	24	72.1	-3.5	94	23	51	27	33	3.12	-0.81	1.09	0	8 18	6	7 ne.	W. E. Utterback
Stockport.....	Van Buren.....	754	18	72.1	-2.9	94	23	52	27†	35	7.49	+3.09	2.82	0	10 20	6	5 ne.	C. L. Beswick
Thurman.....	Fremont.....	.....	23	75.8	-0.6	99	21	49	27	36	3.54	-1.50	1.23	0	6 8	21	2 sw.	C. R. Paul
Washington.....	Washington.....	769	38	72.4	-2.3	95	23	54	26	28	2.41	-0.98	0.95	0	11 14	12	5 w.	Wm. A. Cook
Winterset.....	Madison.....	1129	29	74.1	-1.7	95	23	53	10†	29	3.95	-0.72	1.25	0	7 26	3	2 sw.	H. S. Ely
Omaha, Nebr.....	.....	1040	49	76.4	-0.1	98	21	56	8	27	3.91	-0.42	1.17	0	9 14	14	3 s.	U. S. Weather Bureau
Means and extremes .....	.....	.....	.....	73.5	-1.7	102	23	45	27	37	4.61	+0.59	3.32	0	9 18	9	4 sw.	.....
State Means and Extremes .....	.....	.....	.....	72.3	-1.8	102	23	45	27	41	4.22	+0.26	3.32	0	9 19	9	3 sw.	.....

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

MISCELLANEOUS PHENOMENA

Hail: 1st, 2d, 3d, 4th, 7th, 8th, 9th, 12th, 13th, 14th, 15th, 16th, 17th, 20th, 22d, 23d.

Halos: (Lunar or Solar) 3d, 4th, 12th, 24th, 25th, 29th.

Rainbows: 5th, 7th.

Thunderstorms: All days except 11th, 24th, 26th, 27th, 28th.

RIVERS

Moderately high stages prevailed in the principal rivers, with slight fluctuations during the first half of the month, after which generally falling stages prevailed with the lowest stage on the last day of the month. Rather high stages occurred in the interior rivers during the first half of the month and flood stages occurred at Ottumwa on the 14th, 15th and 16th.

*Davenport, §Charles City, *Des Moines, ||Omaha. §Local mean time.
†And other dates.

DAILY PRECIPITATION FOR JULY, 1920.

July, 1920.

IN CO-OPERATION WITH IOWA WEATHER AND CROP SERVICE.

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DAILY PRECIPITATION FOR JULY, 1920.—Continued

Stations.	Watersheds.	DAY OF MONTH																														
		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	Total
<i>Southern Division</i>																																
Afton.....	Grand.....	.21	1.46	1.10	.04	.5071	1.2311	5.46
Albia || |	Des Moines.....	.06	.92	....	T	1.02	....	.51	....	.24	....	.86	3.32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	177.25
Atlantic || |	Nishnabotna.....	.50	.45	....	.40	.11	.12	....	....	....	1.20	.41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.063.55
Bedford.....	Missouri.....	.19	.07	....	.73	.04	....	....	....	.03	....	.05	T	T	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.161.62
Bloomfield.....	Mississippi.....	.11	.01	....	1.30	....	.90	....	.22	....	....	.01	.01	.01	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.453.13
Bonaparte.....	Des Moines.....	....	1.40	....	.34	1.30	....	.49	T	....	T	2.45	.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.673
Burlington || |	Mississippi.....	....	.08	....	.12	1.00	.05	.25	....	.41	....	.11	.87	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.299
Centerville.....	Chariton.....	....	.21	....	1.05	.85	.05	.21	.48	....	.23	1.37	1.15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.085.92	
Chariton.....	Chariton.....	....	....	....	1.62	....	....	....	....	....	.42	.33	1.65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.655.17
Clarinda || |	Nodaway.....47	.46	.8050	.39	.01	T	T	.36253.65
Columbus Jet.....	Iowa.....	....	.30	....	....	.28	.73	T	.08	.10	....	T	.40	....	....	.68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.102.27
Corning.....	Nodaway.....	....	.42	....	....	1.96	.10	....	....	....	....	1.84	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.114.61
Corydon.....	Chariton.....	....	.24	.77	....	.96	.08	T	T	.06	....	.45	1.37	1.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.5.92
Creston || |	Missouri.....	....	.21	.74	....	.08	1.24	.01	....	.88	....	.69	.31	.40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.315.22
Cumberland.....	Nodaway.....	....	.44	.38	....	.96	....	....	....	....	....	.55	.09	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.053.82
Earlham.....	Des Moines.....	....	.98	....	....	.45	.98	T	....	.39	....	.92	....	.18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	T3.90
Fairfield.....	Skunk.....	....	.12	.18	....	1.69	.16	.13	.03	.10	.01	....	.03	1.31	.70	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	T4.52
Glenwood.....	Missouri.....	....	.90	....	.33	....	.22	....	....	....	....	2.80	....	.10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.3535.75	
Greenfield.....	Nodaway.....	....	.20	.47	....	.31	.19	....	.25	....	....	.91	....	.44	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.289
Indianola.....	Des Moines.....	1.10	....	....	2.06	.10	.70	T	....	....	.60	....	1.60	....	T	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.057.46
Keokuk ***	Mississippi.....	....	.43	.07	....	1.26	T	.60	....	....	....	.75	.47	....	T	T	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.233.84
Keosauqua.....	Des Moines.....	....	.64	....	.38	.71	.66	.15	T	....	....	.07	1.00	1.20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.054.92	
Knoxville.....	Des Moines.....	....	.45	.35	....	1.13	1.53	.75	....	1.39	....	.20	....	.23	1.04	....	.10	....	....	....	....	....	....	....	....	....	....	....	....	.857.47	
Lacona.....	Des Moines.....	....	.25	1.60	.40	....	1.64	.16	....	.02	.02	....	.38	....	.12	1.35	....	....	....	....	....	....	....	....	....	....	....	....	....	.186.12	
Lamoni || |	Grand.....	....	.06	.41	....	....	.20	1.79	....	....	....	.77	....	.22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.053.67
Lenox.....	Missouri.....	....	.19	....	....	1.85	T	....	....	.35	....	1.67	....	....	T	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.094.32
Mt. Ayr.....	Grand.....	....	.30	....	....	1.90	.02	....	.04	T	....	1.42	....	.20	....	....	T	....	....	....	....	....	....	....	....	....	....	....	....	....	.054.07
Mt. Pleasant.....	Skunk.....	....	.12	....	....	.50	1.72	....	.67	....	....	.07	2.86	.85	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.6.86
Murray.....	Grand.....	1.27	1.33	.03	T1655	T	.43	T	.06	T12	.013.96
Oakland.....	Nishnabotna.....	....	1.02	....	....	.47	.13	T	....	....	....	1.63	....	.42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.124.23
Oskaloosa.....	Des Moines.....	....	.10	....	....	1.51	.13	.59	T	.08	....	.36	....	.31	1.10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.024.51
Ottumwa || |	Des Moines.....	....	.50	....	....	1.09	....	.58	....	1.14	....	....	.23	1.00	.40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.135.29
Pella.....	Skunk.....	....	.63	T	....	1.13	.12	.32	.33	....	.02	....	.08	T	1.10	....	....	.25	....	....	....	....	....	....	....	....	....	....	....	.214.19	
Sigourney.....	Skunk.....	....	T	T	T	....	1.09	.72	.17	T	....	....	.41	....	.17	.48	....	....	T	.07	....	T	....	....	....	....	....	....	....	.013.12	
Stockport.....	Skunk.....	....	1.41	....	.39	1.43	.24	.15	.05	T	....	.08	2.82	.90	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.7.49	
Thurman.....	Missouri.....	....	1.23	....	.38	....	.55	.12	....	T	....	T	....	.08	....	T	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.3.54
Washington.....	Skunk.....	....	.30	....	....	....	.24	.71	.05	....	.08	....	.09	....	.39	.30	....	.14	....	....	.01	....	....	....	....	....	....	....	....	.102.41	
Winterset.....	Des Moines.....	....	1.25	....	....	....	.24	.40	....	....	.11	....	.85	....	1.08	....	....	T	....	....	....	....	....	....	....	....	....	....	T3.95		
Omaha, Nebr.***	Missouri.....	....	1.08	....	.02	....	1.15	.02	T	....	T	....	.64	.02	T	....	T	....	....	....	....	....	....	....	....	....	....	....	.03	.313.91	

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 the 24-hour period, midnight to midnight.

** Incomplete.

* Precipitation included in the next following measurement.

CLIMATOLOGICAL DATA: IOWA SECTION.

July, 1920.

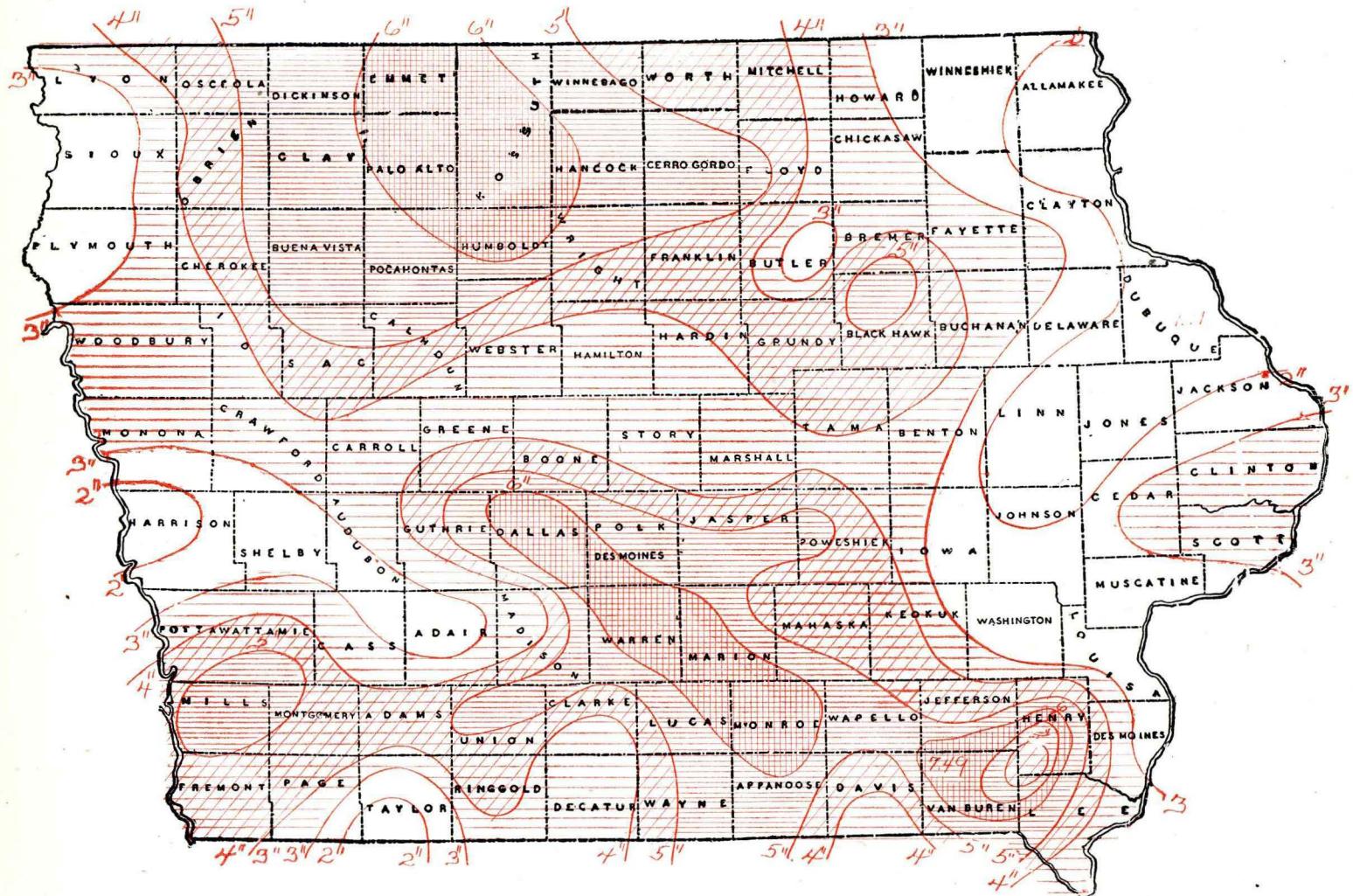
Daily Maximum and Minimum Temperature for the Month of July, 1920.

Stations	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	Mean
<i>Northern Division</i>																																
Algona.....	81	83	85	81	75	70	70	77	76	79	80	80	89	80	79	80	84	80	80	85	85	88	83	77	76	76	76	79	84	85	86	80/80.4
Alta.....	60	60	60	62	63	55	55	54	56	57	60	64	63	54	58	60	63	60	62	55	66	68	73	60	60	57	55	64	63	58	60.0	
Alton.....	81	87	87	84	74	73	68	77	75	81	82	82	86	76	81	82	85	78	82	86	87	91	85	79	76	77	81	85	87	87	77/81.3	
Belmond.....	60	59	65	63	65	61	55	52	57	58	60	65	63	53	58	63	64	64	67	70	72	60	61	60	56	57	64	67	58	61.1		
Charles City.....	83	89	89	88	83	75	74	78	78	84	84	84	85	79	85	82	88	83	87	92	89	91	82	76	78	83	90	92	85	84.6		
Decorah.....	58	60	64	66	66	63	56	53	55	54	64	65	65	52	53	62	63	64	57	66	71	70	60	61	60	55	55	62	65	59	60.7	
Forest City.....	82	88	88	81	73	77	74	80	81	80	85	82	85	84	87	76	80	90	90	90	92	91	82	79	82	86	87	93	91	81	83.4	
Inwood.....	62	58	65	62	65	60	54	53	55	55	57	62	65	53	57	59	58	59	59	65	67	67	72	64	58	54	51	57	63	66	58	60.0
Mason City.....	85	86	84	76	70	65	72	78	81	81	81	78	82	76	78	84	87	87	91	88	88	78	75	78	82	86	89	88	87	86	80/80.5	
Milford (near).....	61	58	68	57	56	60	54	55	52	55	60	63	53	54	48	53	57	49	58	61	59	74	63	51	50	48	52	63	65	56	57/60.7	
New Hampton.....	84	87	86	80	73	69	72	78	78	82	82	80	82	78	78	82	86	82	89	86	92	87	76	77	79	82	85	90	89	88	81/81.6	
Northwood.....	61	60	64	65	66	62	54	50	55	52	60	63	65	49	52	61	62	64	60	67	65	70	67	56	63	59	57	62	57	60/60.0		
Pocahontas.....	85	88	84	77	73	70	74	80	81	83	82	83	85	85	87	84	84	88	81	92	91	92	87	82	78	80	88	92	89	80/83.8		
Postville.....	60	61	63	64	64	63	57	52	57	59	65	65	64	59	56	68	66	70	61	62	59	53	56	56	61	65	61	58	59/59.5			
Northwood.....	64	61	59	54	53	59	55	55	55	55	58	53	65	54	57	52	56	56	50	61	65	56	56	51	55	57	67	60	57/59.7			
<i>Central Division</i>																																
Belle Plaine.....	85	90	88	83	78	77	80	78	82	83	84	80	85	80	81	85	88	82	88	93	93	93	80	78	79	86	88	93	91	81/84.4		
Boone.....	64	60	67	59	58	65	55	54	54	53	57	62	65	57	52	57	61	65	52	59	64	71	55	63	50	49	54	64	61	58/59.1		
Carroll.....	87	90	91	85	77	73	77	81	80	85	84	84	88	83	85	91	77	84	91	90	91	91	90	77	82	84	87	95	93	79/84.8		
Davenport.....	60	59	67	65	66	62	53	54	55	53	60	64	66	57	54	66	67	64	67	69	71	62	60	58	49	54	65	62	63/61.2			
Des Moines.....	88	87	84	81	77	74	78	77	83	83	82	83	85	87	80	84	86	88	79	83	92	90	92	80	87	82	92	93	80/84.5			
Grinnell.....	69	72	72	58	54	63	59	59	61	61	60	67	70	63	61	62	64	63	61	64	71	66	75	65	55	56	62	67	70	64/63.4		
Hughes Center.....	63	62	71	66	65	64	59	57	60	57	63	64	68	58	58	66	68	66	60	65	66	70	64	59	55	62	67	66	63/63.6			
Independence.....	87	90	89	86	80	74	78	81	80	83	88	83	88	75	83	88	87	84	88	90	92	93	94	88	86	89	90	91	82/83.3			
Iowa City.....	66	65	68	58	55	64	57	56	54	59	63	65	55	57	61	64	65	54	56	68	72	63	57	57	52	58	65	66	60/60.9			
Iowa Falls.....	81	84	87	79	76	69	74	75	79	80	79	83	81	84	77	80	83	88	87	91	92	93	93	90	89	90	90	91	79/81.8			
Little Sioux.....	62	58	66	61	63	61	54	53	53	54	55	60	66	57	51	61	62	58	60	68	72	75	65	56	55	60	71	70	62/61.7			
Marshalltown.....	87	91	92	88	84	78	77	81	79	83	85	85	88	87	89	88	87	88	90	93	93	93	93	90	89	89	90	91	82/86.6			
Olin.....	60	64	70	57	53	55	59	58	58	60	60	64	61	55	56	60	62	60	68	61	71	64	54	52	54	61	64	62	59/59.7			
Sioux City.....	82	93	90	87	80	76	74	79	79	80	84	85	88	78	81	87	83	88	91	91	98	89	84	73	77	81	91	91	88/94.2			
South Central Division	65	67	69	69	68	64	59	55	59	57	64	68	65	58	66	68	62	70	68	74	74	63	64	59	64	67	68	62	64/64.6			
Albia.....	89	88	91	91	84	75	79	77	74	83	85	81	89	73	83	85	90	83	82	88	92	93	95	81	75	79	85	87	90	93	84/84.8	
Atlantic.....	61	60	67	76	61	62	55	52	57	53	64	64	60	55	61	63	54	61	65	65	75	77	54	51	60	63	66	66	66/61.1			
Bloomfield.....	84	83	93	89	85	77	78	80	81	83	83	82	88	86	85	88	93	85	85	94	95	94	95	86	87	95	92	84/86.1				
Burlington.....	64	61	67	64	65	67	58	54	59	56	57	60	64	64	57	63	65	64	62	65	69	70	72	61	62	57	49	53	63	61/60.8		
Columbus Junct....	87	88	88	82	79	75	78	75	80	82	80	81	88	82	83	86	81	82	84	89	90	96	93	87	89	90	90	86/83.1				
Coening.....	86	90	91	83	81	78	79	72	82	81	82	82	88	81	83	85	89	88	91	94	93	96	93	83	77	82	85	92	92/92.8			
Fairfield.....	87	88	89	84	80	77	77	63	82	82	82	82	84	78	82	83	86	83	78	86	89	90	93	81	75	79	85	88	91	82/82.8		
Keokuk.....	91	89	91	85	82	80	80	77	84	80	83	87	86	79	83	86	89	88	79	87	89	93	97	82	74	80	84	88	90	92/84.5		
Lamoni.....	86	90	93	87	85	78	81	80	82	83	82	83	89	87	85	89	91	83	89	90	93	95	99	89	70	79	84	89	95	94/88.6		
Pella.....	85	83	87	83	80	72	76	77	82	80	80	80	86	75	82	82	86	79	79	87	89	90	94	80	74	77	81	86	90	92/80.8		
Sigourney.....	86	88	90	85	77	74	78	76	83	83	81	79	84	79	81	85	87	81	80	86	89	91	94	80	77	79	83	87	92	92/80.83.5		
Thurman.....	94	95	96																													

HAIL STORMS DURING JULY, 1920.

1	Dallas	Walnut	N. W.	4 sq. mi.	Heavy	Large	Severe	Narrow
1	Dallas	Sugar Grove	N. W.	Small	Heavy	$\frac{1}{2}$ to 1 inch.	Considerable	$\frac{1}{4}$ to $\frac{1}{2}$
1	Dallas	Adel	.....	8 sq. mi.	Heavy	1 to 2 inches	Severe	1 and $\frac{1}{2}$ miles
1	Dallas	Spring Valley	N. W.	Large	Heavy	Large	Severe	1 to 2 miles
1	Lyon	Richland	N.	6 sq. mi.	Heavy	Large	\$5000	1 mile
1	Lyon	Lyon	N.	8 sq. mi.	Heavy	Large	Severe	2 miles
1	Lyon	Logan	N.	6 sq. mi.	Heavy	Large	Severe	1 $\frac{1}{2}$ to 3 miles
1	Lyon	Rock	S. W.	Small	Heavy	Small	Severe	1 mile
1	Buena Vista	Washington	.....	Small	Light	Small	Slight	Narrow
1	Buena Vista	Nokomie	.....	Small	Light	.....	.....	.....
1	Harrison	Calhoun	N. W.	30 sq. mi.	Light	Small	Slight	5 miles
1	Harrison	Cincinnati	N. W.	10 sq. mi.	Light	1 inch	Considerable	2 to 3 miles
1	Harrison	Little Sioux	.....	Small	Light	.....	None	4 miles
1	Pocahontas	Lake	N. W.	24 sq. mi.	Heavy	$\frac{1}{4}$ to $\frac{1}{2}$ inch.	Considerable	.....
1	Sioux	Nasseu	.....	Small	Light	.....	Slight	.....
1	Story	Washington	.....	.....	Light	.....	.....	.....
1	Union	Union	S. W.	Small	Moderate	Small	None	Narrow
1	Union	Grant	W.	4 sq. mi.	Moderate	$\frac{1}{2}$ to 1 inch	Considerable	2 miles
1	Union	Douglas	.....	Small	Moderate	$\frac{1}{2}$ to $\frac{3}{4}$ inch	Considerable	Narrow
2	Winnesheik	Bloomfield	N.	12 sq. mi.	Heavy	Large	Considerable	1 to 3 miles
2	Winnesheik	Military	N.	Large	Heavy	Large	Severe	1 to 1 $\frac{1}{2}$ miles
2	Winnesheik	Fremont	N.	Large	Heavy	Large	Severe	1 to 2 miles
2	Winnesheik	Burr Oak	N.	Large	Heavy	Large	Severe	1 to 2 miles
2	Clayton	Highland	N. W.	5 sq. mi.	Heavy	$\frac{1}{4}$ to 1 inch	Considerable	2 miles
2	Clayton	Grand Meadow	N. W.	.....	Heavy	$\frac{1}{2}$ inch	Considerable	.....
2	Allamakee	Post	N.	30 sq. mi.	Moderate	$\frac{1}{4}$ to 1 inch	Considerable	4 to 5 miles
3	Clayton	Grand Meadow	.....	Small	Light	.....	Slight	.....
4	Powsheik	Bear Creek	S. E.	1 sq. mi.	Moderate	Small	Considerable	1 mile
7	Emmet	Ellsworth	E.	5 sq. mi.	Moderate	Small	Considerable	1 mile
7	Greene	Greenbrier	W.	9 sq. mi.	Moderate	Large	Considerable	2 to 3 miles
7	Greene	Franklin	W.	15 sq. mi.	Heavy	Large	Severe	2 to 3 miles
7	Lee	Jackson	.....	.....	Light	.....	Slight	.....
7	Mahaska	White Oak	E.	Small	Moderate	$\frac{1}{4}$ inch	Slight	.....
7	Mahaska	Scott	N. W.	6 sq. mi.	Heavy	$\frac{1}{8}$ to $\frac{1}{2}$ inch	Considerable	1 mile
7	Mahaska	Garfield	N. W.	4 sq. mi.	Heavy	$\frac{1}{8}$ to $\frac{1}{2}$ inch	Considerable	1 mile
7	Mahaska	East Des Moines	N. W.	6 sq. mi.	Heavy	$\frac{1}{8}$ to $\frac{1}{2}$ inch	Considerable	1 mile
7	Mahaska	Harrison	N. W.	4 sq. mi.	Heavy	$\frac{1}{8}$ to $\frac{1}{2}$ inch	Considerable	1 mile
7	Mahaska	Lincoln	.....	.....	Light	.....	None	.....
7	Marion	Knoxville	W.	6 sq. mi.	Moderate	Small	Considerable	Narrow
7	Union	Jones	W.	6 sq. mi.	Moderate	Large	Considerable	2 miles
7	Van Buren	Douglas	.....	.....	Light	.....	None	.....
7	Van Buren	Chequest	N. W.	6 sq. mi.	Light	$\frac{1}{2}$ inch	None	1 to 2 miles
7	Van Buren	Vernon	N. W.	4 sq. mi.	Heavy	$\frac{3}{4}$ inch	Severe	2 miles
7	Van Buren	Jackson	N. W.	Large	Heavy	1 to 2 inches	Severe	5 to 6 miles
7	Dallas	Spring Valley	.....	.....	Light	.....	None	.....
7	Davis	Cleveland	N. W.	8 sq. mi.	Heavy	Large	Severe	2 miles
7	Davis	Perry	N. W.	28 sq. mi.	Heavy	Large	Severe	6 miles
7	Davis	Union	N. W.	12 sq. mi.	Heavy	Large	Severe	3 to 4 miles
7	Davis	Prairie	N. W.	24 sq. mi.	Heavy	Large	Severe	3 to 4 miles
7	Polk	Webster	N. W.	Small	Heavy	Large	Severe	4 miles
7	Polk	Des Moines	N. W.	Small	Heavy	1-6 to 1 inch	Slight	Narrow
7	Warren	Lincoln	.....	Small	Light	.....	Slight	.....
8	Clayton	Boardman	.....	.....	Light	.....	Slight	.....
9	Adair	Lee	.....	.....	Light	.....	Slight	.....
9	Audubon	Greeley	S. W.	8 sq. mi.	Heavy	Small	Severe	1 to 2 miles
9	Buchanan	Hazelton	S. W.	12 sq. mi.	Heavy	Small	Considerable	1 to 5 miles
9	Clarke	Madison	W.	8 sq. mi.	Moderate	$\frac{1}{2}$ inch	Considerable	1 to 2 miles
9	Clinton	Orange	W.	12 sq. mi.	Light	$\frac{1}{4}$ inch	None	2 miles
9	Davis	Cleveland	.....	.....	Light	.....	Slight	.....
9	Harrison	Cincinnati	W.	8 sq. mi.	Light	$\frac{1}{4}$ inch	None	2 to 3 miles
9	Johnson	Hardin	N. W.	Large	Heavy	Large	Severe	1 to 3 miles
9	Johnson	Union	N. W.	Large	Heavy	$\frac{3}{4}$ inch	Severe	4 miles
9	Johnson	Washington	W.	10 sq. mi.	Heavy	$\frac{1}{2}$ inch	Severe	2 miles
9	Madison	Madison	.....	.....	Light	.....	Slight	.....
9	Pottawattamie	Knox	N.	8 sq. mi.	Moderate	Small	Considerable	2 to 3 miles
9	Scott	Allens Grove	S.	12 sq. mi.	Moderate	Small	Considerable	2 miles
9	Scott	Cleona	S.	20 sq. mi.	Light	$\frac{1}{2}$ to 1 inch	Considerable	4 to 7 miles
9	Scott	Hickory Grove	S.	Small	Moderate	$\frac{1}{2}$ to 1 inch	Considerable	4 to 5 miles
9	Union	Princeton	.....	Small	Moderate	Small	Considerable	.....
9	Wapella	Douglas	.....	.....	Light	.....	Slight	.....
9	Washington	Richland	N. W.	8 sq. mi.	Light	$\frac{1}{2}$ inch	Slight	1 mile
9	Washington	Washington	N. W.	Small	Moderate	Small	Considerable	2 miles
9	Wayne	Corydon	.....	.....	Light	.....	Slight	.....
9	Wright	Dayton	W.	8 sq. mi.	Heavy	Small	Severe	1 mile
9	Wright	Eagle Grove	W.	Small	Moderate	Small	Considerable	2 miles
9	Wright	Clarion	W.	10 sq. mi.	Moderate	$\frac{1}{2}$ to $\frac{3}{4}$ inch	Considerable	2 to 3 miles
9	Wright	Lake	W.	Small	Moderate	Small	Considerable	1 to 2 miles
12	Ringold	Poo	.....	.....	Light	.....	Slight	.....
13	Harrison	C. Ihoun	N.	8 sq. mi.	Light	Small	None	2 to 3 miles
14	Buena Vista	Nokomis	.....	.....	Light	.....	Slight	.....
14	Warren	Lincoln	.....	.....	Light	.....	Slight	.....
15	Charokee	Wil'ow	.....	.....	Light	.....	Slight	.....
16	Wright	Vernon	N. W.	4 sq. mi.	Heavy	Small	Severe	3 to 4 miles
16	Wright	Iowa	N. W.	Small	Moderate	$\frac{1}{2}$ inch	Severe	1 mile
17	Wright	Pleasant	.....	.....	Light	$\frac{1}{4}$ to $\frac{3}{4}$ inch	Considerable	$\frac{1}{4}$ to 2 miles
17	Blackhawk	East Waterloo	S. W.	Small	Heavy	Large	Slight	.....
20	Plymouth	Union	N. W.	10 sq. mi.	Moderate	Large	Considerable	1 to 2 miles
20	Buena Vista	Washington	W.	Small	Moderate	Large	Considerable	1 mile
20	Buena Vista	Scott	W.	Small	Moderate	Large	Considerable	2 miles
20	Buena Vista	Nokomis	.....	.....	.....	.....	Slight	.....
20	Cherokee	Willow	S. W.	4 sq. mi.	Moderate	$\frac{3}{4}$ inch	Considerable	1 mile
22	Winnesheik	Bluffton	S. E.	Small	Moderate	Small	Slight	1 mile
22	Dickinson	Lakeville	.....	.....	Light	.....	None	.....
23	Winnesheik	Decorah	.....	Small	Heavy	.....	Considerable	.....

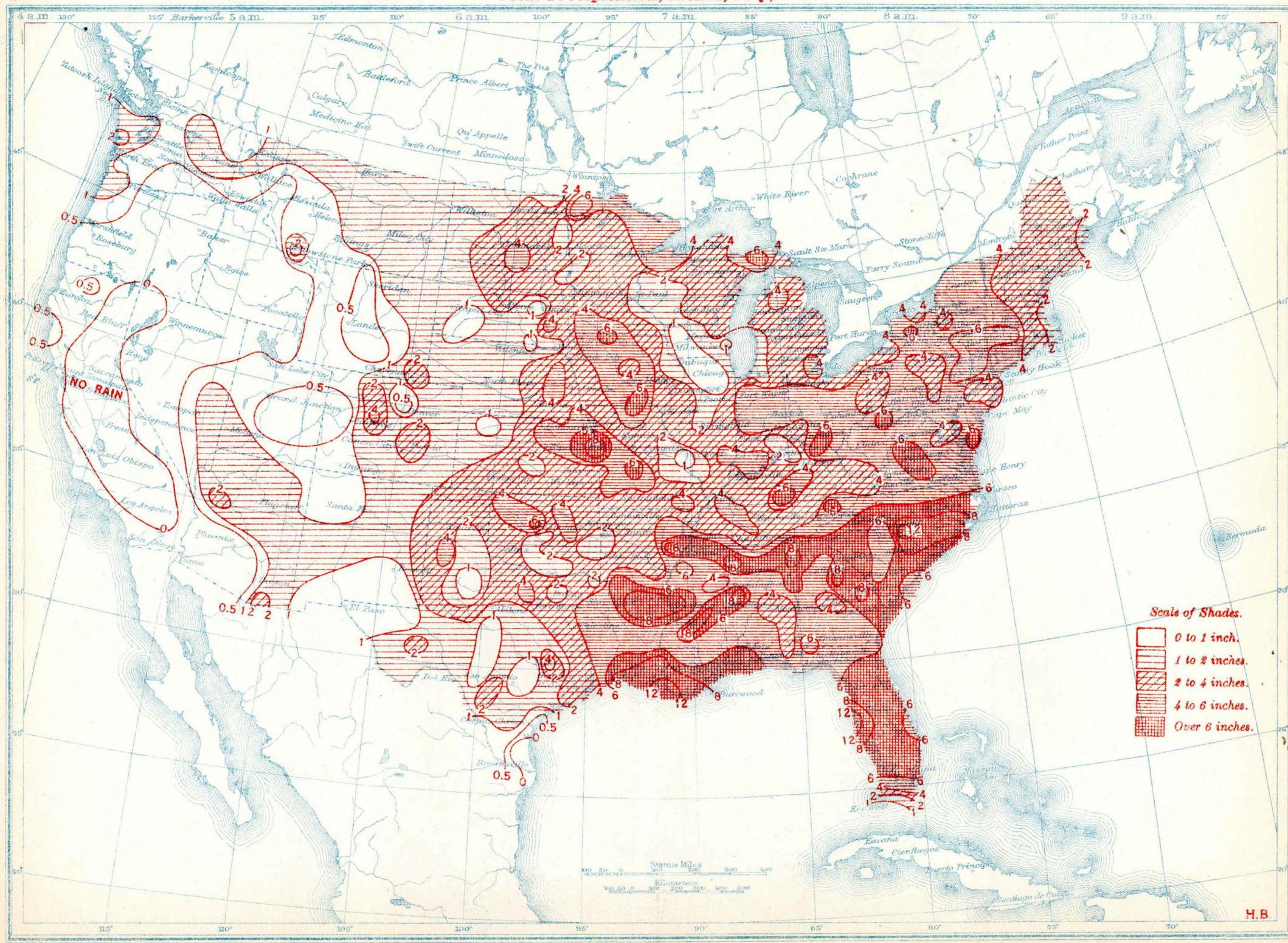
TOTAL PRECIPITATION, JULY, 1920.



SCALE OF SHADES—IN INCHES.

	Less than 3
	3 to 4
	4 to 5
	5 to 6
	More than 6

Total Precipitation, Inches, July, 1920.



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

CLIMATOLOGICAL DATA

IAWA SECTION

IN COOPERATION WITH THE IOWA WEATHER AND CROP SERVICE

AUGUST, 1920

BY

CHARLES D. REED

METEOROLOGIST



PRINTED BY ORDER OF THE IOWA GENERAL ASSEMBLY



E.C.

Departure of the Mean Temperature from the Normal, August, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU
 IOWA SECTION
 CHARLES D. REED, Meteorologist.

Vol. XXXI Des Moines, Iowa, August, 1920 No. 8

GENERAL SUMMARY

August, like July, was deficient in temperature and too cool for the proper development of corn and at the close of the month much of the crop had not advanced beyond the roasting-ear stage. The deficiency was quite uniform over each division though the range varied greatly along the Mississippi. The usual hot periods were absent and the temperature was above normal for but short intervals and the hottest weather occurred during the first ten days. At a number of stations in each division the maximum temperature did not reach 90°.

The precipitation, while averaging slightly below normal, was very unevenly distributed. A large number of stations over the northern division and a few in the central and southern had a decided excess of precipitation and many stations that were decidedly deficient in July, particularly in the southeastern and southwestern portions of the State, showed a pronounced deficiency with drouth becoming serious at the close of the month. The heavy rains of the 19th-20th caused serious loss to crops in Carroll, Greene, Humboldt and Hancock Counties. Hail damage occurred principally on the 6th and 8th in Plymouth, Union, Ringgold, Jasper, Iowa, Allamakee, Clayton, Linn, Johnson and Des Moines Counties. The worst storm occurred in Ringgold County, the loss to growing crops in about 25 sections in Lots Creek, Middle Park and Poe Townships amounted to from 25 to more than 50 per cent. The damage was extensive also in Allamakee County over the northeast corner of Iowa Township. A very heavy downpour of rain occurred in Carroll and Greene Counties between Scranton and Glidden, amounting to 5 inches in from two to three hours, causing small streams to get out of banks and doing great damage to bridges and culverts. The loss to bridges and culverts is estimated at \$10,000 in each county and the loss to crops probably as great.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.02 inches. The highest recorded was 30.37 inches at Dubuque, on the 23d, and the lowest was 29.56 inches at Sioux City on the 28th. The monthly range was 0.81 of an inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 105 stations, was 69.3°, or 2.5° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 67.7°, or 2.7° lower than the normal; Central, 69.4°, or 2.3° lower than the normal; Southern, 70.7°, or 2.5° lower than the normal. The highest monthly mean was 73.4° at Burlington and Keokuk, and the lowest was 65.4°, at Decorah and Spencer. The highest temperature recorded was 98° at Monroe on the 5th and Clarinda on the 10th, and the lowest was 39° at Decorah and Stockport, on the 24th. The temperature range for the State was 59°.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 109 stations, was 3.35 inches, or 0.33 inch less than the normal. By divisions the averages were as follows; Northern, 3.98 inches, or 0.50 inch more than the normal; Central, 3.41 inches, or 0.36 inch less than the

normal; Southern, 2.67 inches, or 1.11 inches less than the normal. The greatest amount, 8.52 inches occurred at Britt, and the least 0.44 inch, at Burlington. The greatest amount in 24 hours, 4.17 inches, occurred at Humboldt, on the 20th.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 81 per cent, and at 7 p. m. it was 58 per cent. The mean for the month was 70 per cent, or 2 per cent lower than the normal. The highest monthly mean was 74 per cent, at Charles City and Dubuque, and the lowest was 66 per cent at Keokuk.

WIND.

The prevailing direction of the wind was from the southeast. The highest velocity reported from a regular Weather Bureau station was at the rate of 39 miles per hour, from the northwest, at Sioux City, on the 6th.

SUNSHINE.

The average per cent of the possible amount of sunshine was 69, 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, 64; Davenport, 73; Des Moines, 71; Dubuque, 65; Keokuk, 71; Sioux City, 73; Omaha, Neb., 66.

MISCELLANEOUS PHENOMENA.

Aurora: 21st.

Fog: 4th, 6th, 8th, 9th, 14th, 15th, 20th, 24th.

Frost: (light): 23d, 24th, 25th.

Hail: 6th, 7th, 8th, 30th.

Halos: (lunar or solar): 7th, 10th, 22d, 28th, 30th, 31st.

Haze: 16th.

Rainbow: 19th.

Thunderstorms: 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 15th, 19th, 20th, 21st, 22d, 27th, 28th, 29th, 30th, 31st.

COMPARATIVE DATA FOR THE STATE—AUGUST

YEAR	Temperature			Precipitation			Number of Days.						
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipitation .01 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	106	34	4.24	+0.56	13.02	1.23	.....	8	13	12	6
1892.....	71.4	-0.4	102	40	2.24	-1.44	4.69	0.65	.....	8	18	9	4
1893.....	69.4	-2.4	101	30	2.32	-1.26	6.22	0.40	5	19	9	3	3
1894.....	74.6	+2.8	108	38	1.58	-2.10	4.53	T.	4	21	8	1	1
1895.....	71.9	+0.1	103	37	4.43	+0.75	10.63	0.67	7	17	9	5	5
1896.....	71.7	-0.1	104	34	3.52	-0.16	12.25	0.86	8	15	11	5	5
1897.....	68.9	-2.9	104	35	1.86	-1.82	4.98	0.47	6	15	11	5	5
1898.....	71.2	-0.6	103	40	3.44	-0.24	10.55	0.58	6	17	9	5	5
1899.....	74.4	+2.6	100	41	3.68	0.00	10.45	1.12	7	17	10	4	4
1900.....	77.4	+5.6	103	44	4.65	+0.97	10.43	1.26	6	18	10	3	3
1901.....	73.8	+2.0	105	40	1.29	-2.39	4.46	T.	5	20	9	9	9
1902.....	69.1	-2.7	98	37	6.58	+2.90	15.47	1.57	11	11	11	9	9
1903.....	69.1	-2.7	101	41	6.64	+2.96	17.74	2.55	11	12	10	9	9
1904.....	69.1	-2.7	97	35	3.43	-0.25	6.75	0.66	7	17	8	6	6
1905.....	74.3	+2.5	104	44	4.08	+0.37	8.47	1.04	9	16	9	6	6
1906.....	74.1	+2.3	101	33	3.95	+0.27	10.51	0.92	9	17	9	5	5
1907.....	71.1	-0.7	99	37	4.33	+0.65	9.67	1.05	9	17	9	5	5
1908.....	70.0	-1.8	101	38	4.77	+1.09	10.55	1.35	9	17	9	5	5
1909.....	76.1	+4.3	103	33	1.81	-1.87	8.21	T.	5	21	8	2	2
1910.....	71.9	-0.1	104	36	3.88	+0.20	11.22	0.37	8	15	10	6	6
1911.....	71.7	-0.1	107	34	3.32	-0.36	9.47	0.44	9	16	10	5	5
1912.....	71.0	-0.8	101	40	3.78	+0.10	7.90	0.89	10	15	10	6	6
1913.....	76.6	+4.8	108	40	2.68	-1.00	7.13	0.68	6	17	10	4	4
1914.....	73.7	+1.9	103	40	2.19	-1.49	4.90	0.42	7	17	10	4	4
1915.....	65.9	-5.9	91	30	2.81	-0.87	9.14	0.27	8	16	8	7	7
1916.....	74.0	+2.2	106	35	2.58	-1.10	6.23	0.49	7	18	9	4	4
1917.....	69.4	-2.4	102	31	2.29	-1.39	6.31	0.70	7	19	8	4	4
1918.....	76.0	+4.2	113	38	3.61	-0.07	8.38	0.54	8	16	10	5	5
1919.....	71.5	-0.3	103	38	2.59	-1.09	5.72	0.97	7	19	9	3	3
1920.....	69.3	-2.5	98	39	3.35	-0.33	8.52	0.44	7	18	8	5	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, 1920

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit						Precipitation in inches.			No. 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 inch or more	Partly cloudy	Cloudy		
<i>Northern Division</i>																			
Algona	Kossuth	1213	47	66.2	-4.6	85	17	46	22	30	3.32	-0.35	1.32	0	5	24	2	5	se.
Allison	Butler	1045	8	68.2	-2.4	91	6	45	23	36	3.90	-1.68	1.60	0	6	15	12	4	sw.
Alta	Buena Vista	1513	29	68.2	-3.0	90	10	47	22	29	2.04	-1.68	0.71	0	7	21	6	4	se.
Alton	Sioux	1305	15	68.4	-3.0	93	5†	42	22	37	3.20	-1.28	0	0	7	19	7	5	se.
Belmond	Wright	1205	10	68.2	-2.4	92	6	47	1†	37	4.71	-1.98	0	10	18	9	4	se.	
Britt	Hancock	1236	23	67.2	-3.0	89	5†	47	22†	34	8.52	+4.72	3.59	0	8	25	2	4	s.
Charles City	Floyd	1015	29	67.7	-3.0	90	10	46	23	31	4.46	+1.04	2.09	0	10	13	13	5	se.
Decorah	Winneshiek	875	27	65.4	-5.8	89	10	39	24	35	3.10	-0.26	0.94	0	9	21	3	7	ne.
Elkader	Clayton	751	41	69.6	-1.8	97	10	41	23	42	2.55	-0.90	1.38	0	4	19	7	5	e.
Esterherville	Emmet	1298	25	68.0	-1.1	86	5†	45	24†	34	3.11	-0.99	1.00	0	8	24	5	2	s.
Fayette	Fayette	1003	30	67.2	-2.4	90	10	41	23†	38	3.02	-0.40	1.68	0	6	23	2	6	nw.
Forest City	Winnebago	1226	26	68.3	-1.7	89	5†	42	30	37	4.09	+0.65	1.23	0	8	16	11	4	se.
Humboldt	Humboldt	1095	32	68.6	-2.2	92	10	45	22	36	8.45	+5.09	4.17	0	7	21	6	4	s.
Inwood	Lyon	1474	16	69.1	-1.9	92	4†	42	22	40	2.20	-0.68	0.69	0	9	23	5	3	s.
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	.....	4.25	+1.42	1.08	0	8	.....	.....	.....	.....
Le Mars	Plymouth	1224	24	68.6	-2.2	94	5	40	22	40	4.52	+1.73	1.00	0	8	19	9	3	s.
Mason City	Cerro Gordo	1148	23	66.2	-3.8	95	6	42	25	44	3.81	-0.13	1.55	0	5	23	0	8	w.
Milford (near)	Dickinson	1430	.....	66.7	.....	85	10†	48	22	27	2.95	.....	0.72	0	7	18	8	5	se.
New Hampton	Chickasaw	1169	23	68.4	-0.9	93	10	45	23	35	5.79	+2.12	3.78	0	7	23	5	3	s.
Nora Springs	Floyd	1064	8	69.3	.....	94	10	45	1†	41	4.11	.....	1.67	0	7	22	6	3	s.
Northwood	Worth	1222	24	66.6	-3.0	88	6†	46	22	31	5.02	+0.98	2.55	0	6	19	6	6	sw.
Pocahontas	Pocahontas	1248	16	67.8	-3.0	90	6†	44	22	36	3.96	+0.05	1.12	0	8	21	4	6	se.
Postville	Clayton	1180	21	66.0	-3.2	87	6†	44	23†	28	4.04	+0.48	1.40	0	8	18	8	5	s.
Rock Rapids	Lyon	1358	21	66.5	-4.9	90	5	40	22	38	3.38	+1.11	1.25	0	8	25	4	2	nw.
Sanborn	O'Brien	1553	6	68.6	.....	92	10	43	22	36	1.80	.....	0.60	0	8	23	5	3	se.
Sioux Center	Sioux	1426	21	68.4k	-2.0	92k	5	45k	21	35k	2.42	-0.76	0.95	0	7	.....	.....	.....	s.
Spencer	Clay	1319	6	65.40	.....	92o	2	41o	21	44o	4.83	.....	2.10	0	7	22	3	6	se.
Storm Lake	Buena Vista	1440	31	68.8	-2.3	91	6	44	22	29	1.94	-1.39	0.83	0	7	22	3	6	s.
Washta	Cherokee	1157	22	67.2	-4.0	92	10	41	22	39	4.22	+1.09	2.85	0	6	19	7	5	s.
Waverly	Bremer	948	24	67.7	-2.9	91	6	43	23†	35	3.99	+0.61	1.57	0	7	19	8	4	se.
West Bend	Palo Alto	1197	27	68.0	-2.2	91	5	42	22	36	5.72	+1.83	2.25	0	8	20	7	4	s.
Means and extremes .....	.....	.....	67.7	-2.7	97	10	39	24	44	3.98	+0.50	4.17	0	7	20	7	4	s.	
<i>Central Division</i>																			
Ames	Story	926	44	69.4	-2.9	92	5†	46	23	34	2.22	-1.59	0.91	0	6	19	5	7	s.
Audubon	Audubon	1301	26	69.6	-2.7	94	5†	47	22	33	5.51	+1.86	1.85	0	6	18	8	5	sw.
Belle Plaine	Jasper	998	20	69.4	-2.4	93	6	49	22†	35	1.76	-1.86	0.80	0	7	12	12	7	ne.
Boone	Benton	886	30	69.7	-1.6	94	6	45	27	40	2.55	-0.95	0.86	0	9	18	8	5	se.
Carroll	Boone	1134	15	69.8	-2.0	94	5	46	22	38	5.33	+1.55	2.68	0	9	18	7	6	s.
Cedar Rapids	Carroll	1265	30	68.8	-1.8	92	5	45	22†	34	6.37	+2.46	3.70	0	7	21	5	5	se.
Clinton	Linn	733	38	71.0	-1.8	95	6†	47	24	35	3.60	+0.09	1.50	0	7	19	1	11	e.
Davenport	Clinton	593	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware	Scott	580	49	72.6	-0.4	93	6	51	23	28	2.67	-0.97	1.21	0	7	13	12	6	e.
Denison	Delaware	1083	29	67.0	-3.0	91	6†	45	24	30	5.31	+1.55	1.66	0	6	18	2	11	ne.
Des Moines	Crawford	1180	26	68.4a	-3.3	90a	10	45a	21	33a	3.64	-0.47	2.80	0	6	.....	.....	.....	n.
Dubuque	Polk	861	40	71.4	-1.6	93	4	53	22	30	2.11	-1.50	0.69	0	7	15	9	7	n.
Fort Dodge	Dubuque	639	47	69.6	-2.4	91	11	49	23	29	3.44	+0.40	1.83	0	11	14	12	5	nw.
Grinnell	Webster	1126	20	69.6	-2.0	93	6	46a	22	35a	2.78	-1.57	1.30	0	7	25	0	6	e.
Grundy Center	Poweshiek	1031	26	69.4d	-3.3	92a	6	42f	27	41f	0.95	-3.11	0.34	0	6	16	11	4	ne.
Guthrie Center	Grundy	976	29	69.3a	-2.5	91a	6†	46a	23†	35a	5.09	+1.46	2.43	0	6	.....	.....	.....	ne.
Harlan	Guthrie	1077	25	67.8	-4.7	93	6	43	22	38	3.76	-0.45	1.37	0	5	19	6	6	sw.
Independence	Shelby	1182	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa City	Buchanan	921	56	68.6	-2.2	89	6†	45	23†	30	6.65	+3.34	2.85	0	8	17	9	5	s.
Iowa Falls	Johnson	733	60	70.0	-2.2	94	6	43	24	42	2.90	-1.34	1.00	0	9	16	5	5	nw.
Jefferson	Hardin	1107	27	66.6	-2.9	87	5†	44	27	34	3.45	-0.26	1.76	0	6	21	6	4	ne.
LeClaire	Greene	1052	21	68.1	-3.9	93	6	43	22	46	4.07	.....	1.77	0	7	22	5	1	s.
Little Sioux	Scott	576	20	.....	.....	.....	.....	.....	.....	.....	1.47	-2.27	0.55	0	6	10	17	4	sw.
Harrison	Harrison	1040	15	70.1	-3.5	95	10	42	22	38	1.58	.....	0.52	0	12	19	7	5	se.
Logan	Harrison	928	53	70.2	-3.0	95	13	45	22	38	4.97	+1.20	2.66	0	7	22	3	6	sw.
Maquoketa	Jackson	688	19	68.9b	-1.6	91b	11	44b	24	35b	2.44	-0.74	0.91	0	8	.....	.....	.....	sw.
Marshalltown	Marshall	947	28	69.8	-2.0	92	6	47	22†	34	1.84	-1.33	0.54	0	8	20	9	2	se.
Monroe	Jasper	922	8	73.2h	.....	98h	5	48h	22	35h	2.67	.....	1.20	0	4	25	5	1	s.
Muscatine .....	.....	554	60	.....	.....	.....	.....	.....	.....	.....	4.03	-0.16	3.20	0	8	.....	.....	.....	.....
Olin	Jones	760	21	70.0	-1.5	93	11	45	24†	45	4.42	-0.28	1.88	0	6	10	17	4	sw.
Monona	Monona	10																	

CLIMATOLOGICAL DATA FOR AUGUST, 1920.—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				Departure from normal	Greatest in 24 hours	Total snowfall, (unadjusted)	Precipitation 0.1 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
<i>Southern Division</i>																			
Afton	Union	1212	26	70.4	-2.6	93	5†	48	22	34	5.88	+2.36	1.80	0	8	17	9	5	ne.
Albia	Monroe	959	22	71.0	-2.1	93	5†	46	22	36	2.94	-0.28	1.20	0	6	20	4	7	sw.
Atlantic	Cass	1164	29	69.4	-3.2	95	10	44	22	39	5.15	+1.86	1.95	0	6	17	7	se.	
Bedford	Taylor .....	.....	20	70.2	-3.2	95	10	43	22	38	3.40	-0.45	1.56	0	5	20	5	6	se.
Bloomfield	Davis	881	13	70.6d	.....	92d	6†	45d	24	29d	0.54	-3.04	0.53	0	2	.....	.....	.....	.....
Bonaparte	Van Buren	565	29	71.0	-2.1	94	6	50	22†	36	2.33	-1.62	1.20	0	6	20	8	3	sw.
Burlington	Des Moines	544	24	73.4	-0.6	94	6	49	24	32	0.44	-8.89	0.19	0	4	21	6	4	ne.
Centerville	Appanoose	1013	15	71.0	.....	97	5	47	22†	36	1.44	-2.45	0.58	0	9	8	17	6	se.
Chariton	Lucas	1042	25	70.3	-2.3	93	10	46	22	33	1.87	-2.05	0.70	0	5	12	13	6	n.
Clarinda	Page	1009	30	72.4	-1.1	98	10	45	22	41	3.01	-0.61	1.38	0	6	20	6	5	ne.
Columbus Jct.	Louisa	595	19	71.9	-0.8	94	6	50	24	34	1.01	-4.22	0.38	0	6	24	7	0	w.
Corning	Adams	1117	28	69.6	-2.6	93	6†	43	22	38	4.31	+0.37	1.37	0	6	20	5	6	se.
Corydon	Wayne	1101	27	71.4	-2.5	94	6†	46	22	36	1.45	-2.11	0.83	0	9	15	12	4	ne.
Creston	Union	1312	15	69.6	-2.2	98	30	49	22	33	3.19	.....	1.10	0	8	3	25	3	se.
Cumberland	Cass .....	.....	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Earlham	Madison	1126	18	68.3	-2.9	93	5	42	22†	38	3.87	-0.53	1.25	0	5	20	2	9	se.
Fairfield	Jefferson	780	36	70.4b	-2.7	93b	11	42b	24	38b	2.90	-0.74	0.94	0	9	15	9	7	nw.
Glenwood	Mills	1100	22	70.9	.....	94	10	46	22	36	3.90	.....	1.90	0	6	20	3	8	ne.
Greenfield	Adair .....	.....	28	69.4	-2.9	94	5	44	22	38	2.97	-0.83	1.05	0	5	24	6	1	se.
Indianola	Warren	969	29	70.2	-2.7	91	5†	49	22	29	1.18	-3.10	0.57	0	5	21	4	6	se.
Keokuk	Lee	614	49	73.4	-12	93	6	51	24	28	0.88	-2.36	0.50	0	6	6	15	10	ne.
Keosauqua	Van Buren	644	28	70.6	-2.7	94	6	41	24	40	2.48	-1.06	0.93	0	8	15	11	5	se.
Knoxville	Marion	920	25	70.1	-3.5	95	6	45	24†	40	2.81	-1.26	1.30	0	7	16	4	11	se.
Lacona	Warren .....	.....	21	.....	.....	.....	.....	.....	.....	.....	3.53	-0.39	1.40	0	8	7	15	9	.....
Lamoni	Decatur	1100	13	70.4	-3.3	96	6	46	22†	37	3.97	+1.17	1.47	0	8	20	5	6	s.
Lenox	Taylor	1250	25	71.6	-1.2	95	10	48	22	34	2.35	-1.37	1.00	0	5	18	9	4	s.
Mt. Ayr	Ringgold	1236	27	70.5	-3.6	94	6	49	22†	32	3.52	+0.02	1.10	0	9	20	7	4	s.
Mt. Pleasant	Henry	729	39	71.7	-1.7	95	6	46	24	35	3.33	-0.10	1.36	0	7	10	18	3	se.
Murray	Clarke	1216	29	70.8	-2.8	93	5	48	24	32	4.24	+0.71	1.54	0	8	13	11	7	sw.
Oakland	Pottawattamie	1105	1	70.0	.....	94	10	43	22	37	4.88	.....	1.80	0	6	23	3	5	s.
Oskaloosa	Mahaska	825	44	70.6	-2.2	93	6	47	24	37	1.82	-1.37	0.67	0	10	12	10	9	se.
Ottumwa	Wapello	849	25	69.5	.....	92	5	45	24	37	1.76	-1.84	0.72	0	6	20	3	8	w.
Pella	Marion	877	27	69.4	-3.7	92	4	44	22†	39	1.61	-1.84	0.62	0	5	24	4	3	se.
Sigourney	Keokuk	877	24	70.4	-2.8	95	6	42	24	42	1.23	-2.24	0.61	0	6	17	8	6	ne.
Stockport	Van Buren	754	18	70.1	-3.1	95	6†	39	24	40	1.46	-2.53	0.41	0	8	17	11	3	ne.
Thurman	Fremont .....	.....	23	70.1	-3.3	92	4	44	22	40	2.09	-2.36	0.50	0	6	5	21	5	se.
Washington	Washington	769	38	71.4a	-1.1	94a	6	51a	22	29a	2.60	-1.18	0.97	0	9	.....	.....	.....	sw.
Winterset	Madison	1129	29	70.6	-2.9	93	5	45	22	34	2.16	-1.66	1.12	0	6	23	4	4	sw.
Omaha, Neb. ....	.....	1040	49	72.6	-1.8	92	10	54	22	25	2.78	-0.84	1.19	0	7	18	7	6	se.
Means and extremes .....	.....	.....	.....	70.7	-2.5	98	10	39	24	42	2.67	-1.11	1.95	0	7	17	9	5	se.
State means and extremes .....	.....	.....	.....	69.3	-2.5	98	5†	39	24	46	3.35	-0.33	4.17	0	7	18	8	5	se.

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 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.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

Stations.	Barometric Pressure Inches (Sea level)				Relative Humidity (Per cent)	WIND			Sun- shine.								
	Mean	Highest	Date	Lowest		Average velocity.		Maximum									
						Total movement	From wind										
Charles City	30.03	30.32	23	29.68	29	86	53	62	33	30	29.60	4.0	20	nw	20	64	-11
Davenport	30.03	30.32	23	29.68	29	80	47	55	31	1ø	36.03	4.8	20	sw	20	73	+ 3
Des Moines	30.02	30.29	23	29.65	28	81	52	56	27	21	35.90	4.8	23	n	20	71	- 1
Dubuque	30.03	30.37	23	29.66	29	85	55	63	34	2	30.42	4.1	24	se	20	65	0
Keokuk	30.03	30.29	23	29.71	29	77	51	55	34	2	35.68	4.8	35	w	31	71	- 2
Sioux City	30.02	30.30	22	29.56	28	82	53	57	25	26	67.58	9.1	39	nw	6	73	+ 2
Omaha, Neb.	30.01	29.27	22	29.61	28	78	53	57	36	1	43.03	5.8	37	n	20	66	- 2
Means and extremes	30.02	30.37	23	29.56	28	81	52	58	.....	.....	5.2	.....	69	.....	.....	.....	.....
Normals and records	29.97	29	29th	10th	82	61	.....	5†th	.....	6.3	.....	6th	71	.....	.....	.....	.....
	.....	30.43	1909	\$29.40	1874	.....	*19	1918	.....	70	sw	1916	.....	.....	.....	.....	.....

Sioux City, \$Omaha, *Des Moines and Omaha, †Local mean time, ‡And other dates

DAILY PRECIPITATION FOR AUGUST, 1920.

DAILY PRECIPITATION FOR AUGUST, 1920--Continued.

Stations	Watersheds	DAY OF MONTH																															
		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	Total	
Southern Division																																	
Afton	Grand																																
Albia	Des Moines																																
Atlantic	Nishnabotna	.04																															
Bedford	Missouri																																
Bloomfield	Mississippi																																
Bonaparte	Des Moines																																
Burlington	Mississippi																																
Centerville	Chariton																																
Chariton	Chariton																																
Clarinda	Nodaway																																
Columbus Jct.	Iowa																																
Corning	Nodaway																																
Corydon	Chariton																																
Creston	Missouri	.03	.04	T	.33																												
Cumberland	Nodaway																																
Earlham	Des Moines																																
Fairfield	Skunk																																
Glenwood	Missouri																																
Greenfield	Nodaway																																
Indianola	Des Moines																																
Keokuk ***	Mississippi																																
Keosauqua	Des Moines																																
Knoxville	Des Moines																																
Lacona	Des Moines																																
Lamoni	Grand																																
Lenox	Missouri																																
Mt. Ayr	Grand																																
Mt. Pleasant	Skunk																																
Murray	Grand																																
Oakland	Nishnabotna																																
Oskaloosa	Des Moines																																
Ottumwa	Des Moines																																
Pella	Skunk																																
Sigourney	Skunk																																
Stockport	Skunk																																
Thurman	Missouri																																
Washington	Skunk																																
Winterset	Des Moines																																
Omaha, Neb.***	Missouri	.02	T	T																													

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.

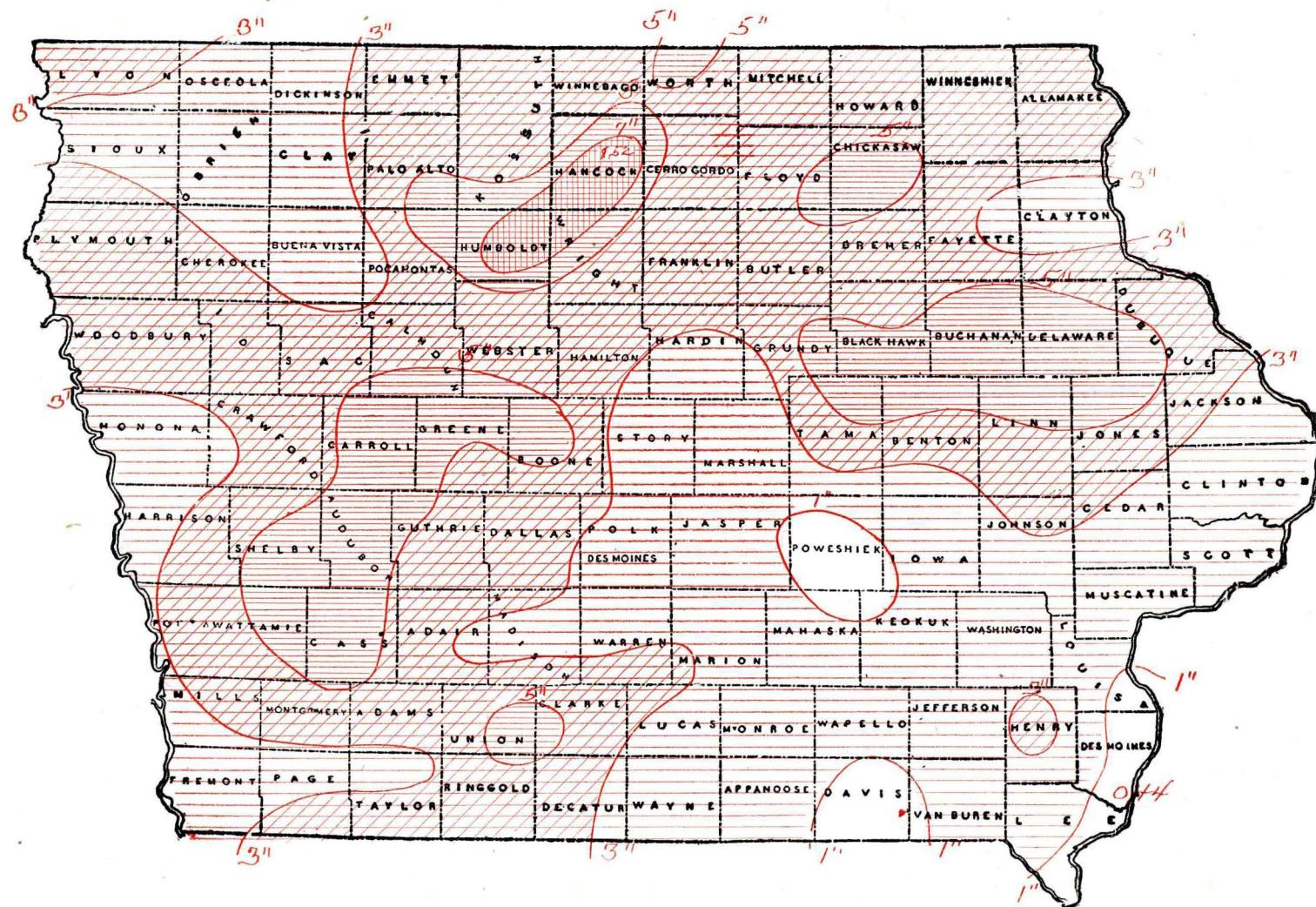
RIVERS

Except for a few slight and unimportant rises, moderate, falling stages prevailed on the principal rivers. On the main streams of the interior rivers no unusually high stages prevailed but on the smaller streams in Carroll, Greene, Humboldt and Hancock County local floods occurred following the heavy rains of the 19th-20th.

Daily Maximum and Minimum Temperatures for the Month of August, 1920.

Stations	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	Mean
<i>Northern Division</i>																																
Algona	72	79	78	71	84	83	77	77	82	78	80	70	71	75	80	82	85	83	76	71	67	70	72	74	74	76	75	78	79	75	76	76.5
	50	49	58	65	60	59	60	58	60	60	67	59	49	50	60	58	61	39	67	60	49	46	49	50	50	49	50	54	59	53	54	55.9
Alta.....	75	82	82	83	89	87	80	83	87	90	75	69	74	79	83	86	81	76	69	69	73	77	76	78	78	76	73	79	76	78	78.8	
Alton.....	53	53	59	67	64	64	60	59	63	63	62	57	55	53	58	61	62	65	67	56	40	47	52	52	56	58	52	56	57.5	52	56	57.5
Alton.....	77	84	85	89	86	81	86	88	93	82	73	75	82	85	85	90	83	80	76	71	76	80	78	79	80	78	75	81	78	81.4		
Belmond.....	50	61	60	65	60	61	55	55	50	56	55	56	52	47	50	54	60	67	66	61	48	42	52	58	54	50	48	55	57	47	54	55.4
Belmond.....	79	82	80	72	90	92	84	85	90	88	86	80	75	80	86	87	86	84	76	71	75	74	75	72	77	82	81	82	75	81	81.0	
Charles City.....	47	50	55	63	61	63	58	56	58	59	66	61	56	49	49	56	60	62	63	61	50	47	48	49	48	50	47	53	62	56	51	55.3
Charles City.....	77	80	79	69	89	87	88	81	87	90	87	83	73	72	78	83	86	88	81	76	69	71	72	77	77	78	80	74	79	78	79.5	
Decorah.....	48	49	55	63	61	61	59	59	58	59	67	62	56	50	54	58	61	63	67	62	54	49	46	47	48	50	50	53	56	55	52	55.9
Decorah.....	76	78	82	67	86	87	76	76	82	89	88	73	65	78	81	85	84	86	83	81	71	73	71	74	77	76	78	79	74	80	79.8	
Forest City.....	50	51	59	60	61	55	55	50	56	55	56	52	47	50	54	60	67	66	61	48	42	52	58	54	50	48	55	57	47	54	55.4	
Forest City.....	76	81	80	76	89	89	82	81	85	88	84	77	73	78	85	87	86	85	87	84	81	78	74	75	76	78	78	76	74	79	79.5	
Forest City.....	50	50	56	61	66	61	58	55	58	60	66	55	53	57	59	60	62	67	62	69	49	46	57	63	63	55	46	55	42	58	57.1	
Inwood.....	78	82	88	92	92	91	87	87	90	91	78	75	78	84	86	86	89	80	84	71	75	75	80	80	80	81	78	78	78	78	82.5	
Mason City.....	48	56	62	66	61	58	55	54	59	57	67	52	44	44	51	53	62	65	66	59	59	45	42	48	54	51	55	55	52	52	55.7	
Mason City.....	76	80	79	75	89	95	80	87	92	86	78	77	74	84	81	86	86	87	84	81	71	76	79	74	79	75	78	79	75	80	79.7	
Milford (near).....	46	44	54	62	61	51	56	53	54	56	69	59	47	47	51	55	57	61	67	61	49	44	46	45	42	44	45	49	61	49	48	52.6
Milford (near).....	71	77	79	79	82	82	77	77	81	85	79	69	70	73	78	80	84	85	76	71	65	69	74	75	76	77	78	71	76	74	76.2	
New Hampton.....	78	80	80	72	90	90	82	82	88	93	90	72	68	81	87	89	89	80	86	77	71	71	73	75	75	78	79	76	82	82	81.0	
Northwood.....	50	51	53	60	60	65	58	58	59	62	65	59	56	51	52	57	60	59	65	63	53	47	45	46	50	52	52	54	63	52	52	55.8
Pocahontas.....	74	78	80	74	86	88	81	81	85	88	81	78	80	88	85	86	86	87	86	89	73	72	73	75	78	78	79	80	80	80	78.8	
Postville.....	48	47	59	64	60	60	58	58	60	58	57	58	51	58	55	58	60	65	69	69	62	63	63	64	64	64	64	64	64	64	64	64.5
Postville.....	73	76	77	70	84	87	77	76	81	87	86	77	63	74	80	81	81	82	77	73	72	75	74	75	74	77	77	74	77	74	76.4	
<i>Central Division</i>																																
Belle Plaine.....	74	83	84	82	92	94	84	87	90	93	92	79	71	75	83	88	89	84	86	80	78	72	75	78	79	84	84	89	89	83	83.2	
Belle Plaine.....	48	46	51	62	63	61	59	58	58	62	64	59	61	54	55	58	62	67	69	50	47	47	47	50	52	49	45	58	63	49	56	56.2
Boone.....	78	85	83	86	94	93	84	88	91	92	87	79	73	79	87	88	87	87	81	74	76	77	75	78	78	84	82	82	82	89	79.8	
Carroll.....	49	47	57	65	64	65	58	59	60	60	66	61	55	53	56	56	61	67	66	62	54	46	48	49	52	55	47	56	62	53	54	56.9
Carroll.....	78	83	84	86	92	91	83	87	90	91	81	81	68	75	83	85	87	89	86	74	75	76	78	76	80	81	77	77	80	81	81.3	
Davenport.....	50	49	56	61	64	64	59	58	61	58	67	59	52	52	54	56	56	62	65	60	50	45	45	50	49	50	49	54	59	53	56.8	
Davenport.....	78	81	82	83	89	93	85	86	88	92	92	77	74	79	81	88	87	90	85	87	74	76	76	75	75	75	75	75	75	75	75	75.7
Des Moines.....	56	58	58	65	68	69	66	65	68	68	70	68	65	62	67	65	65	64	67	71	56	55	51	53	57	53	59	62	66	61	65	62.7
Des Moines.....	77	81	82	93	91	92	84	87	88	90	87	69	78	83	87	87	88	81	79	73	74	76	78	80	80	79	88	80	81	81.8		
Des Moines.....	57	54	60	65	67	68	64	62	64	67	69	64	61	54	54	55	60	63	67	69	62	59	53	53	56	56	60	63	60	63	61	63.10
Dubuque.....	75	78	82	75	88	91	81	82	85	90	91	74	67	78	83	85	87	88	86	83	82	76	77	78	78	79	80	80	78	84	77.80.2	
Ft. Dodge.....	50	55	57	62	64	67	65	61	64	64	68	65	60	57	60	60	61	64	65	63	57	62	59	57	61	60	55	61	60	59	58.91.1	
Grinnell.....	50	51	59	65	61	64	60	58	60	60	67	61	52	59	58	61	61	64	65	60	50	45	48	49	50	50	49	50	50	50	53.58.9a	
Grinnell.....	78	83	81	86	92	93	86	88	92	91	84	74	72	76	83	82	88	86	87	77	74	73	77	75	75	75	75	75	75	75	75	75
Guthrie Center.....	48	45	57	65	61	63	60	54	55	56	63	60	53	57	51	50	53	60	67	58	52	43	46	47	47	52	62	55	57	54.5		
Independence.....	76	80	81	76	87	89	86	87	89	84	87	85	74	72	81	86	84	86	83	81	75</											

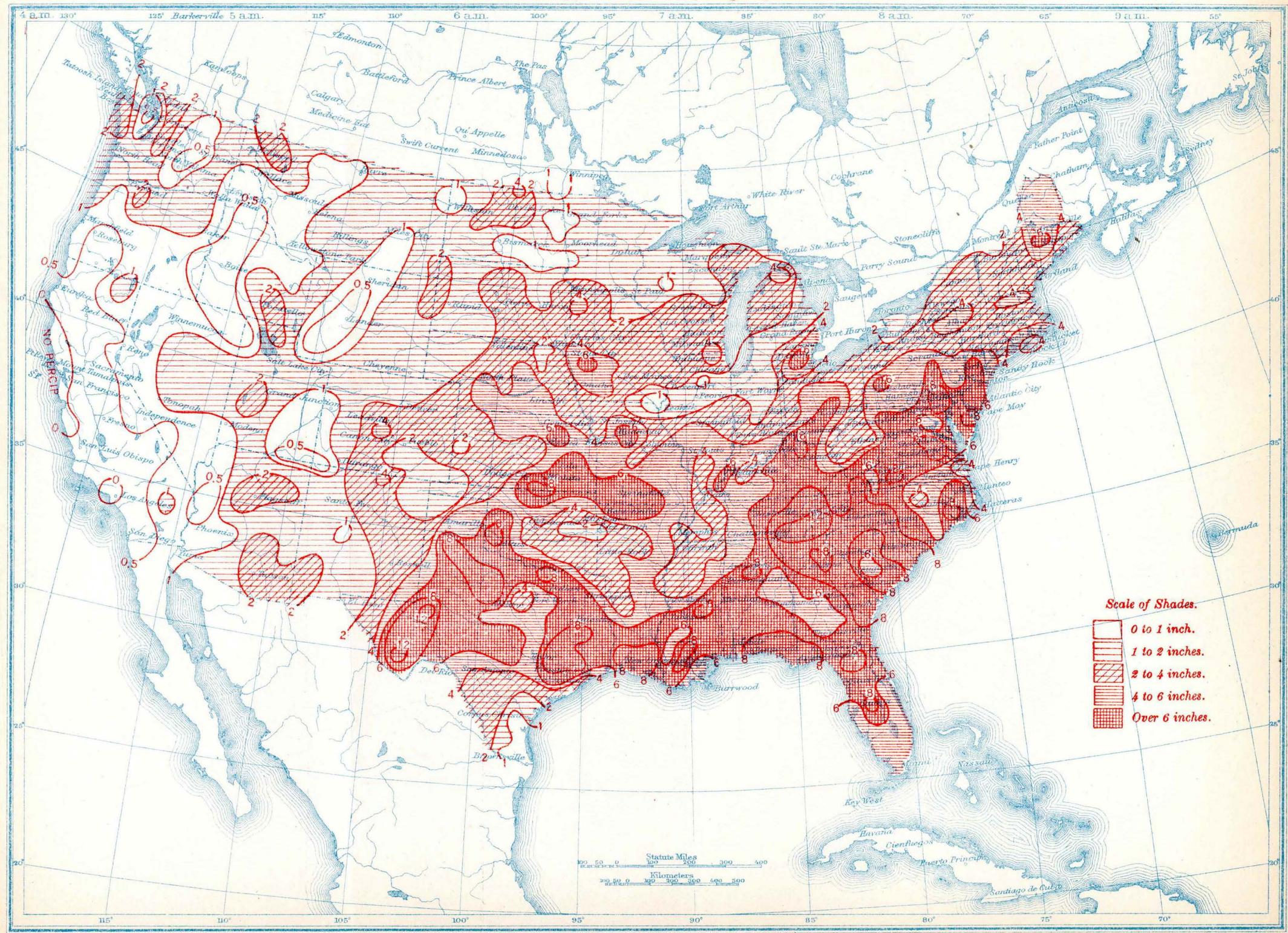
TOTAL PRECIPITATION.—AUGUST, 1920.



SCALE OF SHADES—IN INCHES.



Total Precipitation, Inches, August, 1920.



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, 1920

BY
CHARLES D. REED
METEOROLOGIST

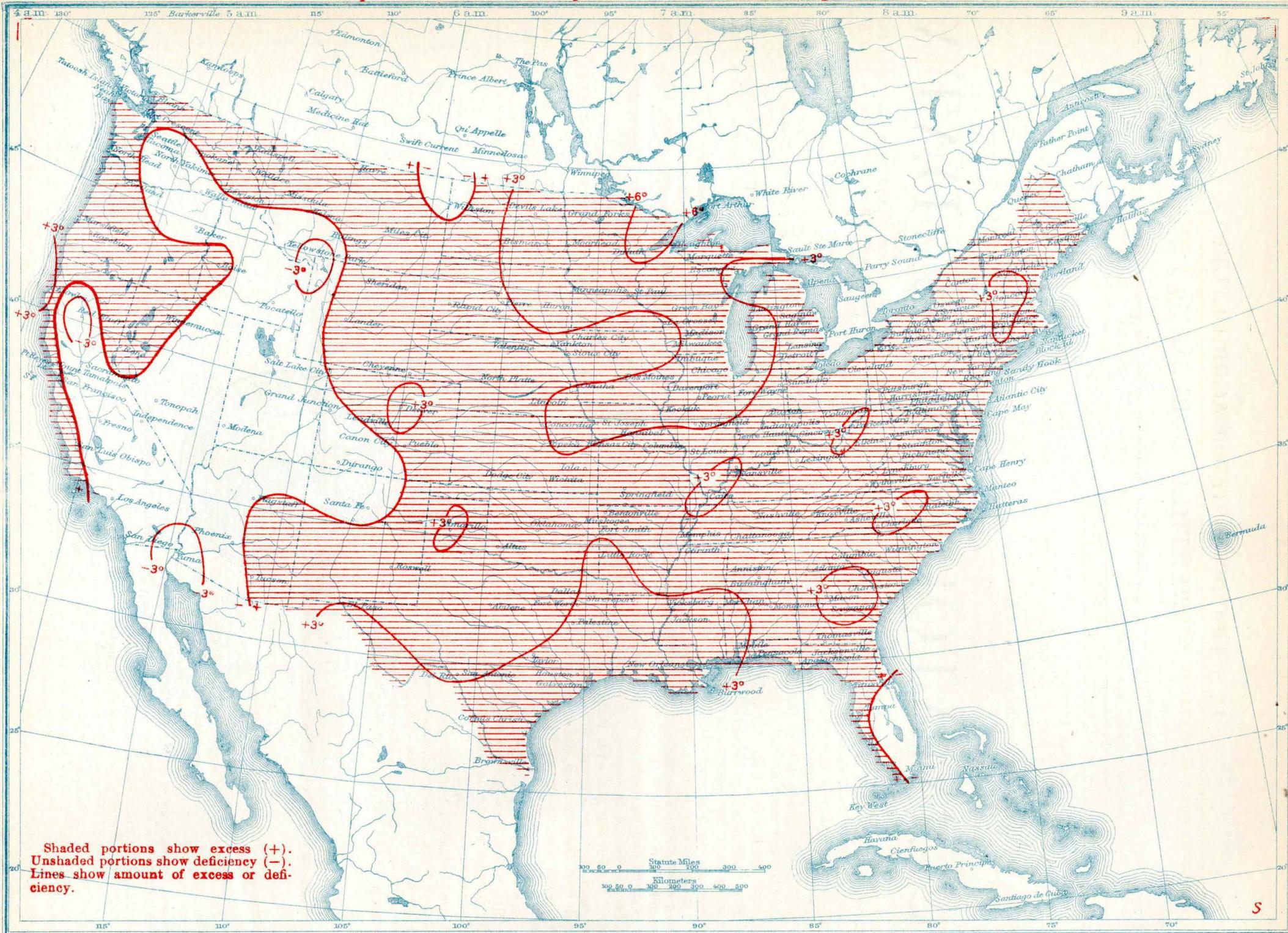


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DES MOINES, IOWA
WEATHER BUREAU OFFICE



Departure of the Mean Temperature from the Normal, September, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist.

Vol. XXXI Des Moines, Iowa, September, 1920. No. 9

GENERAL SUMMARY

The outstanding feature of the weather for September was the unusually favorable condition that prevailed from the 10th to the 28th, inclusive. Aside from the first day, which was warm, the first nine days were cold and wet and the prospects for a normal amount of the corn crop maturing were discouraging, as both July and August were too cool for the normal development of that crop. However on the 10th a warm period, that resembled July weather, set in and it continued unbroken till the 28th, when it was brought to an abrupt ending, with heavy to killing frosts over most of the western and central portions and light to heavy frosts over the eastern portion. During this warm period corn made rapid progress toward maturity and when frost came about 85 per cent of the crop was safe and fortunately over the western half of the State, where the frost was most severe, the greater per cent of the crop was out of danger of frost and much was in the shock.

The precipitation occurred principally during the first nine days but periods of general precipitation also occurred on the 23d and 26th but the amounts on these days were mostly light. The greatest precipitation occurred over about one third of the State in a strip running north and south in the middle section. Over much of the eastern and western sections the precipitation which had been deficient in previous months continued deficient during September and over large areas the soil was too hard and dry to prepare for winter grain, but where wheat had been seeded under favorable conditions the early sown was up in good condition at the end of the month.

Strong winds prevailed generally from the 20th to the 25th which blew down corn and many fields were in a badly tangled condition, but they hastened the maturity of the corn.

A very strange meteor was observed by Mr. Arthur Betts, at Nora Springs, during the early evening of September 6th. It was at an elevation of about 30° in the west-southwest and of about the brilliancy of Venus. It gradually faded out of existence, leaving no trail behind it.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.98 inches. The highest recorded was 30.43 inches, at Sioux City and Omaha, Neb. on the 29th, and the lowest was 29.38 inches, at Sioux City, on the 23d. The monthly range was 1.05 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 94 stations was 66.5° , or 3.1° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 65.1° , or 3.3° higher than the normal; Central, 66.6° , or 3.1° higher than the normal; Southern, 67.7° , or 2.7° higher than the normal. The highest monthly mean was 70.0° , at Burlington, and the lowest was 62.8° , at Northwood. The highest temperature reported was 98° at Onawa, on the 19th, and Maquoketa on the 20th, and the lowest was 24° at Little Sioux and Sanborn, on the 30th. The temperature range for the State was 74° .

HUMIDITY.

The average relative humidity for the State at 7:00 a. m. was 83 per cent and at 7:00 p. m. was 61 per cent. The mean for the month was 72 per cent, which is 2 per cent below normal. The highest monthly mean was 80 per cent at Charles City, and the lowest was 67 per cent at Sioux City.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 102 stations, was 3.30 inches, or 0.06 inch below the normal. By divisions, the averages were as follows: Northern, 3.54 inches, or 0.49 inch more than the normal; Central, 2.86 inches, or 0.60 inch less than the normal; Southern, 3.51 inches, or 0.05 inch less than the normal. The greatest amount, 7.21 inches, occurred at Afton, and the least, 0.69 inch, at Cedar Rapids. The greatest amount in 24 consecutive hours, 3.77 inches, occurred at Boone on the 9th.

WIND.

The prevailing direction of the wind was from the south. The highest velocity reported from a regular Weather Bureau Station was at the rate of 53 miles an hour from the south at Sioux City, on the 25th.

SUNSHINE.

The average per cent of the possible amount of sunshine was 68, which is 5 per cent above normal. The per cent of the possible amount at regular Weather Bureau Stations was as follows: Charles City, 56; Davenport, 68; Des Moines, 68; Dubuque, 59; Keokuk, 66; Sioux City, 78; Omaha, Neb., 73.

MISCELLANEOUS PHENOMENA.

Aurora: 7th, 10th, 17th, 28th, 30th.*Fog:* 2d, 3d, 4th, 5th, 6th, 9th, 10th, 11th, 12th, 20th, 27th, 28th, 30th.*Frost, Light:* 28th, 29th, 30th; *Heavy*, 29th, 30th; *Killing* 29th, 30th.*Hail:* 3d, 4th, 5th, 10th, 26th, 29th.*Halos:* (Lunar or Solar): 1st, 10th, 14th, 21st, 22d.*Meteor:* 6th, 20th.*Thunderstorms:* 1st, 2d, 3d, 4th, 5th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 19th, 23d, 24th, 25th, 26th.

COMPARATIVE DATA FOR THE STATE—SEPTEMBER.

YEAR	Temperature				Precipitation				Number of Days.				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipita-	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	21	3.33	-2.03	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	5.88	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.....	60.8	-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	+1.52	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
1919.....	67.5	+4.1	99	33	5.34	+1.98	11.82	1.49	.....	8	16	6	8
1920.....	66.5	+3.1	98	24	3.30	-0.06	7.21	0.69	.....	8	17	8	5

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

CLIMATOLOGICAL DATA FOR SEPTEMBER, 1920.

STATIONS.	COUNTIES.	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit						Precipitation in inches			No. 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 hour	Total snowfall (unmetred)	Precipitation .01 inch or more	Clear	Partly cloudy	Cloudy		
						Date	Date	Date	Date	Total	Departure from Normal	Total	Clear	Partly cloudy	Cloudy					
<i>Northern Division</i>																				
Algona	Kossuth	1213	47	64.4	+2.2	85	14†	30	30	26	2.78	-0.46	0.86	0	10	21	5	4	se.	W. E. Laird
Allison	Butler	1045	8	65.2	.....	89	25	33	30	35	6.53	.....	3.63	0	8	12	12	6	nw.	J. A. Bell
Alta	Buena Vista	1513	29	61.7	+2.8	88	18	30	30	32	2.69	-0.39	0.90	0	6	18	8	4	s.	David E. Hadden
Alton	Sioux	1305	15	64.8	+2.4	90	18†	27	30	40	2.36	.....	0.78	0	7	13	13	4	sw.	W. S. Slagle
Belmond	Wright	1205	10	65.8	.....	90	25	31	30	39	5.14	.....	2.12	0	10	14	11	5	s.	Geo. P. Hardwick
Britt ???	Hancock	1236	23	64.8a	+3.3	89a	18	33a	30	36a	4.42	+0.93	0.73	0	10	.....	.....	.....	s.	L. M. Goodman
Charles City	Floyd	1015	29	64.4	+2.7	88	25	34	30	31	5.76	+2.96	2.39	0	11	11	11	3	s.	U.S. Weather Bureau
Decorah	Winneshiek	875	27	63.2	+1.0	86	14†	29	30	38	2.07	-1.87	0.45	0	9	19	8	3	s.	William F. Baker
Elkader	Clayton	751	41	.....	.....	91	25	31	30	38	3.39	-0.44	2.11	0	5	12	14	4	se.	C. L. Reinecke
Estherville	Emmet	1298	25	64.8	+4.7	90	18†	30	30	33	2.90	-0.79	1.35	0	7	19	8	3	s.	A. O. Peterson
Fayette ???	Fayette	1003	30	64.7	+3.4	88	14†	32	30	33	5.21	+1.82	2.38	0	7	18	8	4	nw.	R. Z. Latimer
Forest City .....	.....	1226	26	65.4	+4.1	89	18	34	30	33	3.94	+0.49	1.20	0	11	11	13	6	sw.	M. B. Neil
Humboldt ???	Winnebago	1095	32	66.3	+4.0	92	18	31	30	38	5.14	+2.10	2.00	0	9	12	10	8	s.	H. C. Snitkey
Inwood	Humboldt	1474	16	65.8	+3.3	92	18	25	30	40	2.27	-0.54	1.16	0	6	21	8	1	s.	F. B. Hanson
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	2.19	-1.59	0.98	0	8	.....	.....	.....	.....	s.	Chas. R. Serene
Le Mars	Plymouth	1224	24	66.4	+4.0	93	19	25	30	41	2.39	-0.86	0.90	0	6	17	13	0	s.	C. L. Trenery
Mason City	Cerro Gordo	1148	23	64.6	+3.2	90	18	31	30	34	5.89	+3.44	1.42	0	8	21	1	8	se.	North's Sugar Corp.
Millard (near) ???	Dickinson	1430	.....	63.6	.....	86	18	32	30	30	4.91	.....	2.30	0	7	10	13	7	se.	Dr. F. J. Smith
New Hampton ???	Chickasaw	1169	23	65.1	+4.2	89	14†	32	30	34*	2.72	-0.40	1.14	0	8	17	8	5	s.	A. F. Kemmen
Nora Springs	Floyd	1064	8	67.8	.....	92	14	34	30	34	5.40	.....	1.37	0	13	16	12	2	s.	Arthur Betts
Northwood	Worth	1222	21	62.8	+1.8	85	14	35	30	30	7.05	+3.79	2.75	0	9	14	9	7	sw.	Chas. Dwelle
Pocahontas	Pocahontas	1248	16	66.1	+3.7	92	18	29	30	38	1.39	-2.40	0.43	0	8	20	7	3	se.	F. E. Hronek
Postville	Clayton	1180	21	63.1	+2.0	84	25	32	30	25	5.11	+1.42	2.22	0	9	13	12	5	s.	F. L. Williams
Rock Rapids	Lyon	1358	21	63.6	+1.6	88	18	26	30	38	2.61	-0.19	0.83	0	8	24	3	3	nw.	J. K. Medberry
Sanborn	O'Brien	1553	6	64.0	.....	93	18	24	30	42	4.97	.....	2.84	0	7	20	6	4	s.	James W. Dow
Sioux Center	Sioux	1426	21	66.0	+4.2	92	19	28	30	35	2.61	-0.45	1.10	0	6	21	8	1	s.	J. de Ruyter
Spencer	Clay	1319	6	65.8	.....	94	18	27	30	43	3.57	.....	1.10	0	7	16	9	5	sw.	E. W. Little
Storm Lake	Buena Vista	1440	31	66.4	+4.2	90	18	31	30	34	3.71	+0.65	2.20	0	7	20	7	3	s.	Geo. H. Fracker
Washta	Cherokee	1157	22	64.9	+1.6	92	18†	25	30	45	1.80	-1.72	0.93	0	5	23	5	2	s.	H. L. Felter
Waverly	Bremer	948	24	65.7	+3.5	90	25	30	30	39	2.20	-0.79	0.95	0	6	13	6	11	se.	V. Arnold
West Bend	Palo Alto	1197	27	66.9	+4.4	92	25	27	30	41	1.88	-1.69	0.40	0	9	16	11	3	sw.	Jos. Dorweiler
Means and extremes .....	.....	.....	.....	65.1	+3.3	94	18	24	30	49	3.54	+0.49	3.69	0	8	17	9	4	s.	.....
<i>Central Division</i>																				
Ames	Story	926	40	66.2	+2.8	90	25	32	30	34	3.34	-0.53	1.20	0	7	17	5	8	s.	Iowa State College
Audubon	Audubon	1301	26	66.1	+3.6	88	19	28	30	32	2.78	-0.62	1.09	0	6	19	6	5	sw.	Geo. Kirby
Baxter	Jasper	998	20	66.7	+3.2	89	25	32	30	31	2.77	-0.85	0.93	0	8	14	8	8	s.	Rev. Paul Traeger
Belle Plaine	Benton	898	30	66.5	+3.3	92	25	32	30	39	2.89	-0.25	1.67	0	7	11	12	7	se.	O. C. Burrows
Boone	Boone	1134	15	67.0	+4.5	90	25	31	30	40	5.43	+1.87	3.77	0	8	20	3	7	s.	Carl F. Henning
Carroll	Carroll	1265	30	66.0	+4.0	89	11†	29	30	36	2.67	-0.41	0.82	0	7	23	3	4	sw.	Mrs. Jos. J. Wolfe
Cedar Rapids	Linn	733	38	69.2	+5.2	93	14†	35	30	35	0.69	-2.34	0.32	0	4	17	3	10	s.	R. S. Toogood
Clinton	Clinton	593	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Davenport	Scott	580	49	68.8	+4.1	91	25	37	29	29	1.85	-1.29	1.42	0	7	15	8	7	sw.	U.S. Weather Bureau
Delaware	Delaware	1083	29	64.1	+2.2	87	11	34	29†	30	0.98	-2.40	0.24	0	7	14	12	3	s.	Nettie E. Ball
Denison	Crawford	1180	26	66.3	+2.8	89	19	31	30	31	2.27	-0.66	0.86	0	7	24	4	2	n.	Emma Brogden
Des Moines	Polk	861	41	68.0	+3.0	89	25	36	30	30	4.44	+1.37	2.07	0	9	14	9	7	s.	U.S. Weather Bureau
Dubuque	Dubuque	639	47	66.4	+2.8	90	25	34	30	31	1.46	-2.13	1.05	0	6	15	8	7	s.	Isadore Haugh
Fort Dodge	Webster	1126	20	66.7	+4.1	92	11	35	30	36	4.71	+1.40	2.25	0	7	19	3	8	e.	Wm. Bader
Grinnell	Poweshiek	1031	26	66.8	+2.2	90	11	33	30	30	4.44	+0.85	1.94	0	7	.....	.....	.....	s.	U.S. Weather Bureau
Grundy Center	Guthrie	976	29	67.0	+3.4	89	14†	33	30	31	4.98	+1.55	2.35	0	8	17	6	7	w.	M. G. Heilberger
Guthrie Center	Guthrie	1077	25	65.8	+2.1	89	25	29	30	35	2.01	-1.52	0.85	0	6	20	6	4	nw.	C. T. Harney
Harlan	Shelby	1182	21	66.9j	+3.7	91j	15	29j	30	44j	.....	.....	0	0	7	.....	.....	.....	s.	W. K. Colburn
Independence	Buchanan	921	56	66.2	+3.6	89	25	31	30	34	3.83	-0.03	2.40	0	4	17	6	7	s.	Dr. Geo. Boddy
Iowa City	Johnson	733	60	67.4	+3.8	92	11†	34	30	39	1.20	-2.48	0.53	0	11	12	10	8	s.	Prof. J. F. Reilly
Iowa Falls	Hardin	1107	27	64.6	+3.7	87	25	31	30	34	4.73	+1.19	2.85	0	11	18	4	8	s.	J. B. Parmelee
Jefferson	Greene	1052	21	65.5	+2.3	89	25	29	30	34	2.40	.....	1.01	0	8	18	4	8	sw.	Will I. Lyon
LeClaire	Scott	576	20	.....	.....	.....	.....	.....	.....	1.74	-1.66	1.32	0	8	.....	.....	.....	.....	.....	.....
Little Sioux	Harrison	1040	15	67.4	+1.8	96	19	24	30	45	2.59	.....	1.13	0	6	17	7	6	sw.	Margaret T. Disney
Logan	Harrison	928	53	68.4	+3.9	93	19	28	30	41	1.86	-1.48	0.66	0	7	19	8	3	sw.	Geo. H. Gibson
Maquoketa	Jackson	688	19	66.2	+3.6	98	20	33	30											

CLIMATOLOGICAL DATA FOR SEPTEMBER, 1920.—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 0.1 in. or more	Number of Days		
															Clear.	Partly cloudy.	Cloudy.	
Southern Division																		
Afton	Union	1212	26	67.7	+3.2	89	12†	32	30	33	7.21	+3.24	3.21	0	8	17	9	4 sw.
Albia	Monroe	959	22	67.6	+3.0	91	11†	32	30	33	3.90	+0.25	1.10	0	7	14	7	9 sw.
Atlantic	Cass	1164	29	67.6	+3.5	90	19	29	30	43	1.57	-1.95	0.84	0	7	17	9	4 nw.
Bedford	Taylor	20									2.79	-0.79	0.85	0	8	16	8	6 s.
Bloomfield	Davis	881	13	68.0d		90d	14	35d	30	33d	2.15	-1.83	0.98	0	5			sw.
Bonaparte	Van Buren	565	29	68.2	+2.7	91	25	34	30	35	3.32	-0.88	1.33	0	7	21	4	5 w.
Burlington	Des Moines	544	24	70.0	+3.9	93	11	38	29†	34	4.01	+0.36	3.30	0	4	19	6	5 sw.
Centerville	Appanoose	1013	15	68.0		94	25	33	30	39	2.84		1.53	0	9	12	11	7 se.
Chariton	Lucas	1042	25	67.7	+3.0	89	14	32	30	36	6.00	+2.68	2.58	0	6	12	15	3 s.
Clarinda	Page	1009	30	68.4	+3.8	93	20	31	30	42	2.11	-0.88	0.52	0	10	14	9	7 s.
Columbus Jct.	Louisa	595	19	69.2	+3.9	91	11	37	29†	28	1.43	-1.73	0.42	0	6	23	5	2 sw.
Corning	Adams	1117	28	66.6	+2.7	90	20	29	30	43	3.30	+0.02	1.27	0	6	20	4	6 sw.
Corydon	Wayne	1101	27	68.7	+2.7	92	20	32	30	32	5.73	+2.25	2.01	0	12	13	11	6 se.
Creston	Union	1312	15	66.0	+2.4	85	25	32	30	27	6.52		1.72	0	9	8	20	2 sw.
Cumberland	Cass	21									1.00	-2.78	0.40	0	3	22	6	2 sw.
Earlham	Madison	1126	18	65.8	+2.5	88	11	29	30	36	4.26	+0.66	3.05	0	6	21	4	5 sw.
Fairfield	Jefferson	780	36	68.2f	+3.0	94f	14	34f	30	34f	3.61	+0.34	1.59	0	7			sw.
Glenwood	Mills	1100	22	68.2		92	19	29	30	35	1.03		0.27	0	5	16	9	5 se.
Greenfield	Adair	28	66.1	+2.4	88	20	29	30	34	5.12	+1.73	2.15	0	6	22	4	4 sw.	
Indianola	Warren	969	29															
Keokuk	Lee	614	49	69.5	+3.1	91	25	38	30	29	2.65	-1.32	1.12	0	8	12	11	7 s.
Keosauqua	Van Buren	644	28	68.2	+3.7	93	14†	34	30	40	1.42	-2.84	0.32	0	10	12	13	5 se.
Knoxville	Marion	920	25	67.9	+2.6	92	14	33	30	36	5.09	+1.51	2.10	0	8	12	10	8 nw.
Lacona	Warren	21									4.95	+1.21	2.20	0	6	11	14	5
Lamoni	Decatur	1100	13	67.6	+2.3	92	20	31	30	36	5.72	-1.83	1.58	0	11	16	9	5 s.
Lenox	Taylor	1250	25	67.4	+2.7	92	20	32	30	34	4.46	+1.06	1.65	0	7	19	7	4 s.
Mt. Ayr	Ringgold	1236	27	67.0	+1.1	90	20	31	30	33	5.31	-1.73	1.72	0	8	21	4	5 s.
Mt. Pleasant	Henry	729	39	68.6	+3.2	93	11	35	30	32	4.03	-0.80	2.22	0	9	11	14	5 se.
Murray	Clarke	1216	29	67.1	+1.8	87	20	32	30	29	6.22	+2.75	2.42	0	9	14	11	5 s.
Oakland	Pottawattamie	1105	1	67.3		92	19	29	30	42	1.61		1.13	0	5	22	3	5 s.
Oskaloosa	Mashaka	825	44	67.2	+2.5	91	14	33	30	31	4.19	+1.14	1.44	0	12	13	9	8 se.
Ottumwa	Wapello	849	25	67.5		90	14†	35	30	37	2.40	+1.29	0.83	0	8	18	3	9 w.
Pella	Marion	877	27	67.4	+2.2	90	13	32	30	39	4.84	+1.61	2.00	0	7	22	2	6 s.
Sibley	Keokuk	877	24	67.5	+2.5	91	11†	33	30	34	2.35	-0.87	0.47	0	8	14	9	7 se.
Stockport	Van Buren	754	18	67.6	+2.7	93	13†	33	30	40	2.86	-1.07	1.48	0	12	17	9	4 s.
Thurman	Fremont	23	66.4	+1.2	91	19	28	30	41	1.10	-3.40	0.38	0	4	9	19	2 nw.	
Washington	Washington	769	38	67.8	+3.1	91	14	36	29	31	1.89	-1.12	0.68	0	8	12	10	8 sw.
Winterset	Madison	1129	29	67.2	+2.4	89	25	30	30	34	3.33	-0.01	1.47	0	7	21	7	2 sw.
Omaha, Nebr.		1040	49	68.8	+3.0	94	19	34	30	36	1.03	-2.00	0.42	0	8	15	11	4 nw.
Means and extremes				67.7	+2.7	94	14†	28	30	43	3.51	-0.05	3.30	0	8	16	9	5 sw.
State means and extremes				66.5	+3.1	98	19†	24	30	43	3.30	-0.06	3.77	0	8	17	8	5 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, etc., 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.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

Stations.	Barometric Pressure Inches (Sea level)				Relative Humidity (Per cent)			WIND			Sun- shine						
	Mean	Highest	Date	Lowest	7 A. M.	Noon [‡]	7 P. M.	Lowest	Date	Total movement	Average h'ly velocity.	Miles	From	Date			
Charles City	29.98	30.37	2	29.61	24	88	56	72	32	27	3973	5.5	22	se	19	56	-13
Davenport	29.99	30.30	2	29.70	9	84	50	57	25	16	4743	6.6	30	sw	15	68	+ 5
Des Moines	29.96	30.30	30	29.54	23	84	51	61	19	16	4692	6.5	36	sw	23	68	+ 6
Dubuque	30.00	30.33	2	29.68	11	83	58	67	35	28	4046	5.6	24	nw	28	59	0
Keokuk	30.00	30.26	2	29.72	23	79	53	60	31	16	4733	6.6	34	nw	11	66	+ 6
Sioux City	29.95	30.43	29	29.38	23	83	62	1	26	11†	7656	10.6	53	s	25	78	+ 16
Omaha, Neb.	29.96	30.43	29	29.43	23	81	51	58	24	15†	4780	6.6	33	n	28	73	+ 9
Means and extremes	29.98				83	54	61				6.9				68	+ 5	
	30.43	29	29.38	23		19	16				55	s			25		
Normals and records	30.02		26th		30th	83	64		16th		7.2				7th	63	
						19	19				721	w			1872		

* Dubuque § Omaha ¶ Des Moines || Davenport.

† Local mean time. † And other dates.

September, 1920.

DAILY PRECIPITATION FOR SEPTEMBER, 1920.

DAILY PRECIPITATION FOR SEPTEMBER, 1920.—Continued

Stations	Watersheds.	DAY OF MONTH.																														
		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	Total
<i>Southern Division</i>																																
Afton	Grand	.61	1.11	.93	.62	.....	.....	3.21	.....	.32	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.21
Albia	Des Moines	.10	.83	1.10	.....	.....	.....	.32	.82	.....	T	.....	.....	.57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.90
Atlantic	Nishnabotna	T	.17	.....	.....	.....	.....	.30	.14	.04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.57
Bedford	Missouri	.46	.09	.38	.....	.....	.....	.85	.....	T	.60	.....	.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.79
Bloomfield	Mississippi	.....	.....	.....	.02	.....	.....	.98	.....	.....	.12	.....	.....	.....	.78	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.15
Bonaparte	Des Moines	.....	.....	.....	.....	.....	.....	T	.21	.....	.14	.....	.....	.....	.67	1.33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.32
Burlington	Mississippi	.....	.....	.....	.....	.....	.....	.29	.....	.....	.12	.....	T	3.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.01
Centerville	Chariton	.....	.05	.43	.10	.....	.....	1.53	.01	.....	.58	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.84
Chariton	Chariton	T	.85	2.58	.30	.....	.....	1.80	T	.....	.35	.....	.12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.00
Clarinda	Nodaway	.01	.21	.....	.02	.....	.....	.44	.08	.....	.40	.....	.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.11
Columbus Jct.	Iowa	.....	T	.05	.....	.....	.....	.16	.35	.....	.02	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.43
Corning	Nodaway	.....	.17	1.27	.41	.....	.....	.92	.....	T	T	.....	.....	.42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.30
Corydon	Chariton	T	2.01	.12	1.43	.05	.....	1.57	.01	.07	.29	.....	T	.02	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.73
Creston	Missouri	.....	.48	1.72	1.00	.....	.....	1.44	1.58	.....	.01	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.52	
Cumberland	Nodaway	.....	.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.00	
Earlham	Des Moines	.12	.23	.31	.41	.....	.....	3.05	.08	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.26
Fairfield	Skunk	.....	.56	T	.....	.....	.....	.38	.....	.14	.....	.....	.....	1.59	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.61
Glenwood	Missouri	.....	.25	.....	.....	.....	.....	.20	.....	.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.03
Greenfield	Nodaway	.49	.91	.89	.54	.....	.....	2.15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.12
Indianola	Des Moines	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Keokuk	Mississippi	***	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.65
Keosauqua	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.42
Knoxville	Des Moines	T	.20	3.0	1.56	.53	.....	.....	2.10	.15	T	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.09
Lacona	Des Moines	.....	.20	.42	2.08	.....	.....	2.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.95
Lamoni	Grand	.....	.13	.16	1.58	.42	.....	.....	1.20	.30	.....	1.30	.02	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.72
Lenox	Missouri	.....	.85	.65	.39	.....	.....	1.65	.....	.....	.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.46
Mt. Ayr	Grand	1.72	T	.75	.33	.....	.....	1.58	.....	T	.41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.31
Mt. Pleasant	Skunk	.....	T	.19	.....	.10	.18	.....	.12	.....	.22	2.22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.03
Murray	Grand	T	.24	.67	1.65	.97	.....	.....	2.42	.....	.04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.22
Oakland	Nishnabotna	.05	.20	.....	.....	.....	.....	.08	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.61
Oskaloosa	Des Moines	1.06	.08	1.44	.17	.....	.....	.71	.....	.05	.04	.....	.....	.05	.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.19
Ottumwa	Des Moines	1.13	.40	.23	.....	.....	.....	.83	.....	.03	.....	.....	.....	.48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.40
Pella	Skunk	T	.29	T	2.00	.06	.....	2.00	.36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.84
Sigourney	Skunk	.....	.36	.47	.05	.....	.....	.40	.21	T	T	.....	.....	.....	.38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.35
Stockport	Skunk	.....	.....	.02	.05	.....	.....	.11	.03	.....	.10	.....	.....	.04	1.48	.....	.....	.....	.06	.02	.....	.....	.07	.....	.....	.....	.....	.....	.....	.....	2.86
Thurmen	Missouri	T	.34	T26	T	.12	T01	.68	T	.38	.38	1.10
Washington	Skunk	.....	.06	.18	.....	.....	.....	.27	.19	.....	.....	.....	.....	.....	.01	.68	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.89
Winterset	Des Moines	T	.60	.93	.18	.....	.....	1.47	.06	T	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.33
Omaha, Neb.***	Missouri	.06	.15	T	.....	.....	.....	.01	.....	.03	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.03

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.

RIVERS.

On the principal rivers low, slowly falling stages prevailed during practically the entire month. On the interior rivers a few slight rises occurred resulting from locally heavy rainfall but during the greater part of the month low, and nearly stationary stages prevailed.

ERRATA

Report for July, 1920: Rockwell City, Page 76. Total precipitation recorded 4.38 inches, should be 5.98 inches, departure +2.08 inches and the number of days with .01 or more precipitation, 14. Page 78; precipitation on 21st should be 1.60 and the total 5.98 inches. Page 81; headings for hail table should be the same as in the June, 1920 report, page 69.

CLIMATOLOGICAL DATA: IOWA SECTION.

September, 1920.

Daily Maximum and Minimum Temperatures for the Month of September, 1920.

Stations.	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	Total	
<i>Northern Division</i>																																	
Algona.....	{ Maximum..	76	70	69	69	68	69	71	80	74	78	79	76	80	85	79	76	80	83	74	71	82	77	74	75	85	79	66	61	49	49	73.6	
	{ Minimum..	56	57	51	58	54	46	50	55	56	60	60	50	60	65	64	64	54	59	60	59	63	66	64	56	65	53	48	45	32	30	55.3	
Alta.....	{ Maximum..	76	73	68	64	65	71	74	71	77	80	84	82	84	85	79	80	83	88	87	79	86	77	75	79	86	69	60	47	51	75.0		
	{ Minimum..	59	57	55	53	50	49	52	53	52	60	58	55	60	65	60	50	56	61	65	56	66	61	53	54	49	49	42	36	30	54.4		
Alton.....	{ Maximum..	76	72	72	68	65	73	75	74	80	84	85	86	85	88	80	82	86	90	88	82	86	78	76	78	90	73	68	66	45	52	76.9	
	{ Minimum..	52	48	58	54	53	48	48	51	51	55	47	50	65	63	42	52	59	65	56	63	70	60	52	58	50	43	45	34	27	52.6		
Belmond.....	{ Maximum..	81	70	71	70	70	76	78	71	80	80	88	85	82	87	82	84	84	88	69	82	87	78	76	80	90	80	76	68	52	55	77.3	
	{ Minimum..	59	53	53	52	55	48	49	52	57	58	61	52	58	63	66	45	51	58	58	54	66	64	56	68	57	50	45	36	31	54.4		
Charles City.....	{ Maximum..	78	67	70	60	69	73	76	74	75	74	87	77	80	87	79	76	81	87	80	79	85	84	75	79	88	74	71	61	48	51	74.5	
	{ Minimum..	56	56	54	55	53	49	49	53	60	60	58	55	60	65	60	56	49	52	56	55	58	64	66	61	65	50	46	39	33	34	54.2	
Decorah.....	{ Maximum..	74	68	72	66	67	72	76	76	70	74	84	77	81	86	80	76	82	86	74	77	85	83	75	80	85	80	73	63	53	53	75.0	
	{ Minimum..	53	47	52	53	55	45	44	46	60	52	63	53	47	56	65	45	44	55	53	54	58	66	65	55	53	50	39	44	35	29	51.5	
Forest City.....	{ Maximum..	78	65	68	66	67	74	77	76	79	75	85	81	84	87	84	80	89	80	80	85	76	74	80	88	81	74	61	50	53	76.1		
	{ Minimum..	56	53	51	56	50	50	51	57	58	60	52	58	62	69	50	51	57	56	58	64	66	63	56	64	51	52	44	42	34	54.7		
Inwood.....	{ Maximum..	76	75	75	70	68	74	77	79	83	85	89	86	86	90	85	84	90	92	91	90	89	83	76	78	73	73	59	54	53	53	78.7	
	{ Minimum..	60	57	52	53	53	50	51	51	54	61	53	49	56	67	57	44	54	60	66	51	65	64	56	47	39	42	33	25	52.9			
Mason City.....	{ Maximum..	76	77	69	67	69	74	75	74	77	74	85	79	83	87	84	77	85	90	80	80	87	79	75	84	88	81	71	63	49	51	76.3	
	{ Minimum..	54	52	52	54	52	44	45	47	57	56	61	51	55	62	63	46	51	58	55	57	62	65	62	56	43	42	35	31	52.9			
Milford (near).....	{ Maximum..	73	69	69	63	65	68	72	72	75	77	80	77	82	85	77	72	78	77	80	77	70	85	78	71	84	68	62	56	47	38	72.3	
	{ Minimum..	56	56	55	56	55	54	52	54	59	55	60	59	55	63	63	47	53	59	61	66	63	63	54	63	50	44	44	37	32	54.9		
New Hampton.....	{ Maximum..	78	67	72	65	70	76	78	76	76	77	87	79	82	89	80	79	80	84	73	80	87	85	83	88	88	82	78	75	65	48	54	76.4
	{ Minimum..	58	52	52	54	55	47	50	54	60	56	62	54	54	59	66	49	51	55	53	56	57	64	63	60	60	57	45	45	34	32	53.8	
Northwood.....	{ Maximum..	78	65	69	63	67	71	75	75	75	72	80	75	79	85	78	75	80	83	73	80	82	78	72	75	69	67	54	49	51	72.3		
	{ Minimum..	57	53	52	54	53	46	48	52	58	57	60	53	55	60	63	50	57	55	56	60	63	61	56	54	49	43	36	35	33	53.2		
Pocahontas.....	{ Maximum..	81	71	72	73	71	75	78	72	81	84	90	86	87	89	82	85	87	92	89	77	91	80	79	82	91	80	75	65	50	54	79.0	
	{ Minimum..	56	56	58	53	52	42	47	50	51	58	52	57	65	62	47	52	60	61	57	64	61	64	45	66	50	44	44	35	32	53.2		
Postville.....	{ Maximum..	70	67	67	64	64	70	75	74	78	82	85	77	83	77	72	77	81	75	75	81	80	73	76	84	78	69	65	48	48	48	72.3	
	{ Minimum..	57	49	51	51	54	49	50	51	58	53	61	56	59	60	65	51	52	61	52	55	59	66	63	62	54	48	47	34	32	53.9		
<i>Central Division</i>																																	
Belle Plaine.....	{ Maximum..	80	68	77	68	67	77	81	69	78	83	90	85	82	90	85	84	70	85	89	90	91	88	81	89	92	79	80	75	50	53	79.2	
	{ Minimum..	58	56	54	56	56	46	48	57	62	55	63	53	56	61	54	45	56	48	53	55	52	64	64	61	68	59	47	42	34	32	53.8	
Boone.....	{ Maximum..	85	69	73	66	71	76	78	64	81	83	89	88	85	88	81	84	89	87	85	88	87	81	86	80	80	75	69	52	53	78.6		
	{ Minimum..	60	57	51	56	52	46	50	55	58	58	61	52	60	65	70	45	53	57	60	60	64	66	64	59	50	45	30	34	31	55.5		
Carroll.....	{ Maximum..	81	73	67	74	70	78	79	61	79	82	89	85	85	87	81	83	84	89	88	82	87	75	79	84	88	87	76	69	50	52	77.8	
	{ Minimum..	59	56	54	53	50	53	48	54	51	61	54	58	64	63	47	52	61	63	58	62	67	61	54	57	47	42	35	29	54.2			
Davenport.....	{ Maximum..	76	76	79	72	68	76	81	71	70	80	90	84	80	88	84	82	86	89	81	82	86	80	81	87	84	80	76	74	51	52	79.4	
	{ Minimum..	62	54	56	57	53	52	54	54	59	61	58	65	60	61	63	64	55	56	60	57	67	69	66	68	60	58	56	46	37	38	58.3	
Des Moines.....	{ Maximum..	80	65	71	75	69	71	76	77	64	79	82	88	86	83	84	82	87	86	84	88	87	81	87	89	87	87	77	72	49	53	78.1	
	{ Minimum..	65	59	56	56	54	52	54	61	60	62	63	59	63	67	64	54	55	59	60	62	67	68	66	62	55	50	48	40	36	53.0		
Dubuque.....	{ Maximum..	74	74	74	63	61	74	77	74	70	80	88	77	83	87	83	81	87	89	86	88	86	82	87	88	87	87	75	76	48	50	76.2	
	{ Minimum..	58	52	56	57	53	51	52	62	66	56	66	58	56	61	66	45	50	58	55	60	67	65	64	61	54	46						

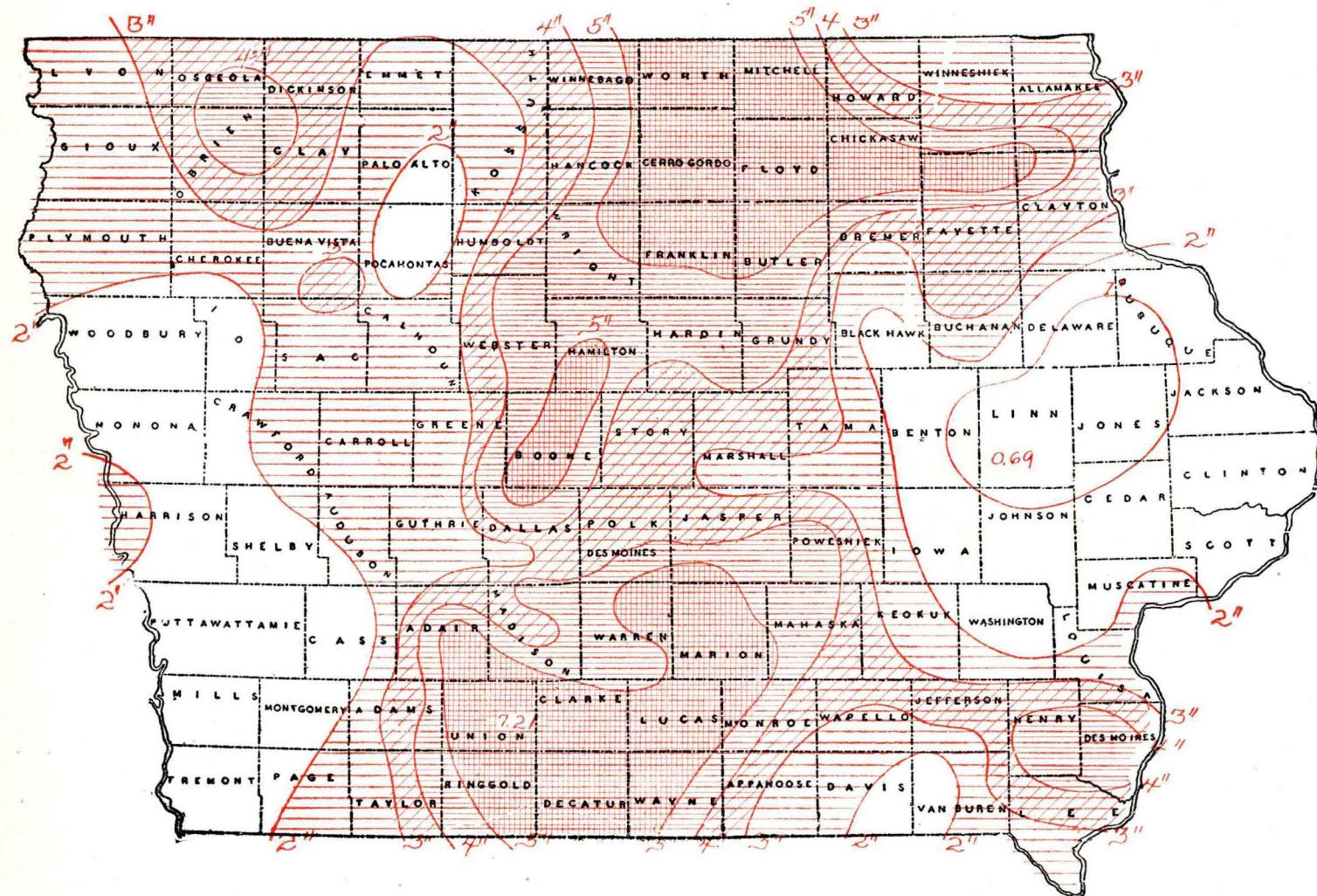
HAIL STORMS DURING AUGUST, 1920.

Date	County	Township	Direction from	Area Covered	Character	Size of Stones	Damage	Width of Path
6	Sioux	Nasspa	.....	Small	Light	Peas	Slight	Narrow
6	Plymouth	Perry	S. W.	4 sq. mi.	Moderate	Marbles	Slight	1 mile
6	Plymouth	Hungerford	N. W.	Large	Light	Small	Slight	Wide
6	Union	Union	N.	12 sq. mi.	Light	Peas	Slight	2 miles
6	Jasper	Palo Alto	W.	Small	Light	Hazel Nuts	Slight	Narrow
6	Allamakee	Iowa	N. W.	6 sq. mi.	Severe	Large	Considerable	2 miles
6	Clayton	Jefferson	S. E.	8 sq. mi.	Heavy	$\frac{1}{2}$ to $\frac{3}{4}$ in.	Considerable	$1\frac{1}{2}$ miles
6	Linn	Washington	N.	Small	Moderate	Large	Considerable	Narrow
6	Johnson	Washington	S. E.	Small	Heavy	$\frac{1}{4}$ to $\frac{3}{4}$ in.	Considerable	Narrow
6	Johnson	Hardin	S. E.	Large	Severe	Walnuts	Considerable	Wide
7	Buchanan	Washington	.....	Small	Light	Small	Slight	Narrow
7	Jasper	Fairview	.....	Small	Light	Small	None	Narrow
8	Ringgold	Poe	W.	5 sq. mi.	Severe	Walnuts	50% crop	1 to 2 miles
8	Ringgold	Middle Park	W.	12 sq. mi.	Severe	Walnuts	50 to 75% crop	2 miles
8	Ringgold	Lots Creek	S. E.	24 sq. mi.	Severe	$\frac{1}{4}$ to $\frac{3}{4}$ in.	50 to 75% crop	$2\frac{1}{2}$ miles
8	Iowa	English	N. W.	12 sq. mi.	Light	Hazelnuts	Slight	2 miles
8	Iowa	Pilot	N. W.	8 sq. mi.	Light	Hazelnuts	Slight	1 mile
8	Des Moines	Danville	S.	3 sq. mi.	Light	Peas	2% crop	$\frac{1}{2}$ mile
8	Des Moines	Pleasant Grove	S.	Small	Light	Peas	Slight	narrow
30	Harrison	Little Sioux	S. W.	3 sq. mi.	Light	$\frac{1}{2}$ inch	Slight	$\frac{1}{2}$ mile

HAIL STORMS DURING SEPTEMBER, 1920.

4	Polk	Des Moines	W.	Large	Moderate	Peas	Slight	Wide
4	O'Brien	Franklin	.....	Small	Light	Small	Slight	Narrow
5	Dallas	Spring Valley	N. W.	Small	Light	Small	Slight	Narrow
10	Hancock	Britt	N. W.	Small	Heavy	Large	Considerable	Narrow
10	Hancock	Orthet	N. W.	Small	Heavy	Large	20% crop	Narrow
10	Cerro Gordo	Mason	N.	Small	Heavy	Small	Slight	Narrow
10	Winnesiek	Orleans	N. W.	Large	Moderate	Large	Considerable	$\frac{1}{2}$ mile
10	Winnesiek	Lincoln	N. W.	Small	Moderate	Small	Slight	Narrow
10	Winnesiek	Madison	N. W.	Large	Moderate	Large	Considerable	$\frac{1}{2}$ mile
10	Winnesiek	Canoe	N. W.	Large	Moderate	Large	Considerable	$\frac{1}{2}$ mile
10	Winresiek	Pleasant	N. W.	Large	Moderate	Large	Considerable	$\frac{1}{2}$ mile
10	Winresiek	Glenwood	N. W.	Large	Moderate	Large	Considerable	$\frac{1}{2}$ mile
11	Taylor	Benton	.....	Small	Light	Small	Slight	Narrow
11	Boone	Garden	S. W.	Large	Moderate	Hazelnuts	Considerable	2 miles
23	Carroll	Glidden	S. W.	Large	Moderate	Small	Slight	3 miles
26	Johnson	East Lucas	.....	Small	Light	Small	Slight	Narrow
29	Lee	Jackson	.....	Small	Light	Small	None	Narrow

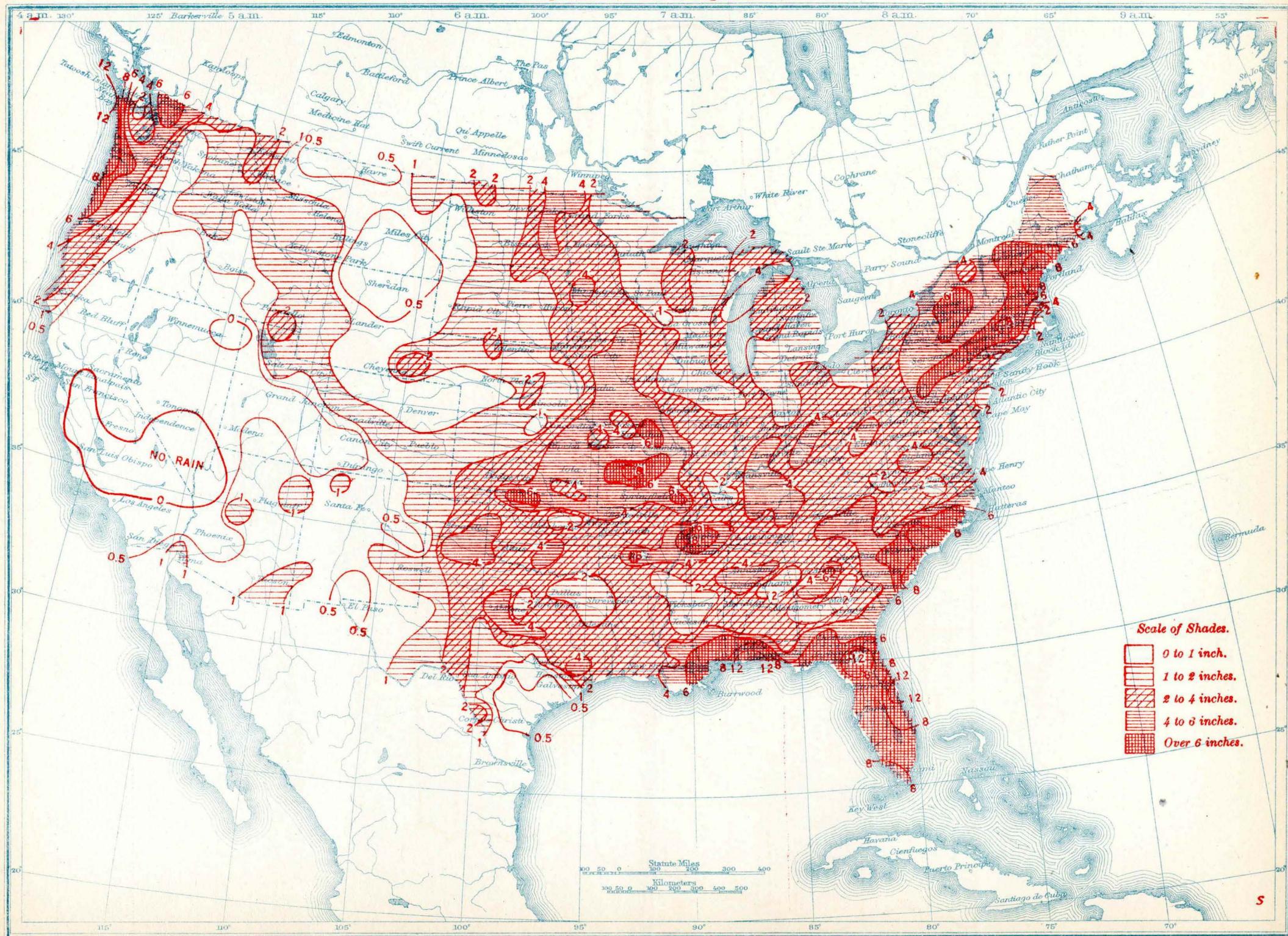
TOTAL PRECIPITATION — SEPTEMBER, 1920.



SCALE OF SHADES—IN INCHES.

	Less than 2		2 to 3		3 to 4		4 to 5		More than 5.
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Total Precipitation, Inches, September, 1920.



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, 1920

BY

CHARLES D. REED

METEOROLOGIST



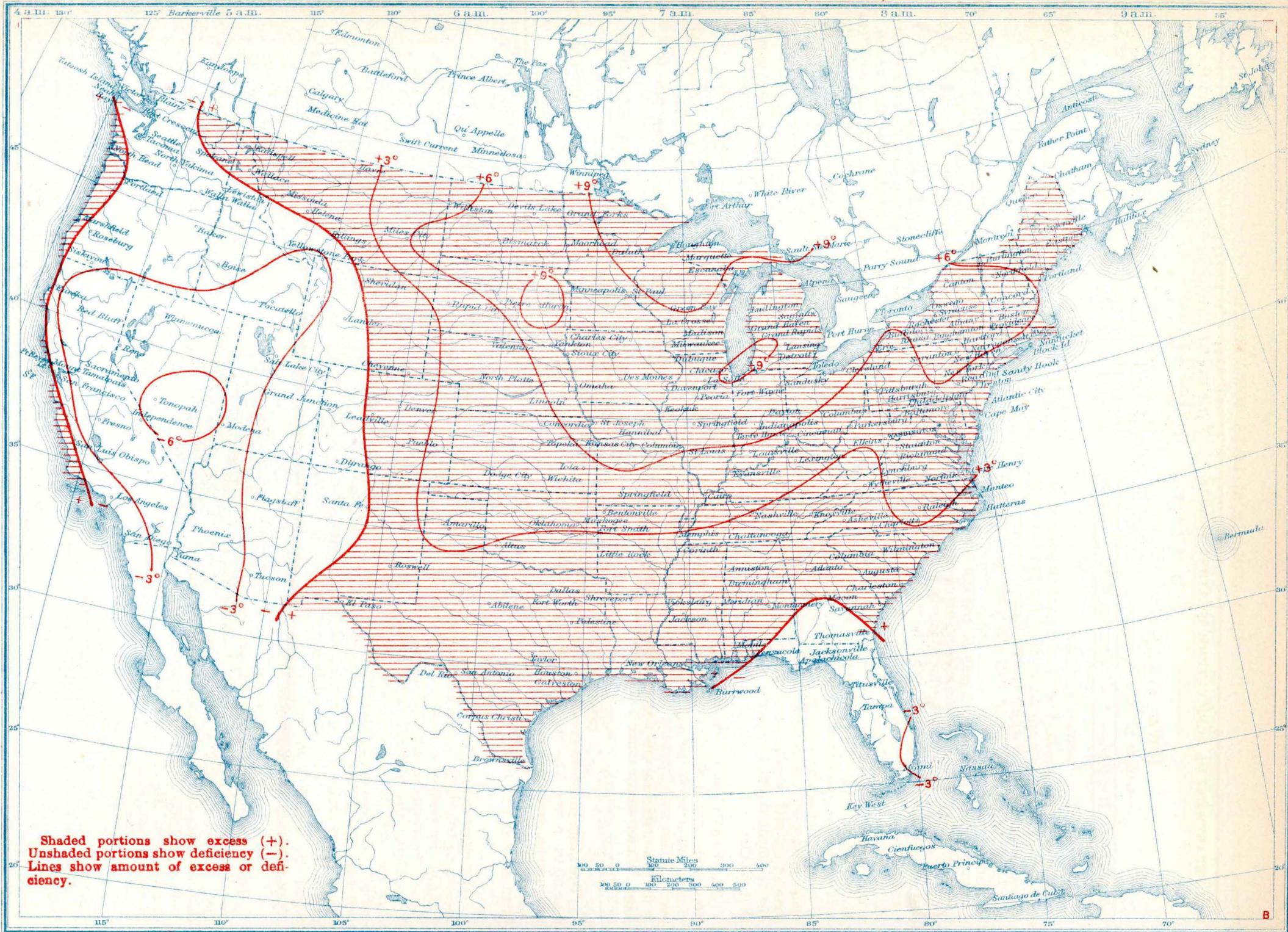
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DES MOINES, IOWA
WEATHER BUREAU OFFICE



E.C.

Departure of the Mean Temperature from the Normal, October, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist.

Vol. XXXI Des Moines, Iowa, October, 1920. No. 10

GENERAL SUMMARY

October, 1920, was next to the warmest October of record for the State as a whole. In 1900 the October mean temperature was 59.3° which is 1.6° higher than the current month. Cold weather at the beginning was followed by warmer on the 3d, after which temperatures continued above normal till the first part of the last week. Killing frost or freezing temperatures occurred at most stations on the 1st, except along the Mississippi River in the central and southern divisions. On the 29th, killing frost covered these sections also. Not more than 10 per cent of the corn crop was damaged by frost. There was some damage to late truck crops. Unusually favorable conditions during the last two-thirds of September and the greater part of October, matured the greatest corn crop of record in Iowa. During the latter half of October, corn husking made good progress generally but high temperatures in connection with locally heavy rains in the north-central district made it unsafe to crib corn in large quantities in that section.

The first 10 days were practically rainless and conditions were unusually favorable for farm work and harvesting sugar beets, potatoes, onions etc. After the 10th precipitation was frequent but the amounts were generally light to moderate and did not hinder farm work materially. Winter wheat made a vigorous growth and pastures improved greatly.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.04 inches. The highest recorded was 30.54 inches at Dubuque and Charles City, on the 5th, and the lowest was 29.54 inches, at Sioux City, on the 13th. The monthly range was 1.00 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 101 stations, was 57.7° , or 6.9° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 55.9° , or 6.9° higher than the normal; Central, 58.0° , or 7.1° higher than the normal; Southern, 59.3° , or 6.7° higher than the normal. The highest monthly mean was 61.6° , at Keokuk, and the lowest was 54.0° , at Northwood. The highest temperature reported was 90° , at Waterloo, on the 11th, and the lowest was 15° , at Decorah, Earlham, Pella, Sigourney and Williamsburg, on the 29th. The temperature range for the State was 75° .

HUMIDITY.

The average relative humidity for the State at 7 A. M. was 81 per cent, and at 7 P. M. it was 60 per cent. The mean for the month was 70 per cent, or 2 per cent less than the normal. The highest monthly mean was 81 per cent, at Charles City, and the lowest was 64 per cent, at Omaha, Neb. The lowest observed was 22 per cent, at Davenport, on the 4th.

PRECIPITATION.

The average precipitation for the State, as shown by the record of 106 stations, was 2.13 inches, or 0.33 inch less than the normal. By divisions the averages were as follows:

Northern, 2.51 inches, or 0.17 inch more than the normal; Central, 2.27 inches, or 0.22 inch less than the normal; Southern, 1.62 inches, or 0.92 inch less than the normal. The greatest amount, 4.64 inches, occurred at Charles City, and the least, 0.48 inch, occurred at Williamsburg. The greatest amount in 24 consecutive hours, 2.82 inches, occurred at Charles City, on the 14th-15th.

SNOW

Light snow flurries occurred in each division during the last few days of the month, but Dubuque, with 0.1 inch, was the only station that reported more than a trace of snow.

WIND.

The prevailing direction of the wind was south. The highest velocity reported from a regular Weather Bureau Station was 36 miles per hour, from the south, at Sioux City on the 13th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 65, or 3 per cent greater than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 53; Davenport, 62; Des Moines, 69; Dubuque, 59; Keokuk, 71; Sioux City, 72; Omaha, Neb. 69.

MISCELLANEOUS PHENOMENA.

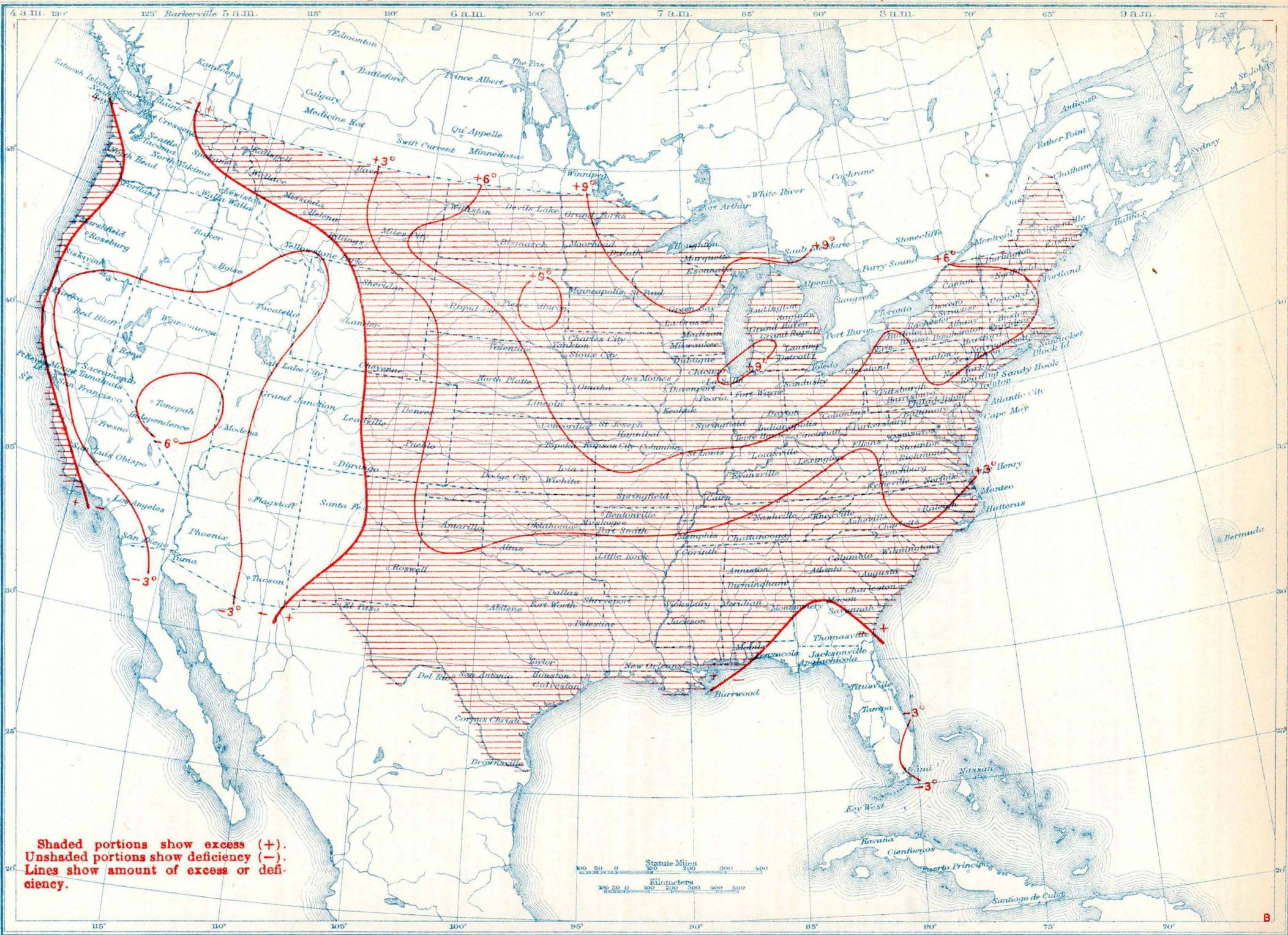
Aurora: 7th, 9th, 10th, 17th, 18th, 22d.*Fog:* 2d, 6th, 16th, 17th, 18th, 21st, 23d, 25th, 26th, 29th.*Frost, Killing:* 1st, 2d, 24th, 28th, 29th.*Hail:* 11th, 12th, 13th, 14th, 26th.*Halos:* (Lunar or Solar): 17th, 19th, 20th, 22d, 23d, 24th, 30th.*Haze:* 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 19th, 20th, 22d, 29th.*Meteors:* 1st, 3d, 6th, 9th, 10th, 13th, 16th, 18th, 19th, 24th.*Rainbows:* 15th, 20th, 22d.*Thunderstorms:* 10th, 11th, 12th, 13th, 14th, 15th, 19th, 20th, 21st, 22d.

COMPARATIVE DATA FOR THE STATE—OCTOBER.

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.....	49.2	-1.6	86	16	3.48	+1.02	6.82	1.59	.....	7	11	11
1891.....	50.0	-0.8	92	19	2.77	+0.31	6.53	0.85	.....	6	18	7
1892.....	54.5	+3.7	96	14	1.55	-0.91	2.58	0.00	0.0	4	21	6
1893.....	52.4	+1.6	94	10	1.28	-1.18	4.56	0.02	0.0	4	16	9
1894.....	51.7	+0.9	90	20	2.67	+0.21	5.25	0.03	0.2	8	14	8
1895.....	46.0	-4.8	88	4	0.47	-1.99	1.38	0.00	T.	2	19	8
1896.....	47.9	-2.9	88	12	3.13	+0.67	5.05	1.51	T.	5	18	6
1897.....	56.8	+6.0	97	12	1.14	-1.32	3.30	0.03	0.0	4	17	8
1898.....	47.5	-3.3	88	17	3.56	+1.10	5.75	1.27	3.6	8	7	9
1899.....	56.7	+5.9	95	17	1.73	-0.73	4.64	0.15	0.0	5	17	8
1900.....	59.3	+8.5	90	21	3.91	+1.45	8.00	1.20	0.0	7	16	7
1901.....	54.2	+3.4	88	20	1.98	-0.48	4.23	0.45	T.	6	17	7
1902.....	53.5	+2.7	83	20	2.54	+0.08	6.66	0.28	T.	5	16	8
1903.....	52.2	+1.4	90	16	1.95	-0.51	4.50	0.32	0.0	5	19	6
1904.....	53.1	+2.3	96	16	1.67	-0.79	4.43	0.14	T.	6	15	8
1905.....	49.2	-1.6	95	16	3.40	+0.94	5.36	1.20	1.6	8	16	6
1906.....	50.5	-0.3	87	7	1.96	-0.50	4.25	0.50	0.1	6	14	7
1907.....	50.4	-0.4	85	10	1.50	-0.96	3.71	0.30	0.0	5	20	5
1908.....	51.1	+0.3	89	17	3.38	+0.92	8.83	0.58	2.6	8	16	9
1909.....	49.7	-1.1	97	10	2.22	-0.24	4.70	0.48	T.	6	16	6
1910.....	55.2	+4.4	93	10	0.77	-1.69	1.73	T.	0.1	4	21	4
1911.....	48.7	-2.1	87	14	3.34	+0.88	7.03	0.73	0.6	10	12	8
1912.....	52.2	+1.4	92	16	2.98	+0.52	5.77	1.03	T.	6	21	3
1913.....	49.2	-1.6	89	2	3.03	+0.57	7.29	0.35	1.2	9	15	8
1914.....	55.9	+5.1	88	14	3.23	+0.77	6.64	0.74	T.	9	16	6
1915.....	54.4	+3.6	86	19	1.31	-1.15	3.25	T.	T.	5	19	6
1916.....	50.9	+0.1	92	6	2.00	-0.46	4.33	0.20	2.0	8	16	7
1917.....	42.9	-7.9	85	0	1.41	-1.05	4.00	0.15	2.2	6	10	11
1918.....	55.1	+4.3	93	21	3.64	+1.18	7.56	1.36	0.8	7	13	7
1919.....	50.7	-0.1	89	8	3.02	+0.56	8.65	0.45	T.	10	11	8
1920.....	57.7	+6.9	90	11	2.13	-0.33	4.64	0.48	T.	6	19	6

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

Departure of the Mean Temperature from the Normal, October, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist.

Vol. XXXI Des Moines, Iowa, October, 1920. No. 10

GENERAL SUMMARY

October, 1920, was next to the warmest October of record for the State as a whole. In 1900 the October mean temperature was 59.3° which is 1.6° higher than the current month. Cold weather at the beginning was followed by warmer on the 3d, after which temperatures continued above normal till the first part of the last week. Killing frost or freezing temperatures occurred at most stations on the 1st, except along the Mississippi River in the central and southern divisions. On the 29th, killing frost covered these sections also. Not more than 10 per cent of the corn crop was damaged by frost. There was some damage to late truck crops. Unusually favorable conditions during the last two-thirds of September and the greater part of October, matured the greatest corn crop of record in Iowa. During the latter half of October, corn husking made good progress generally but high temperatures in connection with locally heavy rains in the north-central district made it unsafe to crib corn in large quantities in that section.

The first 10 days were practically rainless and conditions were unusually favorable for farm work and harvesting sugar beets, potatoes, onions etc. After the 10th precipitation was frequent but the amounts were generally light to moderate and did not hinder farm work materially. Winter wheat made a vigorous growth and pastures improved greatly.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.04 inches. The highest recorded was 30.54 inches at Dubuque and Charles City, on the 5th, and the lowest was 29.54 inches, at Sioux City, on the 13th. The monthly range was 1.00 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 101 stations, was 57.7° , or 6.9° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 55.9° , or 6.9° higher than the normal; Central, 58.0° , or 7.1° higher than the normal; Southern, 59.3° , or 6.7° higher than the normal. The highest monthly mean was 61.6° , at Keokuk, and the lowest was 54.0° , at Northwood. The highest temperature reported was 90° , at Waterloo, on the 11th, and the lowest was 15° , at Decorah, Earlham, Pella, Sigourney and Williamsburg, on the 29th. The temperature range for the State was 75° .

HUMIDITY.

The average relative humidity for the State at 7 A. M. was 81 per cent, and at 7 P. M. it was 60 per cent. The mean for the month was 70 per cent, or 2 per cent less than the normal. The highest monthly mean was 81 per cent, at Charles City, and the lowest was 64 per cent, at Omaha, Neb. The lowest observed was 22 per cent, at Davenport, on the 4th.

PRECIPITATION.

The average precipitation for the State, as shown by the record of 106 stations, was 2.13 inches, or 0.33 inch less than the normal. By divisions the averages were as follows:

Northern, 2.51 inches, or 0.17 inch more than the normal; Central, 2.27 inches, or 0.22 inch less than the normal; Southern, 1.62 inches, or 0.92 inch less than the normal. The greatest amount, 4.64 inches, occurred at Charles City, and the least, 0.48 inch, occurred at Williamsburg. The greatest amount in 24 consecutive hours, 2.82 inches, occurred at Charles City, on the 14th-15th.

SNOW

Light snow flurries occurred in each division during the last few days of the month, but Dubuque, with 0.1 inch, was the only station that reported more than a trace of snow.

WIND.

The prevailing direction of the wind was south. The highest velocity reported from a regular Weather Bureau Station was 36 miles per hour, from the south, at Sioux City on the 13th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 65, or 3 per cent greater than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 53; Davenport, 62; Des Moines, 69; Dubuque, 59; Keokuk, 71; Sioux City, 72; Omaha, Neb. 69.

MISCELLANEOUS PHENOMENA.

Aurora: 7th, 9th, 10th, 17th, 18th, 22d.*Fog:* 2d, 6th, 16th, 17th, 18th, 21st, 23d, 25th, 26th, 29th.*Frost, Killing:* 1st, 2d, 24th, 28th, 29th.*Hail:* 11th, 12th, 13th, 14th, 26th.*Halos:* (Lunar or Solar): 17th, 19th, 20th, 22d, 23d, 24th, 30th.*Haze:* 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 19th, 20th, 22d, 29th.*Meteors:* 1st, 3d, 6th, 9th, 10th, 13th, 16th, 18th, 19th, 24th.*Rainbows:* 15th, 20th, 22d.*Thunderstorms:* 10th, 11th, 12th, 13th, 14th, 15th, 19th, 20th, 21st, 22d.

COMPARATIVE DATA FOR THE STATE—OCTOBER.

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.....	49.2	-1.6	86	16	3.48	+1.02	6.82	1.59	.....	7	11	11
1891.....	50.0	-0.8	92	19	2.77	+0.31	6.53	0.85	.....	6	18	7
1892.....	54.5	+3.7	96	14	1.55	-0.91	2.58	0.00	0.0	4	21	6
1893.....	52.4	+1.6	94	10	1.28	-1.18	4.56	0.02	0.0	4	16	9
1894.....	51.7	+0.9	90	20	2.67	+0.21	5.25	0.03	0.2	8	14	8
1895.....	46.0	-4.8	88	4	0.47	-1.99	1.38	0.00	T.	2	19	4
1896.....	47.9	-2.9	88	12	3.13	+0.67	5.05	1.51	T.	5	18	6
1897.....	56.8	+6.0	97	12	1.14	-1.32	3.30	0.03	0.0	4	17	8
1898.....	47.5	-3.3	88	17	3.56	+1.10	5.75	1.27	3.6	8	7	9
1899.....	56.7	+5.9	95	17	1.73	-0.73	4.64	0.15	0.0	5	17	8
1900.....	59.3	+8.5	90	21	3.91	+1.45	8.00	1.20	0.0	7	16	7
1901.....	54.2	-3.4	88	20	1.98	-0.48	4.23	0.45	T.	6	17	7
1902.....	53.5	-2.7	83	20	2.54	+0.08	6.66	0.28	T.	5	16	8
1903.....	52.2	+1.4	90	16	1.95	-0.51	4.50	0.32	0.0	5	19	6
1904.....	53.1	+2.3	96	16	1.67	-0.79	4.43	0.14	T.	6	15	8
1905.....	49.2	-1.6	95	16	3.40	+0.94	5.36	1.20	1.6	8	16	6
1906.....	50.5	-0.3	87	7	1.96	-0.50	4.25	0.50	0.1	6	14	7
1907.....	50.4	-0.4	85	10	1.50	-0.96	3.71	0.30	0.0	5	20	5
1908.....	51.1	+0.3	89	17	3.38	+0.92	8.83	0.58	2.6	8	16	6
1909.....	49.7	-1.1	97	10	2.22	-0.24	4.70	0.48	T.	6	16	6
1910.....	55.2	+4.4	93	10	0.77	-1.69	1.73	T.	0.1	4	21	4
1911.....	48.7	-2.1	87	14	3.34	+0.88	7.03	0.73	0.6	10	12	8
1912.....	52.2	+1.4	92	16	2.98	+0.52	5.77	1.03	T.	6	21	3
1913.....	49.2	-1.6	89	2	3.03	+0.57	7.29	0.35	1.2	9	15	8
1914.....	55.9	+5.1	88	14	3.23	+0.77	6.64	0.74	T.	9	16	6
1915.....	54.4	+3.6	86	19	1.31	-1.15	3.25	T.	T.	5	19	6
1916.....	53.9	+0.1	92	6	2.00	-0.46	4.33	0.20	2.0	8	16	7
1917.....	42.9	-7.9	85	0	1.41	-1.05	4.00	0.15	2.2	6	10	11
1918.....	55.1	+4.3	93	21	3.64	+1.18	7.56	1.36	0.8	7	13	7
1919.....	50.7	-0.1	89	8	3.02	+0.56	8.65	0.45	T.	10	11	8
1920.....	57.7	+6.9	90	11	2.13	-0.33	4.64	0.48	T.	6	19	6

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

CLIMATOLOGICAL DATA FOR OCTOBER, 1920.

STATIONS.	COUNTIES.	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit						Precipitation in inches.			No. 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 hour	Total snowfall (unmeted)	Precipitation .01 inch or more	Partly cloudy	Cloudy		
<i>Northern Division</i>																			
Algona	Kossuth	1213	47	55.9	+7.1	80	4 [†]	23	29	36	1.76	-0.48	0.59	0	7	21	3	7	se.
Allison	Butler	1045	8	56.7	.....	86	11	22	29	41	3.73	.....	1.55	0	8	21	3	7	sw.
Alta	Buena Vista	1513	29	56.4	+7.6	84	10	23	28	33	3.16	+0.97	1.18	0	7	19	10	2	s.
Alton	Sioux	1305	15	56.0	+7.0	83	10 [†]	21	29	41	1.65	.....	0.52	0	7	20	6	5	se.
Belmond	Wright	1205	10	56.8	.....	88	8 [†]	21	29	39	2.51	.....	1.22	0	7	18	10	3	sw.
Britt	Hancock	1236	23	56.3a	+7.7	85a	10 [†]	21a	29	41a	1.83	-0.50	0.63	0	8	.....	.....	.....	s.
Charles City	Floyd	1015	29	55.8	+7.6	83	11	22	29	38	4.64	+2.61	2.82	T	8	14	8	9	s.
Decorah	Winneshiek	875	27	54.2	+5.1	82	10	15	29	44	2.98	-0.21	2.05	0	8	23	2	6	s.
Elkader	Clayton	751	41	55.0	+4.8	87	11	21	29	47	2.97	+0.49	0.59	0	9	15	9	7	se.
Esterherville	Emmet	1298	25	55.8	+8.5	85	11	18	29	38	1.96	-0.46	1.10	T	7	15	14	2	s.
Fayette	Fayette	1003	30	55.8	+7.1	85	11	16	29	44	3.16	+0.70	2.12	0	7	.....	.....	.....	sw.
Forest City	Winnebago	1226	26	56.2	+7.9	85	11	22	29	38	1.48	-0.93	0.55	0	6	18	6	5	sw.
Humboldt	Humboldt	1095	32	54.4	+3.6	82b	3 [†]	20	29	44b	2.04	-0.08	0.96	0	3	14	13	4	s.
Inwood	Lyon	1474	16	56.0	+7.1	84	10	17	28	43	2.36	+0.14	1.05	0	7	20	7	4	s.
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	.....	3.73	+0.93	2.60	T	9	.....	.....	.....	s.
Le Mars	Plymouth	1224	24	57.6	+8.3	87	10	21	29	46	2.02	-0.20	0.60	0	6	21	7	3	s.
Mason City	Cerro Gordo	1148	23	56.2	+7.4	85	10 [†]	24	28	48	2.23	+0.09	1.19	T	6	21	4	6	sw.
Milford (near)	Dickinson	1430	54.5	.....	.....	80	11	21	29	30	1.45	.....	0.47	0	8	20	6	5	sw.
New Hampton	Chickasaw	1169	23	56.8	+8.7	86	11	20	29	40	3.00	+0.73	1.47	0	8	19	8	4	s.
Nora Springs	Floyd	1064	8	58.0	.....	88	11	21	29	46	2.88	.....	1.18	0	10	19	9	3	s.
Northwood	Worth	1222	24	54.0	+6.3	79	11	20	29	35	2.33	-0.27	0.92	T	8	18	8	5	sw.
Pocahontas	Pocahontas	1248	16	56.8	+7.4	88	10	20	29	43	1.78	-0.69	0.81	0	9	20	7	4	s.
Postville	Clayton	1180	21	56.1	+7.0	80	10 [†]	21	29	34	3.65	+1.07	1.94	0	7	17	7	7	sw.
Rock Rapids	Lyon	1358	21	54.4	+7.5	82	10 [†]	21	29 [†]	42	2.46	-0.14	0.85 ^a	0	9	19	9	3	sw.
Sanborn	O'Brien	1553	6	54.2	.....	87	10	17	27	40	1.55	.....	0.55	0	8	21	3	7	se.
Sioux Center	Sioux	1426	21	54.2	+5.5	78	3 [†]	20	28	36	1.76	-0.30	0.55	0	5	20	5	6	s.
Spencer	Clay	1319	6	56.4	.....	86	10	20	28 [†]	43	2.12	.....	0.60	0	7	17	.9	5	se.
Storm Lake	Buena Vista	1440	31	57.8	+7.6	86	10	23	28	36	2.56	+0.68	0.79	0	7	25	3	3	s.
Washta	Cherokee	1157	22	56.0	+6.4	87	10	17	29	49	2.91	+0.87	1.40	0	5	19	8	4	s.
Waverly	Bremer	948	24	57.2	+7.1	87	11	17	29	47	3.06	+0.70	1.95	0	5	17	8	6	se.
West Bend	Palo Alto	1197	27	56.8	+8.7	87	11	21	28 [†]	40	2.22	+0.29	0.67	0	6	19	6	6	s.
<i>Means and extremes.</i>		.....	.....	55.9	+6.9	88	8 [†]	15	29	48	2.51	+0.17	2.82	T	7	19	7	5	s.
<i>Central Division</i>																			
Ames ^{††}	Story	926	44	57.0	+5.7	87	10	19	29	39	2.56	-0.18	1.10	0	6	21	5	5	s.
Audubon	Audubon	1301	26	56.9	+6.6	86	10	21	29	37	2.72	+0.44	1.30	0	5	21	4	6	s.
Baxter	Jasper	998	20	58.4	+6.9	86	10	23	29	38	1.87	-0.92	0.70	0	5	17	9	5	sw.
Belle Flaine	Benton	886	30	59.0	+8.0	88	10 [†]	17	29	45	1.45	-1.11	0.50	0	6	13	11	7	s.
Boone	Boone	1134	15	58.2	+7.6	88	10	23	29	43	3.25	+0.54	1.05	0	6	.....	.....	.....	s.
Carroll	Carroll	1265	30	57.2	+7.9	86	10	25	28	38	3.20	+0.70	1.80	0	4	21	5	5	se.
Cedar Rapids	Linn	733	38	60.4	+9.5	87	10 [†]	21	29	43	0.55	-1.88	0.31	T	4	17	4	10	sw.
Clinton	Clinton	593	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	s.
Davenport	Scott	580	49	60.4	+7.8	84	10	26	29	29	2.40	+0.01	1.01	0	10	14	8	9	sw.
Delaware	Delaware	1083	29	55.1	+6.0	82	11 [†]	19	29	33	0.82	-1.48	0.53	0	3	15	12	4	N.
Denison	Crawford	1180	26	57.8b	+7.0	87b	10	23b	29	37b	2.52	+0.40	0.90	0	5	19	6	6	s.
Des Moines	Polk	861	40	60.2	+7.7	86	10	25	29	33	1.89	-0.79	0.81	0	7	17	8	6	sw.
Dubuque	Dubuque	639	47	58.6	+6.6	85	11	24	29	35	2.18	-0.50	1.14	0.1	8	16	6	9	s.
Fort Dodge	Webster	1126	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	s.
Grinnell	Poweshiek	1031	26	58.6a	+6.2	85a	10	21a	29	36a	2.31	-0.37	0.82	0	5	.....	.....	.....	s.
Grundy Center	Grundy	976	29	58.9	+8.1	86	10	20	29	40	2.95	+0.35	1.10	0	7	14	8	9	sw.
Guthrie Center	Guthrie	1077	25	57.5	+6.2	87	10	17	29	45	2.33	-0.15	1.30	0	7	21	3	7	sw.
Harlan	Shelby	1192	21	57.0	+6.6	85	3	21	29	40	4.43	+1.89	2.60	0	4	23	6	2	s.
Independence	Buchanan	921	56	57.9	+8.0	85	10 [†]	18	29	41	2.11	-0.37	1.10	T	6	23	2	6	s.
Iowa City	Johnson	733	60	58.6	+7.6	87	10 [†]	16	29	42	0.98	-1.74	0.29	T	10	15	6	10	s.
Iowa Falls	Hardin	1107	27	56.2	+7.8	84	10	18	29	45	4.06	+1.70	1.87	0	8	20	2	9	se.
Jefferson	Greene	1052	21	56.1	+5.1	86	10	21	29	42	3.87	.....	1.76	0	6	18	6	7	sw.
LeClaire	Scott	576	20	.....	.....	.....	.....	.....	.....	.....	1.79	-0.28	0.32	T	10	.....	.....	.....	s.
Little Sioux	Harrison	1040	15	58.4	+5.6	87	3	22	28 [†]	42	3.25	.....	1.59	0	7	14	9	8	se.
Logan	Harrison	928	53	59.7	+7.9	88	10	20	29	43	2.99	+0.64	2.05	0	4	21	5	5	sw.
Maquoketa	Jackson	688	19	57.8	+6.7	86	11	18	29	43	2.07	-0.71	0.75	T	5	20	5	6	sw.
Marshalltown	Marshall	947	28	58.6	+8.0	86	10	21	29	39	2.47	-0.25	1.13	T	6	23	7	1	s.
Monroe	Jasper	922	8	60.2	.....	88	10	26	29	52	1.78	.....	1.01	0	5	20	4	7	s.
Muscatine	Muscatine	554	60	.....	.....	.....	.....	.....	.....	.....	1.57	-1.13	0.45	0	10	.....	.....	.....	s.
Olin	Jones	760	21	56.5	+5.7	84	10	17	29	40	1.40	-0.98	0.65	0	5	19	11	1	sw.
Onawa	Monona	1051	20	58.3															

CLIMATOLOGICAL DATA FOR OCTOBER, 1920.—Continued.

STATIONS.	COUNTIES.	Elevation—feet	Temperature, in Degrees Fahrenheit.							Precipitation, in Inches			Number of Days			OBSERVERS			
			Length of record, —years.	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	Number of days Clear.	Partly cloudy.	Cloudy.	
<i>Southern Division</i>																			
Afton	Union	1212	26	59.7	+8.2	85	10	23	29	34	1.49	-1.18	0.67	0	5	20	7	4	sw.
Albia	Monroe	959	22	59.6	+7.7	86	10	23	29	36	1.23	-1.31	0.55	T	5	17	7	7	sw.
Atlantic	Cass	1164	29	57.6	+6.6	87	10	19	29	50	2.00	-0.56	1.08	0	7	20	7	4	s.
Bedford	Taylor .....	.....	20	57.6	+5.2	85	10	20	29	35	1.30	-1.39	0.55	0	6	20	5	6	s.
Bloomfield	Davis	881	13	61.0	.....	87	10	30	29	35	1.00	-1.59	0.35	0	4	17	7	7	sw.
Bonaparte	Van Buren	565	29	59.5	+6.1	86	10	19	29	36	1.33	-0.58	0.39	T	6	18	3	10	sw.
Burlington	Des Moines	544	24	61.4	+7.7	85	10†	24	29	34	1.63	-0.63	0.47	T	9	18	8	5	sw.
Centerville	Appanoose	1013	15	60.8	.....	86	10†	22	29	38	1.70	.....	0.70	T	9	17	7	7	s.
Chariton	Lucas	1042	25	59.6	+6.8	86	10	23	29	36	1.46	-1.05	0.96	0	3	17	9	5	sw.
Clarinda	Page	1009	30	59.6	+7.7	88	10	21	29	44	2.23	-0.35	0.71	0	6	18	7	6	s.
Columbus Jct.	Louisa	595	19	60.1	+7.2	85	10	25	29	33	2.04	-0.47	0.70	T	8	25	4	2	s.
Corning	Adams	1117	28	57.2a	+5.8	84a	9	20a	29	44a	2.32	-0.35	0.95	0	4	.....	.....	.....	s.
Corydon	Wayne	1101	27	60.0	+6.1	86	10	25	29	36	0.99	-1.83	0.44	T	7	20	3	8	s.
Creston	Union	1312	15	58.2	+6.9	81	10	25	29	28	2.09	.....	0.79	0	7	16	10	5	sw.
Cumberland	Cass	1225	21	.....	.....	.....	.....	.....	.....	.....	2.30	-0.62	1.00	0	5	16	12	3	sw.
Earlham	Madison	1126	18	57.7	+5.9	85	9†	15	29	46	2.37	-0.28	0.76	0	5	21	3	7	sw.
Fairfield	Jefferson	780	36	60.5b	+7.8	89c	10	17b	29	40c	2.46	-0.37	1.00	T	6	.....	.....	.....	s.
Glenwood	Mills	1100	22	59.4	.....	87	10	21	29	43	2.91	.....	1.54	0	4	20	2	9	se.
Greenfield #‡	Adair .....	.....	28	.....	.....	85	11	.....	.....	1.93	-0.55	0.89	0	7	23	6	2	sw.	
Indianola	Warren	969	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Keokuk	Lee	614	49	61.6	+7.1	84	10	27	29	30	1.00	-1.49	0.34	T	11	15	6	10	s.
Keosaukua	Van Buren	644	28	59.4	+7.2	88	10	17	29	42	1.87	-0.12	0.65	T	8	16	5	10	se.
Knoxville	Marion	920	25	59.6	+6.1	87	10	18	29	41	0.58	-1.81	0.24	0	3	18	3	10	sw.
Lacona	Warren .....	.....	21	.....	.....	.....	.....	.....	.....	0.80	-2.08	0.33	0	5	12	11	8	.....
Lamoni	Decatur	1100	13	58.6	+5.7	86	10	20	29	38	1.10	-1.95	0.71	0	4	22	3	6	s.
Lenox	Taylor	1250	25	59.6	+7.4	86	4†	24	29	38	1.40	-1.46	0.72	0	6	16	12	3	s.
Mt. Ayr	Ringgold	1236	27	59.0	+5.4	84	10	25	29	35	1.21	-1.58	0.60	0	6	21	2	8	s.
Mt. Pleasant	Henry	729	39	59.6	+6.9	85	10	22	29	34	1.79	-0.67	0.40	T	11	15	7	9	s.
Murray	Clarke	1216	129	59.1	+6.3	84	10	21	29	36	1.47	-1.05	0.65	0	6	19	7	5	s.
Oakland	Pottawattamie	1105	1	58.4	.....	88	10	19	29	43	2.76	.....	1.27	0	4	23	1	7	s.
Oskaloosa	Mahaska	825	44	59.8	+7.3	86	10	20	29	36	1.49	-0.69	0.48	0	9	17	7	7	sw.
Ottumwa	Wapello	849	25	59.8	.....	88	10	28	1	42	1.17	-1.34	0.46	T	6	20	5	6	se.
Pella	Marion	877	27	58.7	+5.6	87	10	15	29	43	0.53	-1.80	0.28	0	5	18	0	13	se.
Sigourney	Keokuk	877	24	59.3b	+6.7	88b	10	15b	29	37b	0.63	-1.73	0.45	T	3	19	1	11	s.
Stockport	Van Buren	754	18	59.0	+6.2	87	10	16	29	40	1.35	-0.74	0.26	T	11	17	7	7	s.
Thurman	Fremont .....	.....	23	56.6	+4.0	86	10	17	29	46	2.30	-0.58	1.32	0	4	14	15	2	se.
Washington	Washington	769	38	59.7	+7.2	86	10	21	29	35	1.26	-0.91	0.49	0	4	15	10	6	sw.
Winterset	Madison	1129	29	59.4	+7.1	86	10	24	29	35	1.42	-1.06	0.56	0	6	24	4	3	sw.
Omaha, Nebr. ....	.....	1040	49	61.0	+6.8	88	10	31	29	34	2.87	+0.52	2.03	0	4	18	7	6	s.
<i>Means and extremes.....</i>				59.3	+6.7	89	10	15	29	50	1.62	-0.92	2.03	T	6	18	6	7	s.
<i>State means and extremes.....</i>				57.7	+6.9	90	11	15	29	50	2.13	-0.33	2.82	T	6	19	6	6	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, etc., 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.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

*Davenport §Omaha ¶Sioux City ‡Local mean time †And other dates.

DAILY PRECIPITATION FOR OCTOBER, 1920

DAILY PRECIPITATION FOR OCTOBER, 1920.—Continued.

Stations	Watersheds.	DAY OF MONTH.																																
		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	Total	
<i>Southern Division</i>																																		
Afton	Grand																																	.67 1.49
Albia	Des Moines																																	.33 1.23
Atlantic	Nishnabotna																																	1.08 2.00
Bedford	Missouri																																	.55 1.30
Bloomfield	Mississippi																																	.35 1.00
Bonaparte	Des Moines																																	.30 1.33
Burlington	Mississippi																																	.16 1.63
Centerville	Chariton																																	.36 1.70
Chariton	Chariton																																	.33 1.46
Clarinda	Nodaway																																	.71 2.23
Columbus Jct.	Iowa																																	.27 2.04
Corning	Nodaway																																	.95 2.32
Corydon	Chariton																																	.30 .99
Creston	Missouri																																	.79 2.09
Cumberland	Nodaway																																	1.00 20.230
Earlham	Des Moines																																	.54 2.37
Fairfield	Skunk																																	.36 2.46
Glenwood	Missouri																																	1.54 2.91
Greenfield	Nodaway																																	.89 1.93
Indianola	Des Moines																																	
Keokuk ***	Mississippi	T																																.15 1.00
Keosauqua	Des Moines	T																																.50 1.87
Knoxville	Des Moines																																	.58
Lacona	Des Moines																																	.30 .86
Lamoni	Grand																																	.71 1.10
Lenox	Missouri																																	.72 1.40
Mt. Ayr.	Grand																																	.48 1.21
Mt. Pleasant	Skunk	.02																																.29 1.79
Murray	Grand																																	.63 1.47
Oakland	Nishnabotna																																	1.27 2.76
Oskaloosa	Des Moines																																	.48 1.49
Ottumwa ||	Des Moines																																	.46 1.17
Pella	Skunk																																	.10 .10 .53
Sigourney	Skunk																																	.45 .63
Stockport	Skunk	T																																.25 1.35
Thurman	Missouri																																	1.32 2.30
Washington	Skunk																																	.49 1.26
Winterset	Des Moines																																	.48 1.42
Omaha, Neb.***	Missouri																																	T 2.03 2.87

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.

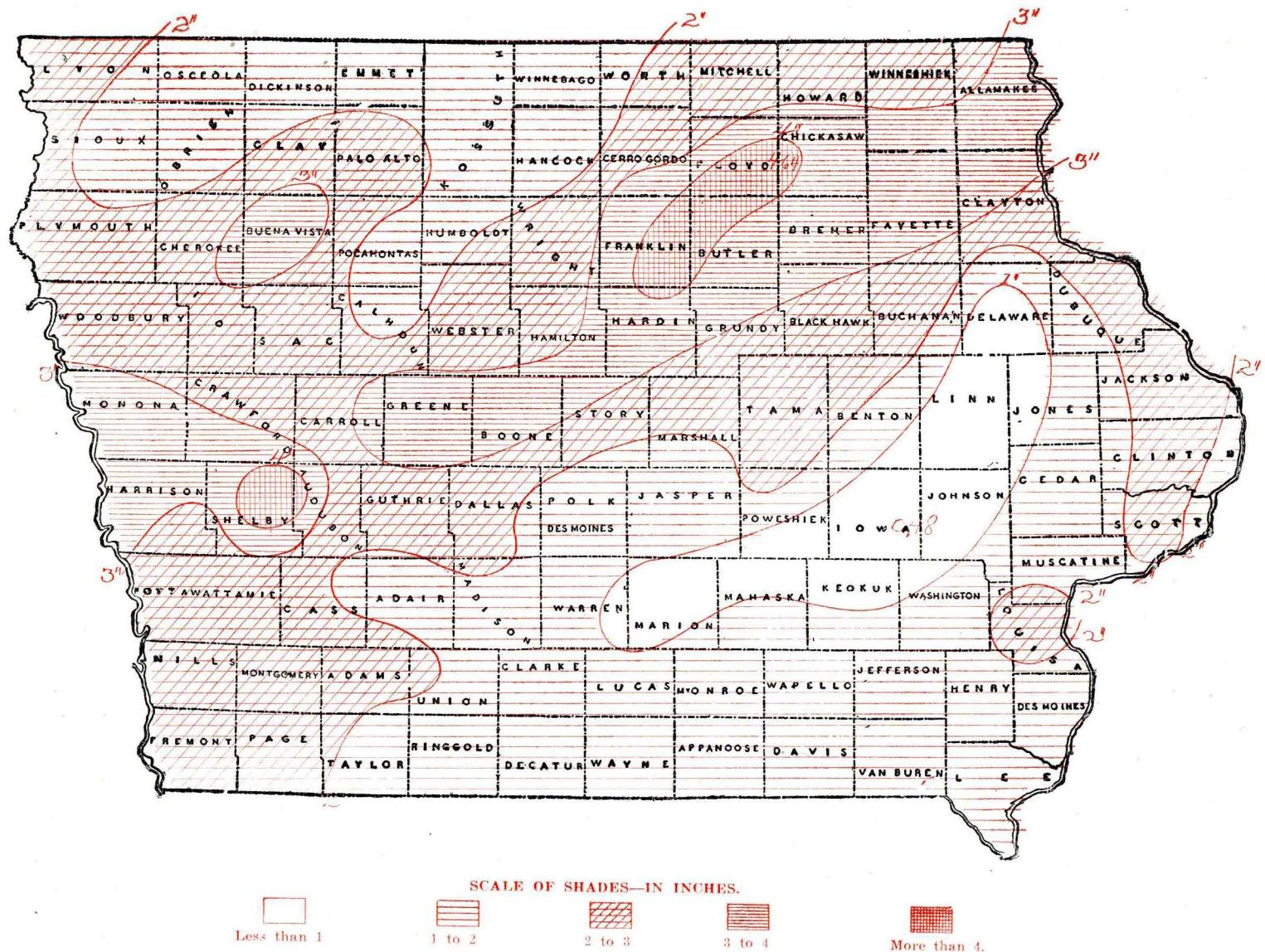
RIVERS.

Moderate stages prevailed on all the rivers of the State with very little fluctuation and the extreme range in all stages was very small. The only rise of consequence occurred after the general rains on the 11-12th.

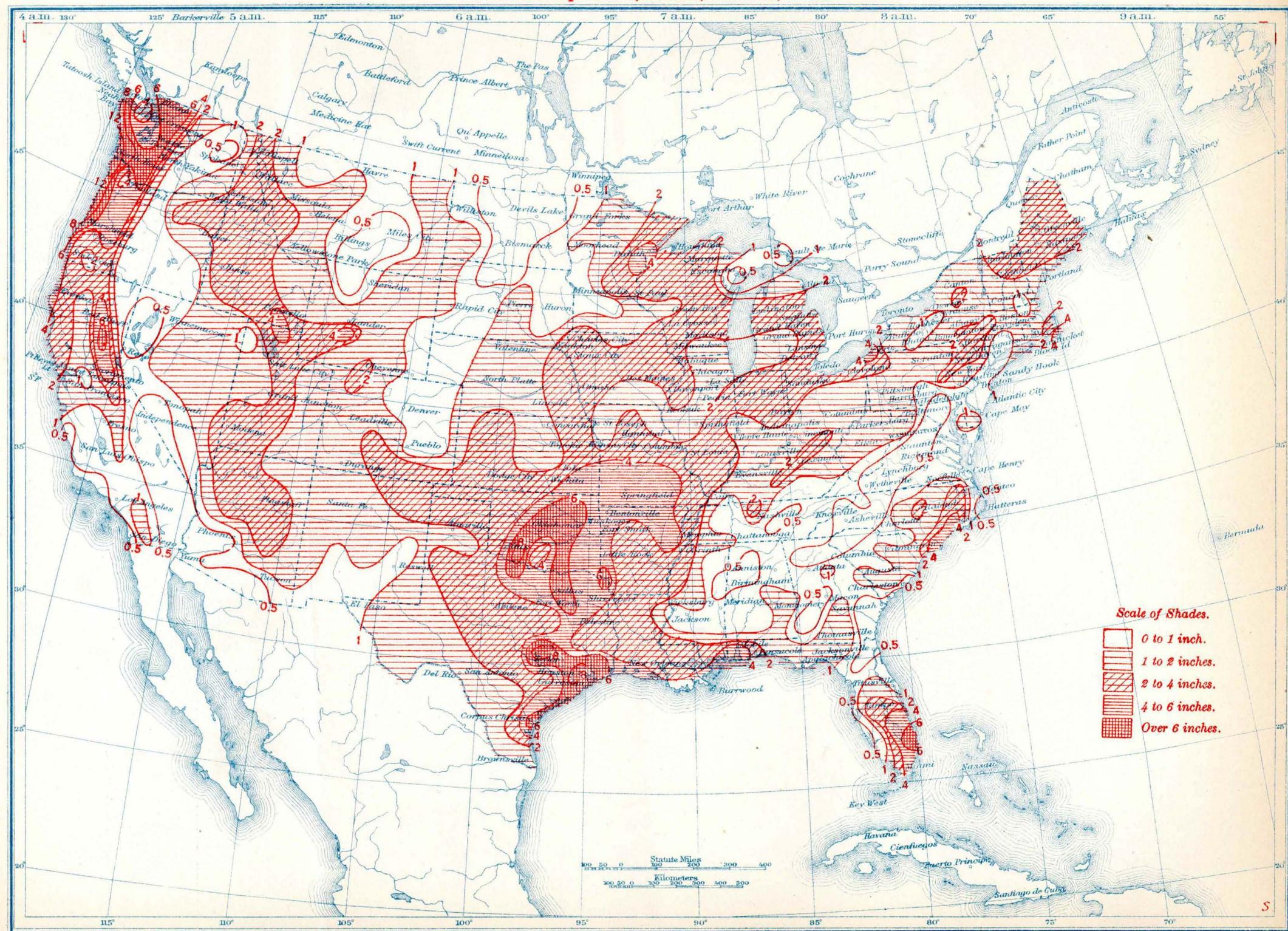
Daily Maximum and Minimum Temperatures for the Month of October, 1920.

Stations.	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	Total		
<i>Northern Division</i>																																		
Algona.....	56	68	74	80	70	70	73	72	75	78	80	73	77	75	66	69	71	67	68	71	75	70	65	55	61	52	48	40	49	59	50	66.4		
Maximum..	30	40	44	44	41	44	47	55	52	54	53	57	53	59	60	56	56	60	62	60	42	30	31	34	30	24	23	35	32	45.4				
Minimum..	63	71	77	77	76	74	76	75	81	84	82	78	79	68	66	72	74	71	70	72	75	66	56	54	62	46	41	53	58	46	67.4			
Alta.....	34	43	47	50	45	48	50	54	48	56	59	49	54	55	52	48	52	52	60	61	60	46	39	33	34	29	23	26	36	35	45.5			
Maximum..	63	72	75	76	78	77	78	73	81	83	83	73	80	74	62	73	75	73	76	74	68	57	53	63	64	56	44	53	54	47	68.7			
Alton.....	27	42	37	40	43	46	53	53	40	53	56	49	48	54	53	42	53	53	50	62	63	48	38	30	26	28	29	28	21	43	34	43.3		
Maximum..	61	73	81	80	74	73	74	88	79	88	83	74	81	71	71	70	72	67	67	71	71	70	63	60	61	58	47	43	50	59	50	68.9		
Belmond.....	27	37	42	47	40	43	43	46	53	42	57	52	55	59	55	52	54	54	61	62	59	59	40	34	31	32	32	24	21	32	39	44.7		
Charles City.....	58	70	78	74	68	71	73	76	77	81	83	72	81	74	71	68	71	69	68	75	77	71	61	55	61	56	44	40	47	58	49	67.0		
Maximum..	31	36	40	41	36	41	42	48	42	58	53	55	57	61	54	46	52	54	61	61	60	57	44	36	32	33	35	24	22	32	40	44.6		
Decorah.....	60	70	78	75	69	70	72	77	78	82	81	74	81	76	68	69	68	71	70	75	76	75	65	53	51	48	47	43	43	58	56	67.1		
Maximum..	24	36	34	33	30	30	34	47	35	52	45	46	43	49	41	35	55	51	55	51	35	27	27	38	29	15	25	40	41.2					
Forest City.....	61	71	78	76	72	73	75	78	78	84	85	77	78	72	70	72	74	66	66	71	64	53	58	46	43	48	59	52	58	62	68.2			
Maximum..	29	37	40	44	44	43	46	53	44	55	53	55	54	58	57	42	50	54	58	62	59	54	41	33	30	32	32	23	22	33	38	44.3		
Inwood.....	73	77	78	79	78	79	79	76	79	84	83	73	79	73	65	73	73	69	73	75	73	70	56	55	61	52	51	41	50	53	45	65.8		
Maximum..	30	47	39	48	50	56	53	43	54	53	50	46	51	51	46	55	60	62	62	51	47	34	27	29	34	26	17	23	34	32	43.6			
Mason City.....	60	71	79	74	69	72	62	79	81	85	85	75	80	73	77	75	72	65	67	72	68	65	55	62	53	45	40	49	60	55	68.4			
Maximum..	25	34	44	26	32	39	43	48	36	57	50	55	55	58	56	53	49	55	60	61	60	58	43	28	40	31	24	37	32	38	43.9			
Milford (near)....	57	69	72	71	70	72	75	69	75	76	80	69	77	69	60	69	72	68	70	71	74	65	65	53	59	46	45	40	50	55	49	64.9		
Maximum..	32	41	42	46	47	45	48	55	45	56	54	50	50	53	53	43	50	55	60	60	59	52	37	32	32	30	22	21	30	35	44.1			
New Hampton.....	61	71	80	77	70	72	74	78	82	83	86	74	81	75	68	72	73	71	68	77	78	72	66	58	59	59	46	42	46	61	52	68.8		
Maximum..	30	35	40	42	42	41	41	46	47	53	50	55	55	61	59	52	50	53	60	60	59	57	50	36	32	33	24	28	20	29	40	44.8		
Northwood.....	56	69	75	71	66	79	71	73	74	75	79	69	75	71	70	67	70	69	66	70	75	68	63	59	50	42	41	61	61	49	64.9			
Maximum..	31	35	40	46	39	41	42	45	42	51	52	54	51	58	57	44	51	57	60	57	56	53	39	34	32	32	26	20	29	36	43.1			
Pocahontas.....	66	76	84	80	78	76	79	82	83	88	84	85	84	75	82	75	71	74	76	75	72	75	79	67	61	53	45	47	49	44	52	63	51	70.5
Maximum..	26	39	41	40	39	41	41	46	55	40	55	54	51	53	52	45	42	48	55	59	62	59	51	38	31	29	30	30	23	20	33	37	43.0	
Postville.....	55	66	71	72	64	65	69	75	75	80	80	73	78	73	64	66	66	70	70	76	78	76	66	55	61	55	46	40	45	62	56	66.2		
Maximum..	31	32	44	44	40	40	48	53	48	58	55	61	60	57	52	49	55	59	61	62	58	55	34	32	36	28	21	31	40	46.0				
<i>Central Division</i>																																		
Belle Plaine.....	66	75	84	82	73	74	77	79	85	88	88	85	85	77	74	76	80	77	75	75	83	76	68	62	56	64	48	46	56	60	58	72.6		
Maximum..	26	35	39	41	39	37	40	45	49	54	56	57	63	64	62	48	53	57	60	60	59	58	50	34	28	40	34	30	17	30	47	45.5		
Boone.....	64	74	82	80	75	75	77	80	82	88	86	81	73	68	74	76	74	70	73	80	66	59	61	54	49	44	53	63	57	70.5				
Maximum..	26	39	33	42	46	43	46	51	46	58	59	56	61	61	55	44	49	58	61	63	61	61	41	36	29	34	32	28	23	34	41.5			
Carroll.....	64	72	81	81	79	76	77	84	85	86	85	74	81	68	71	74	75	73	69	72	77	68	60	57	56	51	44	53	63	53	69.9			
Maximum..	29	42	45	45	46	46	49	54	46	58	54	50	54	50	54	53	45	46	57	61	62	56	51	47	43	47	43	47	43	63	55	69.4		
Davenport.....	61	71	77	79	69	68	72	78	80	84	83	82	82	72	74	76	77	75	77	70	75	76	68	62	52	51	47	43	47	43	63	55	69.4	
Maximum..	35	42	53	52	48	45	49	50	56	60	64	61	65	60	59	53	54	61	62	63	64	62	56	52	47	46	40	31	26	32	35	51.54		
Des Moines.....	61	72	80	81	73	73	75	80	85	86	84	82	82	82	81	67	70	73	72	70	73	80	70	65	59	57	57	51	44	52	66	62	70.4	
Maximum..	30	42	47	53	50	44	50	54	55	60	62	61	68	65	67	62	55	57	61	63	62	62	62	59	56	53	50	45	35	33	25	39	50.1	
Dubuque.....	59	69	78	75	67	69	71	70	80	85	85	81	81	72	68	72	71	71	74	78	80	69	66	56	53	46	41	47	46	48	46.8			
Maximum..	33	44	47	46	41	40	50	52	45																									

TOTAL PRECIPITATION — OCTOBER, 1920.



Total Precipitation, Inches, October, 1920.



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, 1920

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, November, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist.

Vol. XXXI Des Moines, Iowa, November, 1920. No. 11

GENERAL SUMMARY.

The mean temperature for the State as a whole averaged less than one half degree above the normal, the excess being confined to the northern and central divisions, though there were small areas in both these divisions with the temperature below normal. Most of the first week was above normal, but on the 10th the first cold wave of the season spread over the State and the temperature remained below normal till the 17th, when a decided change to warmer occurred and during the rest of the month mostly mild weather prevailed. The first part of the month was favorable for farm work and good progress was made in gathering corn until the 19th, when the fields became too soft for wagons. As a result of this unfavorable condition only 77 per cent of the corn crop had been gathered at the end of November while the usual amount at this time is 90 per cent. However this warm weather and an ample supply of moisture was favorable for winter grain, which made good growth, and at the end of the month was well established. The weather was also favorable for harvesting sugar beets which was completed before the close of the month. The maximum temperature for the State was 71° and the minimum 5°, making an absolute range of 66° which is the least ever recorded since state wide records began in 1890.

Precipitation was evenly distributed throughout the month with an average of 8 rainy days for the State, which has been exceeded but once in November in 31 years. The per cent of sunshine was decidedly below normal and the number of cloudy days is the greatest in the history of the State.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.16 inches. The highest recorded was 30.82 inches, at Sioux City, on the 12th, and the lowest was 29.54 inches, at Davenport and Dubuque, on the 21st. The monthly range was 1.28 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 93 stations was 35.4°, or 0.4°, higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 33.5°, or 0.7° higher than the normal; Central, 35.7°, or 0.6° higher than the normal; Southern, 37.0°, or 0.1°, lower than the normal. The highest monthly mean was 39.2°, at Burlington and Keokuk, and the lowest was 32.4°, at Fayette and Sanborn. The highest temperature recorded was 71° at Oskaloosa, on the 19th, and Fairfield, on the 20th, and the lowest was 5°, at Sanborn, on the 11th, West Bend on the 12th and Earlham on the 16th. The temperatures range for the State was 66°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 84 per cent and at 7 p. m. 73 per cent. The mean for the month was 78 per cent or 2 per cent above normal. The highest mean was 81 per cent at Charles City, and the lowest was 72 per cent, at Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 98 stations, was 2.18 inches, or 0.67 inch above the normal. By divisions the averages were as follows: Northern, 2.69 inches, or 1.28 inches greater than the normal; Central, 2.23 inches, or 0.70 inch greater than the normal; Southern, 1.62 inches, or 0.04 inch greater than the normal. The greatest amount, 4.45 inches occurred at Humboldt, and the least, 0.73 inch, at Lamoni. The greatest amount in 24 consecutive hours, 1.60 inches, occurred at Humboldt, on the 29th.

SNOWFALL.

The average fall for the State was 1.2 inches, or 1.3 inches less than the normal. Many stations in all portions of the State reported but a trace and snow did not remain on the ground at any station for more than two days.

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 54 miles per hour, from the northwest, at Sioux City, on the 1st.

SUNSHINE.

The average per cent of the possible amount of sunshine was 37, or 17 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 26; Davenport, 41; Des Moines, 50; Dubuque, 34; Keokuk, 41; Sioux City, 32; Omaha, Neb. 38.

MISCELLANEOUS PHENOMENA.

Aurora: 13th.

Fog: 6th, 7th, 8th, 16th, 17th, 20th, 23d, 24th, 26th, 27th, 28th, 29th, 30th.

Halos: 5th, 17th, 18th, 20th, 23d, 25th, 27th.

Meteors: 5th, 9th, 16th.

Sleet: 9th, 22d, 23d, 26th.

Thunderstorms: 1st, 6th.

COMPARATIVE DATA FOR THE STATE—NOVEMBER.

YEAR	Temperature				Precipitation				Number of Days.				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With precipita-	Clear	Partly	Cloudy
1890.....	38.6	+3.6	78	2	1.46	-0.05	3.55	0.71	.....	3	15	8	7
1891.....	30.5	-4.5	84	-24	1.70	+0.19	3.64	0.66	.....	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	2.63	+0.52	3.86	0.35	4.8	8	9	7	14
1907.....	36.7	+1.7	68	4	1.03	-0.48	2.27	0.05	0.9	4	17	6	7
1908.....	39.3	+4.3	80	5	1.56	+0.05	3.31	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	1.03	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	83	5	1.94	+0.43	4.86	0.30	1.2	6	11	10	9
1916.....	37.3	+3.3	80	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	0	2.11	+0.60	5.10	0.70	4.4	7	13	5	12
1919.....	33.6	-1.4	68	-12	3.40	+1.89	6.22	1.97	6.3	8	11	7	12
1920.....	35.4	+0.4	71	5	2.18	+0.67	4.45	0.73	1.2	8	10	5	15

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

DAILY PRECIPITATION FOR NOVEMBER, 1920.

DAILY PRECIPITATION FOR NOVEMBER, 1920.—Continued.

Stations	Watersheds.	DAY OF MONTH.																																		
		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	Total				
<i>Southern Division</i>																																				
Afton	Grand34	.22	.15	T21	T	.40	.04	1.36		
Albia	Des Moines	T32	T	.18	T	T2842	.31	1.51		
Atlantic	Nishnabotna3253	.19	.15	T	T1844	.02	1.83		
Bedford	Missouri0557	.37	.16	T	T05	T	.2049	.04	1.93
Bloomfield	Mississippi14	.55	.15	T	T236216	
Bonaparte	Des Moines10	T07	.52	.12	T	T	T	T	T	.06	.13	.06	1.06	
Burlington	Mississippi4050	.11	.12	T	T35	1.48		
Centerville	Chariton0431	.51	.07021523	1.8	1.51		
Chariton	Chariton30	.35	T16	T	.41	.28	1.50			
Clarinda	Nodaway15	T45	.34	.15	T21	.09	.89	.04	2.32			
Columbus Jct.	Iowa23	.0510	.25	.2603	T1305	.04	1.17			
Corning	Nodaway17	T40	.25	.20	T	T3259	.12	2.05				
Corydon	Chariton10	.0219	.37	.18	.0203	.0118	.01	.36	.31	1.78				
Creston	Missouri17	.0133	.17	.130630	.01	.41	.15	1.74				
Cumberland	Nodaway2010	.10	.20	T1010	.10	1.10				
Earlham	Des Moines .....	.....	.12	T	.....	.....	.39	.39	.14	.01	.....	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.30	T	.40	.11	1.86
Fairfield	Skunk11	T1848	T	T	T18	.0120	1.16				
Glenwood	Missouri25	T44	.15	.18	T2002	1.05	.10	2.39				
Greenfield	Nodaway16	.0683	.16	.17	T	.062325	.20	2.12				
Indianola	Des Moines	Keokuk ***	Mississippi04	T32	.03	.07	T	T02	.01	.45	.02	0.98				
Keosauqua	Des Moines .....	.....	.14	T	.....	.....	.05	.50	.13	.....	T	.....	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.10	.....	.43	.07	1.45
Knoxville	Des Moines15	.0528	.20	.16	T05454017				
Lacona	Des Moines .....	.....	.45	.....	.....	.....	.30	.20	.28	.02	.....	.....	.10	.04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.25	.....	.70	.05	2.39
Lamoni	Grand1025	.21	.10	T010673				
Lenox	Missouri .....	.....	.17	T	.....	.....	.30	.24	.26	.....	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.24	.06	.50	.08	1.85
Mt. Ayr	Grand .....	.....	.04	T	.....	.....	.54	.25	.10	.....	.....	.03	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.12	.02	.41	.13	1.64
Mt. Pleasant	Skunk .....	.....	.24	.01	.....	.....	.04	.41	.22	.....	T	.....	.02	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.16	.....	.08	.04	1.22
Murray	Grand .....	.....	.06	.03	.....	.....	.39	.18	.10	.....	.....	.02	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.17	.....	.38	.03	1.37
Oakland	Nishnabotna .....	.....	.27	.....	.....	T	.39	.16	.16	.....	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.25	T	.62	.....	.185
Oskaloosa	Des Moines .....	.....	.09	.01	.....	.....	.46	.21	.17	.05	T	.....	.07	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.15	.....	.60	.....	.146
Ottumwa || | .....	Des Moines .....	.....	.08	.....	.....	.38	.....	.10	.15	.....	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.12	T	.05	.05	0.94	
Pella	Skunk .....	.....	.09	.03	.....	.....	.35	.21	.36	T	.....	T	.....	.10	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.14	.07	.04	.03	1.36
Sigourney	Skunk .....	.....	.19	T	.....	.....	.05	.48	.13	.04	T	.....	.01	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.14	T	.19	.12	1.36	
Stockport	Skunk .....	.....	.24	T	.....	.....	.72	.36	.42	.....	T	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.30	T	.84	T	2.88	
Thurman	Missouri .....	.....	.18	.01	.....	.....	.08	.29	.20	.....	.....	.....	.04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.22	.....	.05	.....	.13	.....				
Washington	Skunk .....	.....	T	.....	.....	.....	.51	.....	.37	.....	T	.....	.02	T	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.26	.....	.46	.....	.62	.....				
Winterset	Des Moines .....	.....	.03	.....	.....	.03	.41	.03	.15	T	.....	T	.....	T	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.12	.19	.47	.04	.04	1.47	
Omaha, Neb.***	Missouri		

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.

RIVERS.

On the Mississippi River nearly stationary stages prevailed, the extreme range being but a few tenths of a foot. On the Missouri a sharp fall occurred on the 17th and 18th due to ice gorges farther up stream; during the rest of the month the fluctuations were slight. In the interior rivers the only rise of consequence occurred about the middle of the second week, with gradually falling stages during the rest of the month.

Daily Maximum and Minimum Temperatures for the Month of November, 1920.

Stations.	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	Mean	
<i>Northern Division</i>																																
Algona.....	{ Maximum..	51	38	52	52	51	48	44	45	49	33	32	22	34	33	29	36	43	52	56	56	46	40	36	36	33	35	43	46	40	38 41.6	
	{ Minimum..	30	29	26	31	27	42	41	35	19	12	11	9	9	22	14	13	20	26	24	30	34	29	23	25	30	27	32	38	34	34 25.9	
Alta.....	{ Maximum..	45	35	53	52	50	44	45	41	36	30	18	32	30	28	36	43	57	61	61	61	38	42	37	32	37	45	43	39	36 40.7		
	{ Minimum..	27	25	27	32	30	40	40	37	15	11	10	9	8	22	17	13	22	26	37	35	32	28	25	29	27	27	37	38	32	32 26.3	
Alton.....	{ Maximum..	43	33	52	50	53	45	46	48	45	36	33	20	33	32	29	36	46	56	58	58	42	54	38	33	36	40	43	43	38	38 41.9	
	{ Minimum..	27	22	26	33	24	40	40	35	18	11	9	14	7	23	20	12	24	21	28	34	32	25	28	30	28	32	33	33 33.5			
Belmond.....	{ Maximum..	42	41	51	48	52	47	50	46	46	32	30	25	33	31	30	35	40	52	57	58	44	38	35	33	31	33	43	47	40	40 41.0	
	{ Minimum..	32	28	27	24	29	41	41	32	20	13	13	8	8	20	15	12	17	21	32	32	27	23	28	29	25	32	38	36	36 25.7		
Charles City.....	{ Maximum..	52	39	54	53	54	45	49	45	44	33	32	20	33	29	35	36	50	54	54	40	39	33	32	33	37	46	40	43 40.5			
	{ Minimum..	30	29	29	34	28	43	36	36	18	14	12	10	11	20	15	12	18	21	32	31	33	30	24	28	33	34	35	38 26.5			
Decorah.....	{ Maximum..	38	30	27	38	24	42	42	33	28	15	15	11	12	17	19	13	12	23	29	28	36	30	30	22	26	31	33	34	39 29.7		
	{ Minimum..	49	38	54	54	56	47	44	43	44	30	20	25	35	32	30	38	38	52	54	55	57	38	30	31	32	32	42	45	41	39 41.1	
Forest City.....	{ Maximum..	32	28	25	35	36	41	40	34	23	11	10	8	8	20	12	11	18	20	33	31	32	26	22	26	29	25	32	36	34	35 25.8	
Inwood.....	{ Maximum..	33	40	48	47	50	45	53	43	39	34	30	22	29	30	30	....	....	55	55	55	38	41	38	33	37	41	38	36	37	39 2.2c
	{ Minimum..	23	17	23	29	33	32	34	39	17	9	14	8	6	19	14	15	26	20	20	36	31	32	26	29	22	30	33	30	32	32 24.4	
Mason City.....	{ Maximum..	50	37	53	51	51	54	51	45	47	43	33	31	33	32	28	37	38	53	41	52	40	38	32	35	35	31	46	44	39	42 41.4	
	{ Minimum..	30	29	29	39	24	37	41	33	10	10	16	9	10	20	12	10	16	20	30	27	32	29	26	25	26	30	33	32	34 24.8		
Milford (near).....	{ Maximum..	47	35	57	50	52	46	44	45	43	33	33	20	32	29	27	35	44	52	52	57	40	39	34	32	34	35	43	41	39	37 40.2	
New Hampton.....	{ Maximum..	31	25	27	36	26	41	38	34	17	11	9	8	9	22	19	12	19	22	31	29	33	30	26	28	34	33	33	33	32 25.9		
	{ Minimum..	50	38	53	54	55	47	48	42	45	32	30	21	33	31	32	36	38	50	55	54	40	35	34	33	32	35	45	40	43 40.4		
Northwood.....	{ Maximum..	47	37	53	51	51	47	46	43	43	30	31	21	29	33	27	32	38	47	53	52	38	37	34	33	32	33	40	45	39	40 39.4	
	{ Minimum..	31	29	27	35	27	41	40	33	20	11	14	9	10	....	17	....	....	27	29	32	26	29	24	29	28	32	35	32	35 27.1c	
Pocahontas.....	{ Maximum..	50	39	56	55	52	45	45	46	45	35	33	22	35	34	31	38	42	56	63	61	48	34	40	36	36	37	47	49	44	38 42.9	
	{ Minimum..	28	29	25	26	25	41	41	34	20	10	11	7	8	18	12	18	20	34	32	34	28	23	25	27	26	35	39	34	33 24.9		
Postville.....	{ Maximum..	49	38	47	53	53	46	48	41	45	31	26	21	30	30	28	34	39	48	55	52	40	36	35	33	32	32	36	46	39	43 39.5	
	{ Minimum..	35	28	26	37	28	40	38	32	26	13	15	8	10	18	17	11	14	24	33	31	34	28	28	30	21	25	29	31	33	37 26.0	
<i>Central Division</i>																																
Belle Plaine.....	{ Maximum..	54	33	64	58	56	49	50	52	56	37	31	32	35	32	35	39	44	57	66	67	56	38	39	36	36	33	41	50	58	51 46.2	
	{ Minimum..	33	24	24	35	24	43	44	36	28	12	17	8	9	17	19	08	15	24	33	36	37	32	31	21	24	32	31	36	36 26.7		
Boone.....	{ Maximum..	55	40	55	56	53	49	47	49	49	36	30	21	34	31	31	38	40	57	65	64	52	44	37	35	32	34	45	46	43	45 43.8	
	{ Minimum..	28	27	26	37	26	42	40	38	24	12	15	09	10	22	20	12	20	23	36	36	35	32	22	27	29	28	33	37	37 27.2		
Carroll.....	{ Maximum..	32	39	45	50	56	47	47	49	49	40	36	32	20	32	30	38	41	59	64	65	45	49	45	37	34	39	48	49	41 39.4		
	{ Minimum..	26	25	26	30	28	40	40	39	19	11	10	7	8	23	20	13	19	25	40	39	33	38	28	21	29	29	37	37	32 26.5		
Davenport.....	{ Maximum..	56	41	54	59	56	60	52	56	52	33	31	27	30	30	30	34	40	52	65	66	59	39	37	38	35	35	44	49	44	46 44.9	
	{ Minimum..	34	31	30	40	34	44	47	41	29	19	18	12	13	21	21	17	22	33	40	46	39	33	33	26	32	33	31	37	36 30.8		
Des Moines.....	{ Maximum..	57	43	55	57	59	52	48	53	48	36	32	25	33	33	30	36	42	56	67	64	56	44	39	38	33	36	45	48	42	48 44.8	
	{ Minimum..	31	30	40	31	31	41	46	44	43	24	16	19	13	12	25	20	15	24	28	40	43	35	36	30	31	36	34	38	41 30.3		
Dubuque.....	{ Maximum..	53	40	48	55	57	47	50	47	50	34	31	23	31	24	30	30	33	39	51	59	61	47	35	36	36	36	34	41	47	45 42.1	
	{ Minimum..	33	30	29	40	33	45	39	33	26	18	16	13	15	20	19	15	16	32	35	34	34	33	31	29	32	33	34	36	36 29.1		
Ft. Dodge.....	{ Maximum..	53	48	58	58	55	48	48	47	47	28	28	18	27	27	25	28	35	43	48	51	51
	{ Minimum..	31	36	41	35	20	11	13	8	9	28	18	17	27	27	25	28	35	43	48	51	51
Grinnell.....	{ Maximum..	51	43	55	56	52	49	49	52	52	36	30	25	34	31	29	29	36	43	56	67	67	64	40	35	36	36	34</td				

IOWA CROPS 1920, ESTIMATED NUMBER OF ACRES BY COUNTIES.

	Corn	Oats	Spring Wheat	Winter Wheat	Barley	Rye	Flax	Potatoes	Tame Hay	Wild Hay	Alfalfa	Pastures
Adair	117,700	49,300	5,240	4,500	8,280	650	.....	781	22,050	4,770	140	112,340
Adams	72,200	26,400	870	5,700	1,450	600	10	484	16,800	2,260	1,150	97,820
Allamakee	46,000	43,200	5,390	1,100	5,270	450	45	1,518	55,650	1,330	20	187,310
Appanoose	50,000	15,400	2,560	7,430	30	950	70	176	28,140	870	50	127,630
Audubon	95,100	49,400	6,170	890	7,250	30	.....	517	22,890	1,850	1,580	73,440
Benton	138,500	99,400	1,810	580	5,850	1,090	.....	1,056	50,295	1,970	90	122,030
Black Hawk	112,200	72,600	1,810	410	3,990	2,000	45	1,397	29,400	8,920	130	92,810
Boone	135,000	84,100	3,040	310	830	80	10	264	19,215	6,120	590	83,920
Bremer	68,400	56,500	420	40	1,620	800	10	1,683	21,525	20,800	100	71,770
Buchanan	108,500	72,300	760	40	3,190	1,310	.....	836	36,540	12,200	120	102,680
Buena Vista	141,300	102,000	2,230	10	790	210	125	1,265	22,890	7,900	1,100	68,200
Butler	106,800	86,200	760	0	1,100	1,000	10	1,375	29,505	11,300	30	95,620
Calhoun	141,900	114,200	630	20	450	220	10	451	20,055	3,030	420	54,740
Carroll	116,900	75,000	7,880	440	2,460	150	10	1,370	27,825	6,240	360	80,090
Cass	125,800	46,600	5,970	14,200	10,700	2,000	.....	913	23,205	1,180	960	105,760
Cedar	99,400	44,200	2,200	2,700	9,320	740	.....	825	51,450	170	90	119,850
Cerro Gordo	91,000	82,100	3,200	0	2,080	50	205	1,474	33,705	9,770	40	82,580
Cherokee	135,000	87,900	1,470	0	1,080	100	.....	1,144	25,935	8,000	3,230	81,700
Chickasaw	72,700	61,800	5,030	40	3,600	220	295	1,122	30,030	11,800	10	86,880
Clarke	59,500	24,300	380	7,000	150	340	75	165	24,675	80	20	112,650
Clay	118,100	89,800	550	20	1,450	170	325	561	24,465	11,400	630	82,290
Clayton	79,700	72,100	4,290	1,190	9,210	540	5	2,442	69,090	910	70	189,760
Clinton	112,800	46,300	3,090	2,840	8,560	2,550	.....	726	61,215	2,000	350	143,260
Crawford	138,400	69,900	21,000	1,170	4,760	150	15	1,771	47,250	5,290	8,050	123,960
Dallas	137,700	64,200	2,570	10,700	1,230	500	.....	176	18,270	2,000	850	100,400
Davis	49,300	18,200	1,200	4,900	70	1,050	.....	506	51,660	40	30	153,250
Decatur	69,700	25,000	1,170	11,700	90	1,100	.....	154	30,870	140	130	136,970
Delaware	89,800	64,500	1,700	60	9,320	2,160	.....	1,012	44,625	6,030	50	116,660
Des Moines	58,100	24,200	1,410	10,400	520	1,790	20	858	29,505	20	350	83,280
Dickinson	64,800	55,200	2,860	0	1,980	180	560	506	15,750	11,700	210	54,040
Dubuque	73,500	50,000	4,290	460	4,860	330	.....	2,574	70,245	900	120	137,150
Emmet	71,000	60,800	620	0	1,640	340	595	506	21,840	6,340	60	50,920
Fayette	96,800	82,700	2,570	220	7,040	700	15	1,815	57,750	12,630	10	154,750
Floyd	97,200	78,900	2,170	10	1,840	660	60	1,842	35,595	4,670	360	78,330
Franklin	119,300	89,700	680	0	1,600	270	40	1,815	35,280	7,720	20	85,170
Fremont	129,700	13,800	880	18,500	460	690	5	407	10,080	6,100	13,200	77,170
Greene	155,000	86,300	1,690	270	560	40	.....	275	21,105	4,420	170	80,350
Grundy	115,000	84,600	1,050	150	1,170	60	.....	2,398	26,880	5,550	130	73,110
Guthrie	118,200	56,600	5,250	1,760	1,600	80	.....	319	26,040	3,480	510	116,710
Hamilton	135,400	103,200	1,590	140	610	80	35	594	21,525	5,260	170	71,920
Hancock	106,400	91,500	2,640	1,220	1,860	220	250	1,089	28,980	16,100	280	82,300
Hardin	119,600	84,600	660	40	1,440	120	25	814	25,515	4,160	90	79,650
Harrison	155,500	32,800	26,500	12,600	2,850	330	15	1,034	8,400	7,980	22,520	105,220
Henry	69,200	28,600	550	3,370	190	1,130	.....	341	26,565	10	110	101,570
Howard	49,600	58,000	2,850	60	4,890	270	1,000	1,144	37,905	14,160	10	84,780
Humboldt	104,000	75,600	1,530	150	2,160	210	100	484	18,375	5,540	120	42,270
Ida	94,200	60,700	3,320	70	2,140	30	5	1,133	25,200	1,890	2,680	64,220
Iowa	94,500	44,700	1,520	1,310	1,240	460	.....	1,584	37,905	400	50	120,140
Jackson	61,200	30,100	3,980	1,550	2,540	880	.....	1,309	65,730	1,700	130	186,180
Jasper	160,200	66,100	9,430	5,320	520	600	.....	605	40,635	600	150	145,840
Jefferson	66,900	21,100	720	4,470	170	540	.....	473	35,595	.....	250	112,020
Johnson	103,300	47,700	1,130	2,050	1,290	1,500	.....	1,419	48,195	900	210	128,650
Jones	81,600	41,900	850	260	6,130	820	10	924	56,700	190	390	149,560
Keokuk	106,200	45,000	3,330	3,700	560	740	.....	693	42,525	40	80	127,590
Kossuth	194,000	167,100	1,870	10	5,000	4,200	1100	1,716	38,745	30,400	270	118,620
Lee	55,400	20,700	1,230	13,800	500	8,740	.....	1,540	32,865	50	460	145,260
Linn	118,400	67,700	1,480	430	2,450	1,520	20	1,782	47,880	2,800	130	172,190
Louisa	66,500	24,500	500	11,800	240	3,270	.....	462	18,375	110	60	78,190
Lucas	51,300	21,200	1,000	8,500	50	510	30	143	22,575	100	120	117,360
Lyon	134,100	112,400	2,530	10	4,860	80	15	2,442	15,225	10,300	3,770	63,260
Madison	88,500	27,600	1,440	16,800	3,000	610	90	264	20,790	1,070	480	132,960
Mahaska	118,200	48,500	3,420	5,240	520	750	5	605	33,600	140	140	122,520
Marion	93,900	36,300	4,370	14,360	880	550	.....	484	23,730	930	840	126,680
Marshall	115,000	74,500	2,120	630	800	90	.....	847	34,860	210	70	90,530
Mills	107,200	18,800	3,330	10,960	1,090	590	.....	561	9,135	4,420	13,960	70,490
Mitchell	68,800	85,900	2,900	80	2,080	110	735	5,137	33,390	3,420	30	72,350
Monona	126,100	27,600	22,000	21,600	2,150	140	.....	880	9,135	16,600	18,700	102,290
Monroe	44,500	16,300	3,350	10,050	140	600	60	220	28,350	60	40	131,280
Mongomery	89,200	21,800	1,940	17,000	1,810	2,000	20	539	19,950	530	4,870	69,960
Muscatine	82,600	22,300	1,520	6,970	2,670	4,000	.....	1,353	24,570	590	560	77,430
O'Brien	119,100	91,700	1,590	30	4,700	80	85	1,133	25,725	6,750	1,420	75,550
Oscolla	82,500	74,900	510	10	2,900	30	215	1,067	17,640	7,390	280	48,740
Page	97,600	21,700	750	21,460	940	1,510	.....	869	23,520	910	5,930	100,680
Palo Alto	140,000	89,300	840	0	1,370	430	1,130	594	17,325	18,760	180	66,070
Plymouth	200,000	96,400	31,500	460	2,910	80	.....	1,980	25,200	19,470	16,600	110,180
Pocahontas	135,200	113,800	910	90	1,750	830	90	1,001	21,000	7,680	260	57,780
Poll	117,500	48,500	10,000	15,700	100	820	70	539	17,430	2,490	600	79,360
Pottawattamie	220,000	56,900	16,440	14,400	11,800	1,750	30	5,170	26,460	6,470	21,700	133,140
Poweshiek	112,300	59,600	2,520	260	1,070	390	.....	616	36,225	90	80	117,180
Ringgold	83,100	35,300	860	4,030	250	520	.....</td					

AVERAGE AND TOTAL YIELDS OF IOWA CROPS, 1920, BY COUNTIES

Counties	Corn		Oats		Sp'ng Wheat		Winterwheat		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	43	5,061,000	39	1,922,700	9	47,200	18	81,000	27	223,560	12	7,800	...	79	61,699	1.4	30,870	2.0	9,540	1.0	140	
Adams	42	3,032,000	41	1,082,400	10	8,700	17	96,900	29	42,050	16	9,600	10	100	78	37,752	1.5	25,200	1.6	3,616	2.8	3,220
Allamakee	47	2,162,000	43	1,857,600	13	70,000	22	24,200	30	158,100	16	7,200	14	630	139	211,002	1.7	94,600	2.1	2,793	2.3	46
Appanoose	41	2,050,000	34	523,600	12	30,700	15	111,450	30	900	15	14,250	10	700	79	13,904	1.0	28,140	1.1	957	3.5	175
Audubon	41	3,899,000	35	1,729,000	11	67,900	20	17,800	29	210,250	18	540	...	101	52,217	1.7	38,910	2.0	3,700	3.5	5,530	
Benton	49	6,786,000	40	3,976,000	18	32,600	23	13,340	24	140,400	18	19,620	...	110	116,116	1.5	75,440	1.5	2,955	4.0	360	
Black Hawk	44	4,937,000	39	2,831,400	15	27,200	15	6,150	29	115,710	15	30,000	10	450	120	167,640	1.4	41,160	1.2	10,704	3.0	390
Boone	47	6,345,000	41	3,448,100	14	42,600	20	6,200	30	24,900	22	1,760	10	100	137	36,168	1.6	30,740	1.0	6,120	2.5	1,475
Bremer	50	3,420,000	37	2,090,500	13	5,500	22	880	34	55,980	12	9,600	10	100	125	210,375	1.5	32,890	1.3	27,040	3.0	300
Buchanan	41	4,418,000	38	2,747,400	14	10,700	18	720	30	95,700	16	20,960	...	96	80,256	1.5	54,810	1.5	18,300	3.0	360	
Buena Vista	51	7,206,000	38	3,876,000	16	33,500	16	160	29	22,910	25	5,250	12	1,500	123	155,595	1.5	84,330	1.5	11,850	3.2	3,520
Butler	48	5,126,000	41	3,534,200	11	8,400	...	27	29,700	17	17,000	9	99	99	136,125	1.4	41,300	1.2	13,560	2.8	84	
Calhoun	49	6,953,000	42	4,796,400	13	8,200	18	360	30	13,500	17	3,740	10	100	114	51,414	1.6	32,090	1.1	3,333	3.0	1,260
Carroll	51	5,962,000	45	3,375,000	11	86,700	19	8,360	28	68,880	19	2,850	10	100	101	188,870	1.4	38,960	1.3	8,112	2.7	972
Cass	44	5,535,000	39	1,817,400	11	65,700	20	284,000	29	310,300	16	32,000	...	120	109,560	1.4	32,490	1.4	1,652	2.8	2,688	
Cedar	51	5,069,000	46	2,033,200	15	33,000	23	62,100	27	251,640	18	13,320	...	100	82,500	1.4	72,030	1.2	204	3.0	270	
Cerro Gordo	47	4,277,000	41	3,366,100	12	38,400	...	26	54,080	15	750	10	2,050	155	228,470	1.6	37,930	1.1	10,747	3.0	120	
Cherokee	50	6,750,000	37	3,252,300	9	13,200	...	32	34,560	18	1,800	...	145	165,850	1.4	36,310	1.3	10,400	3.0	9,690		
Chickasaw	39	2,835,000	38	2,348,400	10	50,300	10	400	27	97,200	15	3,300	8	2,360	97	108,834	1.5	45,040	1.0	11,800	3.2	32
Clarke	40	2,380,000	30	729,000	13	5,000	12	84,000	32	4,800	15	5,100	10	750	76	12,540	1.3	32,080	1.0	80	3.0	60
Clay	50	5,905,000	36	3,228,300	10	5,500	21	420	28	40,600	15	2,550	12	5,525	124	69,564	1.7	41,590	1.2	13,620	2.4	1,512
Clayton	49	3,905,000	44	3,172,400	14	60,100	22	26,180	25	230,250	17	9,180	14	70	150	366,300	1.4	96,720	1.0	910	3.0	210
Clinton	51	5,753,000	37	1,713,100	15	46,400	20	56,800	22	188,320	16	40,800	...	70	50,820	1.5	91,820	1.0	2,000	4.0	1,400	
Crawford	45	6,228,000	41	2,865,900	11	231,000	22	25,740	29	18,040	20	3,000	10	150	122	216,062	1.4	66,150	1.5	7,935	3.1	24,955
Dallas	49	6,747,600	40	2,568,000	12	30,800	22	235,400	29	35,670	21	10,500	...	123	21,648	1.3	23,750	1.4	2,800	3.1	2,635	
Davis	40	1,972,000	33	600,600	14	16,800	16	78,400	35	4,250	16	16,800	...	86	43,516	1.3	67,160	1.0	40	2.8	84	
Decatur	38	2,649,000	23	700,000	14	16,400	14	163,800	27	2,430	12	13,200	...	74	11,396	1.4	43,220	0.5	70	3.5	455	
Delaware	42	3,772,000	32	2,064,000	16	27,200	17	1,020	23	214,360	12	25,920	...	70	70,840	1.3	58,010	1.1	6,633	3.0	150	
Des Moines	52	6,021,000	38	919,600	14	19,700	22	228,800	35	18,200	20	35,800	10	200	91	78,078	1.3	38,350	1.2	24	2.9	1,015
Dickinson	43	2,786,000	37	2,042,400	9	25,700	...	24	47,520	17	3,060	10	5,600	100	50,600	1.5	23,620	1.0	11,700	3.7	777	
Dubuque	49	3,602,000	35	1,750,000	17	72,900	15	6,900	24	116,640	18	5,940	...	94	241,956	1.6	112,390	0.9	810	2.2	264	
Emmet	40	2,840,000	35	2,310,400	12	7,400	...	24	39,360	11	3,740	9	5,355	112	56,672	1.6	34,940	1.0	6,340	3.5	210	
Fayette	47	4,550,000	39	3,225,300	12	30,800	23	5,060	30	211,200	19	13,300	9	135	114	206,910	1.6	92,400	1.2	15,156	3.5	35
Floyd	45	3,374,000	39	3,077,100	9	19,500	16	160	27	49,680	17	11,220	10	600	115	154,330	1.3	46,270	1.3	720		
Franklin	49	5,846,000	47	4,215,900	13	8,800	...	30	48,000	14	3,780	8	320	113	205,095	1.3	45,860	1.1	8,492	2.9	58	
Fremont	52	6,744,000	50	690,000	15	13,200	25	462,500	40	18,400	18	12,420	10	50	69	28,083	1.6	16,130	2.0	12,200	3.0	39,600
Greene	46	7,130,000	41	3,538,300	9	15,200	20	5,400	30	16,800	22	880	...	142	39,050	1.4	29,550	1.0	4,420	3.0	510	
Grundy	54	6,210,000	45	3,807,000	13	13,700	24	3,600	25	29,250	20	1,200	...	131	314,138	1.3	34,940	1.2	6,660	3.0	390	
Guthrie	40	4,728,000	38	2,150,800	13	68,300	17	29,920	30	48,000	23	1,840	...	88	28,072	1.4	36,460	1.4	4,872	2.7	1,377	
Hamilton	55	7,447,000	40	4,128,000	13	20,700	30	4,200	27	16,470	25	2,000	10	350	133	79,002	1.4	30,130	1.0	5,200	3.5	510
Hancock	42	4,469,000	48	4,392,000	11	29,000	17	20,740	25	52,080	18	3,960	9	2,250	173	188,397	1.3	37,670	1.1	17,710	3.5	980
Hardin	49	5,860,000	40	3,384,000	14	9,200	22	880	31	44,640	12	1,440	8	200	112	91,168	1.3	33,170	1.5	6,240	3.2	288
Harrison	42	6,531,000	42	3,776,200	13	122,600	21	111,720	37	19,240	20	12,000	...	102	61,710	1.6	65,020	1.8	1,080	3.9	585	
Henry	47	3,252,000	41	1,172,600	12	6,600	19	64,030	24	4,250	14	7,560	...	60	20,460	1.3	34,530	1.0	10	3.1	341	
Howard	36	1,786,000	40	2,320,000	9	25,600	10	600	30	146,700	15	4,050	8	8,000	116	132,704	1.3	49,280	1.1	15,576	3.4	34
Humboldt	47	4,888,000	40	3,024,000	15	23,000	20	3,000	31	66,960	19	3,990	11	1,100	112	54,208	1.3	23,880	0.9	4		

FINAL CROP REPORT OF THE STATE. 1920

The following estimates of acreage, yield and value of the crops of the State, derived from the reports of hundreds of correspondents well distributed in each county, are the result of the joint effort of the U. S. Bureau of Crop Estimates, of which Mr. Frank S. Pinney is Agricultural Statistician, and the Iowa Weather and Crop Service. The table showing the total value of crops does not include or take into account live stock products.

Corn.--The estimated acreage was 10,300,000; average yield, 46.0 bushels per acre; total yield, 473,800,000 bushels; average price \$4.7 per bushel; total value, \$222,686,000. Only 10 per cent of the crop was reported to be soft or immature and 77 per cent had been husked on December 1. The total production of corn in Iowa this year is the greatest of record. The quality is very good.

Oats.--The estimated area harvested was 5,893,600 acres; average yield, 39.0 bushels; total yield, 229,850,400 bushels; average price 36 cents; total value \$82,746,144.

Spring Wheat.--Area harvested, 400,000 acres; average yield, 11.3 bushels per acre; total yield, 4,520,000 bushels; price per bushel \$1.35; total value, \$6,102,000.

Winter Wheat.--Area harvested, 431,000 acres; average yield, per acre, 19.7 bushels; total yield, 8,490,700; average price \$1.41 per bushel; total value, \$11,971,887.

Barley.--Area harvested, 284,000 acres; average yield per acre, 27.5 bushels; total yield, 7,810,000 bushels; average price, 63 cents per bushel; total value, \$4,920,300.

Rye.--Area harvested, 80,000 acres; average yield, 16.2 bushels; total yield, 1,296,000 bushels; price per bushel, \$1.17; total value, \$1,516,320.

Flax Seed.--Average yield, 10.0 bushels; total yield, 120,000 bushels; total value at \$1.80 per bushel, \$216,000.

Timothy Seed.--Area harvested, 270,000 acres; average yield, 4.9 bushels; total yield, 1,323,000 bushels; total value at \$3.00 per bushel, \$3,969,000.

Clover Seed.--Area harvested, 134,000 acres; average yield 2.0 bushels; total value at \$11.65 per bushel, \$3,122,200.

Potatoes.--Area harvested, 104,500 acres; average yield, 110 bushels; total yield, 11,495,350 bushels; average price, \$1.22; total value \$14,024,327.

Hay (Tame).--Average yield, 1.44 tons per acre; total yield, 4,349,620 tons; average price, \$16.24 per ton, total value, \$70,637,829.

Hay (Wild).--Average yield, 1.27 tons; total yield, 647,700 tons; average price, \$12.69; total value, \$8,219,313.

Alfalfa.--Area harvested, 200,000 acres; average yield, 2.84 tons, total yield, 568,140 tons; average price, \$19.23 per ton; total value, \$10,925,332.

TABULATED CROP SUMMARY, 1920.

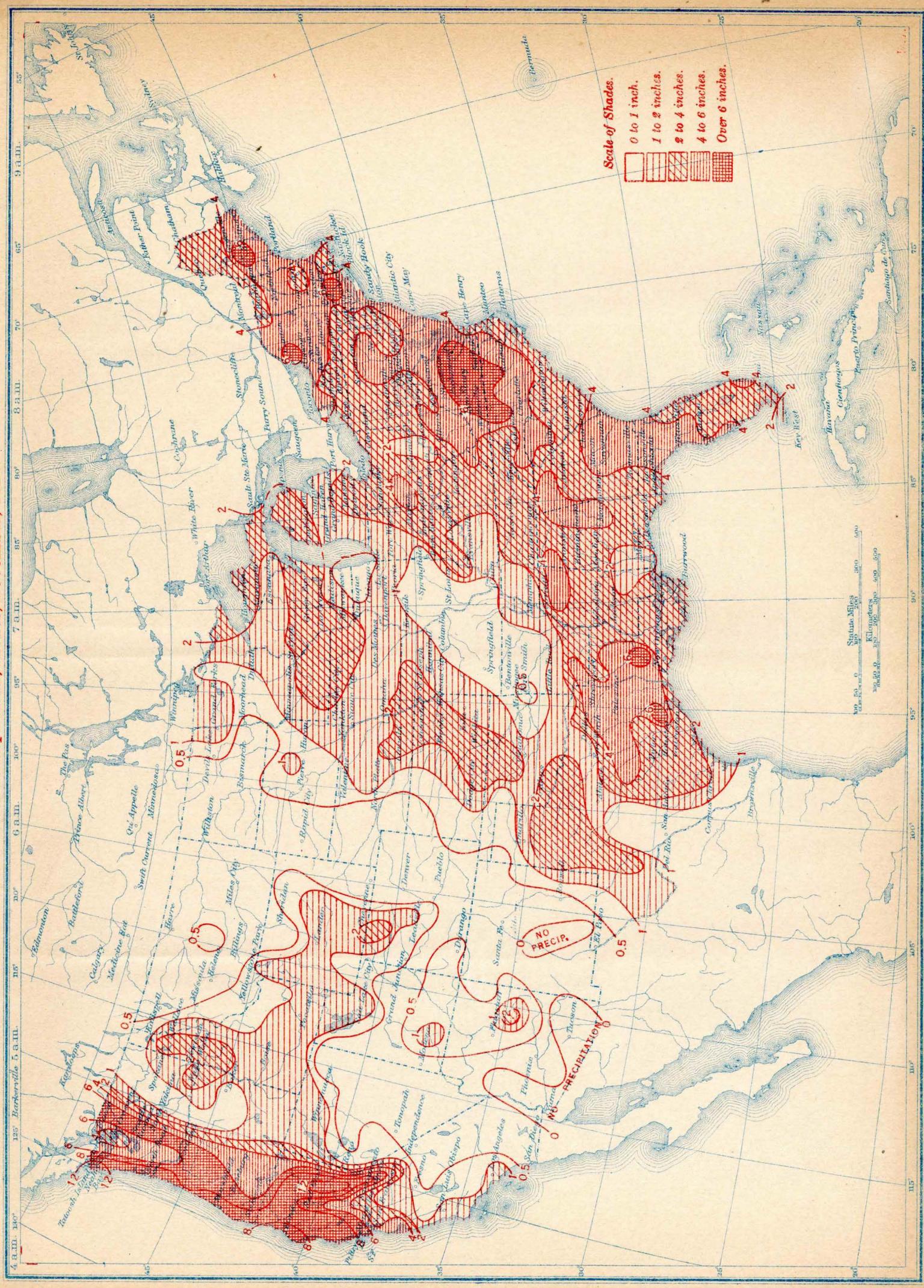
Crop	Acres	Average Yield	Average Price	Total Yield	Total Value
Corn	10,300,000	46.0 Bu.	\$ 0.47	473,800,000	\$222,686,000
Oats	5,893,600	39.0 "	0.36	229,850,400	82,746,144
Spring wheat	400,000	11.3 "	1.35	4,520,000	6,102,000
Winter wheat	431,000	19.7 "	1.41	8,490,700	11,971,887
Barley	284,000	27.5 "	0.63	7,810,000	4,920,300
Rye	80,000	16.2 "	1.17	1,296,000	1,516,320
Flax seed	12,000	10.0 "	1.80	120,000	216,000
Timothy seed	270,000	4.9 "	3.00	1,323,000	3,969,000
Clover seed	134,000	2.0 "	11.65	268,000	3,122,200
Potatoes	104,500	110.0 "	1.22	11,495,350	14,024,327
Hay, tame excluding alfalfa	3,020,850	1.44 tons	16.24	4,349,620	70,637,829
Hay, wild	510,000	1.27 "	12.69	647,700	8,219,313
Alfalfa	200,000	2.84 "	19.23	568,140	10,925,332
Pasture and Grazing	10,137,680	.....	7.01	.....	71,065,136
Ensilage, estimated	.....	.....	.....	.....	25,000,000
Sweet corn, subject to revision	.....	.....	.....	.....	1,960,000
Pop corn	30,000	30.0 Bu.	3.23	900,000	2,907,000
Buckwheat	7,500	17.0 "	1.34	127,500	170,850
Fruit crop estimated	.....	.....	.....	.....	7,000,000
Garden truck, estimated	.....	.....	.....	.....	4,000,000
Sugar beets for manufacture	17,250	9.2 tons	11.34	158,750	1,801,000
Miscellaneous crops estimated .....	.....	.....	.....	.....	5,500,000

Total value, not including live stock products, for the year, 1920 ...\$560,460,638
Total value for the year, 1919 ...\$950,056,002

Frank S. Pinney, Agricultural Statistician,
U. S. Bureau of Crop Estimates.

Charles D. Reed, Director,
Iowa Weather and Crop Service.

Total Precipitation, Inches, November, 1920.



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 AND ANNUAL SUMMARY, 1920

BY

CHARLES D. REED

METEOROLOGIST



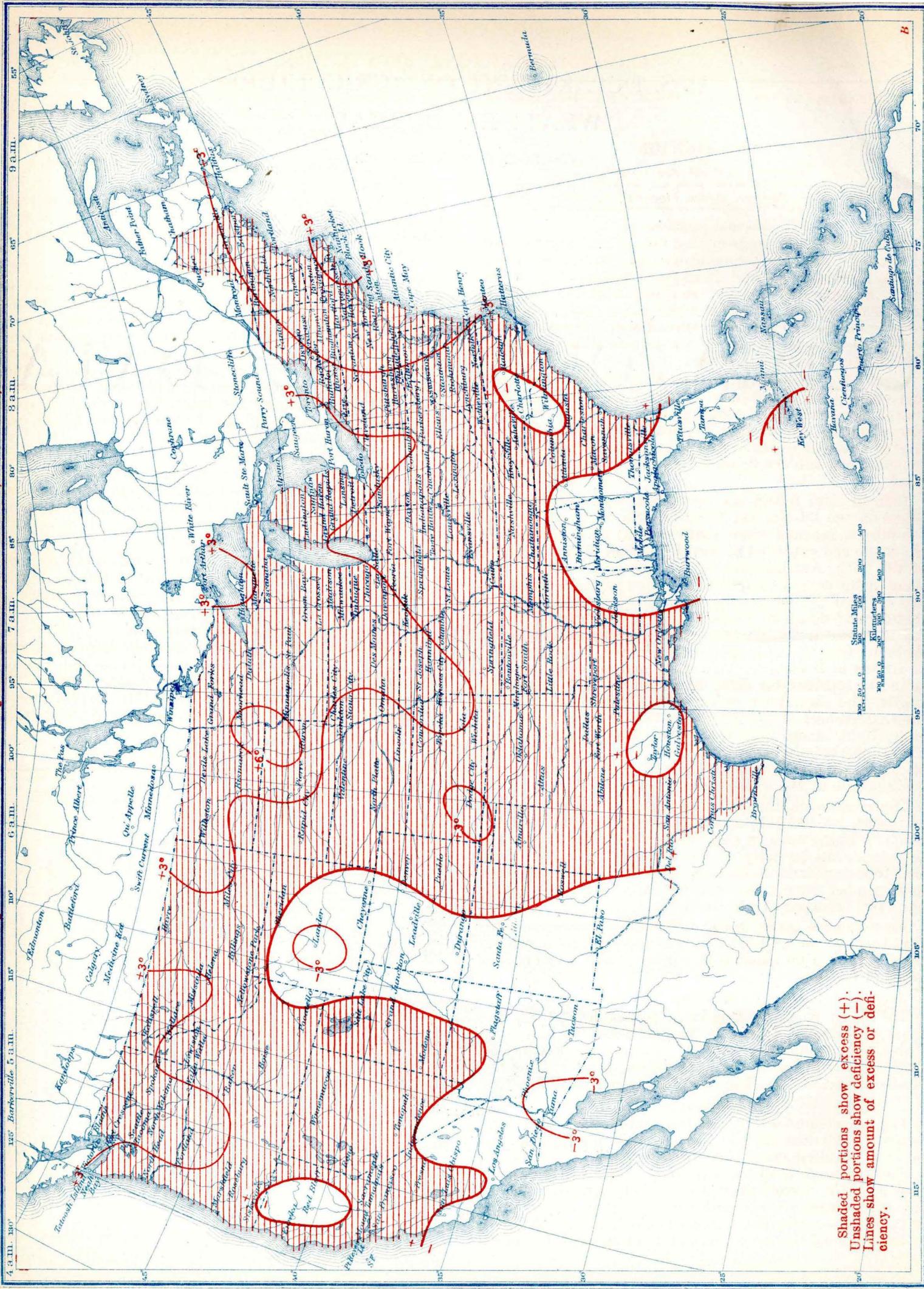
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DES MOINES, IOWA
WEATHER BUREAU OFFICE



9.C

Departure of the Mean Temperature from the Normal, December, 1920.



U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

IOWA SECTION

CHARLES D. REED, Meteorologist.

Vol. XXXI Des Moines, Iowa, December, 1920. No. 12

GENERAL SUMMARY.

Mild winter weather prevailed during the greater part of December and the temperature was above normal continuously during the first 16 days. From the 17th to the 28th, the only cold weather occurred, with the temperature below normal except on a few days. Cold waves, beginning on the 22d and 26th, spread over the entire State but there were no unusually low temperatures reported. The last three days were warm.

Conditions were generally favorable for out door work and stock. Until the cold weather set in very little frost was in the ground and plowing was reported from many places during the greater portion of the second week. During the cold weather winter grain was well protected by snow and the condition at the end of the month was good.

Rain or sleet fell in the south and east portion of the State on the 3d-4th. On the 13th the first well defined snowstorm reached from southwest to northeast across the State and extended to the Mississippi by the morning of the 14th. Amounts up to 7.0 inches occurred at stations in the central counties. The snowstorm of the 20th-22d covered the entire State except a small area in the east-central division. Considerably more than 10 inches fell in areas in the northern and west-central divisions. At Sioux City the 24-hour fall, 13.6 inches, is the greatest of record in December. This snow drifted badly and resulted in considerable delay to street car and automobile traffic. The snowstorm of the 25th-26th was confined to the eastern half of the State, and the amounts were generally light except over the southeastern district. After the ground became covered it remained so during the rest of the month over practically the entire State but was becoming bare at the close of the month.

Thunderstorms, though unusual in December, occurred on the 3d, 4th and 13th at a large number of stations, particularly in the eastern portion of the State. At Dubuque thunderstorms occurred on the 3d and 13th. At this station thunderstorms have been recorded only three times in December during the last 46 years and never before have two occurred in one December.

An extensive glaze storm occurred in connection with the storm of the 20th-22d. It was preceded by a general snow cover, so no damage to winter grains and grass is believed to have resulted.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.97 inches. The highest recorded was 30.52 inches, at Omaha, Neb., on the 24th and the lowest was 29.00 inches, at Dubuque, (the lowest of record for December) on the 13th. The monthly range was 1.52 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 99 stations was 26.4° or 2.5° higher than the normal. By divisions, three tiers of counties to the division, the mean temperatures were as follows: Northern, 23.6° , or 2.4° higher than the normal; Central, 26.7° or 2.6° higher than the normal; Southern, 29.0° or 2.5° higher than the normal. The highest monthly mean was 32.8° , at Keokuk, and the lowest was 21.2° at Inwood. The high-

est temperature recorded was 65° , at Burlington, on the 3d, and the lowest was -26° , at Inwood, on the 24th. The temperature range for the State was 91° .

HUMIDITY.

The average relative humidity for the State at 7 A. M. was 85 per cent, and at 7 P. M. it was 77 per cent. The mean for the month was 81 per cent, which is practically normal. The highest monthly mean was 90 per cent at Charles City, and the lowest mean was 74 per cent, at Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 104 stations, was 1.16 inches, or 0.06 inch less than the normal. By divisions, the average were as follows: Northern, 1.11 inches, or 0.04 inch greater than the normal; Central, 1.17 inches, or 0.08 inch less than the normal; Southern, 1.19 inches, or 0.16 inch less than the normal. The greatest amount, 2.64 inches, occurred at Knoxville and Olin, and the least, 0.26 inch at Denison. The greatest amount in any 24 consecutive hours, was 1.40 inches at Knoxville, on the 13th.

SNOWFALL.

The average snowfall for the State was 7.4 inches, or 1.2 inches greater than the normal. The greatest amount, 19.3 inches, occurred at Northwood, and the least 2.0 inches at Afton, Cumberland and Denison.

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 55 miles an hour, from the west, at Sioux City, on the 15th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 41, or 7 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 25; Davenport, 39; Des Moines, 53; Dubuque, 29; Keokuk, 45; Sioux City, 42; Omaha, Neb. 56.

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	-13	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	8
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	0.05	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	0.05	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	+0.08	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
1919	15.0	-8.9	52	-26	0.54	-0.68	1.55	0.08	5.8	4	11	7	15
1920	26.4	+2.5	65	-26	1.16	-0.06	2.64	02.6	7.4	5	10	8	13

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

CLIMATOLOGICAL DATA FOR DECEMBER, 1920.

STATIONS.	COUNTIES.	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit						Precipitation in inches			No. 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 (unmeted)	Precipitation .01 inch or more	Clear	Partly cloudy			
<i>Northern Division</i>																				
Algona	Kossuth	1213	47	24.8	+3.5	48	11	-15	24	34	1.25	+0.28	1.20	11.0	2	12	3	16	nw	
Allison	Butler	1045	3	24.1	.....	50	11	-14	28	29	1.10	.....	0.55	6.0	3	5	11	15	nw
Alta	Buena Vista	1513	29	23.6	+2.6	50	11	-13	24	35	0.68	-0.27	0.45	7.0	2	9	9	13	nw	
Alton	Sioux	1305	15	23.0	+1.7	47	11	-22	24	36	0.90	.....	0.50	9.0	3	8	13	10	nw
Belmond	Wright	1205	10	23.6	.....	50	11	-18	24	34	1.02	.....	0.65	9.1	7	8	7	16	nw
Britt	Hancock	1236	23	23.6	+2.9	52	11	-18	24	34	0.64	-0.19	0.61	6.3	3	4	11	16	s	
Charles City	Floyd	1015	29	23.7	+4.7	48	11	-14	24	27	1.83	+0.55	0.89	16.1	5	5	7	19	nw	
Decorah	Winneshiek	875	27	24.6	+2.4	48	12†	-13	28	26	1.99	+0.65	0.70	13.5	6	11	4	16	nw	
Elkader	Clayton	751	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Estherville	Emmet	1298	25	23.8	+3.9	49	7	-15	24	32	0.55	.....	0.55	7.0	1	4	17	10	nw
Fayette	Fayette	1003	30	24.6	+3.7	49	12	-13	28	30	1.57	+0.04	0.91	8.2	6	9	9	13	nw	
Forest City	Winnebago	1226	26	23.4	+3.8	51	11	-14	28	30	0.62	-0.35	0.38	6.0	5	8	7	16	nw	
Humboldt	Humboldt	1095	32	24.9	+1.7	53	11	-19	24	32	1.06	+0.20	1.00	10.5	2	6	10	15	nw	
Inwood	Lyon	1474	16	21.2	+1.2	47	11	-26	24	39	1.34	+0.66	1.00	13.3	5	13	10	8	nw	
Lansing	Allamakee	632	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Le Mars	Plymouth	1224	24	23.8	+1.3	51	11	-16	24	36	1.00	+0.07	0.60	10.0	3	10	9	12	s	
Mason City	Cerro Gordo	1148	23	22.6	+1.1	45	12	-18	24†	33	1.27	-0.13	0.90	11.0	4	18	4	9	nw	
Milford (near)	Dickinson	1430	.....	22.6	.....	45	11	-17	24	31	0.63	.....	0.41	6.1	3	6	13	12	nw
New Hampton	Chickasaw	1169	23	23.3	+2.4	48	11	-18	24	26	1.70	+0.57	0.80	14.0	5	10	6	15	nw	
Nora Springs	Floyd	1064	8	26.1	.....	55	11	-17	24	35	1.27	.....	0.71	6.1	8	8	10	13	s
Northwood	Worth	1222	24	23.0	+3.0	46	11	-13	28	26	1.93	+0.69	1.00	19.3	7	7	7	17	nw	
Pocahontas	Pocahontas	1248	16	24.0	+2.1	52	11	-20	24	44	0.76	-0.10	0.70	8.0	2	11	6	14	nw	
Postville	Clayton	1180	21	23.8	+2.4	49	13	-14	28	25	1.78	+0.32	1.12	9.1	8	5	9	17	nw	
Rock Rapids	Lyon	1358	21	22.3	+2.7	44	11†	-21	24	31	1.08	+0.50	0.90	10.8	3	17	7	7	nw	
Sanborn	O'Brien	1553	6	22.6	.....	46	11	-18	24	31	1.00	.....	0.50	10.0	2	8	8	15	nw
Sioux Center	Sioux	1426	21	.....	.....	.....	.....	.....	.....	.....	2.80	-0.09	0.40	8.0	3	8	7	16	nw
Spencer	Clay	1319	6	22.4	.....	48	11	-20	24	34	0.85	.....	0.80	8.5	2	7	10	14	nw
Storm Lake	Buena Vista	1440	31	24.3	+1.9	50	11	-15	24	32	0.90	+0.08	0.80	9.3	3	16	4	11	nw	
Washta	Cherokee	1157	22	23.6	+1.1	51	11	-23	24	40	0.88	+0.08	0.70	9.0	3	14	5	12	nw	
Waverly	Bremer	948	24	25.0	+2.2	51	1	-13	28	34	1.48	+0.22	0.55	10.5	8	9	3	19	nw	
West Bend	Palo Alto	1197	27	23.0	+1.2	52	11	-16	28	38	0.53	-0.70	0.41	7.3	3	14	5	12	nw	
<i>Means and extremes.</i>		.....	.....	23.6	+2.4	55	11	-26	24	44	1.11	+0.04	1.20	9.6	4	9	8	14	nw
<i>Central Division</i>																				
Ames	Story	926	44	27.4a	+3.0	53a	11	-13a	27	35a	1.05	-0.17	0.60	8.0	3	....	....	....	nw
Audubon	Audubon	1301	26	24.7	+0.8	53	11	-15	24	36	0.90	-0.09	0.70	8.0	2	11	11	9	nw	
Baxter	Jasper	998	20	26.3	+2.0	52	11	-11	28	32	0.92	-0.08	0.77	4.2	4	6	9	16	nw	
Belle Flaine	Benton	886	30	27.2	+3.3	57	12	-11	28	28	1.57	+0.14	0.82	5.3	9	6	13	12	nw	
Hoone	Boone	1134	15	26.4	+3.3	54	11	-11	24†	34	0.54	.....	0.43	3.0	5	4	8	18	nw
Carroll	Carroll	1265	30	25.2	+2.0	54	11	-15	24	39	0.90	-0.12	0.80	5.0	2	16	2	13	nw	
Cedar Rapids	Linn	733	38	28.0	+4.0	54	12	-9	28	25	0.84	-0.56	0.35	4.3	5	16	1	14	w	
Clinton	Clinton	593	47	29.8	+4.1	60	6	-3	14	28	29	1.55	-0.30	0.58	4.8	6	12	6	13	s
Davenport	Scott	580	49	29.6	+2.4	60	3	-7	28	30	1.19	-0.50	0.48	6.9	9	6	9	16	w	
Delaware	Delaware	1083	29	25.4	+3.4	52	12	-14	28	25	1.78	+0.44	0.95	5.5	6	8	11	12	n	
Denison	Crawford	1180	26	26.7	+2.2	51	11†	-13	24	38	0.26	-0.67	0.26	2.0	1	11	6	14	n	
Des Moines	Polk	861	40	28.8	+3.1	55	11	-6	28	35	1.38	+0.07	0.89	8.8	5	6	9	16	nw	
Dubuque	Dubuque	639	47	27.3	+2.8	55	13	-9	28	24	0.96	-0.76	0.25	5.6	8	4	10	17	nw	
Fort Dodge	Webster	1126	20	25.1a	+3.2	57b	11	-17	24	36b	1.11	+0.49	0.93	12.2	5	8	7	16	n	
Grinnell	Poweshiek	1031	26	25.8b	+0.3	52b	11†	-8b	28	35b	2.5	.....	.....	.....	15	8	8	8	nw
Grundy Center	Grundy	976	29	26.3	+2.6	51	11	-11	28	27	1.15	-0.03	0.40	11.5	4	5	10	16	nw	
Guthrie Center	Guthrie	1077	25	30.0	+4.8	55	11	-11	24	39	0.70	-0.48	0.40	7.0	2	14	0	17	nw	
Harlan	Shelby	1192	21	24.8d	+1.0	53d	12	-16d	24	36d	0.62	-0.44	0.58	5.3	2	....	....	....	nw
Independence	Buchanan	921	56	26.7	+3.9	51	12†	-11	28	32	0.99	-0.39	0.64	3.0	5	14	0	17	nw	
Iowa City	Johnson	733	60	28.1	+4.0	54	3	-13	28	33	2.45	+0.84	0.79	9.0	8	6	13	12	nw	
Iowa Falls	Hardin	1107	27	24.8	+3.5	51	11	-13	24†	32	1.55	+0.18	0.68	12.7	5	7	9	15	nw	
Jefferson	Greene	1052	21	25.4	+1.2	54	11	-14	24	38	1.39	.....	0.80	7.5	4	12	5	14	nw
LeClaire	Scott	576	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Sioux	Harrison	1040	15	26.2	+0.8	54	5	-21	24	40	0.80	.....	0.70	8.0	2	9	8	14	nw
Logan	Harrison	928	53	27.5	+2.3	52	5	-19	24	38	0.45	-0.73	0.45	5.0	1	13	8	10	nw	
Maquoketa	Jackson	688	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marshalltown	Marshall	947	28	26.8	+3.7	51	11†	-9	28	29	1.28	-0.07	0.72	8.1	6	18	5	8	nw	
Monroe	Jasper	922	8	28.2	.....	55	12	-8	28	30	1.19	.....	0.49	8.6	6	7	6	18	nw
Muscatine	Muscatine	554	60	.....	.....	.....	.....	.....	.....	.....	1.40	-0.64	0.45	5.0	6</td				

CLIMATOLOGICAL DATA FOR DECEMBER, 1920.—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 (unmeted).					
											Precipitation	01 in. or more	Clear.	Partly cloudy.	Cloudy.				
Southern Division																			
Afton	Union	1212	26	28.2	+2.0	54	11†	—9	24	33	0.69	—0.65	0.54	2.0	3	13	8	10	nw
Albia	Monroe	959	22	28.5	+3.2	56	2†	—8	28	37	1.27	+0.12	0.68	6.0	4	2	9	20	e
Atlantic	Cass	1164	29	26.7	+1.9	54	12	—13	24	35	0.68	+0.52	0.53	5.2	3	12	9	10	nw
Bedford	Taylor	.....	20	29.5	+4.5	57	12	—8	24	35	1.16	+0.04	0.50	8.2	5	11	11	9	nw
Bloomfield	Davis	881	13	29.9a	.....	61a	3	—8a	28	32a	0.56	+1.21	0.30	4.0	3	.....	.....	.....	nw
Bonaparte	Van Buren	565	29	30.4	+2.5	63	3	—13	28	34	1.18	+0.17	0.49	3.5	5	15	3	13	nw
Burlington	Des Moines	544	24	32.2	+4.3	65	3	—6	28	26	1.02	+0.76	0.20	3.0	6	17	4	10	sw
Centererville	Appanoose	1013	15	29.9	.....	60	2†	—11	28	39	1.18	.....	0.54	2.5	5	14	6	11	se
Chariton	Lucas	1042	25	31.2	+4.8	58	3	—5	28	28	1.41	+0.09	0.55	3.0	4	8	6	17	nw
Clarinda	Page	1009	30	30.0	+5.3	57	11†	—7	24	35	0.81	+0.36	0.41	6.6	4	10	12	9	nw
Columbus Jct.	Louisa	595	19	29.9	+2.2	61	3	—10	28	28	1.96	+0.65	0.73	10.0	9	10	11	10	nw
Corning	Adams	1117	28	28.1	+3.4	56	12	—10	24	34	0.58	+0.76	0.25	4.0	3	18	5	10	nw
Corydon	Wayne	1101	27	.....	.....	58	3	—5	28	31	1.60	+0.18	0.70	4.2	8	8	11	12	sw
Creston	Union	1312	15	27.8	+3.1	53	12	—11	24	33	0.87	.....	0.61	5.5	5	9	13	13	nw
Cumberland	Cass	1225	21	.....	.....	.....	.....	.....	.....	.....	0.45	+0.65	0.20	2.0	4	7	13	11	sw
Earlham	Madison	1126	18	27.0	+1.6	57	2	—14	24	37	0.44	+0.97	0.23	5.0	2	10	9	12	nw
Fairfield	Jefferson	780	36	28.8a	+1.6	61b	3	—14	28	34b	1.83	+0.14	0.70	9.5	6	16	4	11	nw
Glenwood	Mills	1100	22	28.6	.....	55	5	—14	24	42	0.80	.....	0.60	8.0	4	8	10	13	nw
Greenfield	Adair	969	29	.....	.....	56	12	—12	24	35	0.59	+0.59	0.55	5.9	2	18	5	8	nw
Indianola	Warren	614	49	32.8	+3.4	63	3	—3	28	31	0.61	+1.26	0.28	2.1	6	12	13	w	
Keokuk	Lee	648	28	30.0	+3.3	63	3	—14	28	35	1.88	+0.45	0.55	6.0	7	9	11	nw	
Kenosauka	Van Buren	920	25	28.5	+2.0	55	11	—9	28	35	2.64	+1.27	1.40	8.1	7	8	6	17	nw
Knoxville	Marion	.....	21	.....	.....	.....	.....	.....	.....	.....	1.60	+0.10	0.70	12.0	9	7	16	8	....
Lacona	Warren	1100	13	29.5	+2.8	58	12	—6	28	35	0.58	+0.64	0.40	2.9	5	11	4	16	nw
Lamoni	Decatur	1250	25	28.2	+2.5	56	11†	—9	24	34	0.73	+0.40	0.45	6.0	3	8	12	11	nw
Lenox	Taylor	1236	27	30.0	+3.0	57	11†	—6	24†	36	0.79	+0.60	0.45	2.7	5	12	8	11	nw
Mt. Ayr	Ringgold	729	39	30.6	+2.8	62	3	—3	27	33	1.82	+0.46	0.59	5.6	7	7	8	16	nw
Mt. Pleasant	Henry	1216	29	28.4	+2.2	57	12	—10	24	35	0.83	+0.29	0.50	2.2	3	5	12	14	nw
Murray	Clarke	1105	1	27.6	.....	54	11†	—18	24	40	0.55	.....	0.50	5.5	2	20	2	9	s
Oakland	Pottawattamie	825	44	28.5	+2.4	56	3	—9	28	33	2.43	+1.28	0.78	9.8	8	7	9	15	nw
Oskaloosa	Mahaska	849	25	.....	.....	.....	.....	.....	.....	.....	2.11	+0.81	0.80	6.5	5	11	1	19	w
Ottumwa	Wapello	877	27	28.2	+1.6	54	11	—8	28	32	1.03	+0.05	0.60	10.0	4	10	0	21	nw
Pella	Marion	877	24	28.1	+1.4	56	3	—11	28	30	1.86	+0.63	0.47	7.3	7	12	6	13	nw
Sigourney	Keokuk	754	18	29.7	+2.1	62	3	—18	28	38	1.92	+0.64	0.64	7.5	6	10	6	15	nw
Stockport	Van Buren	.....	23	27.0	+1.3	50	16	—21	24	44	1.25	+0.10	0.85	11.5	4	4	20	7	nw
Thurman	Fremont	769	38	29.3	+2.2	62	3	—13	28	31	2.17	+0.81	0.72	8.0	6	10	11	10	nw
Washington	Washington	1129	29	27.8	+1.7	57	11	—11	24	34	0.95	+0.35	0.75	6.0	2	11	12	8	nw
Winterset	Madison	1040	49	28.7	+1.6	55	5	—8	24	36	0.81	+0.10	0.77	7.3	4	12	7	12	nw
Omaha, Nebr.	.....	.....	.....	29.0	+2.6	65	3	—21	24	44	1.19	+0.16	1.40	5.8	5	11	8	12	nw
Means and extremes	.....	.....	.....	26.4	+2.5	65	3	—26	24	44	1.16	+0.06	1.40	7.4	5	10	8	13	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 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.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

Stations.	Barometric Pressure Inches (Sea level)					Relative Humidity (Per cent)			WIND			Sun- shine.			Per cent. of possible departure from normal.		
	Mean	Highest	Date	Lowest	Date	7 A. M.	Noon [†]	7 P. M.	Lowest	Date	Total movement	Average h'ly velocity.	Maximum	From	Date		
											Miles	Miles	Per cent. of possible departure from normal.				
Charles City	29.96	30.44	7	29.19	14	91	83	89	61	11	5689	7.6	30	nw	15	25	—26
Davenport	29.96	30.43	24	29.08	13	87	75	76	50	20	6393	8.6	33	sw	13	39	—5
Des Moines	29.94	30.46	24	29.24	13	80	74	75	46	23	5917	8.0	28	w	14	53	+ 1
Dubuque	29.96	30.44	7	29.00	13	91	79	80	51	16	5277	7.1	27	nw	14	29	—14
Keokuk	29.98	30.50	24	29.12	13	78	70	69	39	16	7094	9.5	37	nw	14	45	—1
Sioux City	29.98	30.49	23	29.31	12	85	75	80	34	31	9723	13.1	55	w	15	42	—7
Omaha, Neb.	29.98	30.52	24	29.28	12	81	70	73	37	15	6966	9.4	40	nw	14	56	+ 6
Means and extremes	29.97	30.52	24	29.00	13	85	75	77	34	31	.....	9.0	.....	.....	41	—7	.....
Normals and records	30.12	29th	.....	13th	84	77	9th	.....	34	31	.....	8.1	.....	24th	48	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	55	15	.....	.....	.....	.....	.....	.....	.....

*Sioux City †Davenport \$Dubuque

‡Local mean time. ‡And other dates.

MISCELLANEOUS PHENOMENA.

Aurora: 16th.

Fog: 1st, 2d, 3d, 4th, 5th, 6th, 9th, 10th, 12th, 13th, 21st, 22d, 26th, 29th, 30th, 31st.

Hail: 13th, 21st.

Halos: lunar and solar: 13

DAILY PRECIPITATION FOR DECEMBER, 1920.

Stations	Watersheds	DAY OF MONTH.																																	
		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	Total		
<i>Northern Division</i>																																			
Algona	Des Moines																																	1.25	
Allison	Cedar																																T	1.10	
Alta	Raccoon																																	0.68	
Alton	Floyd																																	0.90	
Belmond	Iowa	T	T																															1.02	
Britt	Iowa																																	0.64	
Charles City ***	Cedar																																	1.83	
Decorah	Mississippi																																	1.99	
Elkader	Mississippi																																		
Estherville	Des Moines																																	0.55	
Fayette	Mississippi																																	1.57	
Forest City	Cedar																																	0.62	
Humboldt	Des Moines	T																																1.06	
Inwood	Big Sioux																																	1.34	
Lansing |||	Mississippi																																		
Le Mars	Floyd																																		
Mason City	Cedar	.05																																1.00	
Milford (near)	Dickinson																																	1.27	
New Hampton	Wapsipinicon	T	T																															0.63	
Nora Springs	Cedar	.08																																1.70	
Northwood	Cedar	T																																1.27	
Pocahontas	Des Moines																																	1.93	
Postville	Mississippi																																	0.76	
Rock Rapids	Big Sioux																																	1.78	
Sanborn	Floyd																																	1.08	
Sioux Center	Floyd																																	1.00	
Spencer	Little Sioux																																	0.80	
Storm Lake	Raccoon																																	0.85	
Washta	Little Sioux																																	0.90	
Waverly	Cedar	.03	T	T																														1.48	
West Bend	Des Moines																																	0.53	
<i>Central Division</i>																																			
Ames	Skunk																																	1.05	
Audubon	Nishnabotna																																	0.90	
Baxter	Skunk	T																																1.32	
Belle Plaine	Iowa	T																																1.57	
Boone	Des Moines																																	0.54	
Carroll	Raccoon																																	0.90	
Cedar Rapids	Cedar																																	0.84	
Clinton |||	Mississippi																																	1.55	
Davenport ***	Mississippi	T	.11	.26																													T	1.19	
Delaware	Mississippi																																	1.11	
Denison	Missouri																																	**	
Des Moines ***	Des Moines	T	T	T																														1.15	
Dubuque ***	Mississippi	T	.02	.17																													T	0.96	
Fort Dodge	Des Moines																																	1.39	
Grinnell	Iowa																																	1.78	
Grundy Center	Cedar																																	0.26	
Guthrie Center	Raccoon																																	1.15	
Harlan	Nishnabotna																																	0.70	
Independence	Wapsipinicon																																	0.62	
Iowa City	Iowa																																	0.99	
Iowa Falls	Iowa																																	2.45	
Jefferson	Raccoon																																	1.55	
Le Claire |||	Mississippi																																	1.39	
Little Sioux	Little Sioux																																	0.80	
Logan	Missouri																																	0.45	
Maquoketa	Maquoketa																																	1.28	
Marshalltown	Iowa																																		

DAILY PRECIPITATION FOR DECEMBER, 1920.—Continued.

Stations	Watersheds.	DAY OF MONTH.																																				
		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	Total					
Southern Division																																						
Afton	Grand																																	.03	0.69			
Albia	Des Moines	T	.23																																1.27			
Atlantic	Nishnabotna																																		0.68			
Bedford	Missouri	T																																	1.16			
Bloomfield	Mississippi																																		0.56			
Bonaparte	Des Moines	T	.47																																1.18			
Burlington	Mississippi																																		1.02			
Centerville	Chariton	.25																																	1.18			
Chariton	Chariton																																			1.41		
Clarinda	Nodaway	T																																		0.81		
Columbus Jct.	Iowa	.08	.65																																	.10	1.96	
Corning	Nodaway		.08																																	0.58		
Corydon	Chariton	T	.36																																	1.60		
Creston	Missouri		.08																																	0.87		
Cumberland	Nodaway																																				0.45	
Earlham	Des Moines	T	T																																		0.44	
Fairfield	Skunk	.16	.12																																		1.83	
Glenwood	Missouri																																				0.80	
Greenfield	Nodaway																																				0.59	
Indianola	Des Moines																																				....
Keokuk ***	Mississippi	T	.01																																		0.61	
Keosauqua	Des Moines	.02	.40																																		1.88	
Knoxville	Des Moines	.10	.55																																		2.64	
Lacona	Des Moines	.10	.08																																		1.60	
Lamoni	Grand	T																																			0.58	
Lenox	Missouri	T	T																																		0.73	
Mt. Ayr	Grand																																				T 0.79	
Mt. Pleasant	Skunk		.59																																		1.82	
Murray	Grand		.03																																		0.83	
Oakland	Nishnabotna																																				0.55	
Oskaloosa	Des Moines	.07	.69																																		2.43	
Ottumwa ||	Des Moines	.30	.40																																		2.11	
Pella	Skunk	T	.05																																		1.03	
Sigourney	Skunk	T	.02	.47																																	1.86	
Stockport	Skunk		T	.42																																	1.92	
Thurman	Missouri																																				1.25	
Washington	Skunk			.72																																	2.17	
Winterset	Des Moines																																				0.95	
Omaha, Neb.***	Missouri	T																																				0.81

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.

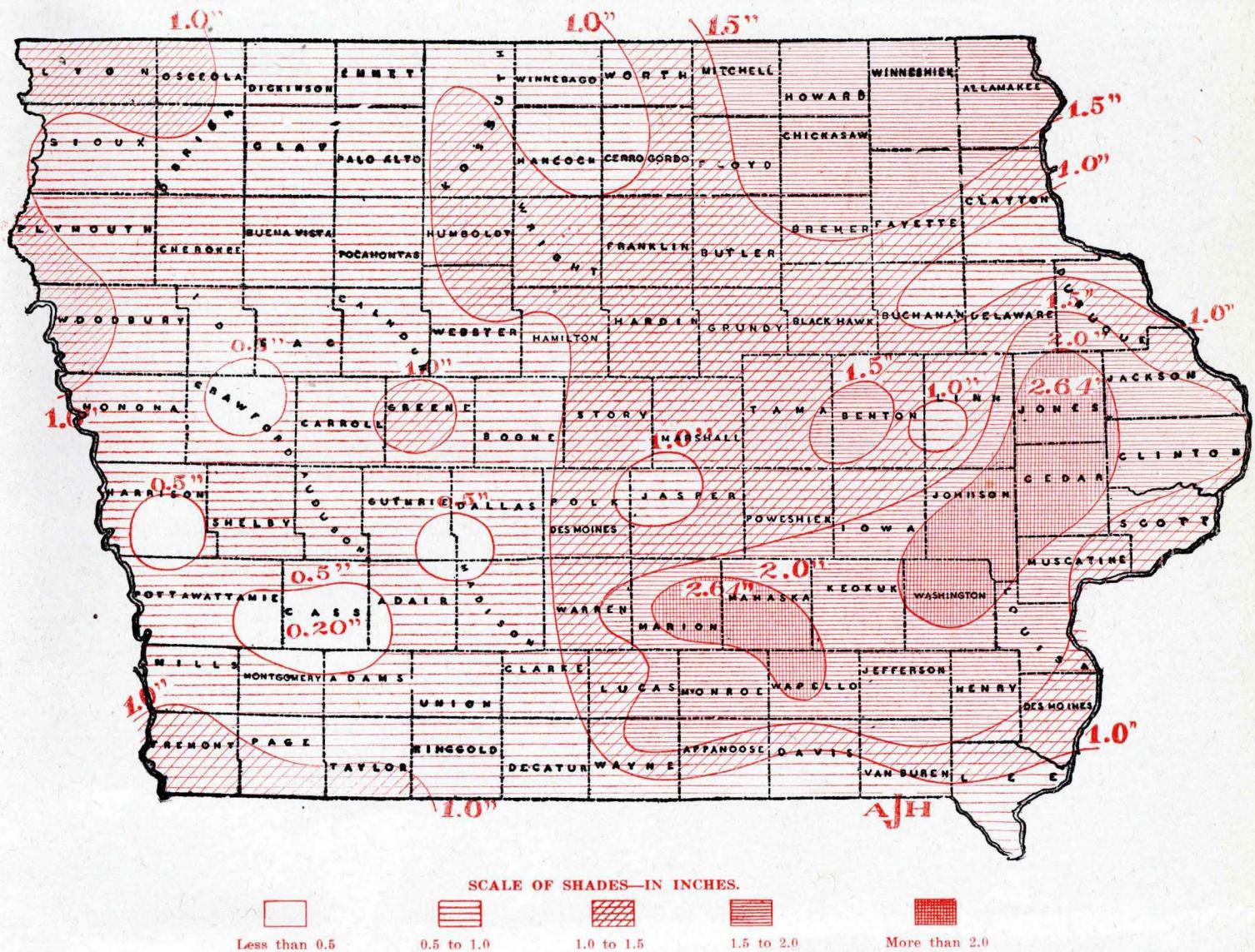
RIVERS.

Moderate stages prevailed on all rivers with only slight fluctuations and were generally free of ice until the third week. The interior rivers froze from the 18th to 20th and the Mississippi and Missouri Rivers about a week later.

Daily Maximum and Minimum Temperatures for the Month of December, 1920.

Stations.	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	Mean	
<i>Northern Division</i>																																	
Algona.....	45	39	39	35	34	33	35	36	34	41	48	45	44	33	35	40	39	32	18	23	25	25	11	7	12	24	9	20	37	35	40	31.4	
Maximum..	34	29	32	30	30	27	28	23	28	32	32	30	26	23	30	30	5	-1	15	20	-3	-15	-4	9	-8	-14	18	22	24	18.2			
Minimum..	41	43	37	34	33	31	36	35	34	42	50	41	34	35	37	42	28	18	21	25	24	17	8	7	19	19	2	24	40	39	39	30.2	
Alta.....	31	29	31	28	28	28	19	24	27	23	29	34	26	28	23	20	14	6	0	15	17	6	-7	-13	4	-2	-10	-11	22	24	31	17.0	
Maximum..	40	42	38	34	34	34	35	32	36	43	47	43	40	34	36	43	32	18	5	20	24	22	18	5	2	20	20	8	22	38	30	40	30.3
Alton.....	30	28	32	28	28	28	17	24	28	15	27	28	26	26	22	18	6	-1	15	18	5	-7	-22	-2	8	-10	-14	12	14	33	15.7		
Belmond.....	42	41	40	37	35	33	37	36	32	41	50	46	45	30	34	40	27	21	17	22	27	25	12	5	17	24	6	18	34	35	37	30.5	
Maximum..	34	29	34	30	29	24	18	26	25	23	33	30	24	23	24	18	5	-1	12	20	11	-2	-18	-6	4	-10	-16	15	21	24	16.6		
Charles City.....	40	40	41	36	41	37	38	35	33	35	48	47	47	31	33	34	28	18	18	22	29	27	18	6	18	23	3	14	33	31	37	30.4	
Decorah.....	32	31	33	31	26	24	22	25	26	33	35	26	24	23	21	12	6	2	13	22	18	2	-14	-3	3	-12	-13	8	16	26	17.0		
Decorah.....	44	43	43	41	39	39	36	38	34	35	44	48	48	35	31	32	29	20	15	24	29	29	23	7	14	25	14	13	30	35	39	31.5	
Forest City.....	45	38	38	35	36	31	38	29	33	42	51	44	43	31	35	38	29	20	20	20	25	25	12	6	11	23	11	16	27	34	37	30.1	
Forest City.....	33	28	31	29	29	24	18	23	25	23	33	32	29	24	22	20	18	5	...	10	18	11	-3	-11	-4	8	-10	-14	14	23	26	16.6	
Inwood.....	42	37	39	33	37	34	32	30	35	40	47	42	38	30	39	33	30	23	17	23	20	20	5	3	23	37	35	41	29.1				
Mason City.....	29	27	27	28	30	23	13	22	28	17	26	30	28	22	20	15	15	2	-5	17	11	2	-10	-26	-7	1	-17	-16	16	13	33	13.4	
Milford (near).....	34	31	33	32	29	22	19	22	26	32	31	27	27	23	22	18	5	1	5	20	26	24	18	15	15	10	15	39	39	37	29.7		
Milford (near).....	39	38	38	34	33	33	34	33	36	40	45	42	40	32	35	40	27	19	17	22	21	20	9	6	17	18	6	20	36	35	38	29.1	
New Hampton.....	43	37	42	37	43	36	36	32	34	48	46	45	32	30	33	28	18	17	22	28	28	18	8	16	24	10	11	32	31	37	30.3		
Northwood.....	34	39	32	31	30	24	21	22	24	29	30	32	31	22	19	18	4	0	6	11	18	1	-8	-6	9	-9	-14	10	19	25	16.3		
Pocahontas.....	43	37	37	35	40	35	35	32	35	35	46	45	42	31	33	34	25	23	16	23	26	24	17	5	16	20	8	13	33	34	38	29.5	
Postville.....	31	26	30	30	29	29	18	21	26	21	30	30	32	25	21	20	19	5	-1	16	21	8	-3	-20	-12	-10	-17	-12	19	26	26	15.6	
Postville.....	42	37	46	38	40	37	35	33	35	45	46	49	49	36	28	32	27	17	14	22	29	29	24	9	14	23	16	11	29	33	40	30.7	
Postville.....	34	31	34	30	29	23	22	23	24	29	30	31	34	21	21	20	15	3	-1	4	17	22	2	-3	-9	13	-9	-14	9	22	24	17.0	
<i>Central Division</i>																																	
Belle Plaine.....	39	50	48	44	42	45	38	37	35	42	53	57	51	38	36	38	30	23	19	30	34	32	16	12	19	28	16	17	36	40	41	35.0	
Boone.....	33	30	36	35	31	25	22	24	25	32	33	34	32	27	24	22	21	8	3	10	24	15	4	-5	-1	16	-6	-11	16	18	25	19.4	
Boone.....	48	47	37	34	36	34	34	38	34	45	54	47	49	37	38	45	32	19	25	34	30	32	12	10	18	23	23	35	44	43	34.0		
Carroll.....	30	30	32	30	29	26	21	23	26	25	35	34	30	26	24	23	18	9	2	16	23	11	0	-11	2	9	-6	-11	20	22	31	18.7	
Carroll.....	42	48	44	47	32	33	40	38	33	36	46	54	48	39	40	39	46	32	22	33	26	22	11	7	20	22	6	28	40	42	42	33.6	
Davenport.....	41	55	60	64	42	40	36	40	37	40	50	52	59	39	37	40	30	21	22	30	35	35	20	14	27	30	15	23	36	39	46	36.6	
Davenport.....	32	32	46	33	33	30	27	28	26	33	34	33	34	31	28	26	19	12	9	19	25	19	7	4	8	13	-3	-7	23	25	26	22.7	
Des Moines.....	41	52	52	40	35	40	35	40	37	48	55	54	49	40	40	46	34	21	29	34	27	13	11	23	25	7	29	38	43	45	35.8		
Dubuque.....	32	34	38	31	31	30	27	27	30	27	31	38	35	30	28	26	19	13	8	17	25	12	0	-3	8	7	-4	-6	26	24	31	21.8	
Ft. Dodge.....	42	48	51	40	41	38	35	39	34	38	46	50	55	35	32	35	28	19	20	27	33	34	25	11	20	24	15	15	37	33	43.5		
Ft. Dodge.....	42	44	44	35	35	35	30	28	24	25	29	32	33	34	27	25	25	17	9	14	25	24	5	-1	15	-4	-9	15	24	30	21.1		
Grinnell.....	32	29	31	29	26	24	19	24	27	23	33	31	26	24	21	20	7	0	11	21	9	-3	-17	1	5	-10	-14	18	18	25	17.0		
Guthrie Center.....	39	51	51	36	41	36	35	39	35	44	52	52	49	39	39	39	22	11	1	10	23	12	3	-5	-4	-4	-5	-8	0	25	25	17.5	
Independence.....	45	40	46	39	41	38	37	40	35	39	49	51	51	41	36	37	46	35	17	25	31	31	22	10	17	25	24	12	32	41	34.4		
Iowa City.....	33	30	34	31	31	24	20	28	22	31	31	30	34	34	24	26	24	7	3	7	21	22	7	-8	-4	14	-8	-11	10	18	23	19.0	
Iowa Falls.....	41	50	54	39	43	41	36	40	35	42	50	52	53	39	35	39	35	26	21	29	33	34	18	12	20	26	22	20	36	42	42	35.6	
Little Sioux.....	42	44	46	37	35	35	38	37	33	43	51	48	47	33	34	38	29	22	13	26	29	13	8	17	24	10	19	36	35	39	32.2		

TOTAL PRECIPITATION, DECEMBER 1920.



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with

IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

Vol. XXXI Des Moines, Iowa, Annual, 1920. No. 13

GENERAL SUMMARY.

The mean temperature, 48.2° , is 0.8° above normal. February, March, June, September, October, November and December were above normal; the other months below. The highest temperature recorded was 102° , at Clarinda, on July 23. The lowest was -26° , at Elkader on January 4, and at Inwood on December 24. The annual variation in temperature within the State was 128° . The total precipitation averaged 31.75 inches, or 0.22 inch below normal.

Spring work was very backward, particularly in the southern districts. Fruit blooms were beneficially retarded.

The mid-summer was cool and pleasant for human beings and animals and favorable for cool weather crops such as potatoes, but unfavorable for maturing corn. However, abnormally warm, dry weather September 10th-28th and through most of October matured the largest corn crop of record in Iowa, both in yield per acre, which was 46.0 bushels, and in total production which amounted to 473,800,000 bushels. It is unusual that a record breaking corn crop and a large potato crop are raised in the same year. In fact, all crops raised in the State were bountiful except spring wheat, which was nearly a failure.

SYNOPSIS BY MONTHS

Nearly normal winter weather prevailed in January, with snow cover throughout the month, over most of the State. Precipitation was deficient but winter grains and grasses were well protected except in the southeast portion of the State, where some injury occurred. An unusually large crop of ice of excellent quality was harvested.

Though the temperature averaged somewhat above normal in February, the period 12th-16th was very cold. On the 16th there was a remarkable rise in temperature from considerably below zero over most of the State to well above 40° in the afternoon, making the range for the day more than 50° at a number of stations. During the most severe temperatures, considerable areas were without snow cover in the south-central and southeast sections and wheat was damaged considerably. The total precipitation of the winter for the State as a whole averaged 1.52 inchees, the least of record.

Warm, wet and windy weather prevailed in March, though there was a cold spell, 4th to 7th with zero temperatures throughout the State. By the end of the third week frost was generally out of the ground. As a result of the heavy and continuous snow blanket of the winter some stations reported that the ground did not become appreciably frozen. There was much damage from gales. The interior rivers broke up from the 12th to the 16th. The Mississippi broke up from the 11th to the 19th and a great rise occurred toward the close of the month, becoming one of the worst floods of record early in April.

April was cold and wet. Killing frosts or freezing temperatures of the 28th were the last of the spring season over most of the central and southern sections. The spring was so backward that no damage resulted. Fruit buds were beneficially retarded. Spring seeding was

greatly delayed by the wet, cold soil. A heavy fall of snow on the 3d and 4th over the southern part of the State drifted badly and delayed trains. Sleet damaged wires from Adair County to the Missouri River on the 11th.

The season continued abnormally cool till May 20, after which it turned warm and vegetation advanced rapidly. Though precipitation was below normal, the previously saturated soil dried very slowly, so that field work progressed slowly and much corn remained to be planted in the southern division at the close of the month. Tornadoes occurred on the 8th and 22d. Downpours of rain in the northern portion of Benton, Lima and Jones Counties on the 22d caused \$200,000 damage. The last killing frost of spring occurred in the northeastern part of the State on May 14.

Warm and cool periods alternated in June. The week, 9th-15th with an average temperature of 80° was the warmest of the season and the warmest June week since June 3d-9th, 1911. Humidities were low during this warm period and diseases of small grain did not flourish as they did during a similar warm period in June of last year. Precipitation was somewhat deficient and unevenly distributed. Tornadoes occurred on the 8th and 9th and damaging wind squalls on the 1st and 15th. Crops advanced to nearly normal.

Pleasant weather with moderate temperatures prevailed in July. Precipitation, though averaging above normal, was deficient and unevenly distributed in some sections, particularly along the Missouri and Mississippi rivers. Most of the rain fell in the first two weeks; the balance of the month was favorable for haying and harvest. Hail storms were unusually numerous, destructive and widely distributed. The most severe and destructive tornado of the season occurred in Adams County on the 1st.

Cool weather with generally deficient rainfall in August caused the corn crop to develop slowly. However, heavy rains on the 19th-20th in the west central and north central districts beat the corn down and caused damage from which it did not recover. In portions of Carroll and Greene counties the floods resulting from this rain seriously damaged roads, bridges and culverts.

The weather continued too cool for corn till September 10th when it turned warm and dry and continued so till the 28th. This caused the crop to make a remarkable recovery so that only about 10 per cent was caught by the killing frosts of the closing days of the month and October 1. High winds on the 25th blew down considerable corn but at the same time hastened maturity. Dry weather after the 9th was unfavorable for preparations for winter wheat seeding, but the earlier seeded wheat came up nicely.

October was next to the warmest of record, though freezing temperatures and killing frosts occurred in all but the central and southern Mississippi River counties on the 1st and in these counties also on the 29th. The first 10 days were practically rainless. These conditions matured the largest corn crop in the history of the State. Winter wheat made vigorous growth and pastures improved greatly, as a result of the rains in the latter part of the month.

November was mostly mild except a cold period 10th-17th, starting with the first cold wave of the season on the 10th. Corn husking made fair progress till the 19th when frost left the ground, and it became too soft for wa-

gons in the field. At the close of the month 23 per cent of the corn remained unhusked in the fields which is about 13 per cent more than normal. Sugar beet harvest was finished before the close of the month. Winter grains and grasses made good progress.

Though rather cold 17th-28th, with cold waves on the 22d and 26th, December was otherwise mild. Plowing was done during the greater portion of the second week. During the cold weather winter grains and grasses were well protected by snow. A snow storm extended across the State from southwest to northeast on the 13th-14th; another on the 20th-22d covered practically the entire State; and another on the 25th-26th was confined to the eastern half of the State. Thunderstorms occurred on the 3d, 4th and 13th.

SUPPLEMENTAL PRECIPITATION TABLE

Stations.	January	February	March	April	May	June	July	August	September	October	November	December	Annual
<i>Northern Division</i>													
Elkader	0.47	0.46	3.35	.....	.....	4.80	3.03	2.55	3.39	2.97	.....	.....	.....
Lansing	.....	.....	3.89	3.63	4.86	1.35	4.25	2.19	3.73	4.32	1.22	1.27	.....
Mason City	0.04	.....	2.96	3.84	4.39	5.24	3.81	5.89	2.23	.....	.....	.....	.....
<i>Central Division</i>													
Audubon	.....	0.74	4.06	2.38	4.75	2.65	5.51	2.78	2.72	1.89	0.90	.....	.....
Boone	0.24	1.49	4.10	3.23	2.11	3.56	5.33	5.43	3.25	2.13	0.54	.....	.....
Delaware	.....	.....	4.26	4.74	4.26	2.38	5.31	0.98	0.82	3.06	1.78	.....	.....
Fort Dodge	0.43	0.45	1.00	2.11	0.62	1.64	5.71	2.78	4.71	.....	.....	1.11	.....
Grinnell	0.56	0.32	3.00	.....	2.54	2.68	5.24	0.95	4.44	2.31	.....	.....	.....
Harlan	0.02	0.80	.....	5.74	3.75	.....	.....	.....	4.43	1.81	0.62	.....	.....
LeClaire	0.49	0.33	4.87	6.39	3.24	2.76	3.36	1.47	1.74	1.79	2.51	.....	.....
Maquoketa	0.90	0.24	4.27	3.62	3.49	4.65	3.14	2.44	1.43	2.07	1.99	.....	.....
Marshalltown	0.88	3.90	4.02	3.46	2.82	3.96	1.84	3.68	2.47	2.72	1.28	.....	.....
Onawa	0.08	0.68	1.19	5.49	2.45	4.53	3.34	1.85	1.43	3.15	.....	.....	.....
Rockwell City	0.31	0.68	2.33	4.18	1.79	2.73	5.98	4.26	.....	1.97	3.21	0.93	.....
Van Melter	.....	.....	2.98	4.12	3.18	1.79	3.70	3.66	2.91	1.70	1.85	0.15	.....
Whitten	0.24	0.30	.....	.....	.....	.....	1.48	.....	.....	.....	.....	.....	.....
<i>Southern Division</i>													
Creston	0.45	0.94	.....	4.92	3.34	4.11	5.22	3.19	6.52	2.09	1.74	0.87	.....
Cumberland	0.20	0.25	2.09	3.99	2.48	3.61	3.82	.....	1.00	2.30	1.10	0.45	.....
Greenfield	.....	.....	1.96	5.04	3.35	7.17	2.89	2.97	5.12	1.93	2.12	0.59	.....
Indianola	0.42	0.53	3.36	4.13	3.62	1.27	7.46	1.18	.....	.....	.....	.....	.....
Ottumwa	0.60	0.38	.....	5.18	3.43	3.72	5.29	1.76	2.40	1.17	1.46	2.11	.....

COMPARATIVE DATA FOR THE STATE—Annual.

Year	Temperature				Precipitation in inches			
	Mean annual	Highest	Date	Lowest	Annual	Greatest annual	Least annual	Av. snowfall
1890.	48.0	110	July 18	.....	-27 January 22	31.30	45.74	16.00
1891.	47.3	106	August 9	.....	-31 February 4	32.90	49.05	23.45
1892.	46.6	104	July 11	.....	-38 January 19	36.58	48.77	24.78
1893.	45.7	102	July* 13	.....	-36 January 14	27.59	33.27	19.19
1894.	49.7	109	July 26	.....	-37 January 25	21.94	29.81	15.65
1895.	47.2	104	May 28	.....	-33 February 1	26.77	35.25	18.57
1896.	48.6	104	July 3	.....	-20 January 4	37.23	51.60	28.68
1897.	47.8	106	July* 23	.....	-30 January 25	26.98	36.18	20.21
1898.	47.7	103	August 20	.....	-25 December 31	31.34	55.47	19.51
1899.	47.3	104	September 6	.....	-40 February 11	28.68	42.06	21.79
1900.	49.3	103	August 3	.....	-27 February 15	35.05	47.33	25.05
1901.	49.0	113	July 22	.....	-31 December 15	24.41	37.69	16.35
1902.	47.7	98	July 30	.....	-31 January 27	43.82	58.80	20.14
1903.	47.2	101	August 24	.....	-27 December 13	35.39	50.53	26.41
1904.	46.3	100	July 17	.....	-32 January 27	28.51	38.93	19.34
1905.	47.2	104	August 11	.....	-41 February* 2	36.56	52.26	24.66
1906.	48.4	102	July 21	.....	-32 February 10	31.60	44.34	20.63
1907.	47.4	102	July 5	.....	-31 February 5	31.61	43.90	19.93
1908.	49.5	101	August 3	.....	-18 January 29	35.26	49.98	24.11
1909.	47.4	103	August* 15	.....	-26 February* 15	40.01	53.48	27.20
1910.	48.6	108	July 16	.....	-35 January 7	19.87	27.99	12.11
1911.	49.5	111	July* 3	.....	-35 January 3	31.37	46.77	19.74
1912.	46.4	104	September 8	.....	-47 January 12	28.89	33.13	15.25
1913.	49.7	108	July* 16	.....	-25 January 8	29.95	45.18	20.31
1914.	49.1	109	July 12	.....	-31 December 26	31.93	44.11	23.30
1915.	47.8	99	May 14	.....	-32 January 28	39.53	51.15	27.29
1916.	47.2	106	August 4	.....	-34 January 13	28.90	46.34	22.48
1917.	44.8	106	July 30	.....	-40 December 29	27.81	36.00	20.78
1918.	49.2	113	August 4	.....	-36 February 4	32.78	47.53	25.03
1919.	48.6	104	July* 30	.....	-36 December 10	36.76	48.16	26.88
1920.	48.2	102	July 23	.....	-26 January 3	31.75	44.00	20.95

* And other dates.

CLIMATOLOGICAL DATA FOR THE YEAR 1920.

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	Total	Greatest monthly	Month	Least monthly	Month	Total snowfall (unmelted)	Precipitation, 0.01 in. or more.	Partly Cloudy	Cloudy				
									Length of record, years	Length of record, years	Month	Month	Month	Clear							
<i>Northern Division</i>																					
Algona	Kossuth	1213	47	45.8	94	June 13	-18	Jan. 25	47	32.31	6.89	July	0.42	Jan.	32.0	73	222	42	102	se.	
Butler		1044	8	46.4	96	June 13	-17	Jan. 25	8	36.08	6.53	Sept.	0.25	Feb.	20.0	84	131	116	119	nw.	
Allison	Buena Vista	1513	29	46.3	92	June 13	-13	Feb. 15†	29	33.19	5.87	July	0.28	Jan.	24.9	98	162	109	95	nw.	
Alta		1305	15	46.5	98	July 22	-22	Dec. 24	15	29.34	4.54	April	0.34	Jan.	24.9	87	135	128	103	nw.	
Alton	Wright	1205	10	46.2	97	June 13	-18	Dec. 24	10	37.59	5.71	July	0.53	Jan.	28.1	129	129	131	106	nw.	
Belmond	Hancock	1236	23	45.7	96a	June 13	-18	Dec. 24	23	41.59	8.52	Aug.	0.24	Jan.	.....	103	.....	.....	.....	s.
Britt	Floyd	1015	29	46.3	95	June 13	-16	Feb. 15	29	38.33	5.76	Sept.	0.21	Feb.	38.5	117	105	136	125	nw.	
Charles City	Winneshiek	875	27	45.3	94	June 13	-24	Jan. 4	27	33.45	4.34	June	0.29	Feb.	38.7	109	210	48	108	nw.	
Decorah	Clayton	751	41	.....	97	Aug. 10	-26	Jan. 4	41	.....	4.80	June	0.46	Feb.	.....	.....	.....	.....	.....	.....
Elkader	Emmet	1298	25	45.4	93	June 13	-15	Jan. 25†	25	29.14	6.37	July	0.30	Jan.	25.0	86	.....	.....	.....	s.
Estherville	Fayette	1003	30	45.8	93	June 13	-20	Jan. 25	30	38.48	7.04	April	0.41	Feb.	23.3	96	.....	.....	.....	nw.
Fayette	Winnebago	1226	26	46.3	94	June 10†	-16	Jan. 25	26	36.04	7.51	June	0.20	Feb.	.....	88	.....	.....	.....	nw.
Forest City	Humboldt	1095	32	47.1	97	June 13	-19	Dec. 24	32	44.00	8.45	Aug.	0.32	Jan.	27.8	86	.....	.....	.....	s.
Humboldt	Lyon	1474	16	46.0	93	June 13	-26	Dec. 24	16	29.75	5.37	May	0.12	Jan.	39.7	99	210	75	81	s.	
Inwood	Plymouth	1224	24	.....	98	July 22	-16	Dec. 24	24	.....	4.96	June	.....	.....	.....	.....	.....	.....	.....
LeMars	Cerro Gordo	1148	23	.....	98	June 13	-18	Dec. 24†	23	.....	5.89	Sept.	0.04	Feb.	.....	.....	.....	.....	.....
Mason City	Dickinson	1430	44.9	93	June 13	-17	Dec. 24	25	25.70	4.91	Sept.	0.63	Dec.	24.7	95	119	154	93	nw.		
Milford (near)	Chickasaw	1169	23	45.8	95	June 13	-18c	Feb. 15†	23	36.01	5.79	Aug.	0.30	Feb.	32.1	89	.....	.....	.....	nw.
New Hampton	Floyd	1064	8	45.5	96	June 12†	-20	Jan. 25	8	38.44	5.40	Sept.	0.31	Feb.	14.3	124	162	109	95	s.	
Nora Springs	Worth	1222	24	.....	94	June 13	-17b	Feb. 15	24	42.85	7.05	Sept.	0.25	Feb.	49.3	101	.....	.....	.....	sw.
Northwood	Pocahontas	1248	16	46.6	96	June 14	-20	Dec. 24	16	30.33	5.36	July	0.30	Jan.	25.2	111	178	84	104	se.	
Pocahontas	Clayton	1180	29	44.8	89	June 13	-21	Feb. 15	29	35.77	5.11	Sept.	0.40	Feb.	28.8	104	133	113	120	sw.	
Postville	Lyon	1358	21	45.6	97	July 22	-21	Dec. 24	21	34.25	5.23	June	0.19	Jan.	40.2	101	234	71	61	nw.	
Rock Rapids	O'Brien	1553	6	45.7	95	July 22	-18	Dec. 24	6	31.56	4.97	Sept.	0.35	Feb.	24.4	80	168	92	106	se.	
Sanborn	Sioux	1426	21	.....	97	July 22	-19	Dec. 24	21	29.51	5.35	April	0.50	Jan.	33.5	85	.....	.....	.....	s.
Sioux Center	Clay	1319	6	46.0	97	June 13	-20	Dec. 24	6	33.29	5.55	July	0.40	Feb.	.....	.....	.....	.....	.....	sw.
Spencer	Buena Vista	1440	31	47.3	93	June 13	-15	Dec. 24	31	33.99	5.92	July	0.11	Jan.	17.8	95	214	54	98	s.	
Storm Lake	Cherokee	1157	22	46.8	94	July 22	-23	Dec. 24	22	32.75	7.58	June	0.20	Jan.	16.5	81	181	84	101	s.	
Washta	Bremer	948	24	46.8	96	June 13	-18	Jan. 25	24	34.51	5.14	July	0.63	Jan.	27.6	102	161	72	133	se.	
Waverly	Palo Alto	1197	27	46.3	97	June 13	-18	Feb. 15	27	35.47	6.09	July	0.36	Jan.	.....	101	180	93	93	nw.
<i>Central Division</i>																					
Ames	Story	926	40	.....	95	June 13	-13	Jan. 25†	44	28.23	4.96	April	0.22	Jan.	.....	88	.....	.....	.....	s.
Audubon	Audubon	1301	26	.....	94	July 22	-15	Dec. 24	26	.....	5.51	Aug.	.....	.....	.....	.....	.....	.....	.....	sw.
Baxter	Jasper	998	20	48.1	96	June 13	-11	Feb. 15†	20	28.58	4.10	May	0.31	Feb.	11.2	96	120	117	129	nw.	
Belle Plaine	Benton	886	30	48.7	97	June 13	-15	Jan. 25	30	30.21	5.71	April	0.40	Feb.	26.1	103	145	109	112	nw.	
Boone	Boone	1134	15	.....	95	June 13	-11	Dec. 24†	15	.....	5.43	Sept.	0.24	Jan.	.....	.....	.....	.....	.....	s.
Carroll	Carroll	1265	30	47.9	94	June 13	-15c	Feb. 15†	30	33.47	6.37	Aug.	0.16	Jan.	.....	83	.....	.....	.....	sw.
Cedar Rapids	Linn	733	38	49.9	99	June 13†	-14	Jan. 25	38	20.95	3.60	Aug.	0.36	Feb.	16.4	67	188	39	139	s.	
Clinton	Clinton	593	47	.....	.....	Dec. 28	-53	.....	.....	.....	.....	Sept.	0.34	Feb.	.....	.....	.....	.....	.....	.....
Davenport	Scott	580	49	50.2	96	July 23	-10	Feb. 15	49	27.48	5.04	April	0.19	Feb.	16.1	100	131	107	128	sw.	
Delaware	Delaware	1082	29	.....	92	June 13	-14	Dec. 23	29	.....	5.31	Aug.	.....	.....	.....	.....	.....	.....	.....	s.
Denison	Crawford	1083	26	48.8	93	June 13	-13	Feb. 15†	26	27.64	3.64	Aug.	T	Jan.	6.8	68	s.
Des Moines	Dubuque	861	41	50.1	95	June 13	-7	Feb. 15	41	30.69	5.66	July	0.44	Jan.	19.3	107	120	105	141	sw.	
Dubuque	Webster	639	47	47.7	95	June 13	-14	Feb. 15	47	27.31	5.24	June	0.47	Feb.	31.2	108	116	116	134	nw.	
Fort Dodge	Poweshiek	1126	20	.....	98	June 13	-17	Dec. 24	20	.....	5.71	July	0.43	Jan.	.....	.....	.....	.....	.....	s.
Grinnell	Grundy	976	29	.....	95	June 13	-15	Jan. 25	29	27.83	5.09	July	0.32	Feb.	.....	.....	.....	.....	.....	s.
Grundy Center	Guthrie	1077	25	.....	94	June 13	-14	Feb. 15	25	27.44	4.29	July	0.30	Jan.	22.0	84	.....	.....	.....	nw.
Guthrie Center	Harlan	1182	21	.....	.....	Dec. 16d	21	Dec. 21	21	.....	5.74	April	0.02	Jan.	.....	.....	.....	.....	.....	s.
Independence	Buchanan	921	56	47.6	94	June 13	-14	Jan. 4†	53	35.16	6.65	Aug.	0.31	Jan.	82	203	44	119	s.		
Iowa City	Johnson	733	60	48.9	95	June 28	-13	Feb. 15†	57	28.88	4.75	April	0.33	Feb.	29.5	106	135	108	123	nw.	
Iowa Falls	Hardin	1107	27	46.4	92	June 13†	-16	Jan. 25	27	34.59	4.73	Sept.	0.48	Jan.	30.4	112	173	71	122	nw.	
Jefferson	Greene	1052	21	47.7	93	June 13	-14	Feb. 15†	21	31.38	4.91	July	0.20	Jan.	18.0	.....	.....	.....	.....	sw.
Le Claire	Scott	576	20	.....	.....	.....	.....	.....	20	.....	6.39	April	0.33	Feb.	.....	.....	.....	.....	.....	.....
Little Sioux	Harrison	1040	15	49.4	97	June 12	-21	Dec. 24	15	25.97	5.78	April	0.15	Jan.	15.0	91	.....	.....	.....	se.
Logan	Harrison	928	53	50.1	96	June 12	-19	Dec. 24	53	30.55	4.97	Aug.	0.11	Jan.	67	172	98	96	sw.		
Maquoketa	Jackson	688	19	.....	95	June 28	-17	Jan. 25	20	.....	4.65	June	0.24	Feb.	.....	.....	.....	.....	.....	sw.
Marshalltown	Marshall	947	28	.....	96	June 13	-12	Feb. 15	28	.....	4.02	April	.....	.....	.....	.....	.....	.....	nw.	
Monroe	Jasper	922	8	.....	98h	Aug. 5	-11	Jan. 25	8	36.03	5.85	July	0.81	Jan.	26.4	83	.....			

CLIMATOLOGICAL DATA: IOWA SECTION.

Year, 1920

CLIMATOLOGICAL DATA FOR THE YEAR 1920—Continued.

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit				Precipitation, in Inches				Total snowfall (un-melted)	Number of Days	Prevailing direction of wind				
				Mean	Highest	Date	Lowest	Date	Length of record, years	Total	Greatest monthly	Least Monthly						
<i>Southern Division</i>																		
Afton	Union	1212	26	97	July 22	— 9	Dec. 24	26	37.27	7.21	Sept. 0.20	Jan. 8.5	83	174	94	98	sw.	
Albia	Monroe	959	22	49.7	95	June 13†	— 9	Jan. 25‡	22	36.79	7.25	July 0.37	Jan. 21.0	70	145	62	159	sw.
Atlantic	Cass	1164	29	49.2	96	July 21	— 13	Dec. 24	29	26.91	5.45	Aug. 0.52	Jan. 14.3	92	179	81	106	sw.
Bedford	Taylor	20	—	99	July 23	— 8	Dec. 24	20	27.62	5.47	April 0.55	Jan. 16.3	91	168	78	120	nw.	
Bloomfield	Davis	881	13	50.8	94	June 14‡	— 8a	Dec. 28	13	26.44	5.50	April 0.30	Jan. 24.5	70	—	—	—	sw.
Bonaparte	Van Buren	29	50.4	94	June 28	— 13	Dec. 28	29	35.46	6.73	July 0.12	Feb. 10.3	79	200	63	103	nw.	
Burlington	Des Moines	544	24	52.2	96	July 23	— 6	Feb. 15‡	24	31.94	5.49	May 0.33	Feb. 18.0	83	217	59	90	ne.
Centerville	Appanoose	1013	15	50.3	97	Aug. 5	— 11	Dec. 28	20	28.89	5.92	July 0.29	Feb. 10.9	89	152	98	116	se.
Chariton	Lucas	1042	25	50.5	94	July 23	— 5	Feb. 15‡	25	33.45	6.04	April 0.26	Feb. 14.0	54	139	124	103	sw.
Clarinda	Page	1009	30	51.7	102	July 23	— 7	Dec. 24	30	26.69	4.50	April 0.24	Jan. 19.7	89	161	102	103	s.
Columbus Jet.	Louisa	595	19	50.8	96	July 23	— 10	Dec. 28	19	23.43	4.50	April 0.18	Feb. 18.9	92	234	69	63	nw.
Corning	Adams	1117	28	49.2	96	July 23	— 10	Dec. 24	28	30.55	4.61	July 0.30	Jan. 9.0	—	—	—	—	sw.
Corydon	Wayne	1101	27	50.3	97	July 23	— 8	Feb. 15	27	35.19	5.92	July 0.37	Jan. 18.3	110	146	116	104	sw.
Creston	Union	1312	15	—	91	July 23	— 11	Dec. 24	15	—	6.52	Sept. 0.45	Jan. —	—	—	—	sw.	
Cumberland	Cass	21	—	—	—	—	—	—	21	—	—	—	—	—	—	—	—	—
Earlham	Madison	1126	18	48.5	93	June 13	— 16	Jan. 25	18	31.43	4.54	April 0.32	Jan. 15.0	76	194	54	118	nw.
Fairfield	Jefferson	780	36	49.9	94a	June 28	— 14	Dec. 28	28	36.91	6.52	April 0.22	Feb. 24.3	90	—	—	—	nw.
Glenwood	Mills	1100	22	50.9	95	July 21	— 14	Dec. 24	22	30.75	5.80	April 0.40	Jan. 20.5	73	167	73	126	nw.
Greenfield	Adair	29	—	—	—	—	—	Dec. 24	29	—	5.12	Sept. —	—	10.1	—	—	—	nw.
Indianola	Warren	969	29	—	94a	June 13	— 7	Feb. 15	29	—	7.46	July 0.42	Jan. —	—	—	—	—	—
Keokuk	Lee	614	49	52.3	97	July 23	— 3	Feb. 15‡	49	24.54	4.02	Mar. 0.19	Feb. 18.1	93	110	124	132	s.
Keosauqua	Van Buren	644	28	50.5	96	July 23	— 14	Dec. 28	28	34.01	5.82	April 0.20	Jan. 19.8	95	154	89	123	se.
Knoxville	Marion	920	25	50.0	97	June 13‡	— 15	Jan. 25	25	35.05	7.47	July 0.45	Jan. 21.1	—	—	—	—	nw.
Lacona	Warren	21	—	—	—	—	—	—	21	—	—	—	—	—	—	—	—	—
Lamoni	Decatur	1100	13	50.4	99	July 23	— 6	Feb. 15‡	13	31.57	5.72	Sept. 0.16	Jan. 30.0	104	89	175	102	—
Lenox	Taylor	1250	25	50.4	96	July 23	— 9	Dec. 24	25	29.25	4.46	Sept. 0.31	Feb. 12.1	85	178	83	105	s.
Mount Ayr	Ringgold	1236	27	50.3	97	July 23	— 6	Jan. 25‡	27	31.59	5.63	April 0.36	Jan. 12.4	90	172	103	91	s.
Mt. Pleasant	Henry	729	39	50.8	96	June 28	— 7	Feb. 15	27	35.75	6.86	July 0.21	Feb. 17.6	105	130	125	111	nw.
Murray	Clarke	1216	29	50.1	94	July 21	— 10	Dec. 24	29	33.47	6.22	Sept. 0.20	Jan. 6.5	94	117	127	122	s.
Oakland	Pottawattamie	1105	1	49.8	96	June 13	— 18	Dec. 24	1	30.16	7.23	April 0.30	Jan. 17.5	63	208	47	111	s.
Oskaloosa	Mahaska	825	44	49.8	95	June 13‡	— 11	Jan. 25	44	34.17	5.31	Mar. 0.84	Jan. 34.8	122	128	102	136	nw.
Ottumwa	Wapello	849	25	—	98	June 12	— 12d	Jan. 25	25	—	5.29	July 0.38	Feb. —	—	—	—	w.	
Pella	Marion	877	18	49.1	94	June 13‡	— 19	Jan. 25	18	27.71	6.55	April 0.22	Feb. 22.2	77	—	—	—	nw.
Sigourney	Keokuk	877	24	49.3	95	Aug. 6	— 15	Jan. 25	24	25.18	4.74	Mar. 0.29	Feb. —	—	—	—	—	nw.
Stockport	Van Buren	754	18	49.7	95	Aug. 6‡	— 18	Dec. 28	18	35.22	7.49	July 0.20	Feb. 20.6	108	169	85	112	nw.
Thurman	Fremont	—	23	50.4	99	July 21	— 21	Dec. 24	23	27.64	4.99	April 0.75	Jan. 26.0	67	72	205	89	nw.
Washington	Washington	769	38	50.0	95	July 23	— 13	Dec. 28	31	28.43	5.83	April 0.25	Feb. 25.6	95	—	—	—	nw.
Winterset	Madison	1129	29	50.7	95	July 23	— 11	Dec. 24	29	27.20	5.02	April 0.48	Jan. 13.0	76	231	74	61	sw.
Omaha, Nebr.		1040	49	51.4	98	July 21	— 8	Dec. 24	49	23.01	3.91	July 0.28	Jan. 19.5	90	137	113	116	nw.

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

† Also on other dates.

MONTHLY STATE DATA FOR 1920.

MONTH	Barometric Pressure. Inches (Sea level).				Temperature, Degrees, F.				Relative Humidity, Per cent.				Precipitation, Inches.				Number of Days	Sunshine.	Wind									
	Mean.	Highest.	Date.	Lowest.	Mean.	Departure from normal	Highest.	Lowest.	7 a. m.*	12 Noon‡	7 p. m.*	Departure from normal	Average	Departure from normal	Greatest	Least	Snowfall	With .01 inch or more precipitation	Per cent of the possible amount	Departure from normal	Average hourly velocity	Departure from normal	Prevaling direction.					
January	30.29	30.87	24	29.63	16	16.7	— 1.2	58	— 26	86	73	77	0	29	0.42	— 0.63	1.05	T	4.6	4	12	8	11	47	— 3	8.5	— 0.2	nw.
February	30.15	30.74	3	29.48	17	24.0	+ 3.5	59	— 22	85	72	76	+ 1	35	— 0.59	1.75	0.47	4.1	5	9	6	14	39	— 17	8.4	— 0.9	nw.	
March	29.87	30.60	6	29.85	15	38.0	+ 4.7	80	— 21	79	60	65	— 2	17	3.02	+ 1.25	5.70	0.47	2.4	7	15	7	9	60	+ 2	11.6	+ 1.7	sw.
April	29.85	30.28	24	29.17	1	42.4	— 6.3	78	22	80	61	61	+ 4	26	4.59	+ 1.73	7.13	1.93	2.0	12	8	9	13	45	+ 15	10.0	+ 0.1	nw.
May	30.04	30.50	14	29.56	18	59.4	— 1.1	89	29	75	54	55	— 3	23	3.26	+ 1.31	5.78	0.62	0.0	8	14	9	8	60	+ 2	7.8	— 0.9	se.
June	29.95	30.33	3	29.46	15	70.7	+ 1.6	99	40	75	53	55	— 5	36	3.56	+ 0.82	8.48	1.25	0.0	9	16	10	4	69	0	7.9	+ 0.3	sw.
July	30.00	30.32	26	29.64	6	72.3	— 1.8	102	45	78	54	55	— 2	27	4.22	+ 0.26	7.49	1.11	0.0	9	19	9	3	73	— 1	6.2	— 0.5	sw.
August	30.02	30.37	23	29.66	29	69.3	— 2.5	98	39	81	52	58	— 2	27	3.35	+ 0.33	8.52	0.44	0.0	7	18	8	5	69	— 2	5.2	— 1.2	se.
September	29.98	30.43	29	29.38	23	66.5	+ 3.1	98	24	83	54	61	— 2	19	3.30	+ 0.06	7.21	0.69	0.0	8	17	8	5	68	+ 5	6.9	— 0.3	s.
October	30.04	30.54	5	29.54	13	57.7	+ 6.9	90	11	81	53	60	— 2	22	2.13	+ 0.33	4.64	0.48	T	6	19	6	6	65	+ 3	7.0	— 1.1	s.
November	30.16	30.82	12</td																									

MEAN MONTHLY AND ANNUAL TEMPERATURES, WITH DEPARTURES FROM THE NORMAL, FOR 1920.

STATIONS	Jan.		Feb.		Mar.		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Annual		
	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	Tem.	Dep.	
Northern Division																											
Algona	12.0	—	2.3	20.4	+2.8	34.2	+3.6	40.2	—6.8	58.8	—0.5	69.3	+1.2	70.2	—3.1	66.2	—4.6	64.4	+2.2	55.9	+7.1	33.8	+1.1	24.8	+3.5	45.8	+0.4
Allison	11.6	—	21.1	—	35.6	—	40.6	—	58.2	—	70.0	—	70.6	—	68.2	—	65.2	—	56.7	—	34.4	—	24.1	—	46.4	—	
Aita	14.5	+	0.4	21.3	+5.2	35.1	+5.0	39.6	+6.7	58.7	—0.3	68.8	+1.2	71.2	—1.6	68.2	—2.4	64.7	+2.8	56.4	+7.6	33.5	+1.1	23.6	+2.6	46.3	+1.2
Alton	15.6	+	0.4	22.0	+4.3	34.0	+2.7	39.7	—7.1	58.7	—0.8	69.4	+1.7	72.6	—0.4	68.4	—3.0	64.8	+2.4	56.0	+7.0	33.7	+1.1	23.0	+1.7	46.5	+0.8
Belmond	11.6	—	20.4	—	34.3	—	40.4	—	57.8	—	70.0	—	71.7	—	68.2	—	65.8	—	56.8	—	33.4	—	23.6	—	46.2	—	
Britt	11.6	—	2.1	19.8	+3.1	33.6	+3.5	39.6	—7.0	58.1	—0.3	69.2	+1.8	72.0	—0.7	67.2	—3.0	64.8a	+3.3	56.3a	+7.7	32.8a	+0.9	23.6	+2.9	45.7	+0.8
Charles City	10.0	—	1.4	19.2	+4.1	34.4	+6.0	40.3	—6.0	57.9	—1.6	69.2	—0.4	70.0	—3.5	67.7	—3.0	64.4	+2.7	55.8	+7.6	33.4	+0.4	23.7	+4.7	46.3	+0.9
Decorah	10.6	—	3.3	19.7	+2.1	34.4	+4.2	42.3	—4.6	58.1	—1.9	69.2	—0.7	68.5	—4.9	65.4	—5.8	63.2	+1.0	54.2	+5.1	33.3f	+0.4	24.6	+2.4	45.3	+0.4
Estherville	11.2	—	1.5	19.6	+4.6	33.0	+4.4	37.4	—7.7	58.1	+0.5	68.4	+2.1	72.1	+1.4	68.0	—1.1	64.8	+4.7	55.8	+8.5	33.2	+1.7	23.8	+3.9	45.4	+1.8
Fayette	11.2	—	2.3	19.4	+2.0	35.2	+4.6	42.0	—4.4	57.4	—0.6	69.2	+2.4	70.4	—2.1	67.2	—2.4	64.7	+3.4	55.8	+7.1	32.4	+0.3	24.6	+3.7	45.8	+0.9
Forest City	12.4	—	0.4	22.0	+6.9	34.6	+5.7	40.5	—5.4	59.5	+1.0	69.2	+1.7	70.2	—2.4	68.3	+1.7	65.4	+4.1	56.2	+7.9	33.4	+1.7	23.4	+3.8	46.3	+1.8
Humboldt	14.6b	—	1.4	21.6	+2.4	35.6	+3.3	41.2	—7.0	60.6d	+1.2	70.4	+2.3	72.2	—1.0	68.6	+2.2	66.3	+4.0	54.4f	+3.6	34.8	+0.5	24.9	+1.7	47.1	+0.6
Inwood	15.2	+	1.4	21.5	+5.3	32.8	+2.2	39.8	—6.8	57.9	+1.2	69.0	+1.4	72.3	—0.6	69.1	+1.9	65.8	+3.3	56.3a	+7.1	31.8b	+2.1	22.2	+1.2	46.0	+1.0
Milford (near)	12.1	—	19.6	—	32.2	—	38.8	—	57.5	—	68.4	—	70.0	—	66.7	—	63.6	—	54.5	—	33.0	—	22.6	—	44.9	—	
New Hampton	10.7	—	2.6	19.0c	+2.4	35.0	+5.4	40.8	—5.6	57.6b	+0.9	69.2	+2.0	70.3	+1.9	68.4	+0.9	65.1	+4.2	56.8	+8.7	33.2	+0.2	23.3	+2.4	45.8	+1.1
Nora Springs	12.9	—	21.9	—	36.7	—	42.8	—	58.8	—	70.4	—	71.2	—	69.3	—	67.8	—	58.0	—	36.0	—	26.1	—	45.5	—	
Pocahontas	14.6	—	0.9	21.0	+3.4	34.8	+3.8	40.4	—6.6	58.6	—0.7	70.0	+2.9	71.6	+0.9	67.8	+3.0	66.1	+3.7	56.3	+7.4	33.9	+1.1	24.0	+2.1	46.6	+1.0
Postville	10.2	—	4.2	18.2	+0.5	34.2	+3.6	41.0	—5.6	56.6	+2.1	67.4	+0.8	67.6	+4.1	66.0	+3.2	63.1	+2.0	56.1	+7.0	32.8	+0.5	23.8	+2.4	44.8	+0.3
Rock Rapids	15.2	+	2.6	21.4	+5.8	32.0	+2.2	39.8	+5.3	57.5	+1.0	69.2	+1.2	71.6	+2.2	66.5	+4.9	63.6	+1.6	54.4	+7.5	33.2	+1.7	22.3	+2.7	45.6	+1.0
Sanborn	14.6	—	21.8	—	35.4	—	39.0	—	58.1	—	68.6	—	71.3	—	68.6	+6.0	64.0	+5.2	54.2	+3.2	44.8	+22.6	—	+45.7	—		
Spencer	13.4	—	20.8	—	34.0	—	40.2	—	58.4	—	69.8	—	72.0	—	65.0	+6.5	68.4	+5.6	56.4	+3.4	44.0	+22.4	—	+46.0	—		
Storm Lake	16.3	+	1.0	21.9	+4.8	35.3	+3.5	45.1	+6.7	58.8	+0.5	69.5	+1.9	72.5	+0.4	68.8	+2.3	66.4	+4.2	57.8	+7.6	34.6	+1.0	24.3	+1.9	47.3	+1.5
Washta	17.4	+	1.0	23.7	+5.0	25.8	+4.1	40.6	+6.5	58.1	+0.9	69.3	+1.9	71.4	+1.3	67.2	+4.0	64.9	+6.1	56.0	+6.4	34.2	+0.8	23.6	+1.1	46.8	+0.7
Waverly	11.2	—	3.8	21.2	+2.6	36.5	+5.0	41.7	+6.1	58.0	+1.9	72.7	+5.0	70.4	+2.6	67.7	+2.9	65.7	+3.5	57.2	+7.1	34.2	+0.1	25.0	+2.2	46.8	+0.7
West Bend	13.0	—	1.7	19.9	+2.4	34.7	+3.9	40.4	+6.8	59.4	+0.2	69.8	+1.6	71.8	+1.2	68.0	+2.2	66.0	+4.4	56.8	+8.7	32.6	+0.1	23.0	+1.2	46.3	+0.8
Central Division																											
Baxter	15.4	—	2.6	23.0	+1.9	38.4	+4.5	42.4	+6.9	59.5	+1.1	71.1	+2.1	72.0	+1.6	69.4	+2.4	66.7	+3.2	58.4	+6.9	35.0	+0.8	26.3	+2.0	48.1	+0.4
Belle Plaine	15.2	—	2.3	23.8	+3.0	39.0	+5.7	43.6	+5.3	60.0	+0.4	71.9	+2.9	71.8	+1.6	69.7	+1.6	66.5	+3.3	59.0	+8.0	36.4	+1.0	27.2	+3.3	48.7	+1.3
Boone	15.7	—	1.1	—	38.8	+6.4	42.3	+5.6	60.0	+0.3	71.6	+2.6	73.0	+1.3	69.8	+2.0	67.0	+4.5	58.2	+7.6	35.4	+0.8	26.4	+3.1	48.7	—	
Carroll	16.8	—	0.2	23.4b	+4.4	38.6	+6.6	42.2	+5.0	59.8	+0.6	70.3	+2.5	72.4	+0.4	68.8	+1.8	66.0	+4.0	57.2	+7.9	34.4	+1.0	25.2	+2.0	47.9	+1.8
Cedar Rapids	15.8	—	1.4	24.1	+4.3	39.6	+6.9	44.4	+4.4	60.6	+0.7	74.0	+3.4	74.4	+1.2	71.0	+1.8	69.2	+5.2	60.4	+9.5	37.0	+2.0	28.0	+4.0	49.9	+2.1
Clinton	15.6	—	5.0	24.4	+1.5	39.6	+4.8	43.8	+5.9	59.6	+1.9	72.2	+1.8	73.6	+1.5	69.2	+5.7	59.9	+8.9	37.3	+1.3	29.8	+4.1	48.8	—		
Davenport	17.2	—	3.6	24.9	+1.1	40.3	+4.9	44.0	+6.2	60.5	+1.0	72.3	+1.4	74.3	+2.0	72.4	+0.4	68.8	+4.1	60.4	+7.8	37.8	+0.3	29.6	+2.4	50.2	+0.7
Denison	18.0	+	0.2	24.8	+4.7	39.2	+5.4	44.7f	+3.9	60.0a	+0.1	70.7	+2.6	72.4	+1.1	68.4a	+3.3	66.3	+2.8	57.8b	+7.0	36.2	+1.5	26.7	+2.2	48.8	+1.5
Des Moines	18.4	—	2.0	25.3	+1.2	39.8	+1.4	43.9	+6.7	61.2	+0.4	72.5	+2.1	73.8	+1.7	71.4	+1.6	68.0	+3.0	60.2	+7.7	37.6	+0.8	28.8	+3.1	50.1	+0.8
Dubuque	13.4	—	4.9	21.1	+0.5	37.2	+4.0	42.8	+6.1	58.8	+2.0	70.9	+1.3	71.2	+3.5	69.6	+2.4	66.4	+2.8	58.6	+6.6	35.6	+0.4	27.3	+2.8	47.7	+0.2
Grinnell	16.0	—	2.9	23.3	+1.2	39.2	+4.2	43.8a	+5.8	57.5	+2.7	69.2f	+0.8	71.1a	+3.4	69.4d	+3.3	66.8	+2.2	58.6a	+6.2	35.4b	+1.1	25.8b	+0.3	48.7	—
Gruny Center	14.8	—	2.1	22.6	+3.0	38.4a	+5.8	43.6a	+5.2	59.7	+0.8	70.8	+1.8	71.1	+3.2	69.3a	+2.5	67.0	+3.4	58.9	+8.1	36.2	+0.8	26.3	+2.6	47.6	—
Guthrie Center	16.9c	—	2.7	25.8	+4.2	39.3	+4.9	42.4	+7.2	59.6	+1.8	70.1	+0.3	72.6	+2.2	67.8	+4.7	65.8	+2.1	57.5	+6.2	35.4	+3.0	48.8	+1.3		
Independence	13.2	—	2.4	21.4	+2.1	39.0	+6.6	43.4	+4.4	59.4	+0.2	69.6	+1.9	70.8	+1.9												

MONTHLY AND ANNUAL PRECIPITATION, WITH DEPARTURES FROM THE NORMAL, FOR 1920.

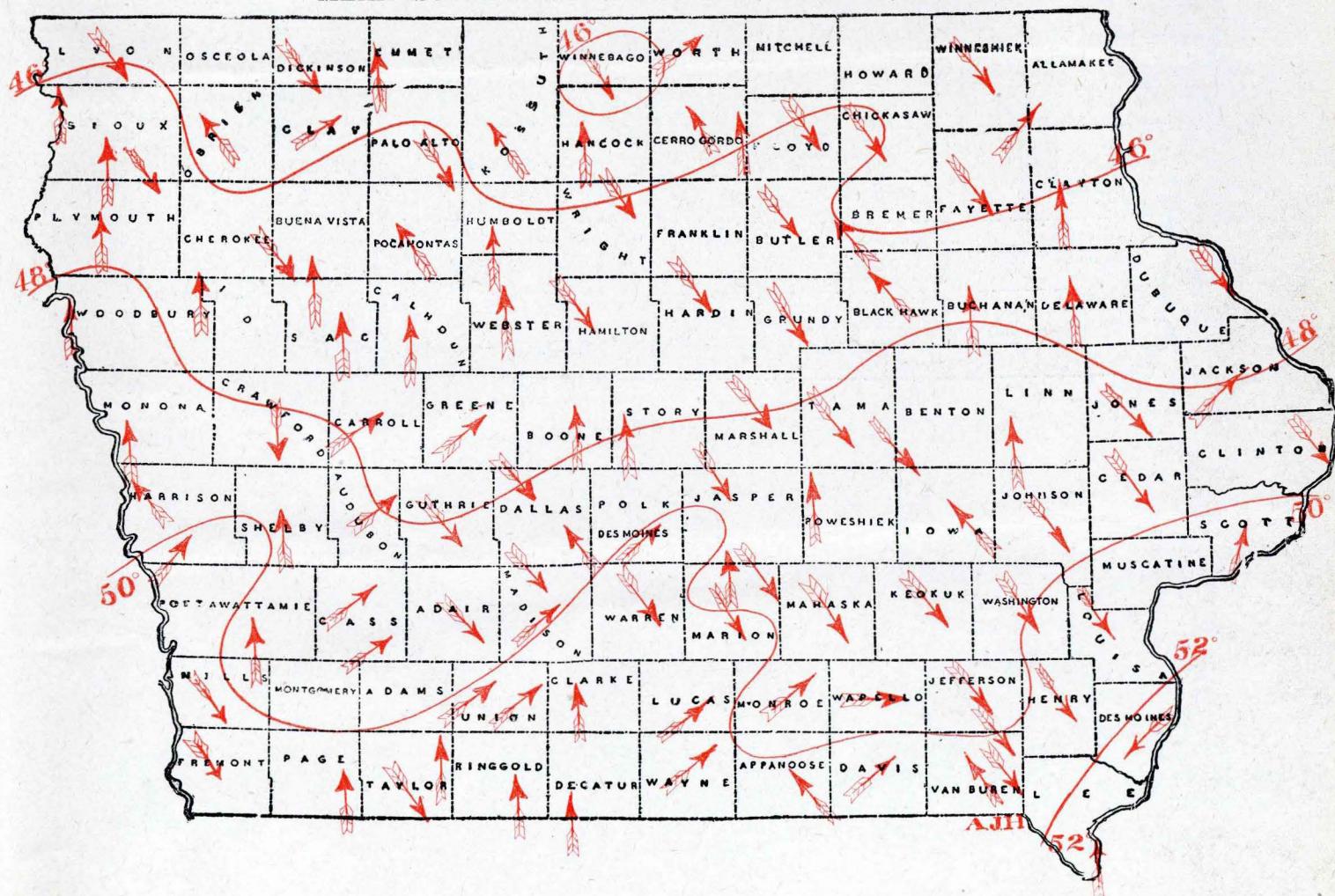
STATIONS	Jan.		Feb.		Mar.		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Annual.	
	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.	Prec.	Dept.
<i>Northern Division</i>																										
Algona.....	0.42	-0.38	0.74	-0.35	1.49	0.00	4.63	+2.12	2.70	-1.43	3.06	-1.38	6.89	+3.87	3.32	-0.35	2.78	-0.46	1.76	-0.48	3.17	+1.87	1.25	+0.28	32.31	+3.31
Allison.....	0.65	0.25	2.50	3.58	4.38	0.00	2.89	3.90	6.53	3.73	2.97	1.10	36.08	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alta.....	0.28	-0.38	0.73	-0.19	2.98	+1.46	4.98	+1.94	3.40	-1.62	4.73	-0.18	5.87	+1.12	2.04	-1.85	3.16	+0.21	1.65	+0.27	0.68	-0.27	33.19	+0.32	.....	.....
Alton.....	0.34	0.45	3.14	4.54	3.06	3.39	4.29	3.20	2.36	1.65	2.02	0.90	29.34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belmond.....	0.53	0.66	2.40	4.63	2.77	4.01	5.71	4.71	5.14	2.51	3.50	1.02	37.59	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Britt.....	0.24	-0.40	0.27	-0.54	2.09	+0.73	2.39	-0.03	4.17	-0.55	8.48	+4.49	5.91	+1.92	8.52	+4.72	4.42	+0.93	1.83	-0.50	2.63	+1.24	0.64	-0.19	41.59	+11.82
Charles City.....	0.65	-0.32	0.21	-0.80	2.85	+0.93	3.31	+0.48	4.54	-0.40	4.43	-0.67	2.92	-0.66	4.46	+1.04	5.76	+2.96	4.64	+2.61	2.73	+1.34	1.83	+0.55	38.33	+7.06
Decorah.....	0.98	-0.24	0.29	-0.74	2.82	+1.02	3.72	+1.28	4.30	-0.31	4.34	+0.10	2.87	-1.08	3.10	-0.26	2.07	-1.87	2.98	+0.21	3.99	+2.16	1.99	+0.65	33.45	+0.92
Estherville.....	0.30	-0.31	0.63	-0.15	2.65	+1.36	4.37	+1.52	2.80	-2.27	1.95	-2.76	6.37	+1.84	3.11	-0.99	2.90	-0.79	1.96	-0.46	1.55	+0.16	0.55	-0.26	29.14	-3.11
Fayette.....	0.47	-0.77	0.41	-1.35	3.18	+1.14	7.04	+3.95	2.82	-2.24	4.52	-0.19	4.13	+0.17	3.02	-0.40	5.21	+1.82	3.16	+0.70	2.95	+1.37	1.57	+0.04	38.48	+4.24
Forest City.....	1.02	+0.24	0.20	0.64	2.70	+1.26	1.93	-0.42	4.48	-0.01	7.51	+3.29	5.09	+1.45	4.09	+0.65	3.94	+0.49	1.48	-0.93	2.98	+1.55	0.62	-0.35	36.04	+6.58
Humboldt.....	0.32	-0.47	0.81	-0.03	2.51	+1.04	4.47	+1.80	2.21	-2.19	5.65	+1.25	6.89	+3.23	8.45	+5.09	5.14	+2.10	2.04	-0.08	4.45	+2.86	1.06	+0.20	44.00	+14.80
Inwood.....	0.12	-0.42	0.82	+0.07	2.62	+1.61	3.54	+0.95	5.37	+1.47	4.92	-0.23	2.75	-0.40	2.20	-0.68	2.27	-0.54	2.36	+0.14	1.44	+0.60	1.34	+0.66	29.75	+3.23
LeMars.....	0.14	-0.41	0.17	-0.60	3.95	+2.74	4.96	+2.09	4.12	-0.38	3.41	-0.95	2.84	-1.17	4.52	+1.73	2.39	-0.86	2.02	-0.20	.....	.....	1.00	+0.07	.....	.....
Milford (near).....	0.69	0.72	1.94	3.33	2.20	1.43	3.96	2.00	5.23	0.97	3.70	-0.24	3.59	-0.16	5.79	+2.12	2.72	-0.40	3.00	+0.73	3.78	+2.15	1.70	+0.57	36.01	+5.66
New Hampton.....	0.40	-0.50	0.30	-0.62	3.78	+1.85	3.39	+0.97	3.86	-0.81	3.70	-0.24	2.42	0.00	5.79	+2.12	2.72	-0.40	3.00	+0.73	3.84	+2.15	1.27	.....	38.44	.....
Nora Springs.....	0.36	0.31	3.61	3.36	3.34	5.34	5.15	4.11	5.40	0.88	3.88	0.00	5.57	0.00	5.21	0.00	5.21	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Northwood.....	1.05	+0.01	0.25	-1.07	3.55	+1.79	4.17	+1.70	2.44	-2.65	6.78	+2.16	4.60	+0.61	5.02	+0.98	7.05	+3.79	2.33	-0.27	3.68	+1.92	1.93	+0.69	42.85	+9.66
Pocahontas.....	0.30	-0.35	0.79	-0.06	2.29	+1.01	4.47	+2.12	1.94	-2.35	5.41	+1.10	5.36	+1.26	3.96	+0.05	1.39	-2.40	1.78	-0.69	1.88	+0.22	0.76	-0.10	30.33	-0.19
Postville.....	0.99	-0.17	0.40	-0.74	2.90	+0.99	4.72	+1.74	3.42	-1.88	4.23	-0.18	1.77	-2.75	4.04	+0.48	5.11	+1.42	2.67	+1.07	2.76	+1.11	1.78	+0.32	35.77	+1.41
Rock Rapids.....	0.19	-0.32	1.04	+0.64	3.16	+2.10	4.67	+2.02	3.29	-0.15	5.23	+0.92	4.60	+1.52	3.88	+1.11	2.61	+0.19	2.46	-0.14	2.54	+1.48	1.08	+0.50	34.25	+9.87
Sarbion.....	0.44	0.35	2.71	4.50	4.27	4.27	4.28	3.48	4.28	1.80	4.97	0.00	1.55	0.00	1.55	0.00	1.55	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sioux Center.....	0.50	-0.09	0.80	+0.10	2.26	+1.00	5.35	+2.73	4.83	+0.34	3.40	-0.56	2.31	-2.08	2.42	-0.76	2.61	-0.30	2.47	+1.67	0.80	-0.09	29.51	+1.51	.....	.....
Spencer.....	0.42	-0.40	0.40	3.20	4.34	3.82	2.01	5.55	0.00	4.83	0.00	3.57	0.00	2.12	0.00	2.18	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Storm Lake.....	0.11	-0.57	0.66	-0.09	2.26	+0.94	5.76	+2.92	3.62	-0.42	4.16	-0.22	5.92	+2.03	1.94	-1.39	3.71	+0.65	2.56	+0.68	2.39	+1.26	0.90	+0.08	33.99	+5.87
Washta.....	0.20	-0.32	0.30	-0.52	2.22	+1.29	4.80	+2.39	2.86	-2.29	7.58	+3.50	3.97	-0.23	4.22	+1.09	1.80	-1.72	2.91	-0.87	1.01	-0.12	0.88	-0.08	32.75	+4.02
Waverly.....	0.63	-0.37	0.77	-0.35	3.27	+1.45	4.99	+2.13	2.67	-1.85	3.56	-0.46	5.14	+1.20	3.97	+0.61	2.20	-0.79	3.06	-0.70	2.75	+1.16	1.48	+0.22	34.51	+3.65
West Bend.....	0.36	-0.57	0.93	+0.04	2.87	+1.20	4.94	+2.10	2.47	-1.53	5.06	+0.89	6.09	+2.53	5.72	+1.83	1.38	-1.69	2.22	+0.29	2.90	+1.46	0.53	-0.70	35.47	+5.85
<i>Central Division</i>																										
Ames.....	0.22	0.71	0.71	-0.20	2.29	+0.77	4.96	+2.10	3.05	-1.72	2.35	-0.19	3.78	-0.56	2.22	-1.59	3.34	-0.33	2.56	-0.18	1.70	+0.37	1.05	-0.17	28.23	-4.41
Baxter.....	0.32	-0.59	0.31	-0.61	3.66	+1.70	3.47	+0.41	4.10	-1.20	4.00	-0.17	3.65	-0.41	1.76	-1.86	2.77	-0.85	1.87	-0.92	2.75	+0.35	0.92	-0.08	28.58	-4.23
Belle Plaine.....	0.96	-0.69	0.40	-0.22	3.52	+1.19	5.71	+2.44	4.16	-0.47	1.56	-2.49	3.50	-0.48	2.55	-0.95	2.89	-0.25	1.45	-1.11	1.94	+0.21	1.57	+0.14	30.21	-3.68
Carroll.....	0.16	-0.65	1.21	+0.14	1.31	-0.55	4.84	+1.95	3.34	-0.33	3.81	-0.97	3.89	+0.28	6.37	+2.46	2.67	-0.41	3.26	+0.70	1.71	+0.46	0.90	-0.12	33.47	+1.96
Cedar Rapids.....	0.55	-0.77	0.36	-1.06	2.08	+1.02	3.24	+0.34	1.90	-2.59	3.11	-0.62	1.90	-1.79	3.60	+0.09	2.34	-0.58	0.55	-1.88	1.23	-0.18	20.95	-10.34		
Clinton.....	0.74	-1.09	0.34	-1.73	4.12	+1.25	3.15	-0.01	2.04	-2.54	4.51	+0.21	1.85	-2.21	1.93	-1.78	2.88	-0.49	1.90	-0.04	1.55	-0.30	26.95	-9.18		
Davenport.....	0.44	-1.13	0.19	-1.42	4.45	+2.24	5.04	+2.16	2.83	-1.36	2.54	-1.57	2.19	-1.36	2.67	-0.97	1.85	-0.27	2.27	-0.66	2.62	+1.44	0.26	-0.67	27.64	-1.56
Denison.....	T	-0.61	0.65	-0.27	2.33	+0.73	3.18	+0.23	3.51	-0.69	3.46	-0.53	3.20	-0.46	3.64	-0.47	2.27	-0.66	2.62	+0.40	2.14	-0.26	0.26	-0.67	27.64	-1.56
Des Moines.....	0.44	-0.77	0.74	-0.38	3.92	+2.27	4.09	+1.11	3.14	-1.42	1.25	-3.71	5.66	+1.80	2.11	-1.50	4.44	+1.37	1.89	-0.79	1.63	+0.15	1.38	+0.07	30.69	-1.80
Dubuque.....	0.63	-0.86	0.47	-0.97	3.04																					

DATES OF KILLING FROSTS, 1920.

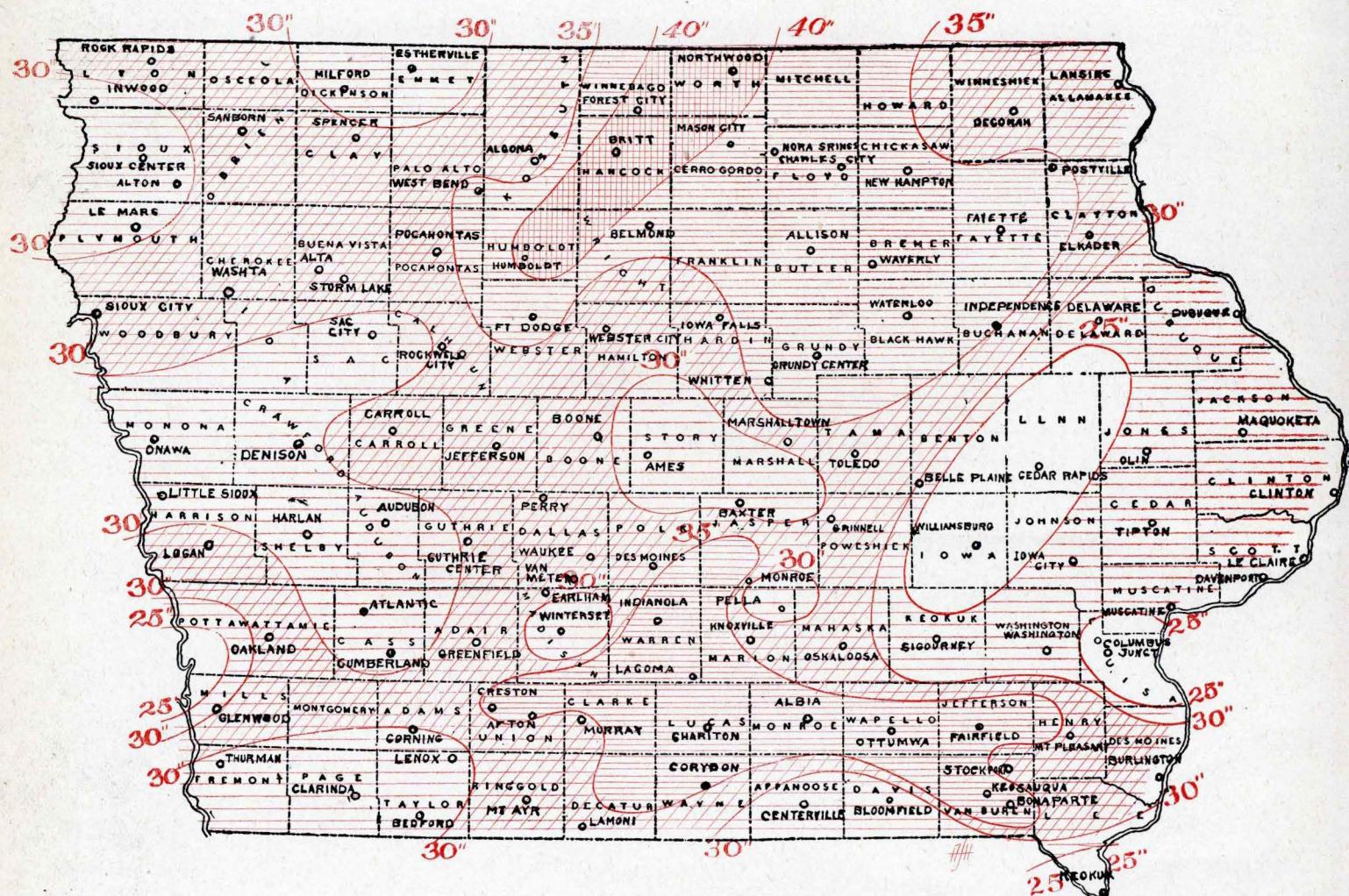
STATIONS	Killing Frosts		STATIONS	Killing Frosts		STATIONS	Killing Frosts	
	Last in Spring	First in Autumn		Last in Spring	First in Autumn		Last in Spring	First in Autumn
<i>Northern Division</i>								
Algona	May 14	Sept. 29	Ames	Apr. 28	Sept. 30 [†]	Afton	May 14 [†]	Sept. 30
Allison	May 14	Oct. 1	Audubon	Apr. 28 [†]	Sept. 30	Albia	May 14 [†]	Sept. 30
Alta	May 14	Sept. 30	Baxter	Apr. 28 [†]	Sept. 30	Atlantic	May 14 [†]	Sept. 30
Alton	May 14	Sept. 30	Belle Plaine	Apr. 14 [†]	Sept. 30	Bedford	Apr. 28 [†]	...
Belmond	May 14	Sept. 30 [†]	Boone	Apr. 28	Sept. 30	Bloomfield	Apr. 17 [†]	Oct. 1
Britt	May 13	Oct. 1	Carroll	Apr. 28	Sept. 30	Eonaparte	Apr. 17 [†]	Oct. 29
Charles City	Apr. 14	Oct. 1	Cedar Rapids	Apr. 14 [†]	Oct. 29	Burlington	Apr. 14 [†]	Oct. 29
Decorah	May 14 [†]	Sept. 30	Clinton	Apr. 14 [†]	...	Centerville	Apr. 28 [†]	...
Elkader	.....	Sept. 30	Davenport	Apr. 13	Oct. 29	Chariton	Apr. 28 [†]	Sept. 30
Estherville	May 14 [†]	Sept. 30	Delaware	Apr. 18 [†]	Oct. 1 [†]	Clarinda	Apr. 14	Oct. 29
Fayette	May 14	Sept. 30 [†]	Denison	Apr. 28 [†]	Sept. 29	Columbus Jct.	Apr. 28 [†]	Sept. 30
Forest City	Apr. 28 [†]	Oct. 1	Des Moines	Apr. 28	Oct. 1	Corning	Apr. 28 [†]	Oct. 1
Humboldt	Apr. 28 [†]	Sept. 30 [†]	Dubuque	Apr. 14	Oct. 29	Corydon	Apr. 28 [†]	Sept. 30
Inwood	Apr. 28 [†]	Sept. 30	Fort Dodge	Apr. 28 [†]	...	Creston	Apr. 28 [†]	Sept. 30
Le Mars	Apr. 29 [†]	Sept. 30	Grinnell	Apr. 28 [†]	Oct. 1 [†]	Cumberland	.....	Sept. 30
Mason City	May 14 [†]	Sept. 30 [†]	Gruny Center	Apr. 28 [†]	Oct. 1 [†]	Earlham	May 14 [†]	Sept. 30
Milford (near)	Apr. 28 [†]	Sept. 30	Guthrie Center	May 14 [†]	Sept. 30	Fairfield	May 14 [†]	Oct. 1
New Hampton	Apr. 28 [†]	Sept. 30	Harlan	Apr. 28 [†]	Sept. 30	Glenwood	Apr. 28 [†]	Sept. 30
Nora Springs	Apr. 17	Oct. 1	Independence	Apr. 28 [†]	Sept. 30 [†]	Greenfield	Apr. 27	Sept. 30
Northwood	May 14 [†]	Oct. 1	Iowa City	May 14 [†]	Oct. 1	Indianola	Apr. 24 [†]	...
Pocahontas	May 14 [†]	Sept. 30	Iowa Falls	Apr. 28 [†]	Sept. 30 [†]	Keokuk	Apr. 13 [†]	Oct. 29
Postville	May 14	Sept. 30	Jefferson	Apr. 28	Sept. 30	Keosauqua	May 14 [†]	Oct. 1
Rock Rapids	May 14	Sept. 30	Little Sioux	Apr. 28 [†]	Sept. 30	Knoxville	May 14	Oct. 1
Sanborn	May 3 [†]	Sept. 30	Logan	Apr. 28 [†]	Sept. 30	Lacoma	.....	Oct. 1
Sioux Center	Apr. 28 [†]	Sept. 30	Maquoketa	May 14 [†]	Oct. 2	Lamoni	Apr. 28 [†]	Sept. 30
Spencer	Apr. 28 [†]	Sept. 30	Marshalltown	Apr. 14 [†]	Sept. 30 [†]	Lenox	Apr. 28 [†]	Sept. 30
Storm Lake	Apr. 28 [†]	Sept. 30	Monroe	Apr. 28 [†]	Sept. 30	Mt. Ayr	Apr. 17 [†]	Sept. 30
Washta	May 14 [†]	Sept. 30	Olin	May 14 [†]	Oct. 1	Murray	Apr. 28 [†]	Sept. 30
Waverly	May 14 [†]	Sept. 30	Onawa	Apr. 28 [†]	Sept. 30	Oakland	Apr. 28 [†]	Sept. 30
West Bend	Apr. 28 [†]	Sept. 30	Perry	Apr. 28 [†]	Sept. 30	Oskaloosa	Apr. 28 [†]	Sept. 30
			Rockwell City	Apr. 28 [†]	...	Ottumwa	Apr. 14 [†]	Oct. 1
			Sac City	Apr. 28 [†]	Sept. 30	Pella	Apr. 15	Oct. 1
			Sioux City	Apr. 28	Sept. 30	Sigourney	Apr. 17 [†]	Oct. 1
			Tipton	Apr. 17 [†]	Oct. 1	Stockport	May 14 [†]	Oct. 1
			Toledo	May 14 [†]	Sept. 30 [†]	Thurman	Apr. 28 [†]	Sept. 30
			Waterloo	May 14 [†]	Sept. 30	Washington	Apr. 17 [†]	Oct. 1
			Waukee	Apr. 28	Sept. 30	Winterset	Apr. 28	Sept. 30
			Webster City	Apr. 28 [†]	Sept. 30	Omaha, Neb.	Apr. 13	Oct. 28
			Williamsburg	Apr. 17 [†]	Oct. 1			

[†] Date of last temperature of 32 or lower in the spring, or first temperature of 32 or lower in the autumn (as the case may be) when frost was not reported.

MEAN ISOTHERMS AND PREVAILING WINDS, YEAR 1920.



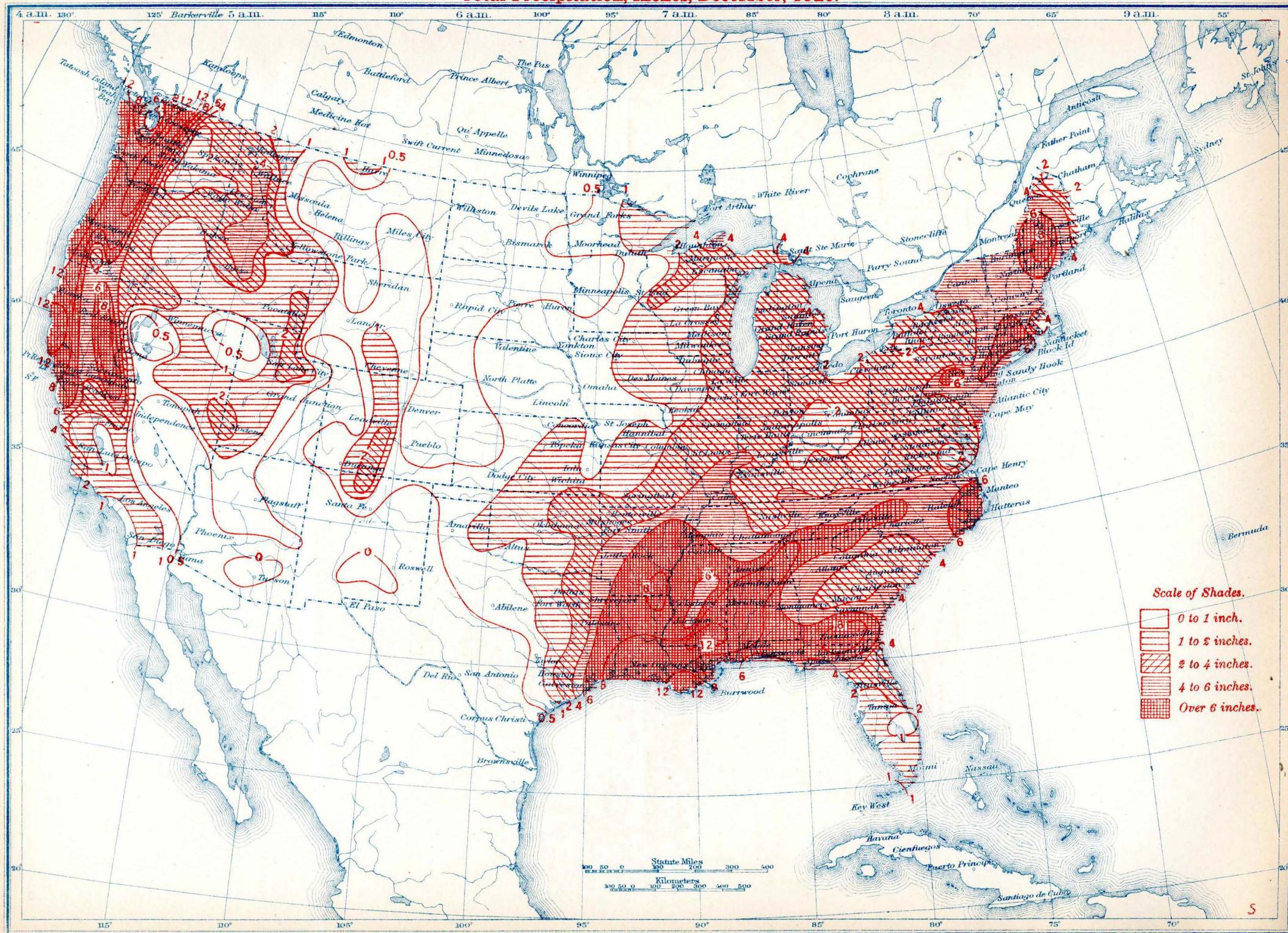
TOTAL PRECIPITATION, YEAR 1920.



SCALE OF SHADES—IN INCHES.

	Less than 25		25 to 30		30 to 35		35 to 40		More than 40
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Total Precipitation, Inches, December, 1920.



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