

CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

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GENERAL SUMMARY

January as a whole was a pleasant month, though subject to an unusual number of fluctuations above and below normal, and there were some great extremes in temperature, particularly on the 6th, when the minimum temperature ranged from 29 degrees below zero at Charles City, to 11 above at Keokuk. The mean temperature averaged somewhat above normal, with an excess at every station except Mason City, and the mean was least over northern districts, where the ground was snow covered the entire month, except the first three days, and gradually increased to the south where the ground was covered on an average of less than 10 days. Zero weather was reported throughout the State except a small area along the Mississippi River in the extreme southeast corner.

Precipitation averaged slightly below normal, being slightly above normal over the northern division and somewhat below in the central and southern divisions. More than 75 per cent of the monthly total occurred during the storm of the 4th-5th, which was in the form of snow over the northern half of the State and rain over the southern half. The snowfall during this storm ranged as high as 14 inches and in sections drifted enough to interfere with wagon and automobile traffic but not enough to seriously delay rail traffic. Over the southern division and portions of the central division the precipitation in this storm was in the form of rain, which froze to all exposed surfaces. This general icy condition continued for several days, and in protected places, till the close of the month. Conditions were generally favorable for the usual outdoor activities and considerable building was in progress which was interrupted for but short intervals. There was sufficient cold weather to make ice of the desired thickness and by the close of the month a good harvest had been completed under the most favorable conditions. The lack of snow cover, the icy condition that followed the storm of the 4th-5th, and the alternate freezing and thawing, later, are thought to have seriously injured winter wheat and young clover over the southern and portions of the central divisions. At the end of the month more than half of the State was without snow. Roads were in good condition, with sleighing nearly the entire month over the northern division. The health of stock continued good.

F. L. D.

PRESSURE

The mean temperature (reduced to sea level) for the State was 30.20 inches. The highest recorded was 30.95 inches, at Davenport, on the 23rd and the lowest was 29.44 inches at Dubuque, on the 4th. The monthly range was 1.51 inches.

TEMPERATURE

The mean temperature for the State, as shown by the records of 97 stations, was 19.8°, or 1.9° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 15.6°, or 1.0° higher

than the normal; Central, 20.5°, or 2.3° higher than the normal; Southern, 23.4°, or 2.5° higher than the normal. The highest monthly mean 25.8° at Centerville, and the lowest monthly mean 13.2° at Charles City. The highest temperature reported was 61°, at Harlan, on the 1st, and the lowest was -29° at Charles City on the 6th and Mason City on the 24th. The temperature range for the State was 90°.

HUMIDITY

The average relative humidity for the State at 7 a. m. was 80 per cent and at 7 p. m. was 69 per cent. The mean for the month was 74 per cent, which is 8 per cent below the normal. The highest monthly mean was 87 per cent, at Charles City, and the lowest was 66 per cent, at Keokuk.

PRECIPITATION

The average precipitation for the State, as shown by the records of 98 stations, was 0.89 inch, or 0.16 inch less than normal. By divisions the averages were as follows: Northern, 0.88 inch, or 0.04 inch more than the normal; Central, 0.88 inch, or 0.23 inch less than the normal; Southern, 0.92 inch, or 0.27 inch less than the normal. The greatest amount, 2.30 inches, occurred at Rockwell City, and the least, 0.32 inch, at Postville. The greatest amount in any 24 consecutive hours, 1.80 inches, occurred at Mason City, on the 4th.

SNOWFALL

The average snowfall for the State was 5.3 inches, or 1.6 inches less than the normal. The greatest amount, 23.0 inches, occurred at Rockwell City, and the least a trace at Chariton and Pella.

COMPARATIVE DATA FOR THE STATE—JANUARY

YEAR	Temperature					Precipitation				Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890.....	19.7	+1.8	61	-27	2.03	+0.98	3.46	0.35					
1891.....	26.0	+8.1	58	-4	1.75	+0.70	3.99	0.61		4	13	7	11
1892.....	15.3	-2.6	76	-38	1.09	+0.04	3.13	0.10	6.9	5	16	9	6
1893.....	9.3	-8.6	54	-34	0.74	-0.31	3.20	0.13	6.9	6	11	9	11
1894.....	19.3	+1.4	69	-37	1.09	+0.04	2.24	0.31	6.0	5	14	9	8
1895.....	13.6	-4.3	68	-31	0.85	-0.20	2.65	0.09	8.7	4	15	7	9
1896.....	23.4	+5.5	68	-20	0.48	-0.57	2.10	T.	2.8	3	10	10	11
1897.....	17.2	-0.7	66	-30	2.01	+0.96	6.16	0.15	8.2	7	12	7	12
1898.....	23.4	+5.5	52	-11	1.60	+0.55	5.32	T.	12.6	5	15	6	10
1899.....	19.8	+1.9	68	-34	0.28	-0.77	1.15	T.	1.5	3	15	10	6
1900.....	25.6	+7.7	66	-20	0.53	-0.52	2.47	T.	2.3	3	16	7	8
1901.....	23.7	+5.8	60	-21	0.74	-0.31	2.34	0.04	6.2	4	14	9	8
1902.....	22.4	+4.5	63	-31	0.88	-0.17	2.83	0.19	9.4	4	17	8	6
1903.....	23.0	+5.1	60	-12	0.28	-0.77	1.46	T.	2.0	4	13	7	11
1904.....	14.0	-3.9	57	-32	1.18	+0.13	3.68	0.02	6.1	6	12	8	11
1905.....	11.2	-6.7	56	-30	0.91	-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	8	13	8	10
1916.....	17.8	-0.1	63	-34	2.62	+1.57	6.07	0.85	7.2	10	12	6	13
1917.....	17.0	-0.9	60	-28	0.83	-0.22	2.07	0.17	7.2	4	17	8	6
1918.....	8.6	-9.3	53	-35	1.02	-0.03	2.79	0.26	11.2	7	13	8	10
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
1921.....	28.4	+10.5	67	-9	0.51	-0.54	1.92	0.10	4.1	4	11	7	13
1922.....	19.8	+1.9	57	-29	0.89	-0.16	2.30	0.32	5.3	4	17	6	8

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



Climatological Data for January, 1922.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.				Number of Days.				Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation .01 in. or more.	Clear.		Partly cloudy.	Cloudy.	Prevailing direction of wind.
Northern Division																				
Algona	Kossuth	1,213	49	16.2	+ 1.9	40	2	-16	6†	30	0.71	-0.69	0.61	13.5	4	17	4	10	nw.	W. E. Laird.
Allison	Butler	1,044	10	15.2	-----	40	2†	-23	6	39	1.10	-----	0.80	10.0	4	19	3	9	nw.	J. A. Bell.
Alta	Buena Vista	1,513	31	16.1	+ 2.0	41	2†	-13	24	31	0.72	+0.06	0.38	6.8	5	13	9	9	nw.	David E. Hadden.
Alton	Sioux	1,305	17	17.2	- 2.0	42	9	-15	6	30	0.60	-----	0.20	6.0	6	15	5	11	se.	W. S. Slagle.
Belmond	Wright	1,205	12	15.2	-----	38	2†	-21	24	35	1.08	-----	0.60	10.6	9	7	12	12	s.	Geo. P. Hardwick.
Britt	Hancock	1,236	25	15.2	+ 1.5	39	2†	-18	6	37	0.34	-0.30	0.30	3.7	3	19	10	2	s.	L. M. Goodman.
Charles City	Floyd	1,015	31	13.2	+ 1.8	38	2	-29	6	37	1.44	+0.47	1.15	20.5	8	10	10	11	se.	U. S. Weather Bureau
Cherokee	Cherokee	1,196	33	17.4	-----	42	9	-16	6	35	0.35	-----	0.20	4.5	3	9	14	8	s.	J. E. Wirth
Decorah	Winneshiek	875	29	15.0	+ 1.1	37	14	-28	6	41	1.15	-0.07	1.10	11.5	2	20	4	7	se.	M. D. Whitney.
Estherville	Emmet	1,298	27	14.2	+ 1.5	40	2	-18	5	34	0.86	+0.25	0.56	8.0	5	10	15	6	nw.	A. O. Peterson.
Fayette	Fayette	1,003	32	16.3 ^a	+ 2.8	38 ^a	3†	-20 ^a	24	41 ^a	0.99	-0.25	0.83	5.2	3	-----	-----	-----	sw.	R. Z. Latimer.
Forest City	Winnebago	1,226	28	15.0	+ 2.2	42	9	-18	6†	36	0.96	+0.18	0.30	9.6	10	19	3	9	sw.	Dr. M. B. Neil.
Humboldt	Humboldt	1,095	34	16.7 ^b	+ 0.7	43 ^b	2†	-23 ^b	6†	43 ^b	1.84	+1.05	1.20	10.5	3	-----	-----	-----	s.	H. C. Snitkey.
Inwood	Lyon	1,474	18	14.4 ^c	+ 0.6	41 ^c	9	-21 ^a	23	36 ^r	1.08	+0.54	0.30	10.0	7	20	6	5	s.	F. B. Hanson.
LeMars	Plymouth	1,224	26	17.4	+ 1.2	42	9	-14	6	32	0.44	-0.11	0.18	8.5	5	13	6	12	se.	Mrs. M. C. Woolley.
Mason City	Cerro Gordo	1,148	25	14.2	- 0.3	45	3	-29	24	36	2.05	+1.00	1.80	12.0	5	21	2	8	se.	Northern Sugar Corp.
Milford (near)	Dickinson	1,430	2	14.0	+ 1.0	38	2†	-15	6	28	0.57	-----	0.36	6.0	5	12	10	9	nw.	Dr. F. J. Smith.
New Hampton	Chickasaw	1,169	25	15.2	+ 1.9	40	14	-22	6	43	1.05	+0.15	1.09	10.5	2	16	8	7	se.	A. F. Kemman.
Nora Springs	Floyd	1,064	10	16.6	-----	41	9	-28	6†	43	1.14	-----	1.00	7.3	4	18	3	10	s.	Arthur Betts.
Northwood	Worth	1,222	26	13.5	+ 0.9	40	14	-20	24	37	0.85	-0.19	0.40	8.5	5	15	6	10	nw.	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	18	16.8	+ 1.3	41	2†	-17	24	34	1.04	+0.39	0.60	11.7	7	17	4	10	se.	F. E. Hronek.
Postville	Clayton	1,180	23	15.4	+ 1.0	37	9	-19	23	39	0.32	-0.84	0.20	3.2	4	13	12	6	se.	F. L. Williams.
Rock Rapids	Lyon	1,358	23	14.4	+ 1.8	40	9	-18	6	32	0.77	+0.26	0.22	7.7	5	14	9	8	nw.	H. C. Medberry.
Sanborn	O'Brien	1,553	8	14.4	-----	40	2	-20	23	39	0.50	-----	0.30	5.0	5	13	6	12	s.	James W. Dow.
Sioux Center	Sioux	1,426	23	15.9	+ 1.3	45	9	-15	19†	32	1.00	+0.41	0.30	10.0	7	13	3	15	w.	J. de Ruyter.
Spencer	Clay	1,319	8	14.4	-----	40	2†	-20	6	34	1.10	-----	0.70	11.0	5	14	7	10	nw.	E. W. Little.
Storm Lake	Buena Vista	1,440	33	18.1	+ 2.8	42	9	-12	24	32	0.40	-0.28	0.20	3.9	5	18	2	11	se.	Geo. H. Fracker.
Washta	Cherokee	1,157	24	18.5	+ 2.1	48	9	-24	6	44	0.80	+0.28	0.60	8.5	4	14	7	10	nw.	H. L. Felter.
Waverly	Bremer	948	26	17.2	+ 2.2	42	9	-20	24	37	0.84	-0.16	0.65	7.0	4	18	4	9	n.	E. M. Weyrauch.
West Bend	Palo Alto	1,197	29	16.0	+ 1.3	42	2†	-19	24	35	0.40	-0.53	0.24	5.5	4	14	6	11	nw.	Jos. Dorweiler.
Means and extremes.				15.6	+ 1.0	48	9	-29	24	44	0.88	+0.04	1.80	8.5	5	15	7	9	nw.	
Central Division																				
Ames	Story	926	46	18.9	+ 0.8	45	29	-12	6†	32	0.59	-0.34	0.44	3.3	5	25	1	5	se.	Iowa State College.
Audubon	Audubon	1,301	28	19.5	+ 1.6	45	9	-11	19	38	0.80	+0.04	0.40	8.0	2	16	10	5	nw.	Geo. Kibby.
Baxter	Jasper	998	22	21.4	+ 3.4	47	9	-11	24	38	0.70	-0.21	0.50	3.0	2	20	5	6	s.	Henry Geise.
Belle Plaine	Benton	889	32	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	O. C. Burrows.
Boone	Boone	1,134	17	19.7 ^b	+ 2.9	47 ^b	9	-19 ^b	6	39 ^b	0.68	-0.11	0.63	4.0	3	-----	-----	-----	s.	Carl F. Henning.
Carroll	Carroll	1,265	32	19.8	+ 2.8	47	9	-12	6	35	0.66	-0.15	0.46	7.7	5	17	3	11	nw.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	40	21.8	+ 4.6	46	29	-7	24	36	0.49	-0.83	0.39	1.0	2	21	2	8	s.	Dr. S. Toogood.
Clinton	Clinton	593	49	23.2	+ 2.6	50	31	-5	24	43	1.02	-0.81	0.93	1.1	4	23	6	2	w.	Dr. A. P. Bryant.
Davenport	Scott	580	51	23.0	+ 2.2	50	31	-5	24	39	0.98	-0.59	0.94	1.0	2	16	8	7	e.	U. S. Weather Bureau.
Denison	Crawford	1,180	28	19.8	+ 2.0	45	9	-12	6	34	0.40	-0.21	0.19	4.5	3	12	6	13	s.	V. L. Byers.
Des Moines	Polk	861	44	22.6	+ 2.2	49	9	-5	24	28	0.85	-0.36	0.50	3.2	7	14	7	10	se.	U. S. Weather Bureau.
Dubuque	Dubuque	639	49	19.7	+ 1.4	42	9	-9	24	35	1.16	-0.33	1.07	2.8	5	17	6	8	nw.	U. S. Weather Bureau
Fairport	Muscatine	567	1	24.8	-----	52	31	1	19†	45	1.04	-----	1.00	-----	3	16	6	9	sw.	R. L. Barney
Fort Dodge	Webster	1,114	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Fred Heman.
Grinnell	Poweshiek	1,031	28	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Wm. Bader.
Grundy Center	Grundy	976	31	20.7	+ 3.8	44	4	-17	24	44	0.50	-0.42	0.30	5.0	3	9	14	8	nw.	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	27	21.6	+ 2.0	50	9	-9	19†	35	0.61	-0.19	0.20	4.0	4	19	5	7	sw.	E. L. Nesselroad.
Harlan	Shelby	1,192	23	21.8	+ 3.1	57	1	-9	19	37	0.40	-0.27	0.20	4.0	2	22	2	7	s.	W. K. Colburn.
Independence	Buchanan	921	58	18.8	+ 3.2	41	15	-14	24	42	0.65	-0.57	0.51	3.5	4	22	0	9	sw.	Dr. Geo. Boody.
Iowa City	Johnson	733	62	22.2	+ 4.6	48	9	-9	24	44	1.11	-0.54	1.01	2.0	4	13	12	6	s.	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	29	16.6	+ 2.8	41	9	-20	6	37	0.60	-0.61	0.40	6.0	6	16	5	10	s.	J. B. Parmelee.
Jefferson	Greene	1,052	23	19.0	+ 1.1	46	2	-15	6	35	0.90	-----	0.60	9.0	4	17	6	8	nw.	Will I. Lyon.
Le Claire	Scott	576	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Margaret T. Disney.
Little Sioux	Harrison	1,040	17	21.6	+ 2.4	51	9	-12	6	33	0.62	-----	0.30	4.5	4	11	12	8	se.	Geo. H. Gibson.
Logan	Harrison	1,035	55	22.4	+ 3.0	48	2†	-11	6†	39	0.76	-0.30	0.38	7.0	3	16	6	9	sw.	Mary Jean Stern.
Manchester	Delaware	944	-----	16.0	-----	40	14	-16	24	40	0.56	-----	0.50	2.5	2	9	6	16	sw.	Thomas H. Tracey
Marshalltown	Marshall	947	30	20.8	+ 4.6	43	2†	-10	24	33	0.85	-0.29	0.61	4.0	6	23	0	8	se.	O. C. Pigman.
Monroe	Jasper	922	10	23.0	-----	48	9	-5	19†	35	1.14	-----	0.98	2.1	2	20	3	8	nw.	J. A. Dibel.
Muscatine	Muscatine	554	62	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Wm. P. Molls.
Olin	Jones	760	23	20.5	+ 1.6	43	9	-9	24	43	1.50	+0.12	1.40	1.0	3	22	4	5	e.	Dr. F. W. Port.
Onawa	Monona	1,051	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Mrs. H. E. Colby.
Perrv	Dallas	975	21	20.8	+ 2.1	43 ^a	2†	-8	6†	32 ^a	0.65	-0.48	0.54	3.2	4	17	6	8	se.	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	18.0 ^a	+ 0.4	44 ^a	2	-12 ^a	6†	30 ^a	2.30	+1.35	1.20	23.0	6	6	7	18	s.	A. W. Melsaac.
Sac City																				

Climatological Data for January, 1922—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation .01 in. or more.	Clear.			Partly cloudy.	Cloudy.
<i>Southern Division</i>																				
Afton	Union	1,212	28	23.2	+ 2.2	46	9	- 6	19	32	0.95	+0.11	0.65	3.5	2	20	5	6	sw.	S. R. Brown.
Albia	Monroe	959	24	23.9	+ 4.5	55	9	- 4	19†	42	1.20	-0.09	1.18	0.5	3	17	7	7	se.	O. E. McBride.
Atlantic	Cass	1,164	31	22.6	+ 3.2	49	9	- 8	19	39	0.59	-0.19	0.45	3.9	2	19	2	10	sw.	Joseph N. Reynolds.
Bedford	Taylor	1,100	22																	E. E. Healy.
Bloomfield	Davis	881	15																	John W. Teed.
Bonaparte	Van Buren		31	23.8	+ 1.8	56	9	- 2	22†	48	1.00	-0.60	0.97	1.0	2	22	1	8	s.	Bruce R. Vale.
Burlington	Des Moines	544	26	25.0	+ 2.6	55	3†	- 3	24	45	1.33	-0.40	1.10	2.5	2	24	3	4	sw.	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	17	25.8		55	9	- 2	19	40	0.84	-0.15	0.77	0.7	4	14	4	13	se.	Leo J. Allen.
Chariton	Lucas	1,042	27	25.0	+ 4.3	52	9	- 4	19	40	0.85	-0.31	0.85	T.	1	18	11	2	se.	C. C. Burr.
Clarinda	Page	1,009	32	24.8	+ 5.1	50	9†	- 5	19	41	1.00	+0.05	0.53	7.3	5	20	3	8	s.	A. S. Van Sandt.
Columbus Jet	Louisa	595	21	24.0	+ 2.0	50	9†	- 6	24	44	1.12	-0.12	0.96	3.5	4	24	4	3	e.	J. B. Johnston.
Corning	Adams	1,117	30	22.0	+ 2.3	47	2†	-12	19	41	0.84	-0.05	0.55	1.0	4	22	3	6	nw.	Jerome Smith.
Corydon	Wayne	1,101	29	24.7	+ 2.9	56	9	- 4	19	39	0.98	-0.35	0.92	1.2	3	15	10	6	nw.	May C. Miller.
Creston	Union	1,312	17	22.5	+ 4.5	44	2†	- 7	19	32	0.77		0.58	8.0	3	13	14	4	sw.	Dr. H. M. Stanley.
Cumberland	Cass	1,225	23																	G. M. Clarke.
Earlham	Madison	1,126	20	21.0	+ 1.9	49	9	-13	6	39	0.79	-0.46	0.69	5.0	3	20	2	9	sw.	Geo. Phillips.
Earfield	Jefferson	780	38	23.0	+ 1.2	52	9	- 4	24	48	1.16	-0.39	0.74	4.2	4	18	6	7	se.	Prof. R. M. McKenzie.
Glenwood	Mills	1,100	24	24.2		50	2†	- 7	19	34	0.50		0.28	3.2	4	20	3	8	se.	Dr. Geo. Mogridge.
Greenfield	Adair	1,368	30	21.2	+ 2.0	46	9	- 9	19	37	0.76	-0.14	0.48		2	23	1	7	nw.	C. E. McCaslen
Indianola	Warren	972	31	23.2 ^a	+ 2.8	49 ^a	9	- 5 ^a	19†	37 ^a	0.33	-0.88	0.15	3.3	5	11	17	3	se.	Seth F. Shenton.
Keokuk	Lee	614	51	25.3	+ 1.6	55	3	1	23	39	1.04	-0.65	0.79	3.5	5	13	11	7	e.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	30	23.4	+ 2.5	52	9†	- 1	22	47	0.95	-0.39	0.75	2.0	3	19	5	7	se.	J. H. Landes.
Knoxville	Marion	920	27	23.2	+ 2.2	52	9	- 7	24	41	1.07	-0.13	0.90	1.7	4	18	5	8	se.	W. J. Casey.
Lacona	Warren		23								1.19	-0.53	0.98	4.0	4	9	14	8		J. B. Alter.
Lamoni	Decatur	1,100	15	22.5	+ 1.0	52	9	- 6	19	38	1.29	+0.17	0.70	3.0	4	16	8	7	nw.	Rupert A. Wight.
Lenox	Taylor	1,250	27	23.5	+ 3.1	47	9†	- 5	19	31	0.71	+0.01	0.33	4.8	4	21	5	5	s.	J. L. Hurley.
Mt. Ayr	Ringgold	1,236	29	24.4	+ 2.6	53	14	- 5	19	37	1.01	-0.06	0.67	2.8	6	18	3	10	se.	Alex Maxwell.
Mt. Pleasant	Henry	729	41	24.0	+ 1.9	54	9	- 4	24	46	0.95	-0.56	0.90	0.7	3	13	9	9	nw.	John H. Jericho.
Oakland	Pottawattamie	1,105	3	22.6		47	2	- 7	19	39	0.94		0.44	5.0	4	15	2	14	s.	M. E. Gray.
Oskaloosa	Mahaska	825	46	22.3	+ 2.3	50	9	- 7	24	40	1.22	+0.26	1.10	2.1	3	11	9	11	ne.	Ray R. Robinson.
Ottumwa	Wapello	849	27								0.77	-0.82	0.40	1.0	3	18	0	13	w.	Henry Eilers.
Pella	Marion	877	29	22.0 ^b	+ 1.6	50 ^b	9	- 6 ^b	24	3 ^b	0.82	-0.20	0.82	T.	1	23	0	8	nw.	J. H. Ver Steeg.
Sigourney	Keokuk	790	26	20.8	0.0	44	9	- 8	24	36	1.38	+0.06	1.18	1.8	4	21	2	8	nw.	W. E. Utterback.
Stockport	Van Buren	754	20	23.3	+ 1.3	55	9	- 4	22†	49	0.88	-0.49	0.73	1.5	3	18	9	4	s.	C. L. Beswick.
Thurman	Fremont		25	24.4	+ 3.5	49	2	- 7	6	37	0.56	-0.06	0.26	5.0	4	8	17	6	sw.	C. R. Paul.
Washington	Washington	760	40	23.0	+ 2.4	51	9	- 6	24	46	1.11	-0.39	0.93	2.0	3	18	9	4	se.	Wm. A. Cook.
Winterset	Madison	1,129	31	23.3	+ 2.4	48	9	- 5	19†	33	0.73	-0.23	0.65	4.0	2	23	5	3	sw.	H. S. Ely.
Omaha, Nebr.		1,040	51	23.6	+ 3.1	50	2	- 5	19	30	0.94	+0.29	0.41	6.2	8	14	10	7	nw.	U. S. Weather Bureau.
Means and extremes				23.4	+ 2.5	56	9	-13	6	49	0.92	-0.27	1.18	2.9	3	18	6	7	se.	
State means and extremes				19.8	+ 1.9	57	1	-29	24	49	0.89	-0.16	1.80	5.3	4	17	6	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 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 (%).				Wind.				Sunshine				
	Mean.	Highest.	Date.	Lowest.	Date.	Mean.			Total movement.	Average hourly velocity.	Maximum		Per cent of possible.	Departure from normal.			
						7 a. m.	Noon.†	7 p. m.			Miles.	From.			Date.		
Charles City	30.21	30.92	23	29.53	14	92	75	82	50	2	5,295	7.1	30	nw.	14	43	- 9
Davenport	30.23	30.91	23	29.44	4	79	55	62	30	†19	6,019	8.1	26	nw.	4	72	+ 25
Des Moines	30.19	30.90	23	29.54	4	82	63	70	31	2	6,039	8.1	35	sw.	16	64	+ 15
Dubuque	30.23	30.95	23	29.48	4	83	64	68	33	29	5,026	6.8	25	nw.	21	67	+ 18
Keokuk	30.24	30.86	23	29.49	4	71	52	62	23	1	5,848	7.9	35	w.	4	72	+ 30
Sioux City	30.19	30.92	23	29.52	2	81	72	72	34	2	5,494	12.8	47	nw.	14	55	0
Omaha, Nebr.	30.19	30.88	23	29.58	2	74	61	65	25	2	6,723	9.0	33	n.	†4	68	+ 13
Means and extremes	30.20					80	63	69				8.5				63	+ 13
		30.95	23	29.44	4				25	2			47	nw.	4		
Normals and records	30.14		25th		3d	85		78		†21		8.7			6th	50	
		31.00	1905	28.71	1906					†25	1922				72	nw.	1903

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

Daily Precipitation for January, 1922—Continued.

Stations.	Drainage Basin.	Day of Month.																															Totals						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							
<i>Southern Division</i>																																							
Afton	Grand			.65																													.30	T.	0.95				
Albia	Des Moines		T.	1.18																														T.	1.20				
Atlantic	Nishnabotna		T.	.45																														.14	T.	0.59			
Bedford	Missouri																																						
Bloomfield	Mississippi																																						
Bonaparte	Des Moines			.97																																1.00			
Burlington	Mississippi			1.10																																1.33			
Centerville	Chariton			.77																																0.81			
Chariton	Chariton			.85																															T.	0.85			
Clarinda	Nodaway			.53																														.23		1.00			
Columbus Jct.	Iowa			.96																																1.12			
Corning	Nodaway			.55																															.19		0.84		
Corydon	Chariton			.92	T.																														.01		0.98		
Creston	Missouri			.58																															.12		0.77		
Cumberland	Nodaway																																						
Earlham	Des Moines			.69		T.																													.06		0.79		
Fairfield	Skunk			.74																																	1.16		
Glenwood	Missouri			.28																															.10	.02	0.50		
Greenfield	Nodaway			.48																															.28		0.76		
Indianola	Des Moines			.05																															.15	T.	0.33		
Keokuk***	Mississippi			.05	.76																																1.04		
Keosauqua	Des Moines			.75	T.																															T.	0.95		
Knoxville	Des Moines			.90																																.06		1.07	
Lacona	Des Moines			.98																																.10	.01	1.19	
Lamoni	Grand			.70																															.09		.40	1.29	
Lenox	Missouri			.33																																.30		0.71	
Mt. Ayr	Grand			.67																																.25	.01	1.01	
Mt. Pleasant	Skunk			.90																																			0.95
Oakland	Nishnabotna			.20																																.20	.44	0.94	
Oskaloosa	Des Moines			1.10		T.	T.																													T.		1.22	
Ottumwa	Des Moines			.30	.46																																	0.77	
Pella	Skunk			.82																																		0.82	
Sigourney	Skunk			1.18																																		1.38	
Stockport	Skunk			.73																																		0.88	
Thurman	Missouri			.26																																.15	.05	0.56	
Washington	Skunk			.96																																		1.11	
Winterset	Des Moines			.65																																	.08	T.	0.73
Omaha, Nebr.***	Missouri			.12	.29		.01																													.13	.01	.19	0.94

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.

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 47 miles per hour, from the northwest, at Sioux City on the 4th.

SUNSHINE AND CLOUDINESS

The average per cent of the possible amount of sunshine was 63, or 13 per cent more than the normal. The per cent of the possible amounts at the several Weather Bureau Stations was as follows: Charles City, 43; Davenport, 72; Des Moines, 64; Dubuque, 67; Keokuk, 72; Sioux City, 55; Omaha, Neb., 68.

MISCELLANEOUS PHENOMENA

Aurora: 5th, 6th, 24th.

Fog, dense: 4th, 10th, 12th, 16th, 21st, 28th, 30th, 31st.

Hail: 4th, 31st.

Halos (Lunar or Solar): 4th, 8th, 10th, 11th, 17th, 18th, 19th, 29th.

Parhelia: 5th, 19th.

Sleet: 3d, 4th, 14th, 29th, 30th, 31st.

Thunderstorms: 4th, 5th.

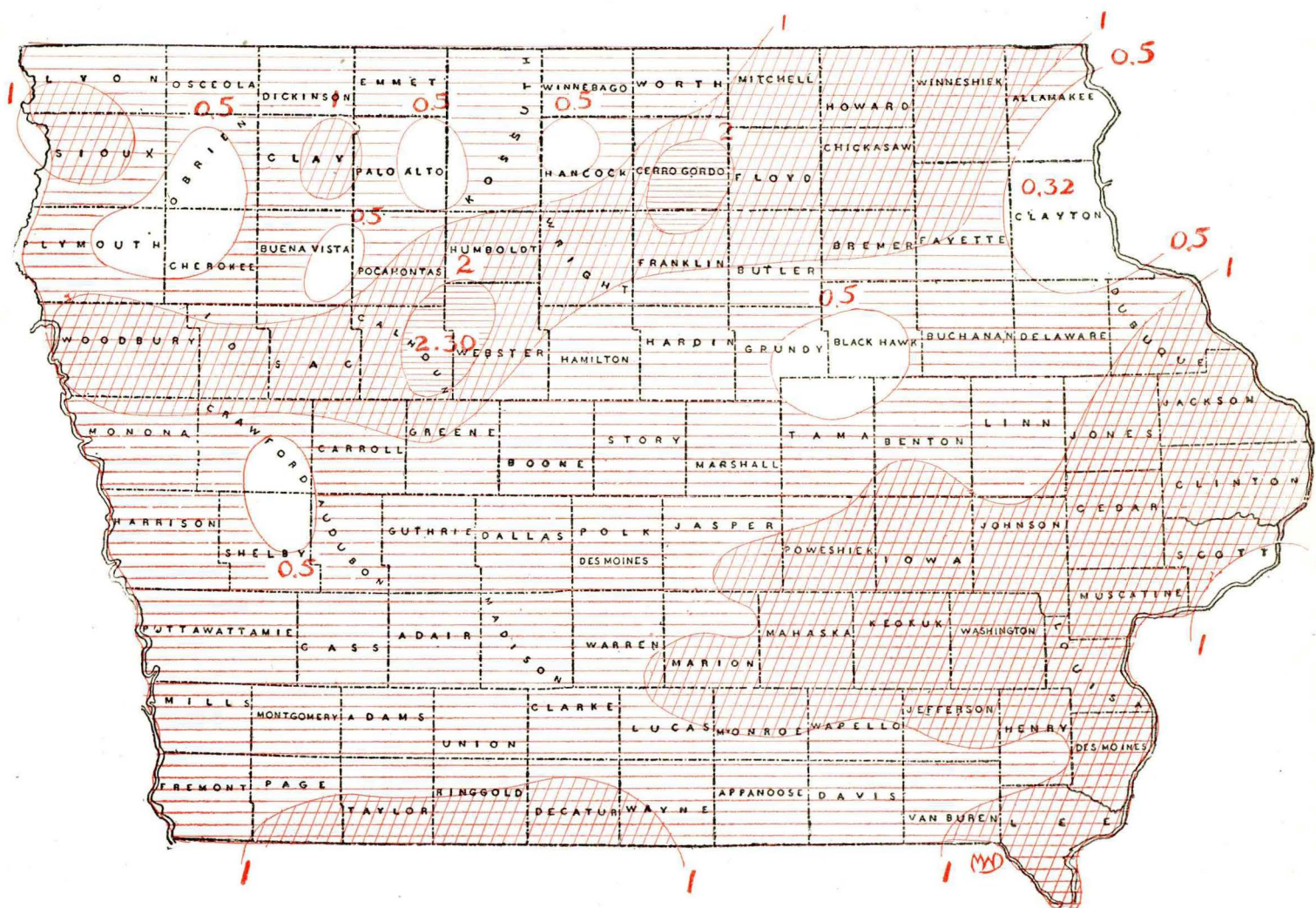
RIVERS

Low to moderate stages prevailed on the Missouri River, with considerable fluctuation due to ice gorges. Low and nearly stationary stages prevailed on the Mississippi and all interior rivers during the entire month. The ice on the Mississippi and interior rivers increased gradually till the end of the month.

Daily Maximum and Minimum Temperature for the Month of January, 1922.

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
Northern Division																																
Algona	26	40	38	30	6	12	33	30	38	31	28	26	22	38	32	34	30	15	10	27	31	17	-3	5	20	25	30	33	34	33	31	25.9
Alta	30	41	35	15	5	20	35	29	41	32	22	27	18	39	18	37	23	11	13	25	30	0	1	15	24	31	38	37	34	33	32	25.5
Alton	5	22	15	0	-10	-9	11	12	23	20	9	16	5	14	6	7	9	1	-11	4	0	-9	-10	-13	2	16	17	15	20	11	10	6.7
Belmond	30	40	38	28	5	15	32	32	42	38	30	28	24	39	33	34	30	13	13	26	29	20	-5	11	22	30	35	38	35	35	27.4	
Charles City	5	22	24	-2	-10	-15	4	11	17	16	12	20	8	16	8	4	10	0	-11	2	2	-8	-13	-14	9	19	15	20	25	12	6	6.9
Decorah	24	38	37	31	10	10	31	30	38	30	28	25	21	38	30	34	26	21	13	23	30	14	-2	4	18	27	50	32	34	32	25.5	
Forest City	0	18	22	6	-10	-19	-3	14	17	12	6	7	2	3	4	1	6	9	-12	6	2	-12	-12	-21	-2	16	21	17	19	25	18	5.0
Inwood	20	38	36	24	9	8	32	27	37	3	21	22	11	37	12	33	23	25	7	23	29	0	-2	4	17	26	30	32	35	31	38	24.1
Mason City	0	17	20	9	-21	-29	0	17	17	8	0	2	-4	4	2	2	3	7	-10	4	-4	-15	-20	-27	3	47	2	13	17	25	23	3.2
Milford (near)	20	32	36	34	32	8	31	34	35	34	34	20	21	34	35	32	26	27	25	21	29	22	-2	4	16	28	28	31	31	35	34	26.9
New Hampton	12	13	22	20	-5	-28	-10	18	4	8	-17	-4	-4	-2	-2	2	5	11	-8	1	15	-16	-13	-27	-5	15	10	0	14	24	31	3.1
Northwood	24	38	37	30	11	9	32	30	42	30	28	25	20	40	24	33	30	24	15	26	30	21	0	4	17	23	20	30	32	31	31	25.6
Pocahontas	-2	12	24	8	-9	-18	0	18	15	5	9	3	4	3	0	0	9	7	-12	3	5	-14	-13	-18	-3	15	16	1	12	24	18	4.5
Postville	26	39	30	15	-2	14	31	31	41	30	29	26	31	36	36	32	10	11	26	28	6	4	22	30	35	35	30	34	34	34	24.9	
Forest City	2	23	15	-2	-17	-15	6	10	23	15	12	5	12	5	3	5	4	-4	-17	7	0	-12	-19	1	12	25	22	24	-2	-2	3.8	
Milford (near)	22	37	45	30	12	10	32	33	37	31	21	23	1	38	21	35	26	23	15	36	16	9	9	3	16	24	29	30	34	34	25.2	
New Hampton	-1	15	18	10	-8	-26	-1	13	19	9	4	4	-6	4	1	-1	5	9	-13	2	-1	-16	-15	-29	3	12	21	10	16	24	2	3.3
Northwood	27	38	32	26	2	13	30	38	30	26	25	19	37	21	19	37	21	11	9	24	26	4	-2	6	21	26	33	33	34	32	29	22.9
Pocahontas	1	20	18	-3	-11	-15	4	11	20	16	8	17	0	11	3	0	8	1	-14	5	1	-11	-14	-14	1	19	16	15	21	16	8	5.1
Postville	21	35	37	31	26	8	32	30	39	32	28	19	21	40	33	32	27	25	23	25	30	24	-1	6	16	25	30	32	34	32	33	26.5
Forest City	-1	14	22	20	-8	-22	0	13	14	17	4	-7	-6	-3	0	-2	2	5	-10	-1	3	-16	-13	-18	-4	14	19	9	13	23	3.8	
Milford (near)	19	35	37	34	10	3	27	27	37	33	26	24	18	40	14	29	21	22	7	23	30	3	-5	-1	18	25	32	28	32	37	23.1	
Postville	-3	10	21	10	-10	-19	-5	15	22	15	5	5	5	5	3	9	9	7	-10	0	3	-17	-14	-20	-3	16	20	9	-2	24	3.9	
Forest City	31	41	36	28	8	17	34	30	41	33	27	27	23	39	28	37	26	15	13	27	31	18	10	9	20	27	34	35	34	32	27.3	
Postville	3	21	23	0	-10	-16	4	12	19	14	10	16	1	8	6	3	11	5	-13	4	3	-9	-10	-17	4	19	21	13	21	14	6.3	
Postville	18	32	36	34	22	10	33	34	37	34	30	19	18	36	28	31	28	26	24	23	29	21	6	21	14	27	30	32	34	34	27.0	
Postville	-3	10	22	19	-8	-17	1	16	17	17	4	-8	-6	-3	0	1	12	10	-10	1	4	-13	-19	-17	-4	12	16	7	13	22	25	3.9
Central Division																																
Belle Plaine																																
Boone			40	36	6	20	40	36	47	38	32	28	28	40	42	37	30	24	19	29	36	33	25	15	27	29	39	44	42	39	36	32.3
Carroll	32	44	44	35	8	23	37	34	47	38	30	29	23	43	34	37	30	18	14	28	37	27	5	17	24	32	40	41	37	35	34	30.9
Davenport	7	20	25	2	-6	-12	10	16	25	19	12	15	8	11	8	5	10	6	-10	5	5	-6	-7	-11	12	18	17	15	21	16	15	8.7
Des Moines	21	37	45	42	19	23	40	37	49	43	32	24	23	47	27	34	34	33	28	25	32	16	7	16	24	30	35	38	39	46	50	32.1
Dubuque	8	17	31	19	8	4	19	30	29	12	8	6	8	11	12	22	22	21	0	9	16	-3	-1	-5	10	9	14	14	18	24	27	13.8
Fort Dodge	31	45	44	34	9	27	40	36	49	41	26	29	21	47	22	37	37	26	12	27	37	11	6	15	30	29	39	39	41	38	44	31.3
Grinnell	10	23	29	6	1	1	20	25	28	25	16	18	10	20	13	12	20	7	-3	9	11	-3	-4	-5	14	18	20	18	23	23	13.8	
Guthrie Center	18	35	38	34	19	18	36	35	42	37	31	22	19	40	15	34	33	30	24	25	33	6	2	12	21	30	34	37	39	40	40	28.4
Independence	4	17	30	19	1	-1	14	25	29	22	8	4	5	5	9	10	19	18	-2	7	6	-7	-5	-9	6	11	9	11	21	26	29	11.0
Marshalltown	33	45	4	37	11	27	37	36	50	42	31	29	27	45	38	37	35	25	14	26	36	31	4	18	28	30	40	42	41	41	35	32.7
Sioux City	7	22	20	5	-7	-6	18	18	26	21	15	17	11	13	11	11	14	9	-9	-7	7	-4	-6	-9	13	19	19	15	22	21	16	10.6
Iowa City	23	39	42	30	23	22	40	37	48	41	33	24	24	45	38	35	32	29	26	33	30	7	13	20	29	35	38	41	43	44	32.4	
Iowa Falls	6	15	26	23	8	1	17	26	26	23	17	6	4	1	11	7	17	18	-3	5	10	-6	-3	-9	8	15	16	15	25	27	12.0	
Little Sioux	23	40	39	35	8	16	33	32	41	33	29	25	22	38	35	33	28	24	23	24	33	27	0	9	18	25	32	33	38	34	33	27.8
Marshalltown	1	18	19	8	-6	-20	2	16	19	12	7	5	-3	1	4	3	10	10	-9	4	-2	-10	-9	-19	-1	16	22	9	19	25	21	5.5
Olin	36	48	46	37	9	26	38	36	51	44	34	31	29	44	38	41	37	18	15	26	35	28	9	20	24	37	40	43	41	39	35	33.4
Sioux City	5	22	21	4	-8	-12	18	5	20	14	11	16	6	22	12	8	12	5	-11	4	4	-6	-4	-5	15	21	26	22	29	15	10	9.7
Sioux City	25	43	41	36	11	21	39	34	43	35	30	26	24	42	37	36																

TOTAL PRECIPITATION, JANUARY, 1922



SCALE OF SHADES—IN INCHES



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, FEBRUARY, 1922 No. 2

GENERAL SUMMARY.

February, like January, was subject to a large number of sudden temperature changes, but on the whole a very pleasant month with no periods of cold weather of long duration. The temperature averaged above normal except over a small area in the northwest corner and the departures increased uniformly to the south and southeast, the greater departures in the south being due principally to a storm that crossed the State on the 22d, which gave unusually high temperatures over all the southern division and much of the central, while over a large portion of the northern division the maximum did not go much above freezing.

The precipitation averaged above normal over all divisions, though there was a deficiency over about half of the central and southern divisions. Most of the precipitation occurred from the 21st to the 23d, in connection with the storm that crossed the State on the 22d. Over a large area in the northeast portion the precipitation was excessive and as a result the worst flood ever experienced this early in the season occurred. The storm was accompanied by severe thunderstorms generally throughout the State and there was considerable loss to stock and buildings from lightning, but the greatest damage was due to floods, which affected most of the northeast section, being especially severe in Allamakee, Clayton, Winneshiek, Fayette, Bremer and Delaware counties. Over practically all of this area unusually heavy rainfall occurred, and, owing to the frozen condition of the ground, all the water soon found its way to the streams, which were soon out of banks, and many miles of roads and railroads were covered with from three to five feet of water. All railroads were damaged by having bridges washed out and road beds injured, but the Chicago, Milwaukee & St. Paul Railroad from West Union to Turkey River Junction was hardest hit, and the stage at points along the Turkey River was the highest ever known. Over this strip 24 railroad bridges were washed out and several miles of track was washed away, and it was necessary to suspend railroad traffic for 10 days. No railroad in the flooded area was able to maintain schedules. Many families were forced to vacate their homes and in Independence 10 blocks were flooded. There was also considerable damage from ice, as the storm terminated in a glaze storm, and as a result telephone, telegraph and electric wires were put out of commission and industries that depended on electric current for power were forced to suspend till the damage could be repaired and many homes had to resort to primitive lighting methods. Many valuable fruit and shade trees were ruined by the weight of ice.

The snowfall was the least ever recorded in February since records have been kept, the average for the State being but 1.3 inches, and many stations reported no snow whatever, and there was less snow cover than in any previous February. In the winter wheat section there was practically no snow protection during the entire month, but the injury from freezing was

apparently less than could be expected under the circumstances. Clover was injured somewhat in some of the northern counties.

The weather was generally favorable for the outdoor activities. Roads were unusually good for the season with very little sleighing except in the extreme northern portion, and until the general storm of the 21st-23d, many roads in the southern and central divisions were dusty.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.14 inches. The highest recorded was 30.97 inches, at Sioux City on the 28th, and the lowest was 29.24 inches, at Charles City, on the 1st. The monthly range was 1.73 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 96 stations, was 23.7°, or 3.2° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 18.4°, or 1.3° higher than the normal; Central, 24.7°, or 4.0° higher than the normal; Southern, 28.0°, or 4.4° higher than the normal. The highest monthly mean was 31.3°, at Burlington, and the lowest 14.8°, at Rock Rapids. The highest temperature reported was 70°, at Clarinda and Mt. Ayr, on the 21st, and the lowest was -20°, at Inwood, on the 13th. The temperature range for the State was 90°.

COMPARATIVE DATA FOR THE STATE—FEBRUARY.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1800.....	26.0	+5.5	67	-24	0.83	-0.32	2.18	0.11	-----	-----	-----	-----	-----
1801.....	19.4	-1.1	70	-31	1.16	+0.01	2.41	0.55	-----	3	13	7	8
1802.....	28.1	+7.6	68	-20	1.20	+0.05	2.18	0.12	5.0	6	6	7	16
1803.....	16.4	-4.1	60	-28	1.39	+0.24	2.91	0.06	8.1	6	10	8	10
1804.....	19.7	-0.8	60	-19	0.89	-0.26	2.41	T.	8.4	3	16	8	4
1805.....	16.4	-4.1	73	-33	0.49	-0.66	1.34	0.02	3.3	4	13	9	6
1806.....	27.4	+6.9	78	-13	0.71	-0.44	2.40	0.04	5.4	4	12	9	8
1807.....	24.7	+4.2	61	-24	0.89	-0.26	1.81	0.22	8.0	5	6	10	12
1808.....	24.2	+3.7	62	-18	1.20	+0.05	3.65	0.10	7.8	5	10	9	9
1809.....	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	3.09	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
1921.....	31.0	+10.5	76	-5	0.77	-0.38	2.00	T.	6.5	5	13	7	8
1922.....	23.7	+3.2	70	-20	1.59	+0.44	4.56	0.40	1.3	4	14	7	7

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



Climatological Data for February, 1922.

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, unmelting.	Precipitation .01 in. or more.	Clear.	Partly cloudy.	Cloudy.	Prevailing direction of wind.		
Northern Division																				
Algona	Kossuth	1,213	49	18.9	+ 1.3	45	17	-10	13	38	1.84	+0.75	1.04	2	13	5	10	nw.	W. E. Laird.	
Allison	Butler	1,044	10	21.0	-----	49	17	-9	13	33	2.67	-----	1.35	T.	4	9	12	nw.	J. A. Bell.	
Alta	Buena Vista	1,513	31	18.0	+ 1.9	45	17	-12	13	37	1.39	+0.47	1.05	2.8	8	12	11	nw.	David E. Hadden.	
Alton	Sioux	1,305	17	16.4	- 1.3	42	10	-12	13	37	1.12	-----	0.68	4.0	5	13	10	nw.	W. S. Slagle.	
Belmond	Wright	1,205	12	17.7	-----	48	17	-10	13	33	2.75	-----	1.60	2.5	6	4	14	10	w.	Geo. P. Hardwick.
Britt	Hancock	1,236	25	18.0	+ 1.3	45	17	-11	13	35	1.67	+0.86	1.06	0.4	6	12	10	6	nw.	L. M. Goodman.
Charles City	Floyd	1,015	31	18.0	+ 2.9	46	17	-10	13	31	2.93	+1.96	1.30	3.8	8	6	12	10	nw.	U. S. Weather Bureau.
Cherokee	Cherokee	1,196	---	18.0	-----	43	19	-13	13	37	0.69	-----	0.49	0.5	3	8	17	3	sw.	J. E. Wirth.
Decorah	Winneshiak	875	29	18.4	+ 0.8	45	17	-10	13	37	3.92	+2.89	1.94	3.0	7	11	4	13	nw.	M. D. Whitney.
Estherville	Emmet	1,298	27	17.2	+ 2.2	40	11	-13	13	40	1.10	+0.32	0.55	6.5	6	8	17	3	nw.	A. O. Peterson.
Fayette	Fayette	1,003	32	20.6	+ 3.2	49	17	- 8	13	36	4.56	+2.80	3.20	2.7	9	14	9	5	nw.	R. Z. Latimer.
Forest City	Winnebago	1,226	28	17.3	+ 2.2	44	8	- 12	13	34	2.27	+1.43	1.25	2.0	5	12	7	9	nw.	Dr. M. B. Neil.
Humboldt	Humboldt	1,095	34	20.9	+ 1.7	49	17	- 8	13	34	1.88	+1.04	1.12	T.	4	10	9	9	n.	H. O. Smitkey.
Inwood	Lyon	1,474	18	---	-----	20 ^c	13	---	13	33 ^c	0.97	+0.22	0.62	3.5	6	---	---	---	nw.	F. B. Hanson.
LeMars	Plymouth	1,224	26	17.9	- 0.4	45	19	-12	13	35	0.54	-0.23	0.41	0.2	3	23	2	3	sw.	Mrs. M. O. Woolley.
Mason City	Cerro Gordo	1,148	25	18.2	+ 0.9	45	17	-11	13	35	1.64	+0.83	0.90	0.8	6	20	3	5	nw.	Northern Sugar Corp.
Milford (near)	Dickinson	1,430	2	14.9	-----	39	17	-13	13	29	0.88	-----	0.45	2.1	5	7	14	7	nw.	Dr. F. J. Smith.
New Hampton	Chickasaw	1,169	25	19.3	+ 2.7	46	17	-10	13	32	2.89	+1.97	1.20	3.0	7	10	13	5	w.	A. F. Kemman.
Nora Springs	Floyd	1,064	10	20.8	-----	46	17	- 9	13	35	3 ^b	-----	2.58	1.3	6	9	11	8	s.	Arthur Betts.
Northwood	Worth	1,222	26	16.6 ^a	+ 0.3	42 ^a	17	-11 ^a	13	31 ^b	2.75	+1.43	2.00	3.5	5	14	6	8	nw.	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	18	19.8	+ 2.2	47	17	-10	13	36	1.67	+0.82	0.88	0.5	5	18	1	9	nw.	F. E. Hronek.
Postville	Clayton	1,180	23	19.2	+ 1.5	45	8	-11	13	35	3.89	+2.75	1.75	2.2	9	10	13	5	nw.	F. L. Williams.
Rock Rapids	Lyon	1,358	23	14.8	- 0.8	41	19	-16	13	36	1.04	+0.64	0.48	7.4	7	17	6	5	nw.	J. K. Medberry.
Sanborn	O'Brien	1,553	8	16.0	-----	40	8	-17	13	41	2.51	-----	1.35	6.1	7	15	5	8	nw.	James W. Dow.
Sioux Center	Sioux	1,426	23	15.5	- 1.5	42	19	-15	13	34	1.87	+1.17	1.20	7.2	7	13	5	10	w.	J. de Ruyter.
Spencer	Clay	1,319	8	16.8	-----	44	17	-14	13	39	0.40	-----	0.20	3.0	4	13	9	6	sw.	E. W. Little.
Storm Lake	Buena Vista	1,440	33	19.6	+ 2.5	47	17	-11	13	38	1.18	+0.43	0.56	0.3	6	16	5	7	nw.	Geo. H. Fracker.
Washta	Cherokee	1,157	24	19.4	+ 0.7	46	17	-12	13	40	0.76	-0.06	0.50	T.	3	15	5	8	nw.	H. L. Felter.
Waverly	Bremer	948	26	22.6 ^b	+ 4.0	49 ^b	18	- 7 ^b	13	28 ^b	1.97	+0.85	1.00	2.0	4	---	---	---	n.	E. M. Weyrauch.
West Bend	Palo Alto	1,197	29	21.0 ¹	+ 3.5	46 ¹	17	- 7 ¹	28	38 ¹	1.18	+0.29	0.47	0.5	5	---	---	---	nw.	Jos. Dorweiler.
Means and extremes.	-----	-----	-----	18.4	+ 1.3	49	17	-20	13	41	1.96	+1.05	3.20	2.5	6	12	9	7	nw.	-----
Central Division																				
Ames††	Story	926	46	14.2 ^a	+ 3.5	55 ^b	22	- 6	13	34 ^b	0.52	-0.39	0.27	0.2	4	---	---	---	nw.	Iowa State College.
Audubon	Audubon	1,301	28	12.7	+ 2.0	56	22	-11	13	35	1.37	+0.41	0.92	0	2	14	8	6	nw.	Geo. Kibby.
Baxter	Jasper	998	22	26.0	+ 4.9	60	22	- 6	13	37	0.80	-0.12	0.50	T.	2	12	13	3	s.	Henry Geise.
Belle Plaine	Benton	886	32	26.4	+ 5.6	60	18	- 5	13	39	1.37	-0.25	0.78	0.9	7	12	11	5	nw.	O. C. Burrows.
Boone	Boone	1,134	17	26.0	+ 7.0	55	22	- 6	13	42	1.42	+0.52	0.98	T.	3	10	9	9	s.	Carl F. Henning.
Carroll	Carroll	1,265	32	23.3	+ 4.3	49	8	- 9	13	33	1.53	+0.46	0.95	0	4	17	3	8	nw.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	40	26.0	+ 6.2	59	22	- 3	13	41	1.43	+0.01	1.10	0.8	5	17	3	8	nw.	R. S. Toogood.
Clinton	Clinton	593	49	28.3	+ 5.4	65	22	- 1	13	37	1.29	-0.78	0.41	0.6	6	15	8	5	w.	Dr. A. P. Bryant.
Davenport	Scott	580	51	28.0	+ 4.2	66	22	- 1	13	33	1.34	-0.22	0.86	2.2	5	10	9	9	nw.	U. S. Weather Bureau.
Denison	Crawford	1,180	28	23.2	+ 1.1	53	22	- 9	13	35	1.12	+0.20	0.85	T.	2	11	8	9	nw.	V. L. Byers.
Des Moines	Polk	861	44	26.4	+ 2.3	61	22	- 4	13	36	0.64	-0.44	0.42	0.4	6	13	8	7	nw.	U. S. Weather Bureau.
Dubuque	Dubuque	639	49	23.8	+ 2.2	52	10	- 3	13	35	1.44	+0.06	0.68	2.1	9	11	11	6	nw.	U. S. Weather Bureau.
Fairport	Muscatine	567	1	30.6	-----	66	22	- 1	13	41	1.47	-----	0.80	0	5	16	3	9	w.	R. L. Barney.
Fort Dodge	Webster	1,114	22	21.4 ^a	+ 3.8	58 ^a	10	-10 ^a	13	38 ^a	1.41	+0.79	0.86	0.4	5	11	10	7	s.	Fred Heman.
Grinnell	Poweshiek	1,031	28	25.6	+ 3.5	60	22	- 5	13	35	1.29	+0.18	0.85	0.5	3	20	5	3	nw.	Wm. Bader.
Grundy Center	Grundy	976	31	24.0 ^c	+ 4.4	53 ^c	22	- 8 ^c	13	36 ^c	1.44	+0.55	0.70	0.4	3	---	---	---	nw.	M. G. Helberger.
Guthrie Center	Guthrie	1,077	27	25.6	+ 4.0	57	22	- 8	13	35	1.57	+0.55	1.30	0	2	15	7	6	nw.	E. L. Nesselroad.
Harlan	Shelby	1,192	23	23.9	+ 3.3	55	17	- 8	13	36	1.47	-----	0.80	T.	---	21	5	2	n.	W. K. Colburn.
Independence	Buchanan	921	58	24.0	+ 4.7	54	22	- 6	13	38	1.24	+0.18	0.54	T.	4	17	2	9	nw.	Dr. Geo. Boody.
Iowa City	Johnson	733	62	27.2	+ 6.7	63	22	- 3	13	37	1.46	-0.07	0.65	1.0	5	10	12	6	nw.	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	29	22.2	+ 5.4	50	17	- 7	13	37	3.34	+1.70	2.28	0.5	7	10	10	8	nw.	J. B. Parmelee.
Jefferson	Greene	1,052	23	23.4	+ 2.2	55	17	- 8	13	35	1.83	-----	1.40	T.	2	12	7	9	nw.	Will I. Lyon.
Le Claire	Scott	576	22	---	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Margaret T. Disney.
Little Sioux	Harrison	1,040	17	23.8	+ 1.7	55	17	- 8	13	41	0.76	-----	0.61	T.	2	11	9	8	se.	Geo. H. Gibson.
Logan	Harrison	1,035	55	25.0	+ 3.0	57	17	- 7	13	39	1.01	-0.21	0.76	0	2	15	7	6	nw.	Mary Jean Stern.
Manchester	Delaware	944	---	22.3	-----	53	11	- 7	13	47	2.18	-----	0.81	3.0	6	17	4	7	sw.	Thomas H. Tracey.
Marshalltown	Marshall	947	30	25.4	+ 6.3	59	22	- 5	13	34	1.11	-0.03	0.42	2.1	7	15	10	3	nw.	O. C. Pigman.
Monroe	Jasper	922	10	28.2	-----	60	22	- 4	13	38	1.34	-----	0.53	T.	3	16	2	10	nw.	J. A. Dibel.
Muscatine	Muscatine	554	62	---	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Wm. P. Molls.
Olin††	Jones	760	23	25.7	+ 3.8	56	22	- 3	13	37	1.00	-0.53	0.40	1.0	5	17	7	4	nw.	Dr. F. W. Port.
Onawa	Monona	1,051	22	---	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Mrs. H. E. Colby.
Perrv	Dallas	975	21	24.5	+ 3.2	57	22	- 6	13	32	0.96	-0.42	0.61	0	4	14	8	6	nw.	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	---	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A. W. McIsaac.
Sac City	Sac	1,344	46	20.6	+ 1.5															

Climatological Data for February, 1922—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation .01 in. or more.	Clear.			Partly cloudy.	Cloudy.
Southern Division																				
Afton	Union	1,212	28	28.0	+ 4.6	63	21†	- 6	13	42	1.07	-0.08	0.82	T.	3	16	6	6	nw.	S. R. Brown.
Albia	Monroe	959	24	29.5	+ 7.4	64	22	- 3	13	36	1.40	-0.16	0.80	0.5	5	14	3	11	nw.	O. E. McBride.
Atlantic	Cass	1,164	31	25.8 ^a	+ 4.1	59 ¹	22	- 8 ¹	13	36 ¹	1.08	-0.06	1.08	T.	1	---	---	---	nw.	Joseph N. Reynolds.
Bedford	Taylor	1,100	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E. E. Healy.
Bloomfield	Davis	881	15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	John W. Teed.
Bonaparte	Van Buren	---	31	29.6	+ 4.9	65	22	- 2	13	37	1.34	-0.07	0.54	1.0	4	19	4	5	s.	Bruce R. Vale.
Burlington	Des Moines	544	26	31.3	+ 6.4	66	22	- 1	13	36	2.50	+0.52	1.23	2.0	6	20	3	5	ne.	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	17	30.3	---	67	21	- 4	13	42	0.75	-0.84	0.28	1.0	5	16	6	6	nw.	Leo J. Allen.
Chariton	Lucas	1,042	27	29.2	+ 5.8	64	21	- 5	13	37	1.65	+0.45	0.65	1.0	5	16	6	6	nw.	C. C. Burr.
Clarinda	Page	1,009	32	29.3	+ 7.5	70	21	- 5	13	37	1.31	+0.24	1.13	T.	2	17	6	5	nw.	A. S. Van Sandt.
Columbus Jet	Louisa	595	21	29.0	+ 4.2	66	22	- 1	13	38	1.56	-0.03	0.76	1.5	6	19	6	3	nw.	J. B. Johnston.
Corning	Adams	1,117	30	26.6	+ 5.0	67	21	- 7	13	42	1.55	+0.38	1.29	0	2	20	0	8	sw.	Jerome Smith.
Corydon	Wayne	1,101	29	29.7	+ 5.3	66	21	- 5	13	38	1.58	+0.12	0.87	1.0	6	14	9	5	nw.	May O. Miller.
Creston	Union	1,312	17	26.2	+ 5.4	61	21	- 6	13	32	1.57	---	1.33	T.	2	13	10	5	nw.	Dr. H. M. Stanley.
Cumberland	Cass	1,225	23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G. M. Clarke.
Earlham	Madison	1,126	20	25.2	+ 3.4	60	22	- 9	13	38	0.94	-0.48	0.72	T.	3	15	6	7	nw.	Geo. Phillips.
Fairfield	Jefferson	789	38	27.8	+ 3.0	65	22	- 3	13	37	1.55	-0.13	0.69	1.5	5	18	5	5	nw.	Prof. E. M. McKenzie.
Glenwood	Mills	1,100	24	27.2	---	64	22	- 7	13	37	1.18	---	0.68	T.	2	15	5	8	nw.	Dr. Geo. Mogridge.
Greenfield	Adair	1,368	30	24.1	+ 2.6	59	22	- 8	13	46	0.66	-0.48	0.63	0	2	19	5	4	sw.	O. E. McCaslen.
Indianola	Warren	972	31	27.1	+ 4.0	60	22	- 5	13	36	0.71	-0.48	0.34	0.5	7	12	12	4	nw.	Seth F. Shenton.
Keokuk	Lee	614	51	30.6	+ 4.0	68	22	- 2	13	35	1.56	-0.06	0.46	2.1	6	11	11	6	nw.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	30	29.6	+ 6.3	65	22	- 2	13	40	1.31	-0.29	0.37	2.0	6	15	5	8	se.	J. H. Landes.
Knoxville	Marion	920	27	28.4	+ 4.0	61	10†	- 5	13	37	1.55	+0.35	0.75	1.5	6	14	9	5	nw.	W. J. Casey.
Lacona	Warren	---	23	---	---	---	---	---	---	---	2.05	+0.40	1.02	2.0	9	7	14	7	---	J. B. Alter.
Lamoni	Decatur	1,100	15	29.8	+ 4.8	69	21†	- 6	13	51	1.29	-0.03	0.95	0.2	5	18	5	5	sw.	Rupert A. Wight.
Lenox	Taylor	1,250	27	27.1	+ 4.3	68	21	- 6	13	40	1.62	+0.56	1.32	T.	3	17	8	3	nw.	J. L. Hurley.
Mt. Ayr	Ringgold	1,236	29	29.0	+ 4.4	70	21	- 6	13	40	1.32	-0.03	0.97	0.1	4	17	6	5	nw.	Alex Maxwell.
Mt. Pleasant	Henry	729	41	30.1	+ 5.2	65	23	- 2	13	46	1.14	-0.37	0.60	0.5	5	12	10	6	nw.	John H. Jericho.
Oakland	Pottawattamie	1,105	3	26.4	---	58	17†	- 8	13	37	0.60	---	0.60	0	1	21	2	5	s.	M. E. Gray.
Oskaloosa	Mahaska	825	46	27.9	+ 4.5	62	22	- 5	13	37	1.48	+0.35	0.76	0.8	6	13	6	9	nw.	Roy R. Robinson.
Ottumwa	Wapello	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Henry Eilers.
Pellatt	Marion	877	29	27.4 ^a	+ 3.7	61	22	- 4 ^b	13	38 ^b	1.05	-0.25	0.60	1.0	5	17	0	11	nw.	J. H. Ver Steeg.
Sigourney	Keokuk	790	26	27.4	+ 3.5	60	22	- 4 ^a	13	36 ^a	1.55	+0.04	0.76	1.2	6	15	3	10	nw.	W. E. Utterback.
Stockport	Keokuk	754	20	28.2	+ 3.1	65	10	- 3	13†	44	2.07	+0.44	0.76	2.0	6	16	4	8	nw.	C. L. Beswick.
Thurman	Van Buren	---	25	26.2	+ 3.1	55	8	- 5	13	35	1.76	+0.50	1.45	T.	3	4	18	6	nw.	C. R. Paul.
Washington	Washington	769	40	28.4	+ 4.6	66	22	- 3	13	37	1.79	+0.48	1.25	2.0	5	13	11	4	w.	Wm. A. Cook.
Winterset	Madison	1,129	31	27.0	+ 3.9	60	22	- 6	13	35	1.40	+0.37	1.15	T.	2	22	2	4	nw.	H. S. Ely.
Omaha, Nebr.	Madison	1,040	51	24.8	+ 1.1	59	22	- 5	13	38	0.91	+0.15	0.83	0.1	3	15	8	5	nw.	U. S. Weather Bureau.
Means and extremes.	---	---	---	28.0	+ 4.4	70	21	- 9	13	51	1.39	+0.04	1.45	0.7	4	15	7	6	nw.	---
State means and extremes.	---	---	---	23.7	+ 3.2	70	21	- 20	13	51	1.50	+0.44	3.20	1.3	5	14	7	7	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 (%).				Wind.				Sunshine				
	Mean.	Highest.	Date.	Lowest.	Date.	Mean.		Lowest.	Date.	Total movement.	Maximum		Per cent of possible.	Departure from normal.			
						7 a. m.	Noon. †				Miles.	From.					
Charles City	30.13	30.94	28	29.24	1	90	74	80	44	17	5,632	8.4	34	w.	1	46	-16
Davenport	30.14	30.84	28	29.40	1	81	57	62	30	17	6,138	9.1	33	w.	23	63	+ 9
Des Moines	30.12	30.89	28	29.31	1	74	55	62	30	20	6,060	9.0	41	sw.	1	73	+17
Dubuque	30.13	30.89	28	29.33	1	83	63	68	36	17	5,345	8.0	31	sw.	1	64	+12
Keokuk	30.15	30.84	28	29.55	1	74	50	59	25	17	6,441	9.6	40	sw.	1	68	+18
Sioux City	30.17	30.97	28	29.37	1	77	69	72	43	16	9,450	14.1	55	w.	1	67	+ 9
Omaha, Nebr.	30.16	30.92	28	29.34	1	73	59	62	32	17	6,975	10.4	33	n.	10	73	+17
Means and extremes.	30.14	---	---	---	1	79	61	66	---	---	---	9.8	---	---	---	65	+ 9
Normals and records	30.10	---	---	---	---	---	---	---	---	---	---	9.3	---	---	---	---	---
	---	\$31.07	1918	*28.69	1902	---	---	---	---	---	---	---	---	---	---	---	---

§ Sioux City. * Davenport. † Des Moines. ‡ Local mean time. † And other dates.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 79 per cent, and at 7 p. m. it was 66 per cent. The mean for the month was 72 per cent, or 8 per cent lower than the normal. The highest monthly mean was 85 per cent, at Charles City, and the lowest was 66 per cent, at Keokuk.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 97 stations, was 1.59 inches, or 0.44 inch greater than the normal. By divisions the averages were as follows: Northern, 1.96 inches, or 1.05 inches more than the normal; Central, 1.43 inches, or 0.23 inch more than the normal; Southern, 1.39 inches, or 0.04 inch more than the normal. The greatest amount, 4.56 inches, occurred at Fayette, and the least, 0.40 inch, at Spencer. The greatest amount in any 24 hours, 3.20 inches, occurred at Fayette, on the 21st-22d.

WIND.

The prevailing direction of the wind was from the north-west. The highest velocity reported from a regular Weather Bureau Station was 55 miles per hour, from the west, at Sioux City, on the 1st.

Daily Precipitation for February, 1922—Continued.

Stations.	Drainage Basin.	Day of Month.																															Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Southern Division																																	
Afton	Grand	.20																					.82				.05	T.					
Albia	Des Moines	.20					T.												T.	T.		.07	.80	.22	T.		.11	T.					
Atlantic	Nishnabotna											T.								T.													
Bedford	Missouri																																
Bloomfield	Mississippi																																
Bonaparte	Des Moines	.19																T.	T.			.42	T.	.54			.19						
Burlington	Mississippi	.43					T.												.10			1.23	.01	.45			.28	T.					
Centerville	Chariton	.10																		T.	T.	.11	.28	.20			.06						
Chariton	Chariton	.50																		T.	T.	.10	.65	.25			.15						
Clarinda	Nodaway	.18																				1.13	T.					T.					
Columbus Jct.	Iowa	.18					T.															T.	.15	.76	.30			.12	.05				
Corning	Nodaway	.26																					1.29					T.					
Corydon	Chariton	.23					T.															T.	.23	.87	.12		T.	.12	.01				
Creston	Missouri	.24																					1.33	T.	T.		T.	T.					
Cumberland	Nodaway																																
Earlham	Des Moines	.21																															
Fairfield	Skunk	.16																				.01		.72	T.		T.	T.					
Glenwood	Missouri	.50																					.19	.69	.36			.15					
Greenfield	Nodaway																						.68					T.					
Indianola	Des Moines	.22					T.															T.	.03	T.	.63	T.							
Keokuk***	Mississippi	.37																					.01	.34	.03			.01	.05				
Keosauqua	Des Moines	.21			T.	T.	T.															.11		.44	.42	.04	T.		.18		T.		
Knoxville	Des Moines	.28																					.23	.30	.37			.10	.10				
Lacona	Des Moines	.28																					.10	.75	.20			.15					
Lamoni	Des Moines	.54																				.01	.05	.02	.02	1.02	.19		.10	.10			
Lenox	Grand																					.08	T.	.15	.95	.05		.06					
Mt. Ayr	Missouri	.25																				.05	T.		T.	1.32	T.		T.				
Mt. Pleasant	Grand	.27																						.97	T.	T.		.07	.01				
Oakland	Skunk	.10																						.28	.06	.60		.10					
Oskaloosa	Nishnabotna																							T.	.60								
Ottumwa	Des Moines	.17					T.																	.05	.76	.36		.04	.01				
Pella	Des Moines	.17																						1.60				.07					
Sigourney	Skunk	.30					T.																.05	.60				.05					
Stockport	Skunk	.22					T.																	.06	.76	.38		.10	.03				
Thurman	Skunk	.24																						.76	.24	.55		.25	T.				
Washington	Missouri	.28																						T.	1.45	.03		T.					
Winterset	Skunk	.22					T.																.15	.58	.67			.17					
Omaha, Nebr.***	Des Moines	.25																						1.15				T.					
	Missouri	.05																						T.	.83	T.		T.		.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.

SNOWFALL.

The average snowfall for the State was 1.3 inches, or 6.1 inches less than the normal. The greatest amount, 7.4 inches, occurred at Rock Rapids, and there were 21 stations that reported only traces and 10 stations no snow whatever. The snowfall for the State was the least ever recorded, being just half of the least amount previously recorded, which was in 1902.

RIVERS.

Low and nearly stationary stages prevailed on the Mississippi and interior rivers until after the general storm of the 21st-22d, when a sharp rise occurred in the Mississippi and a high stage continued through the rest of the month. Ice gorges caused local floods on many interior rivers and bridges were threatened by ice jams which had to be dynamited. In the northeast portion of the State high water and ice caused great damage. Low and nearly stationary stages prevailed on the Missouri the entire month.

THE WINTER OF 1921-1922.

The mean temperature for the three winter months was 23.9°, which is 3.1° above the normal for the State, and 4.7° lower than the mean for 1920-1921, which was the warmest winter ever recorded in the State. The highest temperature reported was 70°, at Clarinda and Mt. Ayr, on February 21st. The lowest temperature reported was -29°, at Charles City, on January 6th, and Mason City, on January 24th.

The average monthly precipitation for the State was 1.17 inches, and the average total precipitation was 3.50 inches, or

0.08 inch more than the winter normal. The average total snowfall, unmelted, was 9.5 inches, the least ever recorded, which is 11.0 inches below the normal, and 8.5 inches less than the winter of 1920-1921. The least ever recorded heretofore was 12.3 inches, during the winter of 1895-1896.

The total number of days with .01 inch or more of precipitation was 13, or 1 less than the winter of 1920-1921. The average number of clear days was 45; partly cloudy, 22; cloudy, 23, as compared with 34 clear days, 22 partly cloudy days and 34 cloudy days during the winter of 1920-1921.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 65, or 9 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau Stations was as follows: Charles City, 46; Davenport, 63; Des Moines, 73; Dubuque, 64; Keokuk, 68; Sioux City, 67; Omaha, Nebr., 73.

MISCELLANEOUS PHENOMENA.

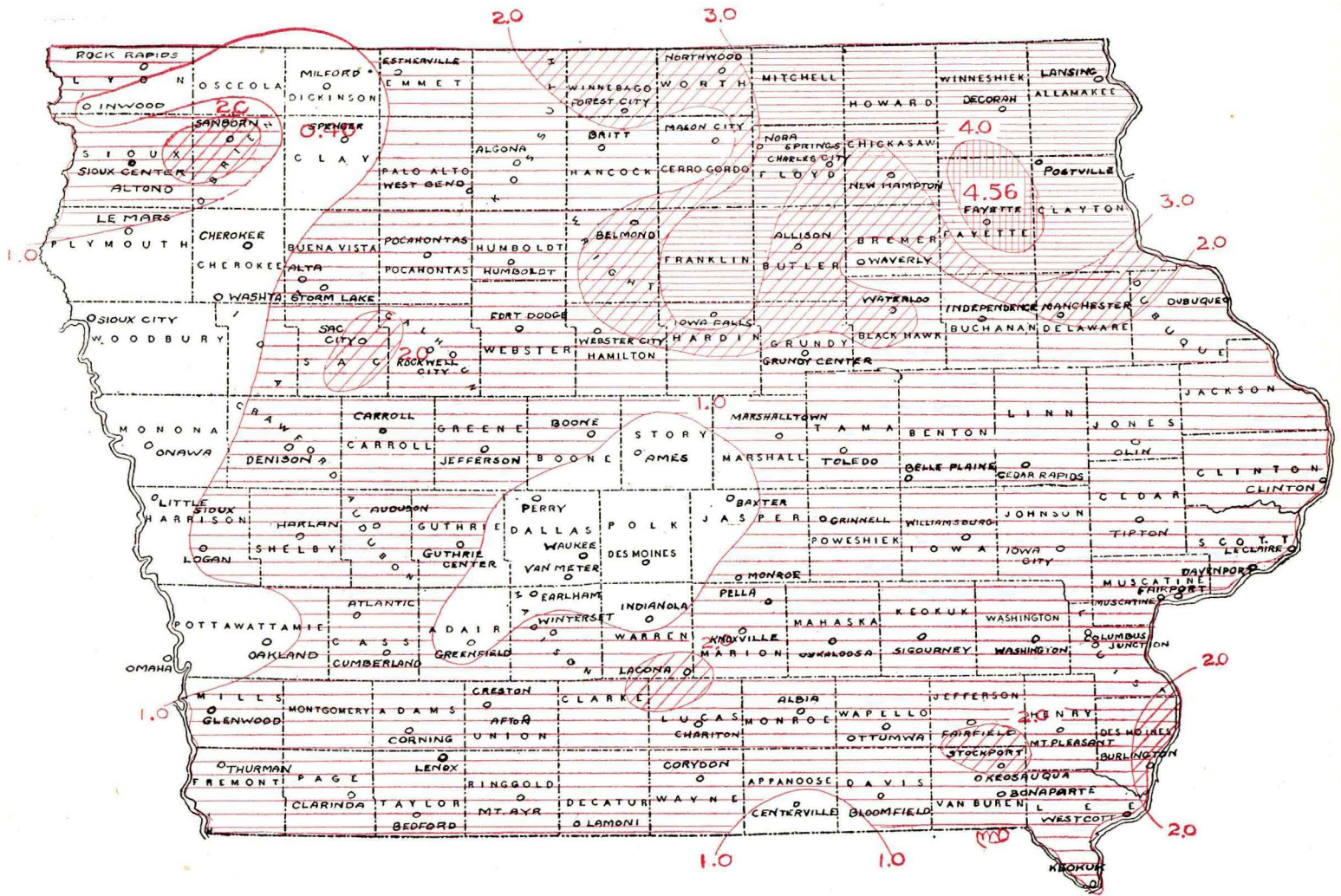
- Aurora: 12th, 14th.
- Birds (migration of): Columbus Junction, robins, 16th; Earlham, blue birds, 21st, black birds, 22d.
- Fog: 1st, 9th, 19th, 21st, 22d.
- Hail: 1st, 21st, 22d, 23d.
- Halos (lunar and solar): 4th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 17th, 22d, 23d, 26th, 27th, 28th.
- Meteor: 12th.
- Sleet: 1st, 4th, 5th, 18th, 21st, 22d, 23d, 26th, 27th.
- Thunderstorm: 19th, 21st, 22d.

Daily Maximum and Minimum Temperature for the Month of February, 1922.

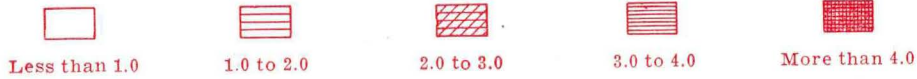
Table with columns for Stations, days 1-31, and Mean. Rows are categorized into Northern Division, Central Division, and Southern Division, listing various Iowa cities and their daily temperature ranges.

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

TOTAL PRECIPITATION, FEBRUARY, 1922



SCALE OF SHADES—IN INCHES.



CLIMATOLOGICAL DATA.

IOWA SECTION
In cooperation with
IOWA WEATHER AND CROP SERVICE
CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, MARCH, 1922 No. 3

GENERAL SUMMARY.

The mild weather that prevailed throughout the winter continued during March and the usual features that characterize this month were lacking. Several storms of more than ordinary severity passed near the limits of the State, but they were generally accompanied by very little wind and less rain and snow than usual. The exception was the storm that passed immediately south of the State on the 19th, and the only damage of consequence reported occurred during the passage of this storm, which crippled telephone and telegraph service in the central and west-central portions of the State. It was necessary to route telegrams between Des Moines and Omaha in a roundabout way and telephone service was entirely suspended until the broken poles and wires could be replaced.

The temperature averaged 5.0° above normal, which is the greatest excess since the present series of months with the temperature above normal began in December. The month opened cold and the lowest temperature generally occurred on the 2d, with a minimum of zero, or lower, over most of the northern division and slightly above zero over the central and southern divisions. The temperature rose above normal on the 3d, and except on an occasional day, continued above normal till the 26th, when a moderately cold period set in and the rest of the month was slightly below normal.

The precipitation for the State was slightly above normal and was more uniform both as to distribution and time of occurrence than usual, but over the greater portion of the State more than half of the monthly total occurred during the storm of the 18th-19th.

The general weather conditions were favorable for plant development, but farm work was somewhat retarded on account of the soil being too wet to work and at the end of the month no spring seeding had been done except in a few small, scattered areas. Fruit buds had not developed as far as usual and at the end of the month all buds were apparently uninjured. Winter wheat and grass were making good growth and it will be necessary to plow up very little winter wheat. Building operations made an active start under very favorable conditions.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.04 inches. The highest recorded was 30.81 inches, at Sioux City on the 1st, and the lowest was 29.26 inches, at Charles City, on the 6th.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 98 stations, was 38.3°, or 5.0° above the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 35.8°, or 5.3° higher than the normal; Central, 38.8°, or 5.3° higher than the normal; Southern, 40.4°, or 4.5° higher than the normal. The highest monthly mean was 43.6°, at Fairport, and the lowest monthly mean was 33.6°,

at Milford. The highest temperature reported was 74°, at Burlington, on the 23d, and the lowest was -5°, at Fayette, on the 2d. The temperature range for the State was 79°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 81 per cent, and at 7 p. m. it was 68 per cent. The mean for the month was 74 per cent, which is practically normal. The highest monthly mean was 81 per cent, at Charles City, and the lowest was 72 per cent, at Sioux City.

SNOW.

The average snowfall for the State was 3.0 inches, or 2.3 inches less than the normal. The greatest amount, 9.0 inches, occurred at Alta, and the least, a trace, at Bonaparte, Corning and Pella.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 101 stations, was 1.97 inches, or 0.20 inch more than the normal. By divisions the averages were as follows: Northern, 1.39 inches, or 0.14 inch less than the normal; Central, 2.00 inches, or 0.13 inch less than the normal; Southern, 2.52 inches, or 0.60 inch less than the normal. The greatest amount, 3.73 inches, occurred at Chariton, and the least, 0.76 inch, at Independence and Spencer. The greatest amount in any 24 consecutive hours, 2.18 inches, occurred at Belle Plaine on the 19th.

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 46 miles per hour, from the northwest, at Sioux City on the 25th.

COMPARATIVE DATA FOR THE STATE—MARCH.

YEAR	Temperature				Total	Precipitation			Snowfall	Number of Days										
	Mean	Departure	Highest	Lowest		Departure	Greatest	Least		With prec. .01 in. or more	Clear	Partly cloudy	Cloudy							
1890.....	28.0	-5.3	75	-24	1.57	-0.20	3.67	0.32												
1891.....	26.8	-6.5	66	-19	2.60	+0.83	4.58	1.33												
1892.....	31.9	-1.4	84	-6	2.22	+0.45	4.58	0.57	3.9	6	11	6	6	6	6	6	6	6	6	6
1893.....	31.2	-1.5	84	-6	2.14	+0.37	4.40	0.64	4.0	6	13	9	11	11	11	11	11	11	11	11
1894.....	41.0	+7.7	84	-5	2.03	+0.36	4.52	0.26	2.7	6	13	10	8	8	8	8	8	8	8	8
1895.....	34.4	+1.1	94	-11	0.83	-0.94	2.60	0.22	2.9	4	16	8	7	7	7	7	7	7	7	7
1896.....	30.9	-2.4	81	-12	1.10	-0.67	3.99	0.16	5.4	5	12	9	10	10	10	10	10	10	10	10
1897.....	32.0	-1.3	72	-22	2.39	+0.62	6.16	0.29	5.5	6	12	9	10	10	10	10	10	10	10	10
1898.....	32.0	-1.3	72	-22	2.39	+0.62	6.16	0.29	5.5	6	12	9	10	10	10	10	10	10	10	10
1899.....	33.5	+4.2	72	-2	1.94	+0.17	6.21	0.33	2.7	6	12	9	10	10	10	10	10	10	10	10
1900.....	33.0	-10.3	75	-16	1.62	-0.15	5.00	0.37	8.0	6	7	12	12	12	12	12	12	12	12	12
1901.....	30.7	-2.6	81	-13	2.06	+0.29	5.15	0.45	6.6	5	12	9	10	10	10	10	10	10	10	10
1902.....	34.2	+0.9	76	-2	2.64	+0.87	5.25	0.70	12.6	7	10	8	13	13	13	13	13	13	13	13
1903.....	39.1	+5.8	79	-12	1.45	-0.32	4.33	0.13	1.3	7	9	11	11	11	11	11	11	11	11	11
1904.....	38.8	+5.5	82	6	1.38	-0.39	3.90	0.15	3.9	7	11	7	13	13	13	13	13	13	13	13
1905.....	34.8	+1.5	78	3	2.18	+0.41	4.57	0.50	4.4	7	8	8	8	8	8	8	8	8	8	8
1906.....	41.5	+8.2	84	1	2.04	+0.27	3.70	0.89	4.1	7	8	8	8	8	8	8	8	8	8	8
1907.....	27.1	-6.2	63	-14	2.34	+0.57	4.55	0.58	8.9	10	8	7	16	16	16	16	16	16	16	16
1908.....	40.6	+7.3	92	-7	1.35	-0.42	5.05	0.23	4.1	6	14	7	11	11	11	11	11	11	11	11
1909.....	37.9	+4.6	85	-7	1.58	-0.19	3.74	0.45	1.1	6	13	7	10	10	10	10	10	10	10	10
1910.....	32.5	-0.8	71	-15	1.53	-0.24	5.00	0.28	9.8	6	12	10	9	9	9	9	9	9	9	9
1911.....	48.9	+15.6	92	-10	0.17	-1.60	1.37	0.00	T.	1	23	6	2	2	2	2	2	2	2	2
1912.....	39.4	+6.1	83	-2	0.83	-0.84	4.84	T.	1.9	5	10	6	10	10	10	10	10	10	10	10
1913.....	34.9	-8.4	70	-19	2.01	+0.24	5.25	0.60	19.1	7	15	6	10	10	10	10	10	10	10	10
1914.....	31.9	-1.4	78	-23	2.48	+0.71	5.88	0.74	5.3	9	11	10	10	10	10	10	10	10	10	10
1915.....	34.7	+1.4	79	-5	1.69	-0.08	3.84	0.28	1.8	6	12	11	11	11	11	11	11	11	11	11
1916.....	29.3	-4.0	61	-15	0.96	-0.81	2.12	0.17	8.8	5	11	8	9	9	9	9	9	9	9	9
1917.....	35.2	+1.9	80	-18	1.57	-0.20	5.80	0.23	2.9	6	14	9	11	11	11	11	11	11	11	11
1918.....	34.6	+1.3	85	-12	1.84	+0.07	4.35	0.57	6.2	6	14	9	11	11	11	11	11	11	11	11
1919.....	42.9	+9.6	85	0	0.63	-1.14	2.12	0.03	2.6	6	15	7	8	8	8	8	8	8	8	8
1920.....	37.5	+4.2	78	-11	2.33	+0.56	5.40	0.81	1.1	6	15	7	8	8	8	8	8	8	8	8
1921.....	38.0	+4.7	80	-21	3.02	+1.25	5.70	0.47	2.4	7	14	7	14	14	14	14	14	14	14	14
1922.....	42.8	+9.5	86	4	1.57	-0.20	6.62	0.17	0.2	7	15	8	8	8	8	8	8	8	8	8
1922.....	38.3	+5.0	74	-5	1.97	+0.20	3.73	0.76	3.4	7	12	6	13	13	13	13	13	13	13	13

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



Climatological Data for March, 1922

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.				Number of Days.			Prevailing direction of wind.	Observers.				
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Precipitation .01 in. or more.			Clear.	Partly cloudy.	Cloudy.	
Northern Division																					
Algona	Kossuth	1,213	49	36.1	+ 5.5	61	13	6	2	31	1.51	+0.02	0.81	3	16	4	11	se.	W. E. Laird.		
Allison	Butler	1,044	10	36.2	-----	68	13	4	2	31	1.07	-----	0.61	3.5	5	12	5	14	se.	J. A. Bell.	
Alta	Buena Vista	1,513	31	36.6	+ 6.5	65	16	5	2	32	2.40	+1.03	1.20	9.0	7	11	9	11	se.	David E. Hadden.	
Alton	Sioux	1,305	17	36.4	+ 5.1	63	15†	4	1	33	1.15	-----	0.60	5.0	4	14	2	15	nw.	W. S. Slagle.	
Belmond	Wright	1,205	12	36.4	-----	65	13	4	2	30	1.27	-----	0.66	3.3	7	8	13	10	se.	Geo. P. Hardwick.	
Britt	Hancock	1,236	25	35.6	+ 5.5	65	15	3	2	31	1.15	-0.21	0.71	3.3	5	16	8	7	n.	L. M. Goodman.	
Charles City	Floyd	1,015	31	35.5	+ 7.1	64	13	8	2	29	1.31	-0.61	0.63	3.4	6	9	8	14	se.	Dr. S. Weather Bureau	
Cherokee	Cherokee	1,196	-----	36.8	-----	65	16	5	2	33	1.08	-----	0.52	1.2	5	12	9	10	ne.	J. E. Wirth	
Decorah	Winneshiek	875	29	35.8	+ 5.6	63	13	2	2	38	1.39	-0.41	0.54	3.0	6	15	4	12	nw.	M. D. Whitney.	
Estherville	Emmet	1,298	27	33.7	+ 5.1	65	15	5	1	36	0.93	-0.36	0.30	7.0	5	12	16	3	se.	A. O. Peterson.	
Fayette	Fayette	1,003	32	35.0	+ 4.4	64	13	5	2	35	1.59	-0.45	0.57	6.1	9	14	6	11	sw.	R. Z. Latimer.	
Forest City	Winnebago	1,226	28	34.7	+ 5.8	66	13	3	1†	34	1.23	-0.21	0.45	1.5	7	11	9	11	se.	Dr. M. B. Nell.	
Humboldt	Humboldt	1,095	34	37.5	+ 5.2	67	13	6	2	35	1.36	-0.11	0.37	2.5	4	12	6	13	n.	H. C. Snitkey.	
Inwood	Lyon	1,474	18	-----	-----	-----	-----	4	1	-----	0.85	-0.16	0.40	6.0	3	20	6	5	nw.	F. B. Hanson.	
LeMars	Plymouth	1,224	26	37.1	+ 5.0	67	15	5	1†	38	1.25	+0.04	0.73	6.0	4	17	3	11	se.	Mrs. M. C. Woolley.	
Mason City	Cerro Gordo	1,148	25	34.8	+ 4.7	63	13	1	2	32	1.61	+0.21	0.80	4.6	7	16	4	11	nw.	Northern Sugar Corp.	
Milford (near)	Dickinson	1,430	2	33.6	-----	59	16	3	2	29	0.96	-----	0.56	4.3	6	9	3	14	nw.	Dr. F. J. Smith.	
New Hampton	Chickasaw	1,169	25	35.2	+ 5.6	65	13	5	2	28	1.36	-0.57	0.88	2.0	5	9	12	10	se.	A. F. Kemman.	
Nora Springs	Floyd	1,064	10	37.2	-----	67	13	5	2	31	1.84	-----	0.62	1.6	9	12	8	11	s.	Arthur Betts.	
Northwood	Worth	1,222	26	33.9	+ 4.5	60	13	5	2	26	1.65	-0.11	0.50	3.5	5	11	10	10	se.	Chas. Dwelle.	
Pocahontas	Pocahontas	1,248	18	37.0	+ 6.0	67	16	8	1†	34	1.71	+0.43	0.98	4.7	8	11	10	10	se.	F. E. Hronek.	
Postville	Clayton	1,180	23	34.2	+ 3.6	65	13	0	2	28	1.44	-0.47	0.58	3.5	6	11	9	11	se.	F. L. Williams.	
Rock Rapids	Lyon	1,358	23	35.2	+ 5.4	64	15	4	2	38	1.23	+0.17	0.65	5.0	5	16	3	12	se.	J. K. Medberry.	
Sanborn	O'Brien	1,553	8	35.7	-----	65	15	2	2	38	1.17	-----	0.57	5.5	5	19	1	11	sw.	James W. Dow.	
Sioux Center	Sioux	1,426	23	35.6	+ 4.8	64	15	1	1	35	1.29	+0.03	0.42	8.5	6	13	5	13	e.	J. de Ruyter.	
Spencer	Clay	1,319	8	36.0	-----	66	13	4	2	37	0.76	-----	0.36	2.0	4	11	10	10	nw.	E. W. Little.	
Storm Lake	Buena Vista	1,440	33	35.4	+ 4.6	60	13	7	2	27	2.69	+1.37	1.85	6.0	6	15	2	14	se.	Geo. H. Fracker.	
Washita	Cherokee	1,157	24	37.6	+ 5.9	66	15†	3	2	42	1.75	+0.82	0.70	3.0	4	14	6	11	n.	H. L. Felter.	
Waverly	Bremer	948	26	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	D. H. Murphy.	
West Bend	Palo Alto	1,197	29	36.9	+ 6.1	67	13	5	1†	34	1.32	-0.35	0.52	6.5	6	10	10	11	nw.	Jos. Dorweiler.	
Means and extremes.	-----	-----	-----	35.8	+ 5.3	68	13	5	2	42	1.39	-0.14	1.85	4.3	6	13	7	11	se.	-----	
Central Division																					
Ames	Story	926	46	38.4	+ 4.4	65	13†	4	2	34	1.62	+0.10	0.84	2.1	6	12	7	12	nw.	Iowa State College.	
Audubon	Audubon	1,301	28	37.2	+ 3.6	65	13	4	2	35	1.01	-0.61	0.72	-----	4	10	12	9	nw.	Geo. Kibby.	
Baxter	Jasper	998	22	39.6	+ 5.7	69	13	4	2	34	2.12	+0.16	1.75	5.0	5	13	6	12	n.	Henry Geise	
Belle Plaine	Benton	886	32	39.2	+ 5.9	70	13	3	2	34	3.25	+0.92	2.18	2.5	9	9	10	12	nw.	O. C. Burrows.	
Boone	Boone	1,134	17	38.8	+ 6.4	67	13	1	2	44	1.50	-0.03	0.65	0.5	4	-----	-----	-----	nw.	Carl F. Henning.	
Carroll	Carroll	1,265	32	38.8	+ 6.8	67	13	8	1	32	1.31	-0.55	0.50	3.0	4	19	1	11	ne.	Mrs. Jos. J. Wolfe.	
Cedar Rapids	Linn	733	40	39.0	+ 4.3	68	13	9	2	27	1.73	-0.23	0.53	2.6	6	14	2	15	e.	R. S. Toogood.	
Clinton	Clinton	593	49	39.8	+ 5.0	67	13	13	1	32	3.36	+0.49	0.76	0.6	9	12	4	15	s.	Dr. A. P. Bryant.	
Davenport	Scott	580	51	39.8	+ 4.4	66	23	1	1	24	3.40	+1.19	0.75	1.6	12	8	2	21	e.	U. S. Weather Bureau	
Denison	Crawford	1,180	28	38.3	+ 4.5	65	13	5	2	34	1.12	-0.48	0.76	2.6	5	8	11	12	nw.	V. L. Byers.	
Des Moines	Polk	861	44	40.6	+ 4.9	66	13	10	2	31	2.25	+0.60	1.65	2.7	9	7	8	16	n.	U. S. Weather Bureau	
Dubuque	Dubuque	639	49	37.4	+ 4.2	67	13	8	2	26	1.65	-0.56	0.45	3.8	9	8	6	17	nw.	U. S. Weather Bureau	
Fairport	Muscatine	567	1	43.6	-----	70	18	12	1	38	2.95	-----	0.57	0.3	11	11	2	18	s.	R. L. Barney	
Fort Dodge	Webster	1,114	22	37.4	+ 6.3	66	13	5	2	34	1.16	-0.57	0.56	7.4	6	10	11	10	n.	Fred Heman.	
Grinnell	Poweshiek	1,031	28	38.8	+ 3.8	67	13	8	1†	27	2.42	+0.69	1.31	-----	7	17	1	13	s.	Paul P. Meyers.	
Grundy Center	Grundy	976	31	38.2	+ 5.6	66	13	5	2	31	1.20	-0.61	0.65	4.5	4	10	10	11	se.	M. G. Helberger.	
Guthrie Center	Guthrie	1,077	27	39.3	+ 4.9	66	13	4	2	37	1.87	+0.28	0.63	6.0	7	12	8	11	se.	E. L. Nesselroad.	
Harlan	Shelby	1,192	23	39.1	+ 5.3	65	13	2	2	35	2.55	+1.14	2.00	-----	3	17	5	9	s.	W. K. Colburn.	
Independence	Buchanan	921	58	36.6	+ 4.2	65	13	4	2	31	0.76	-0.99	0.51	1.8	5	13	1	17	sw.	Dr. Geo. Boody.	
Iowa City	Johnson	733	62	39.3	+ 6.1	67	13	11	1	32	2.18	-0.20	0.62	3.5	10	10	5	16	s.	Prof. J. F. Reilly.	
Iowa Falls	Hardin	1,107	29	37.0	+ 6.4	66	13	5	2	31	1.19	-0.67	0.80	5.8	5	11	7	13	nw.	J. B. Parmelee.	
Jefferson	Greene	1,052	23	38.2	+ 4.3	66	13†	2	2	38	1.35	-----	0.48	2.5	6	9	8	14	nw.	Will I. Lyon.	
Le Claire	Scott	576	22	-----	-----	-----	-----	-----	-----	-----	3.19	+0.86	0.80	2.5	14	-----	-----	-----	-----	Margaret T. Disney.	
Little Sioux	Harrison	1,040	17	39.5	+ 3.9	67	13	3	2	37	1.96	-----	0.97	5.0	6	11	7	13	se.	Geo. H. Gibson.	
Logan	Harrison	1,035	55	40.2	+ 5.0	70	13	1	2	37	1.80	+0.06	0.87	3.0	6	12	9	10	sw.	Mary Jean Stern.	
Manchester	Delaware	944	-----	36.0	-----	69	14	6	2†	32	3.19	-----	1.83	1.0	7	20	0	11	sw.	Thomas H. Tracey	
Marshalltown	Marshall	947	30	39.0	+ 6.6	67	13	7	2	33	1.76	-0.12	1.23	4.4	8	15	3	13	se.	C. C. Pigman.	
Monroe	Jasper	922	10	41.1	-----	68	13†	8	2	35	2.71	-----	1.41	2.2	7	12	4	15	s.	J. A. Dibel.	
Muscatine	Muscatine	554	62	-----	-----	-----	-----	-----	-----	-----	1.70	-0.94	0.40	3.5	10	-----	-----	-----	-----	Wm. P. Mollis.	
Olin	Jones	769	23	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Dr. F. W. Port.	
Onawa	Monona	1,051	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Perry	Dallas	975	21	38.6 ^b	+ 4.6	66 ^b	13	4 ^a	2	34 ^b	1.69	-0.29	0.59	1.0	7	-----	-----	-----	-----	s.	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	A. W. McIsaac.
Sac City	Sac	1,344	46	37.8 ^a	+ 5.5	65 ^a	13†	6 ^a	2												

Climatological Data for March, 1922—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days.			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Precipitation .01 in. or more.	Clear.			Partly cloudy.	Cloudy.
Southern Division																				
Afton	Union	1,212	28	40.2	+ 4.3	65	16†	6	1†	34	2.85	+0.93	1.00	3.5	10	13	4	14	nw.	S. R. Brown.
Albia	Monroe	659	24	41.2	+ 6.2	69	23	8	1	34	2.61	+0.84	1.84	5.5	11	13	1	17	nw.	O. E. McBride.
Atlantic	Cass	1,164	31	39.2	+ 4.7	65	1†	4	2	37	1.34	-0.33	0.61	0.5	6	15	6	10	se.	Joseph N. Reynolds.
Bonaparte	Van Buren		31	41.0	+ 4.4	72	23	12	1†	29	2.57	+0.26	0.61	T.	8	15	2	14	se.	Bruce R. Vale.
Burlington	Des Moines	544	26	42.2	+ 5.1	74	23	13	1	29	3.31	+0.66	0.66	1.0	12	13	4	14	se.	Mrs. E. M. Donnelly.
Cenerville	Appanoose	1,013	17	41.3	-----	72	23	7	1	33	2.16	-0.16	0.40	4.0	11	10	8	13	se.	Leo J. Allen.
Chariton	Lucas	1,042	27	40.0	+ 4.6	66	23†	4	1	35	3.73	+2.12	1.40	2.0	7	9	10	12	-----	C. C. Burr.
Clarinda	PAGE	1,069	32	41.3	+ 6.4	68	14†	7	1†	40	2.01	+0.26	1.09	4.5	9	9	5	17	s.	A. S. Van Sandt.
Columbus Jet	Louisa	395	21	41.0	+ 4.6	66	13†	11	1	26	2.24	+0.18	0.75	3.2	8	15	1	15	e.	J. B. Johnston.
Corning	Adams	1,117	30	38.2	+ 4.1	67	13†	3	2	45	2.14	+0.34	0.78	T.	5	16	4	11	sw.	Jerome Smith.
Corydon	Wayne	1,101	29	40.8	+ 4.0	69	23	5	1	34	2.54	+0.64	0.62	4.5	11	11	5	15	nw.	May C. Miller.
Oreston	Union	1,312	17	39.7	+ 5.5	65	17†	6	1†	33	2.48	-----	1.34	5.0	8	10	10	11	ne.	Dr. H. M. Stanley.
Cumberland	Cass	1,225	23	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Carl E. Pollock.
Earlham	Madison	1,126	20	38.4	+ 4.0	68	13	- 2	2	41	1.63	-0.22	0.80	2.5	6	11	4	16	nw.	Geo. Phillips.
Fairfield	Jefferson	780	38	40.8 ^b	+ 4.7	69 ^b	23	12 ^b	1	31 ^b	1.83	-0.52	1.00	3.0	6	14	3	14	s.	Prof. R. M. McKenzie.
Glenwood	Mills	1,100	24	41.0	-----	70	22†	4	2	40	2.53	-----	1.60	1.1	8	11	8	12	se.	Dr. Geo. Mogridge.
Greenfield	Adair	1,368	30	38.0	+ 3.5	65	13	2	1	36	0.76	-1.22	0.42	-----	4	9	13	9	se.	E. H. McCaslen.
Indianola	Warren	972	31	40.8	+ 5.2	69	13	6	1	34	3.32	+1.76	1.32	7.7	9	9	7	15	nw.	Seth F. Shenton.
Keokuk	Lee	614	51	42.8	+ 4.9	72	23	15	1	27	3.58	+1.21	0.94	2.9	13	7	6	18	n.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	30	41.1	+ 5.3	73	23	12	1	35	2.01	-0.31	0.62	1.5	9	10	4	17	se.	J. H. Landes.
Knoxville	Marion	920	27	40.6	+ 4.4	70	13	8	2	34	3.32	+1.67	1.20	1.0	8	9	8	14	se.	W. J. Casey.
Lacona	Warren	23	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	J. B. Alter.
Lamoni	Decatur	1,100	15	40.4	+ 3.4	69	18	2	1	38	3.57	+1.96	1.40	4.0	9	14	6	11	nw.	C. E. Wight.
Lenox	Taylor	1,250	27	40.2	+ 4.7	67	17	6	1	38	2.18	+0.60	1.06	2.2	7	8	10	13	nw.	J. L. Hurley.
Mt. Ayr	Ringgold	1,236	29	40.6	+ 3.8	68	18	4	6	35	3.52	+1.64	1.40	4.5	10	11	3	17	nw.	Alex Maxwell.
Mt. Pleasant	Henry	729	41	41.6	+ 4.9	72	23	12	1	30	2.36	+0.15	0.53	2.7	13	10	6	15	e.	John H. Jericho.
Oakland	Pottawattamie	1,105	3	38.6	-----	67	22†	3	2	41	1.90	-----	1.11	1.5	6	14	3	14	n.	M. E. Gray.
Oskaloosa	Mahaska	825	46	40.1	+ 4.4	67	23	6	2	31	2.22	+0.42	0.68	4.2	10	10	5	16	se.	Roy R. Robinson.
Ottumwa	Wapello	849	27	42.4	-----	71	23	12	1	32	3.30	+1.40	0.85	3.0	9	13	10	8	s.	W. H. Powell.
Pella	Marion	877	29	40.6	+ 4.8	69	13	8	2	37	2.39	+0.97	0.99	T.	6	14	2	15	nw.	J. H. Ver Steeg.
Sigourney	Keokuk	790	26	40.0	+ 4.1	68	23	10	1	30	2.88	+1.01	0.72	2.8	13	13	2	16	se.	W. E. Utterback.
Stockport	Van Buren	754	30	40.2	+ 3.9	72	23	12	2†	32	2.59	+0.52	0.84	2.0	13	14	3	14	s.	C. L. Beswick.
Thurman	Freemont	25	40.4	+ 4.7	68	22†	5	2	2	36	2.99	+1.34	0.73	2.0	6	4	22	5	sw.	C. R. Paul.
Washington	Washington	769	40	40.0	+ 4.1	68	15†	11	1	38	2.24	+0.20	0.95	2.5	8	8	9	14	se.	Wm. A. Cook.
Winterset	Madison	1,129	31	40.2	+ 4.8	68	13	5	2	33	2.78	+0.98	1.05	4.0	8	18	2	11	nw.	H. S. Ely.
Omaha, Nebr.	-----	1,040	51	40.6	+ 4.6	71	22	7	1	39	1.47	+0.08	1.02	3.8	6	10	10	11	nw.	U. S. Weather Bureau.
Means and extremes	-----	-----	-----	40.4	+ 4.5	74	23	- 2	2	45	2.52	+0.60	1.84	3.0	9	11	6	14	nw.	-----
State means and extremes	-----	-----	-----	38.3	+ 5.0	74	23	- 5	2	45	1.97	+0.20	2.18	3.4	7	12	6	13	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 (%).				Wind.					Sunshine	
	Mean.	Highest.	Date.	Lowest.	Mean.				Total movement.	Average hourly velocity.			Per cent of possible.		
					7 a. m.	Noon.†	7 p. m.	Lowest.		Date.	Miles.	From.		Date.	Departure from normal.
Charles City	30.06	30.74	1 29.26	6.86	67	76	35	15	6,474	8.7	27	s.	12	46	-16
Davenport	30.05	30.63	1 29.39	6.82	65	71	26	15	7,392	9.9	30	sw.	6	42	-16
Des Moines	30.02	30.70	1 29.32	6.80	61	65	36	16	6,856	9.2	32	sw.	25	46	-14
Dubuque	30.08	30.74	1 29.34	6.81	63	68	29	15	6,153	8.3	26	s.	6	47	-6
Keokuk	30.05	30.63	1 29.46	6.81	58	68	30	15	7,127	9.6	34	sw.	6	45	-15
Sioux City	30.04	30.81	1 29.40	5.80	64	64	26	13	10,481	14.1	46	nw.	25	55	-3
Omaha, Nebr.	30.02	30.77	1 29.34	5.80	64	63	34	14	7,694	10.3	36	n.	19	62	+6
Means and extremes	30.05	-----	1 29.26	6	-----	-----	-----	-----	-----	10.0	-----	-----	-----	49	-9
Normals and records	30.04	-----	28	15	80	-----	67	-----	18 th	9.9	-----	-----	16	58	-----
	30.82	1921	28.85	1920	-----	-----	-----	-----	*5 1918	-----	46	w.	1920	-----	-----

†Sioux City. *Des Moines. †Local mean time. ††And other dates.

Daily Precipitation for March, 1922.

Stations.	Drainage Basin.	Day of Month.																															Totals			
		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				
Northern Division																																				
Algona	Des Moines							.19										.81																		1.51
Allison	Cedar	.10				T.		.18		.10	.15							T.	.09	.61					T.	.07		T.			.20				1.07	
Alta	Raccoon					.20		.05											.20	1.00					T.	.52				.25					2.40	
Alton	Floyd																								T.	.60		T.		.30					1.15	
Belmond	Iowa	.07				.05	T.			T.									.08	.66						.25		T.		.09	.07			1.27		
Britt	Iowa					.08													.04	.71						.27							T.	1.15		
Charles City**	Cedar					.01												.04	.36	.43	T.				T.	.36		T.		.11				1.31		
Cherokee	Little Sioux					.05		.20												.20					.52		T.		.11	T.				1.08		
Decorah	Mississippi					.20												.12	.28	.54					.15						.10			1.89		
Estherville	Des Moines					.30	.10	.10																		.23					.20				0.93	
Fayette	Mississippi					.01												.10	.25	.57						.20			.03	.05	.18				1.59	
Forest City	Cedar	T.				.05				.15								T.	.05	.45	.05					.40		T.		.08				1.23		
Humboldt	Des Moines					.31														.32	T.					.36				.37	T.				1.36	
Inwood	Big Sioux					.20																				.25				.40					0.85	
LeMars	Floyd					.11		T.	.11										T.	T.						.73		T.		.30	T.				1.25	
Mason City	Cedar					.01													.15	.80						.30		T.		.07	.23				1.61	
Millford (near)	Little Sioux					.15		.04																		.56		.01		.11	.09				0.96	
New Hampton	Wapsipineon					.10												.10		.88						.18					.10				1.36	
Nora Springs	Cedar					.03				.11								.05	.62	.41					.10	.35			.05	.10					1.84	
Northwood	Cedar					T.												T.	.50	.50					.50		T.		.05	.10				1.65		
Pocahontas	Des Moines					.01		.01		T.									.21	.77						.45				.12	.04				1.71	
Postville	Mississippi					.20												T.	.58	.48					.11	T.		T.		.05				1.44		
Rock Rapids	Big Sioux					.25													.03		T.				.67		T.		.25	.05				1.23		
Sanborn	Floyd					.15		.10		.10																.57				.30	.05				1.17	
Sioux Center	Floyd					.17		.10	.10																	.42		T.		.40	.10				1.29	
Spencer	Little Sioux					.15		.15		.15																.36		T.		.10					0.76	
Storm Lake	Raccoon	T.				.09	T.			.11										1.85						.41		T.		.14	.09				2.69	
Washta	Little Sioux					.88														.70								T.		.12					1.75	
Waverly	Cedar																									.08				.05					1.75	
West Bend	Des Moines					.12		.07											T.	.40						.52				.08	.13				1.32	
Central Division																																				
Ames	Skunk					.04		.01											.48	.84						.07				.18					1.62	
Audubon	Nishnabotna					.04		.04												.72	.10				T.					.15					1.01	
Baxter	Skunk					.04		T.											1.75	.08															2.12	
Belle Plaine	Iowa					.08	T.	.02										.01	.15	2.18					T.	.35			.26	.17	.03				3.25	
Boone	Des Moines					T.		T.											.65	.45						.20				.20					1.50	
Carroll	Raccoon					.09													.50	.37										.35					1.31	
Cedar Rapids	Cedar	.22	T.			.13													.16	.44						.53			.25	T.	T.				1.73	
Clinton	Mississippi					.15				.76									.05	.52	.03					.58			.60		.62	.05			3.36	
Davenport**	Mississippi					.08	.01			.68	.03								.20	.58					.10	.20			.60	.23	.35	.02			3.40	
Denson	Missouri					T.		.03											.14	.62						.20			.13						1.12	
Des Moines***	Des Moines					.10		.03	T.			T.							1.57	1.12					.01	.08			.17	.15	.02				2.25	
Dubuque**	Mississippi					.10		.08	T.									.19	.18	.28					T.	.31		T.	.19	.30	.02	T.			1.65	
Fairport	Mississippi					.04		.02			.44	.41							.40	.20	.05					.57			.51		.28	.03				2.95
Fort Dodge	Des Moines					.02		.04											.12	.56						.17			T.	.25					1.16	
Grinnell	Iowa							.20											.39	1.31					.10	.10			.17	.15					2.42	
Grundy Center	Cedar	T.																	.15	.65									.20	.20					1.20	
Guthrie Center	Raccoon					.04													.45	.63	.20	.15				.20									1.87	
Harlan	Nishnabotna					2.00													.50							.05										2.55
Independence	Wapsipineon					.03													.57	T.						.04				.03		.15				0.78
Iowa City	Iowa					.07	.01			.66		.48	T.						.0	.62	T.					.47			.24	.03	.16	T.			2.18	
Iowa Falls	Iowa					.03				T.									T.	.80						.08					.25	T.				1.19
Jefferson	Raccoon					.10		.12											.48	.24						.20				.21					1.35	
LeClaire	Mississippi					.10	.05		.01	.02	T.		.80						.14	.45	.05					.07	.39		.46	.05	.55	.05			3.19	
Little Sioux	Little Sioux					.15													.20	.97						.40				.20					1.96	
Logan	Missouri					.10													.25	.87						.28			.20						1.80	
Manchester	Mississippi					T.													.55	1.83						.17	.34		.15	.05	.10				3.19	
Marshalltown	Iowa					.03		T.										.01	.10	1.23						T.	.10			.09	.17		T.		1.76	
Monroe	Skunk					.06		T.	T.		.37	T.							T.	1.41	T.					.18		T.	.37	.26	.06				2.71	
Muscataine	Mississippi					.11	.03												.14	.40	.05					.10	.35		.28	.10	.14	T.			1.70	
Olin	Wapsipineon																																			
Onawa	Missouri																																			
Perry	Raccoon					.05		.02												.59	.59						.29			.01	.14				1.69	
Rockwell City	Raccoon																																			
Sac City	Raccoon					.05															.33															
Sioux City**	Missouri					.01				.24	T.	.17							T.	.10	.02					T.	.88		T.		.27				1.69	
Tipton	Cedar																																			

Daily Precipitation for March, 1922—Continued.

Stations.	Drainage Basin.	Day of Month.																															Totals	
		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		
Southern Division																																		
Afton	Grand	.08					.02	T.			.25								1.00	.76					.02	.12			.30	.25	.05		2.85	
Albia	Des Moines	.16					.01	T.			.78	.06		T.					.09	.50					.03	.37			.31	.33	.03	T.	2.61	
Atlantic	Nishnabotna	.03					.03	T.			.02			T.					.61	T.						.42			.23				1.34	
Bonaparte	Des Moines	T.	T.				T.	T.			.61	.12		T.	.45				T.	.45	T.				.02	.40			.30	T.	.22	T.	2.57	
Burlington	Mississippi	.10	T.					T.			.43	.14		T.	.66				T.	.10	.28	T.			.02	.53	.11		.31		.60	.03	3.31	
Centerville	Chariton	.09					.01	T.			.40				.26				.04	.30					.04	.40			.33	.24	.05	T.	2.16	
Chariton	Chariton		T.				T.				.48			.20						1.40					.45			.65	.40	.15		3.73		
Clarinda	Nodaway	.07					.05				.32								1.09	.02					.01	.11			.14	.20		2.01		
Columbus Jet	Iowa	.10					T.	T.			.75	.10							.15	.32					T.	.37			.30	T.	.15		2.24	
Corning	Nodaway										.36								.78	.23					T.	.24			.53				2.14	
Corydon	Chariton	.08					.03	T.			.50			.02	.07				.62	.26					T.	.26		T.	.36	.32	.02		2.54	
Creston	Missouri	.10					T.				.45								1.10	.24					T.	.10			.26	.20	.03		2.48	
Cumberland	Nodaway																																	
Earlham	Des Moines	.03					T.	T.											.48	.80					T.	.06			.13	.13	T.		1.63	
Fairfield	Skunk	.25						T.			1.00			T.						.10						.10			.29	.09			1.83	
Glenwood	Missouri	.02					.02				.05										.42					.22			.08		.04		0.76	
Greenfield	Nodaway										T.									.42					.22			.08		.04		0.78		
Indianola	Des Moines	.30					.05	.02			.30								1.32	.70					.03			.33	.27			3.32		
Keokuk***	Mississippi	.14	.02				T.	T.			.37			.17	.77				.37	.02					.17	.66		T.	.39	.30	.14	.06	3.58	
Keosauqua	Des Moines	.10					T.	T.			.60	.02		T.	.36				T.	.28	T.				T.	.33			.17	.01	.14	T.	2.01	
Knoxville	Des Moines	.10					.10				.48								T.	.33	1.20					.31			.48	.32			3.32	
Lacona	Des Moines	.20					.10	.10			.28								.01	.88	.67	.01				.28			.60	.02			3.15	
Lamoni	Grand	.15	T.				T.	T.			.22			.15					1.40	.50					.01	.35			.54	.25			3.57	
Lenox	Missouri	.10					T.				.10								1.06	.30					T.	.15			.15	.32			2.18	
Mt. Ayr	Grand	.20					.01	T.			.30			T.					1.40	.23					T.	.33			.81	.23	.03		3.52	
Mt. Pleasant	Skunk	.07	.01								.32	.21			.24				.05	.39	.04				.02	.43			.34	.01	.23		2.36	
Oakland	Nishnabotna	.10					.05												.60	.51					.42			.22		.22			1.90	
Oskaloosa	Des Moines	.18	T.				.04	.03			.62	.06							T.	T.	.52	T.	T.		T.	.37			.15	.21	.06	T.	2.22	
Ottumwa	Des Moines	.20						.10			.30								.40	.45					.45	.50	.50	.40					3.30	
Pella	Skunk	T.	T.				T.	T.			.35								.15	.99	T.	T.			T.	.27		T.	.46	.17			2.39	
Sigourney	Skunk	.19	.01				.01	.02			.72	.08							.09	.70					.10	.41			.36	.09	.10	T.	2.88	
Stockport	Skunk	.10	T.				T.	T.			.70	.14			.03	.27			T.	T.	.34	.20			.03	.37	.02		.21	.02	.16		2.59	
Thurman	Missouri	.10					T.				.60								.65	.73					T.	.33			T.	.58			2.99	
Washington	Skunk	.10					T.				.95								.88	.03					.04	.43			.25				2.24	
Winterset	Des Moines	.09					T.				.15								1.05	.95					T.	.15			.18	.18	.03		2.78	
Omaha, Nebr.***	Missouri	.02					.11	T.	T.										T.	.90	.12				T.	.08		T.	T.	.24	T.		1.47	

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.
 *Precipitation included in the next following measurement.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 49, or 9 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau Stations was as follows: Charles City, 46; Davenport, 42; Des Moines, 46; Dubuque, 47; Keokuk, 45; Sioux City, 55; Omaha, Nebr., 62.

MISCELLANEOUS PHENOMENA.

Aurora: 1st, 13th, 14th.
Birds (migration of): Alton, meadow larks, 12th, robins, 13th; Corydon, robins, 5th, blue birds, 13th, black birds, 23d; Jefferson, meadow larks and robins, 4th; Nora Springs, robins, 21st; Oskaloosa, blue birds and robins, 4th; Pocahontas, meadow larks, 3d, robins, 17th.
Fog: 3d, 6th, 7th, 19th, 24th, 27th, 30th.

Hail: 10th, 14th, 18th, 19th, 24th, 25th.
Halos (lunar and solar): 2d, 4th, 5th, 6th, 9th, 10th, 12th, 14th, 25th.
Parhelia: 10th, 13th.
Sleet: 6th, 9th, 17th, 18th, 20th, 25th, 28th, 29th, 31st.
Thunderstorms: 6th, 10th, 18th, 19th, 23d, 24th, 25th.

RIVERS.

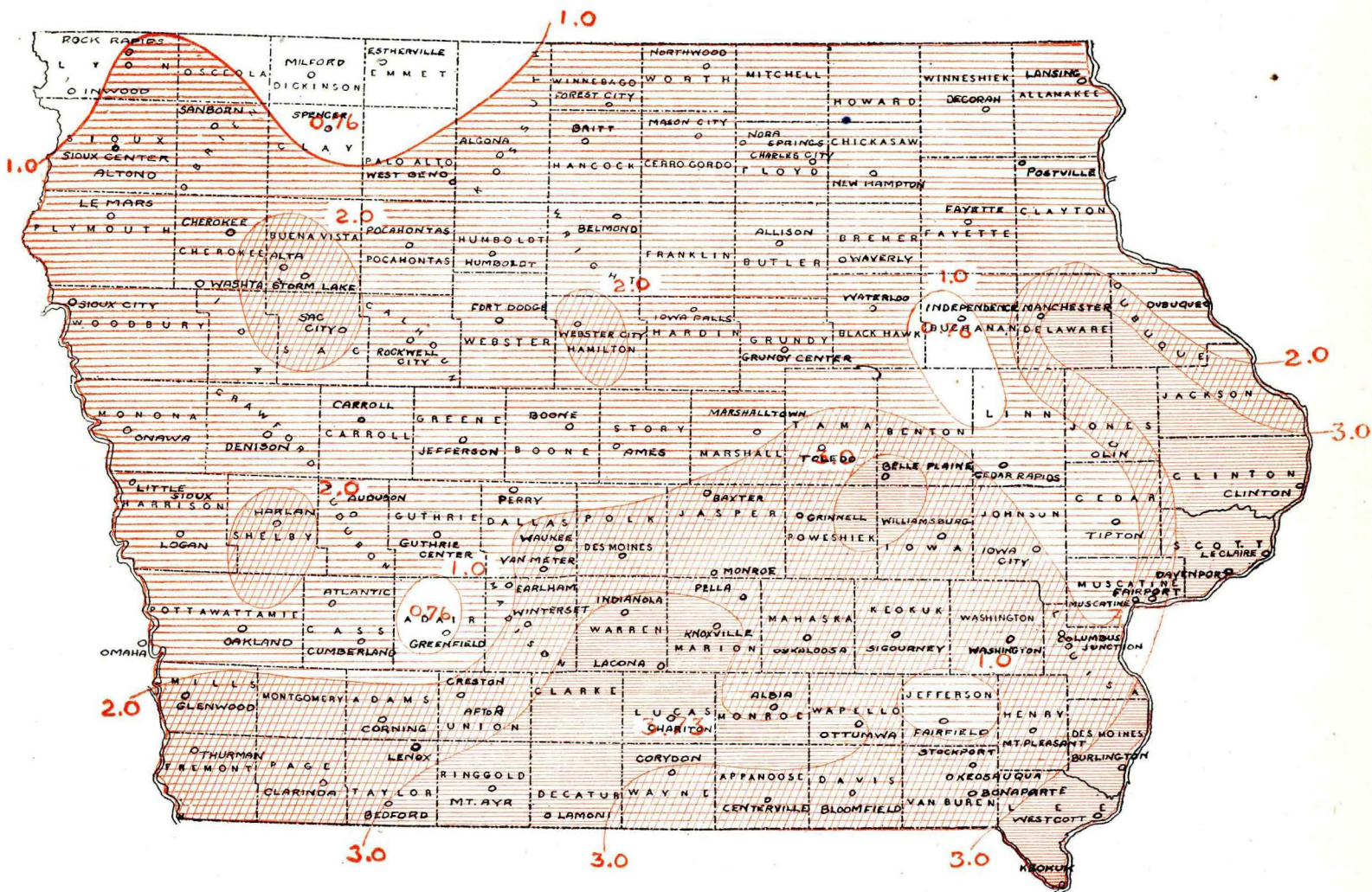
Moderate stages with a general rising tendency prevailed on the Mississippi River and most interior streams with the crest stages after the general rains on the 18th-19th. The Missouri was subject to numerous fluctuations with a sharp rise at the beginning of the third week. The ice moved out of the upper reaches of the Mississippi River on the 6th and on the 13th ice in the Missouri broke up, doing very little damage.

Daily Maximum and Minimum Temperatures for the Month of March, 1922.

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

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

TOTAL PRECIPITATION, MARCH, 1922



SCALE OF SHADES—IN INCHES.



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, APRIL, 1922 No. 4

GENERAL SUMMARY.

Nearly normal conditions prevailed during April, though both temperature and precipitation showed a slight excess. The temperature excess was general and uniform throughout the State except in the northeastern and south central portions where small areas showed a slight deficiency. The first nine days of the month were warm and in this period most of the excess occurred. During the rest of the month temperature changes were frequent, though not decided, with cool weather predominating. Frosts were general over the greater portion of the State as late as the 29th, but as vegetation had been retarded in growth the last two weeks very little damage resulted from frosts and it was thought that all fruit buds were uninjured at the end of the month, except possibly strawberries sustained slight damage in the south central portion.

The precipitation was below normal over most of the southern division, the extreme northwest and most of the counties bordering on the Mississippi River. Most of the precipitation occurred during the first eleven days, when showers occurred almost daily, and as a result very little farm work was accomplished in this period and the seeding of oats was delayed. After the eleventh only two shower periods occurred and in connection with the relatively strong winds that prevailed the greater portion of the time, the soil dried rapidly and caused a great deal of oats to fail to germinate or resulted in a very poor stand. At the end of the month many fields in the drier western sections that were intended for oats were being prepared for corn.

Many storms occurred throughout the State, especially during the first eleven days. On the evening of the 6th, shortly after 8 p. m. a tornado developed in the eastern portion of Dallas County and its influence was felt in Polk, Boone and Story Counties, but the greatest damage occurred in the northeast corner of Dallas County and the northwest corner of Polk County. The storm originated near Moran and moved in a general northeasterly direction but the actual path was somewhat zigzag and the tail of the funnel did not reach the earth at all points in its course. Five farms were directly in its path. Two dwellings were partially destroyed, resulting in the death of one woman and the injury of eleven people. The loss to farm buildings was heavy, many being completely destroyed and the contents scattered in all directions. The loss to buildings, stored grain and stock was estimated at \$200,000. On the same afternoon severe hail storms occurred at many places in the western portion of the State, the damage being particularly heavy to green houses in Council Bluffs and it was estimated that the damage to glass and hot house plants amounted to \$100,000. On the 11th there appeared to be several tornadoes in the southwestern portion of the State that were accompanied by severe hail, the greatest damage being confined to Adams, Taylor and Ringgold Counties. Many buildings were destroyed and many fruit trees and telephone poles broken down. No human lives were lost but the loss to stock was heavy. Horses were killed

by buildings collapsing, and hogs and chickens were killed by hail stones which were as large as hen's eggs, and a stone in the shape of a disk was reported seven inches long and three inches wide. The northwestern portion of the State was visited by a heavy, wet snow on the 11th, that broke down trees and completely wrecked telephone and telegraph lines.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.00 inches. The highest recorded was 30.58 inches, at Davenport, on the 28th, and the lowest was 28.92 inches, at Des Moines, on the 8th. The monthly range was 1.66 inches.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 98 stations, was 49.9°, or 1.2° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 47.5°, or 0.8° higher than the normal; Central, 50.4°, or 1.5° higher than the normal; Southern, 51.8°, or 1.2° higher than the normal. The highest monthly mean was 53.8° at Keokuk, and the lowest was 45.2° at Northwood. The highest temperature reported was 87° at Thurman, on the 6th, and the lowest was 21° at Boone, on the 1st. The temperature range for the State was 65°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 79 per cent, and at 7 p. m. it was 59 per cent. The mean for the month was 69 per cent, which is 3 per cent more than the normal. The highest monthly mean was 76 per cent at Charles City, and the lowest was 64 per cent at Sioux City.

COMPARATIVE DATA FOR THE STATE—APRIL.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	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	-0.39	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	11
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	4.35	+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	0.11	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
1921	52.4	+ 3.7	88	14	3.34	+0.48	6.69	0.99	3.6	10	13	7	10
1922	49.9	+ 1.2	87	21	3.06	+0.20	6.70	1.04	1.0	9	11	9	10

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



Climatological Data for April, 1922.

Stations	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.				Number of Days			Prevailing direction of wind.	Observers.				
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.			Clear.	Partly cloudy.	Cloudy.	
<i>Northern Division</i>																					
Algona	Kossuth	1,213	49	48.0	+ 1.0	74	6	26	1	37	6.70	+4.19	3.72	7	20	5	5	se.	W. E. Laird.		
Allison	Butler	1,044	19	47.6	-----	75	6	25	20	41	2.98	-----	0.93	T.	10	5	10	13	se.	J. A. Bell.	
Alta	Buena Vista	1,513	31	48.7	+ 2.4	76	6	27	18	35	3.31	+0.27	1.60	2.0	8	8	16	6	ne.	D. E. Hadden.	
Alton	Sioux	1,305	17	49.1	+2.3	74	22	27	18	40	2.67	-----	1.05	4.0	9	10	8	12	se.	W. S. Slagle.	
Belmond	Wright	1,205	12	47.2	-----	74	6	25	20	41	2.54	-----	0.80	1.0	11	3	19	8	ne.	Geo. P. Hardwick.	
Britt	Hancock	1,236	25	46.8	+ 0.2	74	6	26	1	40	2.55	+0.13	1.36	T.	7	11	9	10	n.	L. M. Goodman.	
Charles City	Floyd	1,015	31	46.0	- 0.3	70	6	27	1	35	3.05	+0.22	1.15	2.0	10	4	12	14	n.	U. S. Weather Bureau.	
Cherokee	Cherokee	1,196	---	48.8	-----	73	6	27	12	39	2.54	-----	1.41	1.0	9	12	12	6	ne.	J. E. Wirth.	
Decorah	Winneshek	875	29	47.9	+ 1.0	69	27	25	1	38	3.19	+0.75	1.23	T.	8	11	5	14	se.	M. D. Whitney.	
Estherville	Emmett	1,298	27	46.0	+ 0.9	72	6	23	20	42	2.52	-0.33	1.20	6.0	6	15	12	3	s.	A. O. Patterson.	
Fayette	Fayette	1,003	32	46.9	+ 0.5	73	6	23	20	41	2.77	-0.32	0.47	T.	11	12	7	11	sw.	R. Z. Latimer.	
Forest City	Winnebago	1,226	28	46.3	+ 0.4	70	6	24	20	41	2.83	+0.48	1.25	T.	7	11	10	9	se.	Dr. M. B. Neil.	
Humboldt	Humboldt	1,095	34	48.8	+ 0.6	79	6	24	1	44	2.83	+0.26	1.65	3.0	6	7	15	8	n.	H. C. Snitkey.	
Inwood	Lyon	1,474	18	47.8	+ 1.2	73	22	24	1	37	2.93	+0.56	1.65	3.0	6	11	9	10	se.	F. B. Hansen.	
LeMars	Plymouth	1,224	26	48.7	+ 1.3	73	22	27	12	41	1.04	-1.55	0.82	7.0	6	17	4	9	se.	Mrs. M. C. Wooley.	
Mason City	Cerro Gordo	1,148	25	46.3	- 0.1	69	6	24	20	40	2.67	+0.18	1.00	T.	9	13	9	8	se.	Northern Sugar Crop.	
Milford (near)	Dickinson	1,430	2	46.1	-----	69	30	27	1	38	2.41	-----	1.12	2.9	7	3	17	10	ne.	Dr. F. J. Smith.	
New Hampton	Chickasaw	1,169	25	47.1	+ 0.7	70	30	25	20	39	2.82	+0.40	1.05	0	9	11	9	10	e.	J. E. Kemman.	
Nora Springs	Floyd	1,064	10	48.2	-----	73	30	25	20	42	4.62	-----	1.97	2.5	11	10	11	9	s.	Arthur Betts.	
Northwood	Worth	1,222	26	45.2 ^c	- 0.9	68 ^c	6	25 ^c	20	37 ^c	4.60	+2.13	1.60	9.0	9	7	10	13	ne.	Chas. Dwelle.	
Pocahontas	Pocahontas	1,248	18	48.6	+ 1.6	79	6	26	1	41	4.52	+2.17	2.72	4.0	11	8	13	9	se.	F. E. Hronek.	
Postville	Clayton	1,180	23	46.3	- 0.3	69	6	26	1	35	2.98	0.00	1.15	0	10	7	15	8	ne.	F. L. Williams.	
Rock Rapids	Lyon	1,358	23	48.2	+ 3.1	72	23	27	18	41	2.38	-0.27	1.36	6.0	8	17	10	3	sw.	J. K. Medberry.	
Sanborn	Obrien	1,553	8	47.6	-----	75	22	25	1	46	3.56	-----	1.60	6.0	6	10	11	9	ne.	J. W. Dow.	
Sioux Center	Sioux	1,426	23	47.6	+ 1.1	71	22	27	1	40	2.96	+0.34	1.96	8.0	8	8	11	11	e.	J. de Ruyter.	
Spencer	Clay	1,319	8	47.8	-----	76	6	25	20	43	4.17	-----	2.00	10.0	7	7	17	6	se.	E. W. Little.	
Storm Lake	Buena Vista	1,440	33	47.9	+ 1.1	67	6	29	1	37	3.18	+0.34	1.38	1.0	8	12	8	10	ne.	Geo. H. Fracker.	
Washita	Cherokee	1,157	24	49.2	+ 2.1	73	22	24	13	40	4.15	+1.74	3.18	T.	5	13	9	8	s.	H. L. Felter.	
Waverly	Bremor	948	26	47.2	- 0.6	74	6	23 ^a	1	41 ^a	3.31	+0.45	0.96	1.2	13	15	7	8	e.	D. H. Murphy.	
West Bend	Palo Alto	1,197	29	48.2	+ 1.0	79	6	26	1	42	4.95	+1.21	2.30	0	9	9	13	8	s.	Jos. Dorweller.	
Mean and extremes.	-----	-----	-----	47.5	+ 0.8	79	6	23	1	46	3.25	+0.57	3.72	2.7	8	10	11	9	se.	-----	
<i>Central Division</i>																					
Ames	Story	926	45	49.6	0.0	80	6	26	1	38	2.96	+0.10	0.98	T.	11	11	9	10	ne.	Iowa State College.	
Audubon	Audubon	1,301	28	48.8	+ 0.1	79	6	25	1	40	3.20	+0.11	1.55	1.5	8	14	9	7	e.	Geo. Kibby.	
Baxter	Jasper	998	22	51.2	+ 1.9	82	6	26	1	39	3.95	+0.89	1.70	T.	7	11	10	9	e.	Henry Giese.	
Belle Plaine	Benton	886	32	50.6	+ 1.7	82	6	26	1	40	3.04	-0.21	1.19	0.2	13	6	14	10	se.	U. S. Burrows.	
Boone	Boone	1,134	17	49.9 ^g	+ 2.0	84 ^g	6	21 ^g	1	43 ^g	-----	-----	-----	T.	-----	-----	-----	-----	se.	C. F. Henning.	
Carroll	Carroll	1,265	32	50.2	+ 3.0	80	6	27	1	40	4.81	+1.92	2.25	0	11	18	3	9	ne.	Mrs. Jos. J. Wolfe.	
Cedar Rapids	Linn	733	40	50.9	+ 2.1	80	6	31	1	35	3.30	+0.40	0.86	0	9	11	6	13	ne.	R. S. Toogood.	
Cinton	Clinton	503	49	51.0	+ 1.3	77	6	30	1	33	3.00	-0.16	1.60	0	11	10	7	13	e.	Dr. A. P. Bryant.	
Davenport	Scott	589	51	50.9	+ 0.7	78	6	34	1	30	2.86	-0.02	0.91	T.	10	9	8	13	s.	U. S. Weather Bureau.	
Denison	Crawford	1,180	28	50.6	+ 2.0	80	6	28	1	40	4.40	+1.45	2.46	1.0	8	10	11	9	s.	V. L. Byers.	
Des Moines	Polk	861	44	50.8	+ 0.2	82	6	31	1	35	2.84	-0.14	1.14	0.3	9	8	9	13	e.	U. S. Weather Bureau.	
Dubuque	Dubuque	639	49	48.8	- 0.1	73	6	30	1	30	2.89	-0.03	0.97	T.	15	5	12	13	ne.	U. S. Weather Bureau.	
Fairport	Muscatine	567	1	53.2	-----	78	7	31	1	33	2.61	-----	0.81	0	10	15	3	12	se.	R. L. Barney.	
Fort Dodge	Webster	1,114	22	48.4	+ 1.2	81	6	24	1	43	3.50	+0.87	1.26	T.	9	-----	-----	-----	se.	Fred Heman.	
Grinnell	Poweshiek	1,031	28	51.0	+ 1.2	81	6	28	1	37	2.60	-0.81	0.59	0	13	8	11	11	se.	Paul P. Meyers.	
Grundy Center	Grundy	976	31	49.6	+ 0.8	79	6	26	20	41	3.27	+0.20	1.05	0	8	7	11	12	nw.	M. G. Heiberger.	
Guthrie Center	Guthrie	1,077	27	51.4	+ 1.8	82	6	28	1	39	3.55	+0.64	1.29	0	8	14	8	8	se.	E. L. Nesselroad.	
Harlan	Shelby	1,192	23	50.8	+ 1.9	81	6	27	1	43	4.19	+1.67	2.25	0	9	17	8	5	e.	W. K. Colburn.	
Independence	Buchanan	921	58	49.6	+ 1.8	68	9	28	1	32	2.49	+0.09	0.64	T.	10	14	2	14	se.	Dr. George Boody.	
Iowa City	Johnson	733	62	50.8	+ 2.2	78	6	27	1	36	3.49	+0.31	1.10	0	11	7	10	13	se.	Prof. J. F. Reilly.	
Iowa Falls	Hardin	1,107	29	47.6	+ 1.2	78	6	23	20	47	3.17	+0.04	1.22	1.5	11	7	11	12	ne.	J. B. Parmelee.	
Jefferson	Greene	1,052	23	49.7	+ 0.6	82	6	25	18	42	3.05	-----	1.65	0.5	11	7	11	12	ne.	W. I. Lyon.	
Little Sioux	Harrison	1,040	17	52.3	+ 1.7	80	6	28	18	42	2.79	-----	1.16	0	7	14	9	7	se.	G. H. Gibson.	
Logan	Harrison	1,035	55	52.4	+ 2.0	82	6	30	1	40	2.87	+0.13	1.22	0	6	11	12	7	sw.	Mary Jean Stern.	
Manchester	Delaware	944	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	sw.	Thomas H. Tracey.	
Marshalltown	Marshall	947	30	50.4	+ 2.1	81	6	28	1	37	3.22	+0.52	1.01	T.	12	17	4	9	ne.	C. C. Pigman.	
Monroe	Jasper	922	10	52.0	-----	83	6	28	1	36	2.65	-----	1.28	T.	6	13	7	10	s.	J. A. Dibel.	
Olin	Jones	760	23	50.0	+ 1.3	75	6	27	1	35	3.70	+1.05	1.20	0	9	15	8	7	nw.	Dr. F. W. Port.	
Onawa	Monona	1,051	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Perry	Dallas	975	21	50.0 ^a	+ 0.4	81 ^a	6	28 ^a	1	40 ^a	3.17	+0.42	0.99	0	9	-----	-----	-----	-----	se.	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Sac City	Sac	1,344	46	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Sioux City	Woodbury	1,135	33	50.2	+ 1.7	73	20	30	19	35	3.08	+0.31	2.19	4.0	9	6	7	17	se.	A. W. McIsaac.	
Tipton	Cedar	807	23	48.7	-----	70	6	29	20	36	2										

Climatological Data for April, 1922—Continued.

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers.			
				Mean.	Departure from normal.	Highest	Date.	Lowest	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.			Clear	Partly cloudy.	Cloudy.
Southern Division																				
Afton.....	Union.....	1,212	28	51.5	+ 0.9	78	6	29	1†	39	1.91	-1.44	0.65	0	8	11	7	12	ne.	S. R. Brown.
Albia.....	Monroe.....	959	24	52.4	+ 2.8	83	6	28	18	38	2.21	-0.64	0.78	T.	12	10	8	12	ne.	O. E. McBride.
Atlantic.....	Cass.....	1,164	31	51.0	+ 1.4	81	6	26	1	41	3.34	+0.41	1.20	T.	10	12	9	9	se.	J. N. Reynolds.
Bonaparte.....	Van Buren.....	31	52.6	+ 1.3	79	6	30	1†	35	2.31	-0.90	0.76	0	9	17	3	10	se.	B. R. Vale.	
Burlington.....	Des Moines.....	544	26	53.2	+ 2.0	79	6	31	18	35	2.81	-0.43	0.63	0	13	16	2	12	ne.	Mrs. E. M. Donnelly.
Centerville.....	Appanoose.....	1,013	17	52.3	-----	80	6	29	18	32	3.32	+1.02	1.36	T.	10	15	5	10	e.	Leo J. Allen.
Chariton.....	Lucas.....	1,042	27	51.4	+ 1.4	81	6	26	18	39	1.73	-1.39	0.60	T.	7	12	5	13	se.	C. C. Burr.
Clarinda.....	Page.....	1,009	32	52.7	+ 3.1	77	20	26	1	46	2.89	+0.06	1.27	0	8	10	13	7	ne.	A. S. Van Sandt.
Columbus Jet.....	Louisa.....	595	21	52.6	+ 1.9	78	6	32	1†	35	3.01	+0.07	1.20	0	13	16	5	9	s.	J. B. Johnston.
Corning.....	Adams.....	1,117	30	50.5	+ 0.9	81	5	27	12	41	2.26	-0.77	0.44	0	6	11	7	12	ne.	Jerome Smith.
Corydon.....	Wayne.....	1,101	29	52.4	+ 1.2	82	6	29	18	40	2.12	-1.01	0.56	T.	12	10	12	8	ne.	May C. Miller.
Creston.....	Union.....	1,312	17	51.2	+ 2.9	81	6	29	1†	37	2.04	-----	0.95	0	8	8	13	9	ne.	Dr. H. M. Stanley.
Cumberland (near).....	Cass.....	1,225	23	-----	-----	-----	-----	-----	-----	-----	2.59	+0.32	0.80	0	7	-----	-----	-----	e.	Carl E. Pollock.
Earlham.....	Madison.....	1,126	20	49.0	- 0.2	81	6	25	1†	43	2.18	-1.28	0.70	T.	9	14	4	12	e.	George Phillips.
Fairfield.....	Jefferson.....	780	38	51.2 ^c	+ 0.4	81 ^c	6	29 ^c	18†	39†	2.63	-1.02	0.90	0	9	-----	-----	-----	s.	Prof. R. M. McKenzie.
Glenwood.....	Mills.....	1,100	24	52.6	-----	82	6	30	1†	41	4.12	-----	1.98	T.	10	10	12	8	se.	Dr. George Mogridge.
Greenfield.....	Adair.....	1,368	30	49.2	- 0.6	80	6	27	1	40	3.69	+0.57	2.64	T.	7	11	12	7	se.	C. E. McCaslen.
Indianola.....	Warren.....	972	31	51.6	+ 1.1	83	6	28	1†	39	1.97	-1.24	0.73	0	12	9	11	10	se.	Seth F. Shenton.
Keokuk.....	Lee.....	614	51	53.8	+ 1.8	81	6	33	1	31	2.97	-0.37	0.69	0	11	10	5	15	s.	U. S. Weather Bureau.
Keosauqua.....	Van Buren.....	644	30	52.8	+ 2.3	81	6	27	1	40	2.98	-0.82	0.93	0	11	12	4	14	se.	J. H. Landes.
Knoxville.....	Marion.....	920	27	51.4	- 0.2	84	6	27	1	40	2.70	-0.29	0.58	T.	9	10	5	15	se.	W. J. Casey.
Laona.....	Warren.....	23	-----	-----	-----	-----	-----	-----	-----	-----	1.52	-1.18	0.79	0	8	6	14	10	-----	J. B. Alter.
Lamoni.....	Decatur.....	1,100	15	51.2	+ 0.2	80	6	26	1†	42	1.70	-1.65	0.46	0	10	16	8	6	s.	C. E. Wight.
Lenox.....	Taylor.....	1,250	27	51.2	+ 0.9	81	6	17	19	41	1.84	-1.10	0.67	0.5	8	17	6	7	s.	J. L. Hurley.
Mt. Ayr.....	Ringgold.....	1,236	29	51.4	+ 0.2	80	6	27	18	40	1.77	-1.28	0.62	0	9	14	6	10	ne.	Alex Maxwell.
Mt. Pleasant.....	Henry.....	720	41	53.0	+ 1.8	80	6	29	18	38	3.02	+0.12	1.27	0	14	7	12	11	ne.	John H. Jericho.
Oakland.....	Pottawattamie.....	1,105	3	51.3	-----	81	6	27	1	40	3.87	-----	1.96	0	9	17	5	8	s.	M. E. Gray.
Oskaloosa.....	Mahaska.....	825	46	51.8	+ 1.2	83	6	28	1†	39	2.25	-0.51	0.56	T.	12	10	8	12	ne.	Roy R. Robinson.
Ottumwa.....	Wapello.....	849	27	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	W. H. Powell.
Pella.....	Marion.....	877	29	51.2	+ 0.8	82	6	26	1†	37	2.42	+0.41	0.66	1.0	8	11	4	15	se.	J. H. Ver Steeg.
Sigourney.....	Keokuk.....	790	26	51.2	+ 0.2	79	6	28	18	38	2.08	-1.20	0.70	0	10	15	2	13	ne.	W. E. Utterback.
Stockport.....	Van Buren.....	754	20	52.3	+ 1.7	79	6†	26	1	47	2.21	-0.85	0.59	0	13	11	5	14	s.	C. L. Beswick.
Thurman.....	Fremont.....	25	52.5	+ 1.3	87	6	28	18	41	4.95	+1.82	2.90	T.	6	4	16	10	ne.	C. R. Paul.	
Washington.....	Washington.....	769	40	51.0	+ 0.4	81	6	26	18	39	3.19	+0.57	1.00	0	12	8	9	13	sw.	Wm. A. Cook.
Wescott (near).....	Lee.....	-----	-----	52.3	-----	75	6	34	1†	28	3.45	-----	1.08	0	12	11	4	15	se.	George H. Smith.
Winterset.....	Madison.....	1,129	31	51.7	+ 1.0	83	6	29	1	37	2.65	-0.95	0.50	T.	9	17	6	7	sw.	H. S. Ely.
Omaha, Neb.....	-----	1,040	51	52.6	+ 2.1	83	6	30	19	36	2.12	-0.89	1.06	T.	9	10	9	11	se.	U. S. Weather Bureau.
Means and extremes.....	-----	-----	-----	51.8	+ 1.2	87	6	17	19	47	2.63	-0.42	2.90	T.	10	12	7	11	ne.	-----
State means and extremes.....	-----	-----	-----	49.9	+ 1.2	87	6	17	19	47	3.06	+0.20	3.72	1.0	9	11	9	10	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 (%)				Wind				Sunshine					
	Mean	Highest	Date	Lowest	Date	Mean.			Total movement	Average hourly velocity	Maximum		Per cent of possible	Departure from normal				
						7 a. m.	12 Noon. †	7 p. m.			Miles	From			Date			
Charles City	30.01	30.57	28	29.01	9	86	63	66	31	30	5,638	7.8	35	nw.	19	45	-17	
Davenport	30.01	30.58	28	29.07	11	79	59	62	29	30	6,444	9.0	47	sw.	9	45	-14	
Des Moines	29.98	30.47	28	28.92	8	78	58	57	28	18	6,155	8.5	31	sw.	18	52	-8	
Dubuque	30.04	30.55	28	29.07	9	80	61	60	25	28	5,231	7.3	38	nw.	19	48	-9	
Keokuk	30.01	30.45	28	29.11	11	76	57	62	27	28	6,165	8.6	36	nw.	10	55	-3	
Sioux City	30.00	30.52	28	29.32	8	75	56	53	10	29	9,337	13.0	55	nw.	19	53	-5	
Omaha, Neb	29.98	30.43	28	29.24	10	78	57	56	24	20	6,738	9.4	40	nw.	11	67	+10	
Means and extremes	30.00	-----	-----	-----	-----	79	59	59	-----	-----	-----	91	-----	-----	-----	53	-----	7
Normals and records	29.98	-----	9th	-----	20th	76	-----	57	-----	29th	-----	99	-----	-----	25th	60	-----	-----
	-----	\$30.78	1918	*28.80	1898	-----	-----	-----	-----	-----	-----	74	n.	-----	1902	-----	-----	-----

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

PRECIPITATION.

The average precipitation for the State, as shown by the records of 100 stations, was 3.06 inches, or 0.20 inch more than the normal. By divisions the averages were as follows: Northern, 3.25 inches, or 0.57 inch more than the normal; Central, 3.30 inches, or 0.44 inch more than the normal; Southern, 2.63 inches, or 0.42 inch less than the normal. The greatest amount, 6.70 inches occurred at Algona, and the least 1.04 inches, occurred at Inwood. The greatest amount in any 24 consecutive hours, 3.72 inches, occurred at Algona, on the 11th.

SNOW.

The average snowfall for the State was 1.0 inch, or 0.8 inch less than the normal. Practically all the snow occurred in the northwest portion of the State on the 11th, and only a few stations in the central and southern division reported more than a trace. The greatest fall reported was 10.0 inches at Spencer.

Daily Precipitation for April, 1922—Continued.

Stations.	Drainage Basin	Day of Month.																														To-als.					
		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				
Southern Division																																					
Afton	Grand			.04	.10		.06	.65	.35	.05								.31						.35	T.									1.91			
Albia	Des Moines		.10	.06	.07	.07	.11		.78	T.	.69	T.	.01						.13				.01		.02	.16								2.21			
Atlantic	Nishnabotna		.03	.13	T.	.13	.20	.53	1.20		.90	.01							T.					.15	.06									3.34			
Bonaparte	Des Moines		.35	.03	.10		.35	.07		T.	T.			T.			.76	.47					.08		.10									2.31			
Burlington	Mississippi		.16	.22	.08	.25	.50		.27		.28					.15		.63	.10				.03		.01	.13								2.81			
Centerville	Chariton		.28		.08		1.36	.54	.26	.14	.25	.26						.08						.12										3.32			
Chariton	Chariton		T.		.20		.15	.20	.60	.25	T.	T.							.10				T.		.23	T.								1.73			
Clarinda	Nodaway		T.	T.	.19	.61	.02		1.27	T.	.98							T.	.17					.21	.04									2.89			
Columbus Jet	Iowa		.07	T.	.28	T.	.13	.11	.30	1.10	.10							.08	.24			.03	.33		.15	.09	T.							3.01			
Corning	Nodaway		T.	T.	.44			.42	.44	.28									.31					.37											2.26		
Corydon	Chariton		.27	.02	.10	.01	.07	.56	.23	.40	.05	T.	T.					.14						.23	.04										2.12		
Creston	Missouri		T.	.06	.01	.02		.95		.33										.30				.33	.04										2.07		
Cumberland	Nodaway			.11		.51	.43	.47	.80	.04														.23												2.59	
Earlham	Des Moines		T.	.02	.08			.25	.27	.25	.70	.02											T.		.36											2.18	
Fairfield	Skunk						.65	.30	.21	.24	.05							.85	.05					.25	.03											2.63	
Glenwood	Missouri		.11	T.	.11	.03	.37	.30	1.68	.98	.04								.20					.30												4.12	
Greenfield	Nodaway			T.	.06	.25	.24		1.78	.86									.06					.34												3.69	
Indianola	Des Moines		.04		.05		.02	.50	.23	.23	.17								.25	.02				.33	.01											1.97	
Keokuk	Mississippi		.69		.46		.18	.43		.15	.02	T.		.24				.27	.33				T.		.16	.04										2.97	
Keosauqua	Des Moines		.40	T.	.03		.55	.25	.23	.04	.02							.78	.15					.20	.03											2.68	
Knoxville	Des Moines		T.	.05		.12	T.		.40	.52	.68	.58							.53	T.			.05		.37											2.70	
Lacona	Des Moines						.12	.48	.31	.19	.07								.01					.30	.04											1.52	
Lamon	Grand			.27	.11	.07		.46		.15				.01						.20				.32	.10	.01										1.70	
Lenox	Missouri		.03	T.	.13	T.		.50	.17	.45	.07								.17					T.	.32											1.84	
Mt. Ayr	Grand		.13	.01	.14			.56	.06	.26	.02	T.						T.	.21					T.	.38	T.		T.								1.77	
Mt. Pleasant	Skunk			.35	.03	.26	.01	.21	.05	.22	.14	.06						.17	1.27					.05		.10	.10									3.02	
Oakland	Nishnabotna		.07	.18		.21	.23	.07	.19	1.96	.80													.16												3.87	
Oskaloosa	Des Moines		T.	.04	T.	.08	T.	.16	.26	.56	.47	.11		.03					.08				T.	.05		.38	.03									2.25	
Ottumwa	Des Moines																																				
Pella	Skunk		T.	T.	.08		.05	.35	.65	.28	.45							.30	T.			T.		.26	T.											2.42	
Sigourney	Skunk		T.		T.	.11		.70	.29	.36	.23	.03						T.	.11			T.		.18	.01											2.08	
Stockport	Skunk		.39	.05	.11		.29	.11	.32	.04	.06			T.				.35	.24					.11	.05											2.21	
Thurman	Missouri		T.	T.	T.	T.	.40	.45	2.96	.78	T.								.02					T.	.37												4.95
Washington	Skunk			.19		.14	.02	.29	.29	.55	.31	.03							1.00						.17											3.19	
Winterset	Des Moines			.08	.08		.19	.40	.50	.45	.37								.27						.12	.08										2.66	
Omaha, Nebr.***	Missouri	T.	.05	T.	.01	.08	.24			1.02	.04	.54							.04	T.				T.	.10											2.12	

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.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 53, or 7 per cent less than normal. The per cent of the possible amount at the regular Weather Bureau Stations was as follows: Charles City, 48; Davenport, 45; Des Moines, 52; Dubuque, 48; Keokuk, 55; Sioux City, 53; Omaha, Neb., 67.

MISCELLANEOUS PHENOMENA.

Aurora: 21st, 22d.
 Fog: 3d, 4th, 5th, 6th, 7th, 8th, 10th, 24th, 25th.
 Hail: 6th, 7th, 8th, 9th, 10th, 11th, 12th, 14th, 16th, 17th.
 Halos, (lunar or solar): 1st, 3d, 13th, 14th, 21st, 23d, 26th, 27th, 28th.
 Sleet: 10th, 11th, 13th, 17th

Thunderstorms: 3d, 6th, 7th, 8th, 10th, 11th, 12th, 16th, 17th, 18th, 24th.
 Tornado: 6th, 11th.

WIND.

The prevailing direction of the wind was from the south-east. The highest velocity reported from a regular Weather Bureau Station was at the rate of 55 miles per hour, from the northwest, at Sioux City, on the 19th.

RIVERS.

High stages prevailed on all rivers the greater part of the month, but the flood stage was not reached except on the Mississippi River, where one of the worst floods in the history of the State occurred. The flood was caused principally from the discharge of streams in Wisconsin and Minnesota.

Daily Maximum and Minimum Temperature for the Month of April, 1922.

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

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

REPORT ON MISSISSIPPI RIVER FLOOD OF APRIL, 1922, DUBUQUE DISTRICT.

By Thomas A. Blair, Meteorologist.

Weather Bureau Office, Dubuque, Iowa, May 11, 1922.

Warm weather during the latter half of March over the drainage area of the Mississippi River above Dubuque, particularly in Minnesota and Wisconsin, had resulted in considerable run-off, raising the Mississippi and its tributaries above Dubuque to rather high levels. There followed during the first ten days of April frequent and moderately heavy rains, attended by unusually warm weather. Although the snow cover was thought to be less than average, the result was a flood beginning at La Crosse on April 12, and reaching its maximum stage at Dubuque on the 21st, of a magnitude which has been equaled but three times in the past 50 years.

In the maximum stages reached this flood was very nearly the counterpart of that of March and April, 1920, but in the manner of rise there was considerable difference. In 1920 a rather rapid rise began immediately after the breaking up of the ice, becoming very rapid as the crest of the flood was approached. In 1922 the river opened about the middle of March and from that time to the end of March moderately high stages, sufficient to overflow the lower islands and bottoms, were maintained with little change. Then began a continuous and approximately uniform rise until about five days before the peak was reached, when the rate increased considerably but did not attain the rate reached in 1920. In the latter half of its rise it resembled very closely the floods of 1880 and 1888, but these latter were more rapid in the early stages.

Maximum stages reached from La Crosse to Dubuque in the six floods of the past 50 years are shown in the accompanying table:

	Flood Stage	1880	1881	1888	1916	1920	1922
La Crosse	12	16.0	13.2	14.5	13.6	14.2	13.7
Lansing	18				16.4	17.3	17.3
Prairie du Chien	18	21.5	19.0	20.0	18.3	19.6	19.4
Dubuque	18	21.7	20.2	21.4	19.8	21.0	21.0

It is evident that a large part of the flood waters came from above La Crosse, for the maximum stage there was 1.7 feet above flood stage, and the highest at Lansing was the same as that of two years ago, but a flood exceeding that of 1920 was in progress on the Wisconsin River at the same time and added considerably to the stages reached at Prairie du Chien and Dubuque. The peak of the Wisconsin flood wave reached Prairie du Chien, however, about three days earlier than that from the Mississippi, and hence the crests occurred at Prairie du Chien and Dubuque a little earlier and were a little lower than would have been the case if the Wisconsin flood had been a few days later.

From below La Crosse to below Lansing the damage was comparatively slight, as is usually the case with spring floods. The largest item aside from the injury to and the cost of protection of railroad roadbeds was the collapse of a warehouse filled with ice at Lansing. At Prairie du Chien about one-fourth of the town was under water, and people were traveling on the streets by boat. As a result of the warnings, all live stock and much movable property were moved to higher portions of the city, while many families either moved from their residences altogether or moved to the second floors. Railroad traffic east into the Wisconsin Valley and north into the Kickapoo Valley was suspended. Opposite Prairie du Chien, at Marquette and McGregor, Iowa, buildings along the river front were inundated, causing interruption of business. Much land was overflowed in the vicinity of Cassville, Wis., and Waupeton, Iowa, causing a loss estimated at about \$50,000.

At Dubuque the overflow was a duplicate of that of 1920. Many plants and establishments along the river front and on the lower ground back from the river were surrounded or partially surrounded by water, and several were forced to suspend operations. Practically all of the factories and wholesale houses in the southern end of the town suffered flooded basements. Considerable lengths of track of the Illinois Central, the Chicago, Burlington & Quincy, and the Chicago, Milwaukee & St. Paul railroads were under water, and traffic was diverted and partially suspended. Much labor and material were used in protecting tracks and embankments from undermining. A high northwest wind on the 19th, when the river was within five inches of its maximum stage, added to the difficulties of the railroads and others in preventing the wearing away of dikes.

Many families living in the lowlands on both sides of the river were temporarily driven from their homes, and a much larger number had flooded basements. At least 14 cottages, situated on the islands in the vicinity of Dubuque and used as summer residences, were carried away by the flood waters in conjunction with the high wind on the 19th.

On April 12th, nine days before the crest of the flood reached Dubuque, flood warnings were issued for the entire district from below La Crosse to Dubuque. On April 17th definite forecasts of maximum stages were made, as follows: Lansing, 17.0 feet; Prairie du

Chien, 19.5 feet; Dubuque, 21.0 feet. Warnings were distributed by mail to all towns in the district, and those having property subject to overflow in general did whatever could be done to remove or protect it, so that the preventable loss was slight.

Statistics of Money Loss by Flood in the Mississippi River, Dubuque River District, April, 1922.

Losses to tangible property that can only be restored by the outlay of cash, includes loss to buildings, factories, municipal plants, highways and bridges.....	\$68,000
Losses to railroads, principally expenditures in protecting and restoring tracks and roadbeds.....	35,000
Loss of crops.....	10,000
Loss of prospective crops.....	3,500
Loss of live stock or other movable property.....	4,000
Loss due to suspension of business.....	20,000
Total losses reported.....	\$140,500
Money value of property saved by warnings, as reported.....	154,000

MISSISSIPPI RIVER FLOOD

From below Dubuque to Muscatine, April, 1922.

By Andrew M. Hamrick, Meteorologist.

Weather Bureau Office, Davenport, Iowa, May 20, 1922.

During the first 21 days of April, 1922, rain fell on some part of the watershed of the Mississippi River from Muscatine northward on every day but three. The frequent rains, while not very heavy, except on the 10th and 16th, fell on a well-saturated soil and the run-off was above normal.

As an index of the general situation, note the conditions at Davenport: The precipitation during the month of March was 3.40 inches, 1.19 inches above normal. There were 21 cloudy days during the month, and consequently little evaporation. The percentage of possible sunshine was 42, 16 per cent below the normal for March.

The rivers were rising steadily in the vicinity of Prairie du Chien and Dubuque by the end of March, and the continued rainy weather during the first ten days of April made it apparent that a flood would be experienced in the Davenport District during the last decade of the month. Forecasts were issued daily for a steady rise, and on April 14 interests were advised that the crest stage would reach Davenport during the week of April 23-29. On April 17 a general flood warning was issued to the effect that the crest stages would equal those of the 1920 flood in this District. On Wednesday, April 19, the following definite stages were forecast: Clinton, 19.0 feet by Saturday; Le Claire, 13.0 feet by Saturday; Davenport, 17.0 feet by Saturday, and Muscatine, 19.0 feet by Saturday night. Those stages were reached within one-tenth of a foot at all stations.

At Davenport, the crest stage was 17.1 feet on April 23, exactly the same as the crest in the flood of 1920; at Clinton, the crest stage was 19.0 feet, during the night of April 21-22, exactly the same as the crest in 1920; at Le Claire the crest was 12.9 feet during the night of April 22-23, 0.5 foot less than the crest in 1920, but the difference was due to the gage readings being affected by a dam which has been built near Le Claire since 1920, as the overflowed area was practically the same; at Muscatine, the water rose above the permanent river gage, and a temporary gage showed a stage of 19.1 feet on the morning of the 23d, and reached a crest stage of 19.5 feet on the 24th, the highest of record. Levees in the vicinity of Muscatine have been strengthened considerably since the flood of 1920, and, therefore, a much higher gage reading resulted; the highest stage reached in 1920 was 18.0 feet, but the levees gave way and prevented what would have been at least another foot rise. On April 26, the levee broke at a point ten miles north of Burlington, and that relieved the situation at Muscatine, even though the crest had already been reached at the latter place.

Forecasts and warnings were given wide distribution by mail, newspapers, telephone, and radio, and all interests had ample time to protect their property. No losses were sustained as a result of being unprepared to meet the emergency. In the vicinity of Muscatine and New Boston hundreds of men worked day and night, patrolling and strengthening the levees; high northwest winds on April 19 made conditions critical for the Illinois side of the river, but fortunately the levees held, and favorable weather prevailed during the remainder of the week.

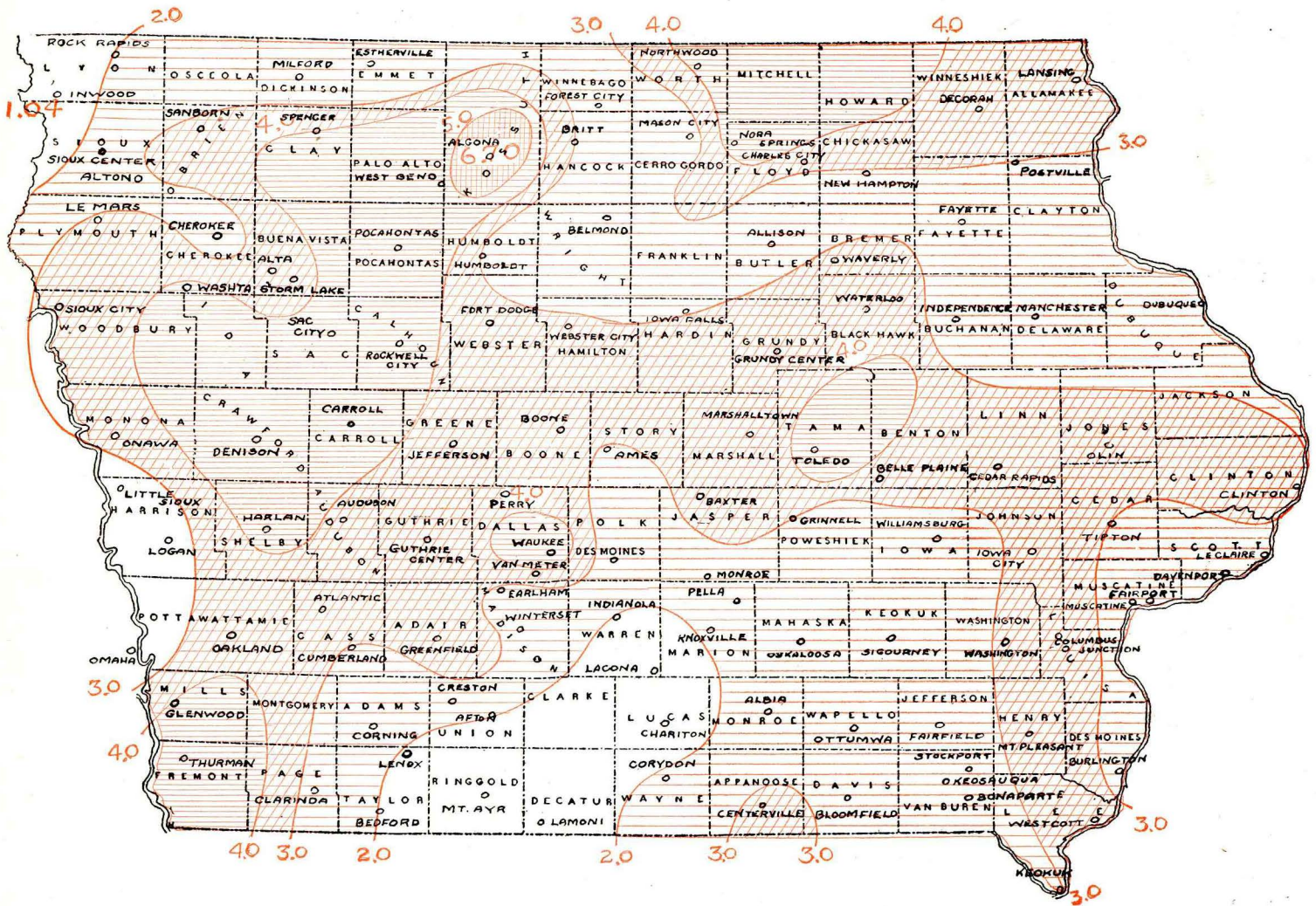
A careful survey of the Tri-Cities and their environs is summed up as follows:

Loss and damage due to flooding of property which could not be protected.....	\$37,000
Added expenses, incurred in protection work.....	9,000
Losses due to suspension of business.....	1,000

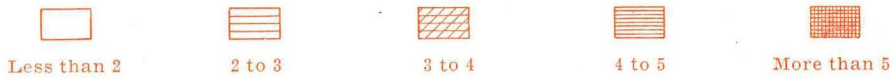
Muscatine reports items similar to above and crop loss, totaling \$31,000, also that \$400,000 worth of property was saved by the warnings.

No loss of life by drowning occurred in this District as a direct result of the flood.

TOTAL PRECIPITATION, APRIL, 1922



SCALE OF SHADES—IN INCHES.



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, MAY, 1922 No. 5

GENERAL SUMMARY

May, 1922, was characterized by remarkably uniform temperatures, the range between the northern and southern divisions amounting to only 2.4° and the range for the State was the least ever recorded since State wide records began in 1890. For the second time in 33 years the minimum temperature did not reach the freezing point, the lowest temperature recorded being 34°, which is the highest May minimum of record, and only a few light frosts occurred on the 13th which did no damage. The mean temperature averaged nearly three degrees above the normal and most of the excess occurred during the first twelve days. During the rest of the month the temperature was near normal though mostly slightly below normal and the last two days rather cool.

The precipitation averaged more than an inch below normal and was very unevenly distributed. The greatest deficiency occurred over the northern division. The central and southern division averaged near normal due to a decided excess over the central and south-central sections. Over much of the western and north-central portions of the State a drouth set in during April that was not relieved during the entire month of May and at the end of the month the drouth was serious over a large area. Up until the 23d only light showers occurred at frequent intervals, but on the 23d a general shower period set in that continued for five days over a large portion of the State and excessive amounts were recorded at many points in the central, south-central and southeastern portions of the State. Over this area farm work was temporarily stopped or greatly retarded and many corn fields became weedy and large patches were covered with water. At most stations reporting heavy amounts the rate of fall was moderate and most of the water was absorbed by the soil without causing serious flood damage, but at Burlington the rain fell at a remarkably rapid rate on the afternoon of the 26th, and a serious flood occurred. Rain began falling at 2:30 p. m. and increased rapidly and at 3:15 p. m. the total fall for 45 minutes from the time of beginning was 2.35 inches, which is one of the heaviest falls ever experienced in the State. The sewers were not adequate to carry the water from the streets and at points in the city the water was over four feet deep. Great damage was done to all kinds of property but power plants, railroads and business houses with goods stored in basements were the heaviest losers. The damage to property and goods in Burlington was estimated at \$200,000, and the loss to crops, and buildings and railroads in the vicinity was probably as great.

Hail storms were frequent and covered much of the State and in localities were severe. On the evening of the 6th a storm occurred at Boone and vicinity that did considerable damage to greenhouses and crops and on the late afternoon a severe storm occurred in the vicinity of Iowa City that damaged fruit greatly, broke many window glasses and killed chickens. This storm assumed tornadic characteristics particularly near Tiffin, Johnson County, and did considerable

damage to fruit trees and small farm buildings. On the afternoon of the 11th a tornado occurred about one mile southeast of Plainfield, Bremer County, which caused damage to a number of homes and destroyed a large number of farm buildings. One man was severely injured; horses, cattle, hogs and chickens were killed and fruit trees suffered considerable damage as a result of this storm. The path of the storm where the greatest damage occurred was about two miles wide and four miles long.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.92 inches. The highest recorded was 30.38 inches at Du-buque, on the 28th, and the lowest was 29.41 inches, at Dav-enport, on the 18th. The monthly range was 0.97 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 98 stations was 63.4° or 2.9° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 61.9°, or 2.9° higher than the normal; Central, 64.0°, or 3.3° higher than the normal; South-ern, 64.3°, or 2.6° higher than the normal. The highest monthly mean was 67.8°, at Fairport, and the lowest was 60.4°, at Estherville. The highest temperature reported was 91° at Cedar Rapids, on the 10th, and the lowest was 34° at Poca-hontas on the 13th and Washta, on the 7th and 13th. The temperature range for the State was 57°.

COMPARATIVE DATA FOR THE STATE—MAY.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre-.01 in. or more	Clear	Partly cloudy	Cloudy
1890	57.7	-2.8	90	26	3.56	-1.01	6.44	1.61		9	10	13	8
1891	58.3	-2.2	94	21	3.18	-1.39	7.10	1.46		8	14	9	8
1892	54.0	-6.5	88	29	8.77	+4.20	12.64	4.87	T.	16	5	9	17
1893	56.6	-3.9	96	26	3.45	-1.12	5.82	1.65	0	9	13	9	9
1894	61.1	+0.6	96	22	1.87	-2.70	4.77	0.33	0	6	17	10	4
1895	61.7	+1.2	104	24	3.19	-1.38	5.79	0.84	0	9	11	12	8
1896	65.5	+5.0	100	34	6.69	+2.12	11.79	3.40	0	12	11	12	8
1897	58.5	-2.0	96	20	1.92	-2.65	3.59	0.21	0	5	16	10	5
1898	59.6	-0.9	92	26	4.67	+0.10	7.82	2.22	0	12	9	10	12
1899	60.2	-0.3	90	27	6.23	+1.66	11.47	3.09	0	13	9	12	10
1900	63.2	+2.7	98	22	3.31	-1.26	6.98	0.96	0	8	14	10	7
1901	60.7	+0.2	95	28	2.35	-2.22	4.57	0.72	0	7	16	9	6
1902	63.8	+3.3	97	25	5.39	+0.82	18.04	0.87	0	13	10	12	9
1903	61.6	+1.1	91	24	8.55	+3.98	15.45	2.88	0	16	9	12	10
1904	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	18	8.34	+3.77	14.33	1.33	0	15	9	11	7
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	3.00	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	25	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
1921	63.3	+2.8	99	25	4.23	-0.34	9.41	1.32	0	10	14	10	7
1922	63.4	+2.9	91	34	3.53	-1.04	8.36	0.47	0	12	13	10	8

T. Indicates an amount too small to measure, or less than .005 inch precipi-tation and less than .05 inch snowfall.



Climatological Data for May, 1922.

Stations	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.	Clear.			Partly cloudy.	Cloudy.
<i>Northern Division</i>																				
Algona	Kossuth	1,213	49	63.6	+ 4.3	84	3†	42	7†	34	0.47	-3.66	0.30	0	3	19	5	7	se.	W. E. Laird.
Allison	Butler	1,044	10	62.5	-----	86	10	41	7	33	4.58	-----	1.37	0	14	6	14	11	sw.	J. A. Bell.
Alta	Buena Vista	1,513	31	61.6	+ 2.6	83	9	41	4	35	1.06	-3.96	0.27	0	11	9	15	7	se.	D. E. Hadden.
Alton	Sioux	1,305	17	61.2	+ 1.7	84	5	36	7	42	2.38	-----	0.76	0	10	10	13	8	se.	W. S. Slagle.
Belmond	Wright	1,205	12	62.5	-----	88	10	40	7†	35	2.76	-----	0.45	0	16	5	18	8	sw.	Geo. P. Hardwick.
Britt	Hancock	1,236	25	62.8 ^a	+ 4.4	89 ^a	29	38 ^a	13	40 ^a	1.36	-3.36	0.42	0	7	15	10	6	sw.	L. M. Goodman.
Charles City	Floyd	1,015	31	62.3	+ 2.8	87	10	44	7	33	3.93	-1.01	1.22	0	15	6	13	12	nw.	U. S. Weather Bureau.
Cherokee	Cherokee	1,196	-----	60.8	-----	83	29	38	7†	41	1.40	-----	0.51	0	10	13	15	3	s.	J. E. Wirth.
Decorah	Winneshiek	875	29	62.8	+ 2.8	86	10	41	12	41	3.87	-0.74	0.90	0	12	10	14	7	se.	M. D. Whitney.
Estherville	Emmet	1,298	27	60.4	+ 2.8	84	10	42	7†	35	1.85	-3.22	0.35	0	9	7	21	3	s.	A. O. Paterson.
Fayette	Fayette	1,003	32	62.3	+ 4.3	88	10	41	13	34	3.86	-1.20	0.78	0	14	16	7	8	sw.	R. Z. Latimer.
Forest City	Winnebago	1,226	28	62.0	+ 2.6	87	11	40	13	39	1.83	-2.66	0.25	0	12	10	11	10	se.	Dr. M. B. Neill.
Humboldt	Humboldt	1,095	34	63.6 ^a	+ 4.2	88	3†	38 ^b	13	40 ^b	0.86	-3.54	0.26	0	7	5	14	12	s.	H. C. Snitkey.
Inwood	Lyon	1,474	18	60.9	+ 1.8	83	5	35	7	40	2.38	-1.52	0.98	0	12	12	10	9	s.	F. B. Hanson.
LeMars	Plymouth	1,224	26	61.4	+ 1.5	83	5	37	20	41	2.30	-2.20	0.75	0	10	15	7	9	se.	Mrs. M. C. Wooley.
Mason City	Cerro Gordo	1,148	25	61.6	+ 2.8	86	10	39	13	37	3.65	-1.01	1.56	0	13	16	4	11	se.	Northern Sugar Crop.
Milford (near)	Dickinson	1,430	2	60.8	-----	82	3†	41	4†	34	0.96	-----	0.42	0	8	6	19	6	se.	Dr. F. J. Smith.
New Hampton	Chickasaw	1,169	25	62.6	+ 4.1	87	10	43	7	33	5.22	+0.55	0.96	0	15	15	9	7	s.	A. F. Kemman.
Nora Springs	Floyd	1,064	10	63.0	-----	87	10	40	1	35	4.92	-----	1.65	0	14	14	8	9	s.	Arthur Betts.
Northwood	Worth	1,222	26	61.6 ^a	+ 3.2	87 ^a	10	41 ^a	13	38 ^a	3.43	-1.66	0.80	0	14	8	15	8	sw.	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	18	62.4	+ 3.1	86	11	34	13	40	1.67	-2.62	0.43	0	13	11	11	9	s.	F. E. Hronek.
Postville	Clayton	1,189	23	61.6	+ 2.9	85	10	43	7	31	3.36	-1.94	0.75	0	12	9	14	8	sw.	F. L. Williams.
Rock Rapids	Lyon	1,358	23	61.4	+ 2.9	84	28	38	15	39	3.49	+0.05	1.38	0	12	20	9	2	nw.	J. K. Medberry.
Sanborn	O'Brien	1,553	8	60.9	-----	84	10†	35	20	45	1.83	-----	0.87	0	8	12	10	9	sw.	J. W. Dow.
Sioux Center	Sioux	1,426	23	60.8 ^a	+ 2.0	82 ^a	5†	39 ^a	31	37 ^a	2.29	-2.20	0.97	0	9	14	6	11	s.	J. de Ruyter.
Spencer	Clay	1,319	8	61.6	-----	88	3	36	7	42	1.23	-----	0.54	0	8	13	9	9	sw.	E. W. Little.
Storm Lake	Buena Vista	1,440	33	61.9	+ 2.6	83	29	41	20†	35	0.95	-3.09	0.23	0	9	18	9	4	s.	F. L. Williams.
Washta	Cherokee	1,157	24	60.6	+ 1.6	84	5	34	7†	42	2.00	-3.15	0.68	0	9	15	5	11	s.	H. L. Felter.
Waverly	Bremer	948	26	62.3	+ 2.4	87	10	39	13	35	3.45	-1.07	0.70	0	13	17	8	6	se.	D. H. Murphy.
West Bend	Palo Alto	1,197	29	63.5	+ 4.3	90	10	36	31	41	0.80	-3.20	0.21	0	8	13	11	7	nw.	Jos. Dorweiler.
Mean and extremes				61.9	+ 2.9	90	10	34	7†	45	2.47	-2.01	1.65	0	11	12	11	8	s.	
<i>Central Division</i>																				
Ames	Story	926	45	63.0	+ 1.8	84	10†	44	17	32	8.36	+3.59	3.20	0	13	17	8	6	s.	Iowa State College.
Audubon	Audubon	1,301	28	62.2	+ 2.0	85	3	40	19†	36	1.96	-2.45	0.60	0	8	15	11	5	sw.	Geo. Kibby.
Baxter	Jasper	998	22	64.1	+ 3.5	87	10	44	13†	36	5.05	-0.95	1.28	0	13	9	16	6	se.	Henry Geise.
Belle Plaine	Benton	886	32	64.5	+ 4.1	90	10	42	13	36	5.22	+0.59	2.38	0	16	11	9	11	se.	O. C. Burrows.
Boone	Boone	1,134	17	62.6	+ 2.9	87	10	36	13	40	6.76	+1.6†	1.47	0	12	-----	-----	-----	s.	C. F. Henning.
Carroll	Carroll	1,265	32	62.6	+ 3.4	84	22†	40	13	37	1.72	-2.9†	0.61	0	8	19	7	5	nw.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	738	40	66.3	+ 5.0	91	10	49	17	29	5.08	+0.59	2.54	0	10	13	8	10	e.	R. S. Toogood.
Clinton	Clinton	593	49	66.7	+ 5.2	89	10†	46	7	31	4.23	-0.3†	1.04	0	15	19	7	5	s.	Dr. A. P. Bryant.
Davenport	Scott	580	51	66.0	+ 4.5	87	11	49	19	27	3.87	-0.3†	0.87	0	16	8	10	13	e.	U. S. Weather Bureau.
Denison	Crawford	1,180	28	62.7	+ 2.8	83	3†	38	13	39	1.03	-3.17	0.24	0	13	13	9	9	nw.	V. L. Byers.
Des Moines	Polk	861	44	64.3	+ 2.7	86	10	44	13	31	6.87	+2.3†	3.29	0	14	8	12	11	sw.	U. S. Weather Bureau.
Dubuque	Dubuque	639	49	64.8	+ 4.0	87	10	48	1	26	4.79	+0.4†	1.68	0	15	7	13	11	s.	U. S. Weather Bureau.
Fairport	Muscatine	567	1	67.8	-----	87	10	44	31	38	3.32	-----	0.66	0	13	17	8	6	s.	R. L. Barney.
Fort Dodge	Webster	1,114	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Samuel Sampson.
Grinnell	Poweshiek	1,081	28	64.4	+ 3.0	88	10	44	15	31	3.00	-1.6†	0.57	0	16	7	16	8	se.	Paul P. Meyers.
Grundy Center	Grundy	976	31	64.4	+ 3.9	87	10†	41	1	34	4.03	-0.88	1.10	0	10	14	8	9	se.	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	27	63.3	+ 1.9	84	3	41	13	36	3.83	-0.9†	1.36	0	8	19	3	9	sw.	F. L. Nesselroad.
Harlan	Shelby	1,192	23	62.9	+ 2.7	85	3†	38	13	40	1.47	-3.05	0.58	0	8	23	2	6	s.	W. K. Colburn.
Independence	Buchanan	921	58	63.7	+ 4.1	84	10	43	17	29	3.89	-0.35	0.96	0	14	14	7	10	sw.	Dr. George Boody.
Iowa City	Johnson	733	62	64.7	+ 3.8	88	10	44	7†	32	5.52	+1.07	1.15	0	14	7	15	9	s.	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	29	62.4	+ 3.9	86	10	39	13	36	3.56	-1.04	1.06	0	15	13	8	10	s.	J. B. Parmelee.
Jefferson	Greene	1,052	23	62.3	+ 1.3	84	3	38	7†	36	2.38	-----	0.48	0	11	9	11	11	se.	W. I. Lyon.
Little Sioux	Harrison	1,040	17	63.3	+ 1.3	87	5	37	4	40	1.13	-----	0.31	0	8	12	11	8	se.	G. H. Gibson.
Logan	Harrison	1,035	55	63.4	+ 1.8	86	6	38	13	37	1.66	-2.54	0.48	0	9	15	11	5	nw.	Mary Jean Stern.
Manchester	Delaware	944	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	Thomas H. Tracey.
Marshalltown	Marshall	947	30	64.6	+ 4.1	90	10	46	7†	34	4.99	+0.48	0.87	0	17	19	4	8	sw.	C. C. Pigman.
Monroe	Jasper	922	10	64.6	-----	87	10	45	19	30	5.53	-----	1.43	0	12	16	8	7	s.	J. A. Dibel.
Olin	Jones	760	23	65.2	+ 4.7	89	10	42	1	32	2.21	-2.49	0.60	0	7	12	17	2	sw.	Dr. F. W. Port.
Onawa	Monona	1,051	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Perry	Dallas	975	21	64.2	+ 2.8	85	10†	39	13	36	6.11	+1.06	1.87	0	15	17	7	7	nw.	F. N. Bartlett.
Rockwell City†	Calhoun	1,134	26	60.4†	-----	85†	11	40†	31	37†	-----	-----	0	-----	-----	-----	-----	-----	-----	A. W. McIsaac.
Sac City	Sac	1,344	46	61.2†	+ 1.2	86†	9	41†	13†	41†	1.21	-3.07	0.33	0	7	-----	-----	-----	-----	F. P. Kessler.
Sioux City	Woodbury	1,135	33	62.8	+ 2.0	83	5	44	31	32	2.23	-2.14	0.75	0	11	8	10	13	s.	U. S. Weather Bureau.
Tipton	Cedar	807																		

Climatological Data for May, 1922—Continued.

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest	Date.	Lowest	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more	Clear			Partly cloudy.	Cloudy.
Southern Division																				
Afton	Union	1,212	28	63.6	+ 1.8	83	10	42	19	33	6.38	+1.64	2.87	0	10	14	8	9	nw.	S. R. Brown.
Albia	Monroe	959	24	65.0	+ 3.8	89	10	42	15	32	4.35	-0.62	1.53	0	15	10	13	8	sw.	O. E. McBride.
Atlantic	Cass	1,164	31	63.4	+ 2.3	86	3	38	15	39	2.06	-2.37	0.58	0	11	15	7	9	se.	J. N. Reynolds.
Bonaparte	Van Buren	31	64.8	+ 2.8	85	10†	42	15	31	2.71	-1.72	0.57	0	11	16	9	6	se.	B. R. Vale.	
Burlington	Des Moines	544	26	66.6	+ 3.8	88	10	47	7†	30	6.17	+2.07	3.00	0	15	18	4	9	sw.	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	17	64.4	---	85	10	44	13	32	4.72	-0.34	1.33	0	13	13	9	9	se.	Leo J. Allen.
Chariton	Lucas	1,042	27	63.2	+ 2.6	84	11	43	7†	33	5.95	+1.24	2.90	0	6	10	11	10	s.	C. C. Burr.
Clarinda	Page	1,009	32	64.3	+ 3.5	86	3†	41	15	40	4.74	-0.39	1.23	0	16	14	9	8	se.	A. S. Van Sandt.
Columbus Jet	Louisa	595	21	65.8	+ 3.4	89	10	43	4	30	4.25	+0.15	1.12	0	9	19	11	0	w.	J. B. Johnston.
Corning	Adams	1,117	30	61.6	+ 1.0	82	3†	35	15	40	4.62	-0.60	1.23	0	9	16	7	8	se.	Jerome Smith.
Corydon	Wayne	1,101	29	64.8	+ 2.9	87	11	42	19	35	4.92	+0.41	1.55	0	13	6	18	7	se.	May C. Miller.
Creighton	Union	1,312	17	63.2	+ 3.7	82	10	43	19	31	6.01	---	2.10	0	13	9	19	3	sw.	Dr. H. M. Stanley.
Cumberland (near)	Cass	1,225	23	---	---	---	---	---	---	---	2.31	-1.91	0.80	0	8	15	8	8	s.	Carl E. Pollock.
Earlham	Madison	1,126	20	62.5	+ 2.6	84	10	35	13	37	4.41	-0.27	1.43	0	12	19	2	10	sw.	George Phillips.
Fairfield	Jefferson	780	38	64.8	---	89	10	39	-15	36	3.15	-2.12	0.66	0	10	12	7	12	nw.	Prof. R. M. McKenzie.
Glenwood	Mills	1,100	24	64.0	---	86	3	37	13†	39	3.87	---	0.93	0	10	15	9	7	se.	Dr. George Mogridge.
Greenfield	Adair	1,368	30	---	---	---	---	---	---	---	7.40	+2.23	3.90	0	14	6	17	8	---	C. E. McCaslen.
Indianola	Warren	972	31	64.0	+ 2.4	85	10	43	13	33	7.22	+2.73	2.92	0	16	11	12	8	s.	Seth F. Shenton.
Keokuk	Lee	614	51	66.4	+ 3.2	87	10	49	19	26	2.44	-1.81	0.56	0	15	8	13	10	e.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	30	65.1	+ 2.9	89	10	41	15	39	2.45	-2.17	0.72	0	11	9	9	13	se.	J. H. Landes.
Knoxville	Marion	920	27	64.4	+ 1.7	86	10	39	18	37	4.14	+0.02	2.05	0	11	9	15	7	se.	W. J. Casey.
Lacona	Warren	---	23	---	---	---	---	---	---	---	7.40	+2.23	3.90	0	14	6	17	8	---	J. B. Alter.
Lamoni	Decatur	1,100	15	62.8	+ 0.8	82	10	40	19	34	6.29	+1.47	1.16	0	16	11	14	6	nw.	C. E. Wight.
Lenox	Taylor	1,250	27	63.3	+ 2.0	83	21	40	19	35	3.92	-0.94	0.78	0	14	16	7	8	s.	J. L. Hurley.
Mt. Ayr	Ringgold	1,236	29	63.2	+ 1.0	81	10†	42	19	32	4.75	-0.95	1.22	0	14	11	13	7	ne.	Alex Maxwell.
Mt. Pleasant	Henry	729	41	66.2	+ 3.6	89	10	43	14†	32	3.56	-0.91	1.05	0	8	7	14	10	se.	John H. Jericho.
Oakland	Pottawattamie	1,105	3	63.8	---	88	29	37	14	45	2.28	---	0.90	0	7	20	2	9	n.	M. E. Gray.
Oskaloosa	Mahaska	825	46	64.2	+ 2.6	87	10	42	15	37	4.57	+0.75	1.09	0	14	6	12	13	se.	Roy R. Robinson.
Ottumwa	Wapello	848	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	W. H. Powell.
Pella	Marion	877	29	64.0	+ 1.8	87	10	40	13†	35	4.08	-0.75	1.98	0	9	16	4	11	e.	J. H. Ver Steeg.
Sigourney	Keokuk	796	26	64.2 ^a	+ 2.0	87 ^a	10	41 ^a	15	32 ^a	2.93	-1.35	0.99	0	12	---	---	---	nw.	W. E. Utterback.
Stockport	Van Buren	754	20	63.2	+ 2.0	87	10	39	15	34	2.91	-1.51	0.61	0	14	8	16	7	s.	C. L. Beswick.
Thurman	Fremont	25	64.0	+ 1.3	85	3†	38	15	37	3.31	-1.60	1.06	0	11	1	25	5	sw.	C. R. Paul.	
Washington	Washington	---	40	66.4	+ 4.7	89	10	46	7†	30	3.31	-0.72	0.87	0	12	10	12	9	sw.	Wm. A. Cook.
Wescott (near)	Lee	769	40	64.7	---	82	10†	46	15†	26	4.03	---	0.74	0	14	7	7	17	se.	George H. Smith.
Winterset	Madison	1,129	31	64.0	+ 1.7	84	10	43	15†	34	4.84	+0.20	1.79	0	10	19	6	6	sw.	H. S. Ely.
Omaha, Neb.	---	1,040	51	64.6	+ 2.1	88	5	46	4	34	2.37	-2.13	1.29	0	10	12	9	10	nw.	U. S. Weather Bureau.
Means and extremes	---	---	---	64.3	+ 2.6	89	10	35	13†	45	4.21	-0.43	3.90	0	12	12	11	8	se.	---
State means and extremes	---	---	---	63.4	+ 2.9	91	10	34	7†	45	3.53	-1.04	3.90	0	12	13	10	8	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.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 77 per cent, and at 7 p. m. it was 58 per cent. The mean for the month was 68 per cent, which is just normal. The highest monthly mean was 72 per cent, at Charles City, and the lowest was 62 per cent, at Sioux City.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 100 stations, was 3.53 inches, or 1.04 inches less than the normal. By divisions the averages were as follows: Northern, 2.47 inches, or 2.01 inches less than the normal; Central, 3.92 inches, or 0.67 inch less than the normal; Southern, 4.21 inches, or 0.43 inch less than the normal.

The greatest amount, 8.36 inches, occurred at Ames, and the least, 0.47 inch, occurred at Algona. The greatest amount in 24 consecutive hours, 3.90 inches, occurred at Lacona, on the 24th.

WIND.

The prevailing direction was from the south. The average velocity was 8.0 miles per hour, or 0.7 mile less than the normal. The highest velocity reported from a regular Weather Bureau Station was at the rate of 48 miles an hour, from the southwest, at Sioux City, on the 11th.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE.

Stations	Barometric Pressure Inches (Sea level)				Relative Humidity (%)			Wind				Sunshine					
	Mean	Highest	Date	Lowest	Mean.			Total movement	Average hourly velocity		Miles		From	Date			
					7 a. m.	12 Noon. †	7 p. m.		Lowest	Miles		From					
Charles City	29.92	30.34	28	29.43	18	80	60	65	29	7	4,803	6.5	28	sw.	11	56	-12
Davenport	29.93	30.33	28	29.41	18	78	56	61	26	13	5,552	7.5	31	sw.	5	55	-9
Des Moines	29.90	30.32	28	29.44	5	75	52	57	16	13	5,883	7.9	33	sw.	11	56	-5
Dubuque	29.93	30.33	28	29.42	18	79	60	63	25	7	4,410	5.9	20	se.	24	52	+7
Keokuk	29.93	30.29	28	29.46	18	74	51	59	23	13	5,049	6.8	37	sw.	5	65	+1
Sioux City	29.91	30.27	28	29.42	5	74	51	51	19	11	9,385	12.6	48	sw.	11	54	+3
Omaha, Neb.	29.90	30.26	28	29.47	5	76	54	53	21	6	6,345	8.5	33	nw.	3	72	+1
Means and extremes	29.92	---	---	---	77	55	58	---	---	---	8.0	---	---	---	---	59	-3
Normals and records	29.95	---	4th	---	7th	77	---	59	---	---	8.7	---	---	---	---	62	---
		*30.58	1910	§29.02	1875	---	---	---	---	---	---	---	---	---	---	---	---
						§10	1889	---	---	---	---	---	---	---	---	---	---

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

Daily Precipitation for May, 1922.

Stations.	Drainage Basin	Day of Month.																															Totals		
		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			
Northern Division																																			
Algona	Des Moines					.03	.14									.30																			0.47
Allison	Cedar	T.	.59	.78			.01	.57			.02		T.	T.	.47	.17	.20	.02					1.04	.25	.04	.12					.25			4.58	
Alta	Raccoon		.08	.09				.14	.05							.02	.18	.27					.04	.05	.08	.06					.02			1.06	
Alton	Floyd	T.	.48				.06	.48			.07					.02	.31						.12	.02	.76					.06			2.38		
Belmond	Iowa	T.	.23	.05			T.	.20		T.	.04			.05	.45	.43	.25	.20	.02				.29	.04	.19	.01	.06			.25			2.76		
Britt	Iowa		.20	.14						.30									.42				.17	T.	.04					.09			1.36		
Charles City	Cedar	T.	.91	.37		T.		.79		.02	.20			.04	T.	.17	.42	.01			T.		.17	T.	.04				.29			3.93			
Cherokee	Little Sioux	T.	.09		.01	T.	T.	.51		T.			.03	.03	.07	.19							.15	.65	.09	.21			T.			1.40			
Decorah	Big Sioux		.05	.20		T.			.85			.40		.05			T.	.80	.05	T.				.75	.20	.65	.07			.90			3.87		
Estherville	Des Moines		T.	.35				.15	.20						.15	.25	.15	T.						.25		.10	.25			T.			1.85		
Fayette	Mississippi		.56	T.		.08		.22		.08			.04	T.	.11	.40	.32	T.					.78	.15	.17	.37			.55	.03			3.86		
Forest City	Cedar		.25			.10		T.	.24		.22			T.	.18	.16	.20	.05			T.			.12	.05	.05	T.			T.	.21		1.83		
Humboldt	Des Moines		.26					T.	.31	.13			T.	T.	.07	.17	T.						.04	.06	.13	T.			T.			0.86			
Inwood	Big Sioux		.29	.61				T.	.31	.67					.05	.17	.15						.01	.17	.15		.02	.04		.05			2.38		
LeMars	Floyd	T.	.47				T.	.75		.21				T.		.12	.12						.14				.12	.25		.09	.03		2.30		
Mason City	Cedar		.82	.74		.02		.52		.03					.09	.88	.22						.22	.03	.22	.16			.20			3.65			
Milford (near)	Little Sioux		.05			.02		.42							.16	.06	.22	T.					.02	.01				T.				0.96			
New Hampton	Wapsipinicon		.78	.96				.22		T.	.28		T.	T.	.65	.10	.05	.61					.50	.21	.10	.68	.05		.60	.03		5.22			
Nora Springs	Cedar		1.65		.05			.50		.12				.07	.10	.33	.31	.06					.49	.15	.16	.36			.58			4.92			
Northwood	Cedar		.20	.80		.60		.10		.15				.03	.05	.10	.08	.12					.43		.30	.17			.30			3.43			
Pocahontas	Des Moines	T.	.01	.01		T.		.05	.08					T.	T.	.01	.35	.32	.02				.04	.30	.03	.43			.02			1.67			
Postville	Mississippi		.33					.40		.08			T.	T.		.16	.06	.22					.75	.17	.07	.24			.48	.66		3.36			
Rock Rapids	Big Sioux	.03	1.38					.04	1.11				.06		.02	.40	.27			.02			T.		.08	.02		.05	.03			3.49			
Sanborn	Floyd		.21					T.	.87						T.	.09	.26						.20		.04	T.		.10	.06			1.83			
Sioux Center	Floyd	T.	.48				.02	.95		T.	.18		.02			.17	.26						T.		T.	.12		.18	.08			2.29			
Spencer	Little Sioux		.04				T.	.45						T.	.08	.62	.54	T.					.05	.05	.05							1.23			
Storm Lake	Raccoon		.05	.14		.03		.23						T.	.04	.23							.10	.11	.02							0.95			
Washta	Little Sioux		T.	.20		T.	T.	.04	.44					T.	T.	.22	.22						.14	.62	.04	.68	.22					2.00			
Waverly	Cedar		.70	.05		.10		.34		.08				.02	.15	.43	.34	.09						.64	.21				.30			3.45			
West Bend	Des Moines					T.		.08	.12						.12	.21							.04	T.	.04				.02			0.80			
Central Division																																			
Ames	Skunk		.30	.08	.05	1.29		.08							.03	.17							1.36	3.20	.31	.42	.10		.97			8.36			
Audubon	Nishnabotna		.05					.04					T.		.22	.15							.60	.34	.32	T.			.24			1.96			
Baxter	Skunk	T.	.25	.20	.08		.22		.25			T.			.12	.05	.22						.50	1.28	.06	1.16			.66			5.05			
Belle Plaine	Iowa	T.	.25			.10		.45		.09			T.	T.	.05	.27	.26	.20	.01				.14	2.29	.09	.07	.69		.18	.08		5.22			
Boone	Des Moines		.19	.27			.48		T.	.07			T.		.02	T.	T.	.24					.75	1.35	1.47	.44	.37				1.11	6.76			
Carroll	Raccoon		.04	.02				T.	.05						T.				.17					.26	.25	.32	.61			T.			1.72		
Cedar Rapids	Cedar		T.			.16		.40		.02	T.			.20	T.			.21	T.				.04	.05	2.54	T.	1.22		.24			5.08			
Clinton	Mississippi			.20		.13		.22		.08			.13	.21	.15		.48	.08					.43	.16	1.04	.07	.66		.19			4.23			
Davenport	Mississippi	T.	.09	T.		.29		.25		.09	.35	.08	.66	T.	.02	.29	.22	T.					.26	.22	.04	.84	.03		.01	.21		3.87			
Denison	Missouri	.01	.01	.08			.15								.23	.08	.05						.24	.02	.08	.04	.03		.01			1.03			
Des Moines	Des Moines	.28	.01	.03		T.	T.	.20		.08		.02	T.		.48	.19						.15	1.01	2.62	.11	.54			1.15			6.87			
Dubuque	Mississippi	T.	T.	.02		.26	T.	.19	.01		T.		T.	.11	T.	.84	.29	.21	.01				.44	1.45	.26	.27			.40	.03		4.79			
Fairport	Mississippi					.60		.41		.09		.10		.02		.04	.66	.62					.16	.14	.02	.14	.09		.25			3.32			
Fort Dodge	Des Moines							.06		.09		.09		.04		.02	.16							.25	.82	.15	.02		.03			**			
Grinnell	Iowa	.01	.30			.12			.01	.03					.40	.19	.12			.01			.57	.42	.24	.17	.03		.35	.03		3.00			
Grundy Center	Cedar		.66	T.		.22		.34			T.				T.	.30	.12						1.10	.42	.08	T.	.25		.54			4.03			
Guthrie Center	Raccoon		.10	.09											.05								1.36	.88	.78	.36			.21			3.83			
Harlan	Nishnabotna	.03						.05		.11					.12								.45	.08	.58				.05			1.47			
Independence	Wapsipinicon		.48	.09				.07		T.	.27			.44	.07	.06	.39						.37	.17	.96		.07		.44	.10		3.89			
Iowa City	Iowa		T.	T.		.24		1.15	T.	.01	.71			.13	.13	.40	.35	.02					.05		1.03	.61	.55		.14			5.52			
Iowa Falls	Iowa		.13	.30		.41		.07	.40		.02		T.	.02		.21	.12	.07					.19	.06	.17	T.	.09		.30			3.56			
Jefferson	Raccoon	T.	.06		.08		T.	.03		.15			T.		.14	.37							.38	.48	.35	.26	T.		.08	T.		2.88			
Le Claire	Mississippi		T.	.11		.23		.41		.39				.82	.14	T.	.58	.18	.01				.14	.18	.55	.59	.62		.30			5.25			
Little Sioux	Little Sioux		.04	.31	.03			.25		.18					.06								.22	T.	T.				T.			1.13			
Logan	Missouri		.12	.10				.26							.10								.48	.20	.15	.10	.15					1.66			
Manchester	Mississippi																																		
Marshalltown	Iowa		.58	T.	T.		.63		.09	.15		T.	.03		.02	.01	.10	.01	.21	.02			.77	.60	.13	.06	.71		.87			4.99			
Monroe	Skunk	T.	.34			.18	T.	.17		.20			T.		.14		.04	.38					.59	1.43	1.12	.43	T.		.63	.02		5.53			
Muscataine	Mississippi					.20		.30							.25	.46	T.						T.	T.	.68	.04	.10		.40			2.57			
Olin	Wapsipinicon					.20		.24	.30				T.		T.	.55	.20						T.	T.	.60	T.	.22		.30			2.21			
Onawa	Missouri																																		
Perry	Raccoon		.31	.53	.04		.05		.03		.17				.04	.13							1.20	1.87	.60	.75	.03		.31	.05		6.11			
Rockwell City	Raccoon														.02	.10							T.	.30	.15	.0									

Daily Precipitation for May, 1922—Continued.

Stations.	Drainage Basin	Day of Month.																															Totals
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Southern Division</i>																																	
Afton	Grand	.20	.08			.12											.37		.12					1.30	2.87	.20	.04				1.08		6.38
Albia	Des Moines		.11				.11		T.	.06		.07	.30				.02	.02	.24					.38	1.53	.63	.18	.60	.01		.09		4.35
Atlantic	Nishnabotna	T.	.04		.01			.05									.03	.03	.15					.58	.17	.18	.58				.24		2.06
Bonaparte	Des Moines	T.				.22		.30			T.	.12		.06			.08		.57				T.	.24	.15	.05	.55				.37		2.71
Burlington	Mississippi			.03			.54		.01	.34			.02			.15		.03	.62	.03					.12	.77	.46	2.54			.26		6.17
Centerville	Chariton	.02				.01	.09		.04			.12					.22		.38				.16	.98	1.33	.68	.41				.28		4.72
Chariton	Chariton											.30					.45	T.					T.	1.95	2.90	.10	T.	T.		.25		5.95	
Clarinda	Nodaway	.02	.25	.01	.04		.87	.15									.08	.02	.07					1.23	.56	.04	.70	.29	.23		.23		4.74
Columbus Jct.	Iowa	T.					.35		.26		T.	T.			1.12		.26		.65					T.	.65	.20	.09	.02			.65		4.25
Corning	Nodaway		.34	.21		.29			T.		T.					T.							.47	.45	.55	.53	T.	T.		1.23		4.62	
Corydon	Chariton	.06	.05	T.			.07		.04			.17				T.	.43	T.	.39				T.	1.03	1.55	.36	.70	.01		T.	.06		4.92
Creston	Missouri		.32	.23	.06		.45		.08	T.			.22			T.		T.	.01	.12				.48	.82	2.10	.29	T.			.83		6.01
Cumberland	Nodaway	.20	T.			.05			T.							T.	T.							.80	.40	.46	.05				.14		2.31
Earlham	Des Moines	.06	.43		.05	T.						.23		T.	T.		.19		.11	.08				1.05	1.43	.25	.04	T.		.49		4.41	
Fairfield	Skunk					.66		.26	T.	.10	T.					T.	.03		.50					.05	.10	.30	.63			T.	.52		3.15
Glenwood	Missouri	.16			T.	.10			T.			.11					T.	.14					.86	.93	.45	.33		.64		.15		3.87	
Greenfield	Nodaway																																
Indianola	Des Moines	.09	.48			.20	.24		.14		T.	.04			.03		.45	.20	.05					.97	2.92	.51	.50	T.		.59	.01	7.22	
Keokuk**	Mississippi	T.	.03			.22	T.		.56			.15	.04	T.	.14		.19	.42	.05				.07	T.	.16	.04	.17			.05	.15	2.44	
Keosauqua	Des Moines	T.						.34		.06	.10			T.			T.		.49	.01			.15	.22	.50	.01	.08			.49		2.45	
Knoxville	Des Moines	.07				.18		.10			T.			T.		.15	T.	.30						.65	2.05	.13	.18	.03		.30		4.14	
Laona	Des Moines	.07	.02			.04	.09	.06			.24					.26	.06	.24						1.35	3.90	.30	.02			.75		7.40	
Lamoni	Grand		.14	.16		.44		.10	T.		.01					.62		.02	.27					1.08	1.16	1.13	1.08	.32	.01	.07	.28	6.29	
Lenox	Missouri	.27	.19	.05		.24		.08		.02					T.	.15	.18						.27	.62	.67	.29		.11		.78		3.92	
Mt. Ayr	Grand	.12	.16	.21		1.22		.10		T.	T.			T.		.08	T.	.26					.19	.75	.97	.01	.05	.08		.55		4.75	
Mt. Pleasant	Skunk	T.	T.				.86		T.	T.			.18		.18		.18		.40						.23	.32	1.05	T.		.34		3.56	
Oakland	Nishnabotna	.11														T.	.20							.90	.19	.55		.15		.18		2.28	
Oskaloosa	Des Moines	.04	.08			.34	.04	T.	.32		T.	T.			T.	T.	.02	T.	.38				T.	.85	1.09	.23	.85	.23		.06	.04	4.57	
Ottumwa	Des Moines																																
Pella	Skunk	T.	.13			T.	.25		T.	T.						T.	T.	.35					T.	.62	1.08	.06	.28	.06		.30		4.03	
Sigourney	Skunk	T.			T.	T.	.99			.21	T.	.67			.13		.16	T.	.25					.11	.12	.06	.13	.06		.04		2.93	
Stockport	Skunk	.03	.02				.45		.30		T.	.14			.03	.02	T.	.44						.16	.05	.20	.61	.02		.52		2.99	
Thurman	Missouri	.08	.04			.20		.04					.03		T.	T.	.18						1.04	1.06	.37	.12		T.		.15		3.31	
Washington	Skunk					.32		.17		.05	.08				.28		.08		.47						.43	.87				.56		3.31	
Wescott (near)	Mississippi		T.	.06		.74		.41		.12	.02	.20		.14		.18		.62						.02	.32	.29	.60			.31		4.03	
Winterset	Des Moines		.37					.18			T.					.06		.05						1.35	1.79	.05	.25	.07		.67		4.84	
Omaha, Nebr.***	Missouri	.09	T.	T.				.18	T.	T.	.05			T.		T.	.06						1.06	.30	.11	.19	T.	.24		.09		2.37	

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.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 59, or 3 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau Stations was as follows: Charles City, 56; Davenport, 55; Des Moines, 56; Dubuque, 52; Keokuk, 65; Sioux City, 54; Omaha, Nebr., 72.

MISCELLANEOUS PHENOMENA.

Aurora: 20th.
 Fog: 3d, 13th, 16th, 17th, 24th, 30th.
 Frost: (light) 13th.
 Hail: 2d, 3d, 5th, 6th, 8th, 11th, 12th, 13th, 14th, 15th, 16th, 20th, 24th, 25th, 26th, 28th, 30th.
 Halos: 1st 2d, 3d, 4th, 7th, 8th, 13th, 14th, 15th, 27th.

Rainbows: 5th, 15th, 16th, 17th, 26th.
 Thunderstorms: All dates except 1st, 7th, 19th, 20th, 21st, 28th, 29th, 31st.
 Tornadoes: 8th, 11th.

RIVERS.

Gradually falling stages prevailed on the Mississippi River except south of Clinton, where a slight rise occurred after the rains that set in on the 23d. Moderate stages prevailed on the Missouri River with very little fluctuation except about the middle of the month when a moderate rise occurred. Low stages prevailed on most interior rivers but a sharp rise occurred on the Skunk, Des Moines and Raccoon Rivers after the heavy rains the last week of the month.

Daily Maximum and Minimum Temperature for the Month of May, 1922.

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

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

HAIL STORMS DURING APRIL, 1922.

Date	County	Township	Direction From	Width of Path	Area Covered	Character	Size of Stones	Damage
6	Adams	Quincy						None
6	Boone	Des Moines						None
6	Buena Vista	Nokomis						None
6	Denison	Denison				Very light		None
6	Polk	Des Moines			Small	Light	Small	None
6	Taylor	Benton						None
6	Wright	Belmond						None
7	Clinton	Lincoln						None
7	Ringgold	Poe						None
8	Webster	Cooper						None
9	Denison	Denison						None
10	Cherokee	Willow						None
10	Dallas	Walnut						None
10	Denison	Denison				Very light		None
10	Jasper	Independence				Light		None
10	Page	Buchanan	S.	1 mile	18 sq. mi.	Heavy	1½ inches	Considerable
10	Polk	Des Moines	SW.	Wide	Large	Light	Small	None
10	Ringgold	Grant	W.		1 sq. mi.	Light	Hickory Nuts	None
10	Ringgold	Poe						None
10	Keokuk	Sigourney						None
10	Taylor	Dallas	N. W.		13 sq. mi.	Moderate	½ inch	Considerable
10	Taylor	Benton	S.	12 miles	Large	Moderate		None
10	Taylor	Platte				Light		None
10	Taylor	Washington	S. W.	1 mile	8 sq. mi.	Heavy	Hickory Nuts	None
10	Wayne	Corydon				Very light		None
10	Webster	Cooper						None
11	Page	Nodaway						None
12	Carrroll	Maple River	S. W.	8 miles		Moderate	Marbles	None
12	Marshall	Marshall	N. E.		4 sq. mi.	Moderate	Hazel Nuts	Slight
12	Marshall	Taylor	N. E.		36 sq. mi.	Moderate	Hickory Nuts	Slight
14	Green	Grant						None
16	Lee	Green Bay						None
16	Van Buren	Van Buren				Light		None
16	Winneshiek	Glenwood	N. W.		15 sq. mi.	Light	Small	Considerable
17	Johnson	Lucas						None
17	Ringgold	Poe						None
17	Wayne	Corydon						None
17	Wayne	Warren	N. W.			Light	¾ inch	None
19	Page	Buchanan	S. W.			Light	Walnuts	Considerable

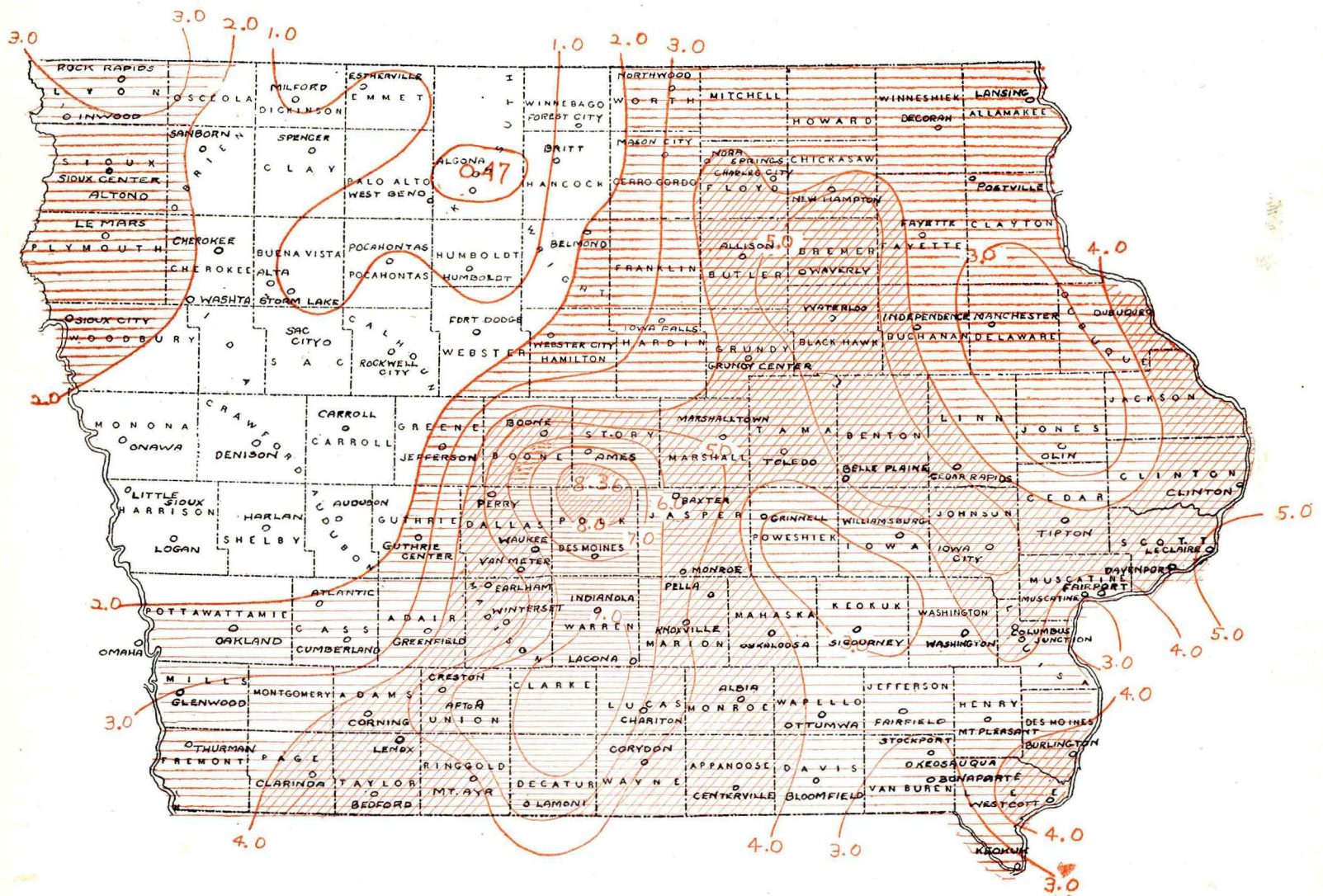
HAIL STORMS DURING MAY, 1922.

Date	County	Township	Direction From	Width of Path	Area Covered	Character	Size of Stones	Damage
2	Cerro Gordo	Mason						None
5	Appanoose	Vermillion						None
5	Boone	Des Moines	S. W.	30 miles	36 sq. mi.	Heavy	¼ to ¾ inch	Considerable
5	Boone	Peoples	W.	1 mile	9 sq. mi.	Heavy	1 inch	None
5	Boone	Worth	N. W.			Moderate	Hickory Nuts	Considerable
5	Boone	Yell	N. W.		36 sq. mi.	Moderate	Walnuts	None
5	Dallas	Des Moines	N. W.	3 miles	23 miles	Moderate	½ inch	None
5	Fremont	Scott				Light	Small	None
5	Greene	Hardin	S. W.	Narrow	10 sq. mi.	Light	½ inch	Slight
5	Greene	Grant	S. W.	Narrow	12 sq. mi.	Light	½ inch	Slight
5	Greene	Paton	N. W.	6 miles	21 sq. mi.	Moderate	1 inch	Slight
5	Greene	Junction	S.			Light	½ inch	None
5	Guthrie	Dodge	S. W.			Light	Small	None
5	Hamilton	Webster	S. E.			Moderate	Hickory Nuts	Considerable
5	Jasper	Palo Alto	S.	2 miles	8 sq. mi.	Moderate	¾ inch	Slight
5	Jasper	Fair View				Light		None
5	Keokuk	Sigourney				Light		None
5	Lee	Green Bay				Light		None
5	Madison	Webster	S. W.	4 miles	30 sq. mi.	Moderate	¾ inch	None
5	Marion	Pella				Light		None
5	Marion	Perry	S. W.	2 miles	10 sq. mi.	Moderate	1¼ inches	Slight
5	Marion	Swan	S. W.	3 miles	17 sq. mi.	Moderate	Walnuts	Considerable
5	Mahaska	Lincoln	S. W.			Light		None
5	Mills	Glenwood						None
5	Montgomery	Grant	S. W.	1 mile	8 sq. mi.	Light	½ inch	None
5	Marion	Lake Prairie	S. W.	1 mile	5 sq. mi.	Light	Small	None
5	Page	Douglas	N. W.	3 miles	16 sq. mi.	Moderate	Pigeon Eggs	None
5	Ringgold	Poe				Light		None
5	Sac	Coon Valley	N. W.	18 miles	23 sq. mi.	Moderate	Hickory Nuts	Considerable
5	Story	Washington	S. W.	3 miles	16 sq. mi.	Moderate	¼ to ½ inch	Considerable
5	Taylor	Benton	S. W.	6 miles	36 sq. mi.	Light	½ inch	Slight
5	Warren	Richland	W.	6 miles	36 sq. mi.	Light	1 inch	None
5	Warren	Lincoln					1½ inches	None
5	Webster	Lost Grove	W.	2 miles	9 sq. mi.	Light	Cherries	None
6	Jefferson	Fairfield						None
6	Marion	Knoxville						None
6	Page	Nodaway						None
6	Story	Washington				Light		None
8	Cedar	Springdale	W.	¼ mile		Heavy	Hickory Nuts	Considerable
8	Boone	Union	S. W.	3 miles	11 sq. mi.	Moderate	½ to ¾ inch	None
8	Boone	Jackson	S. E.	12 miles		Heavy	½ inch	None
8	Johnson	West Lucas	S. W.	3 miles	12 sq. mi.	Heavy	¾ to 1½ inches	Considerable
8	Johnson	Scott	S. W.	2 miles	13 sq. mi.	Heavy	¾ inch	Considerable
8	Johnson	Union	S. W.	5 miles		Heavy	Walnuts	Considerable
8	Keokuk	Washington	S. E.	3 miles	26 sq. mi.	Light	Small	None
11	Boone	Amagua	S.		4 sq. mi.	Moderate	1 inch	None
11	Bremer	Polk	S. W.	3 miles	18 sq. mi.	Moderate	Pigeon Eggs	None
12	Poweshiek	Sugar Creek	S. W.	2 miles	7 sq. mi.	Heavy	Quail Eggs	None
14	Lee	Van Buren	W.			Light	Marbles	None
14	Scott	Davenport				Light		None
15	Cedar	Cass	W.			Light		None
16	Butler	Washington	S. W.		8 sq. mi.	Light	Hickory Nuts	None
16	Cerro Gordo	Mason			4 sq. mi.	Light	Peas	None
16	Buena Vista	Nokomis				Light		None
16	Davis	Lick Creek	W.			Light		None
16	Decatur	Richland				Light	¼ inch	None
16	Dubuque	Jefferson	W.	1 mile	8 sq. mi.	Moderate	½ to ¾ inch	Considerable
						Light	Hickory Nuts	None

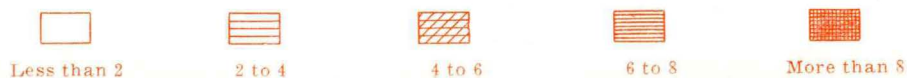
HAIL STORMS DURING MAY, 1922.—Continued.

Date	County	Township	Direction From	Width of Path	Area Covered	Character	Size of Stones	Damage
16	Dubuque	Dubuque				Light	Small	None
16	Emmet	Estherville		2 miles	12 sq. mi.	Light	Small	None
16	Floyd	Rock Grove	W.	1 mile	3 sq. mi.	Moderate	Peas	None
16	Jones	Scotch Grove	S. W.			Light	1/4 inch	None
16	Lee	Jackson				Light		None
16	Louisa	Columbus City				Light		None
16	Lyon	Riverside			30 sq. mi.	Moderate	1/4 inch	None
16	Lyon	Rock			24 sq. mi.	Moderate	1/4 inch	None
16	Wayne	Corydon				Light		None
16	Worth	Brookfield	N. E.	2 miles	9 sq. mi.	Light	3/8 inch	None
16	Polk	Des Moines	W.	Wide	Large	Moderate	Peas	None
17	Union	Jones	E.	1 mile	3 sq. mi.	Light	Peas	None
20	Scott	Buffalo	N. W.			Light	Small	Slight
24	Benton	Iowa				Light		None
24	Des Moines	Danville	S. E.			Light	1/4 inch	None
24	Dubuque	Taylor	S. E.	6 miles	36 sq. mi.	Moderate		Considerable
24	Dubuque	Washington	S. E.	2 miles	12 sq. mi.	Moderate	Hickory Nuts	Considerable
24	Henry	Trenton	S. W.	1 mile	4 sq. mi.	Moderate	1/2 to 3/4 inch	Considerable
24	Jones	Fairview	S. E.	1 mile	6 sq. mi.	Heavy	Hickory Nuts	None
24	Washington	Lone Creek	S. E.			Moderate	1/2 to 1 inch	Considerable
25	Marion	Lake Prairie	S. W.	1 mile	3 sq. mi.	Light	Small	None
26	Clayton	Buena Vista	S. E.			Light	1/8 inch	None
26	Des Moines	Burlington				Moderate	1/4 inch	Considerable
30	Muscatine	Wilton	S. W.			Moderate	3/4 inch	None
30	Muscatine	Goshen	W.	3 miles	18 sq. mi.	Light	Hickory Nuts	None
30	Muscatine	Pike	N. W.	3 miles	24 sq. mi.	Light	Peas	None
30	Scott	Cleone	S. W.			Light	Hazel Nuts	None

TOTAL PRECIPITATION, MAY, 1922



SCALE OF SHADES—IN INCHES.



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, JUNE, 1922 No. 6

GENERAL SUMMARY.

June was considerably warmer than normal and unusually dry. The month opened cool and the first three days were the coldest of the month. After the third the temperature was continuously above normal except a single day near the middle of the month and a short period during the last week when temperatures were slightly below normal. The warmest day occurred over practically the entire State on the 23d and temperatures of 100°, or higher, were reported from a number of stations in the northwest portion.

The outstanding feature of the month's weather was a severe drouth that covered practically the entire State. The rainfall average for the State was the same as in 1911, which previous to this June was the driest of record. Light showers occurred at frequent intervals, but they were not sufficient to maintain the normal growth of staple crops. Corn had not advanced to a stage where it could be permanently injured, but the hot weather started the leaves to curl in many fields in the drier sections. Oats suffered most. Much of the crop in the west-central and northwest counties headed too short to be harvested and was grazed off. Barley and spring wheat also were injured. Pastures, hay, truck crops and gardens also suffered greatly on account of the dry weather. Winter wheat, alfalfa and rye were not materially injured. High winds were frequent and considerable damage resulted from this source to standing grain, farm buildings, windmills and trees, but they were all straight blows and no tornadoes are known to have occurred.

Hailstorms occurred at many places on many dates, but the damage was much less than usual on account of the storms being confined to smaller areas than ordinary. A rather severe storm in Union Township, Kossuth County, on the 5th did considerable damage to crops and killed several hundred chickens, a number of hogs and cattle and two horses. Another hailstorm, of more than ordinary severity, in Cerro Gordo County on the 12th caused much damage to crops and broke the glass in greenhouses. In both storms stones of unusual dimensions were reported and heaps of stones remained unmelted for ten hours.

The month was unusually favorable for all outside work. Building operations were carried on with practically no interruption and at the end of the month most of the corn crop had been laid by. The general rain the last of the month greatly relieved the drouth, but it came too late to save many gardens, truck crops and berries. Roads were unusually good during the entire month.

F. L. D.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 95 stations, was 72.2°, or 3.1° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 70.9°, or 3.3° higher than the normal; Central, 72.6°, or 3.3° higher than the normal; Southern, 73.1°, or 2.8° higher than the normal. The highest monthly mean was 75.2°, at Glenwood and Thurman, and the

lowest was 67.3°, at Postville. The highest temperature reported was 104°, at Inwood, on the 23d, and the lowest was 38°, at Decorah on the 1st and Washta on the 3d. The temperature range for the State was 66°.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.96 inches. The highest recorded was 30.37 inches, at Sioux City, on the 25th, and the lowest was 29.53 inches, at Sioux City, on the 10th. The monthly range was 0.84 inch.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 74 per cent, and at 7 p. m. was 51 per cent. The mean for the month was 62 per cent, or 8 per cent below the normal. The highest monthly mean was 67 per cent, at Dubuque, and the lowest was 58 per cent at Sioux City.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 99 stations, was 1.82 inches, or 2.56 inches less than the normal. By divisions, the averages were as follows: Northern, 1.67 inches, or 2.76 inches less than the normal; Central, 1.34 inches, or 2.98 inches less than the normal; Southern, 2.46 inches, or 1.93 inches less than the normal. The greatest amount, 7.19 inches, occurred at Corning, and the least, 0.28 inch, at Iowa City. The greatest amount in 24 consecutive hours, 3.20 inches, occurred at Corning on the 30th.

WIND.

The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was 67 miles an hour, from the south, 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 pre. .01 in. or more	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	9.23	2.07	-----	11	14	9	7
1908	67.1	-2.0	94	35	5.66	+1.28	11.88	1.77	-----	13	12	10	8
1909	69.1	0.0	96	40	6.41	+2.03	13.30	2.80	-----	13	12	10	8
1910	69.5	+0.4	105	33	1.99	-2.39	5.51	0.05	-----	7	18	7	5
1911	75.7	+6.6	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	9	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
1921	74.7	+5.6	100	40	3.76	-0.62	8.85	0.56	-----	9	16	10	4
1922	72.2	+3.1	104	38	1.82	-2.56	7.19	0.28	-----	6	19	8	3

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



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Climatological Data for June, 1922.

Stations	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.				Number of Days			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.			Clear.	Partly cloudy.
Northern Division																			
Algona.....	Kossuth.....	1,213	49	70.9	+ 2.8	95	23	45	2	34	2.32	-2.12	0.94	0	6	25	3	se.	W. E. Laird.
Allison.....	Butler.....	1,044	10	70.8	-----	95	23	43	1†	37	1.22	-----	0.62	0	6	13	5	sw.	J. A. Bell.
Alta.....	Buena Vista.....	1,513	31	71.4	+ 3.8	96	23	47	3	33	2.79	-2.12	1.45	0	7	12	16	se.	D. E. Hadden.
Alton.....	Sioux.....	1,305	17	71.6	+ 3.9	100	23	40	3	41	1.67	-----	0.47	0	8	16	12	sw.	W. S. Slagle.
Belmond.....	Wright.....	1,205	12	72.8	-----	98	23	42	1	39	0.61	-----	0.32	0	5	10	18	sw.	Geo. P. Hardwick.
Britt.....	Hancock.....	1,236	25	71.7	+ 4.3	97	23	43	1	38	0.72	-3.27	0.40	0	4	24	5	s.	L. M. Goodman.
Charles City.....	Floyd.....	1,015	31	70.0	+ 1.2	95	23	43	1	33	1.00	-4.10	0.45	0	11	13	14	sw.	U. S. Weather Bureau.
Cherokee.....	Cherokee.....	1,196	71.4	-----	-----	99	23	43	3	39	2.21	-----	0.88	0	6	16	13	s.	J. E. Wirth.
Decorah.....	Winneshek.....	1,875	29	70.1	+ 1.6	93	23	38	1	41	1.85	-2.39	0.50	0	10	21	6	nw.	M. D. Whitney.
Estherville.....	Emmet.....	1,298	27	69.7	+ 3.4	98	23	45	1†	36	2.85	-1.86	0.80	0	14	20	9	s.	A. O. Peterson.
Fayette.....	Fayette.....	1,003	32	69.3	+ 2.5	95	23	40	1	39	1.24	-3.47	0.60	0	5	23	5	sw.	R. Z. Latimer.
Forest City.....	Winnebago.....	1,226	28	71.0	+ 3.5	98	23	44	3	33	0.35	-3.87	0.12	0	4	9	15	nc.	Dr. M. B. Neil.
Humboldt.....	Humboldt.....	1,095	34	73.5	+ 5.4	100	15†	41	3	41	0.92	-3.48	0.34	0	5	21	6	sw.	H. C. Snitkey.
Inwood.....	Lyon.....	1,474	18	71.7	+ 4.1	104	23	39	1	37	1.71	-3.44	0.63	0	7	21	6	sw.	F. B. Hanson.
LeMars.....	Plymouth.....	1,224	26	71.8	+ 3.7	99	23	43	3	41	2.37	-1.99	0.70	0	6	22	5	sw.	Mrs. M. C. Wooley.
Mason City.....	Cerro Gordo.....	1,148	25	70.4	+ 3.0	99	23	40	1	38	0.30	-4.78	0.10	0	6	16	12	se.	Northern Sugar Corp.
Milford (near).....	Dickinson.....	1,430	2	69.9	-----	99	23	46	1†	31	2.09	-----	0.64	0	7	11	13	sw.	Dr. F. J. Smith.
New Hampton.....	Chickasaw.....	1,169	25	70.4	+ 3.2	94	23	43	1†	34	1.58	-2.36	0.72	0	8	20	7	sw.	A. F. Kemman.
Nora Springs.....	Floyd.....	1,064	10	71.4	-----	97	23	42	1†	38	0.74	-----	0.25	0	8	19	9	sw.	Arthur Betts.
Northwood.....	Worth.....	1,222	26	69.9	+ 3.1	95	23	44	1	34	1.71	-2.91	1.30	0	4	14	14	sw.	Chas. Dwelle.
Pocahontas.....	Pocahontas.....	1,248	18	71.6	+ 4.5	99	23	42	3	38	3.03	-1.28	0.88	0	8	21	4	s.	F. E. Hronek.
Postville.....	Clayton.....	1,180	23	67.3	+ 0.7	88	23	43	1	29	1.78	-2.63	0.75	0	4	18	9	sw.	F. L. Williams.
Rock Rapids.....	Lyon.....	1,358	23	71.0	+ 3.0	100	23	40	1†	42	1.55	-2.76	0.53	0	5	26	3	se.	J. K. Medberry.
Sanborn.....	O'Brien.....	1,553	8	70.8	-----	100	23	43	2	40	1.89	-----	0.93	0	6	23	5	sw.	J. W. Dow.
Sioux Center.....	Sioux.....	1,426	23	-----	-----	-----	-----	-----	-----	-----	1.72	-2.44	0.66	0	3	-----	-----	sw.	J. de Ruyter.
Spencer.....	Clay.....	1,319	8	71.7	-----	102	23	40	2	40	1.32	-----	0.45	0	7	14	11	sw.	E. W. Little.
Storm Lake.....	Buena Vista.....	1,440	33	71.8	+ 4.2	95	24	48	3	33	3.06	-1.32	0.90	0	10	23	4	sw.	Geo. H. Fracker.
Washata.....	Cherokee.....	1,157	24	71.4	+ 4.0	100	23	38	3	42	2.49	-1.59	0.80	0	10	17	12	s.	H. L. Felter.
Waverly.....	Bremer.....	948	26	70.0 ^a	+ 2.3	95 ^a	23	39 ^a	3	40 ^a	0.97	-3.05	0.59	0	5	-----	-----	sw.	D. H. Murphy.
West Bend.....	Palo Alto.....	1,197	29	-----	-----	98	23	41 ^b	3	39 ^b	1.98	-2.19	0.58	0	8	21	6	nw.	Jos. Dorweiler.
Mean and extremes.....	-----	-----	-----	70.9	+ 3.3	104	23	38	1†	42	1.67	-2.76	1.45	0	7	18	9	sw.	-----
Central Division																			
Ames.....	Story.....	926	45	72.8 ^a	+ 3.6	94	23	52 ^b	1†	32 ^b	0.87	-3.67	0.60	0	6	22	6	sw.	Iowa State College.
Audubon.....	Audubon.....	1,301	28	72.4	+ 4.2	96	23	48	1	34	1.83	-2.00	0.53	0	5	20	9	sw.	Geo. Kibby.
Baxter.....	Jasper.....	998	22	72.9	+ 3.9	95	23	44	1	34	0.90	-3.27	0.42	0	4	18	12	sw.	Henry Geise.
Belle Plaine.....	Benton.....	886	32	71.2	+ 2.2	95	23	42	1†	35	2.46	-1.59	1.55	0	7	15	9	sw.	O. C. Burrows.
Boone†.....	Boone.....	1,134	17	70.8	+ 1.8	97	23	39	3	40	1.20	-3.48	0.73	0	6	19	9	s.	C. F. Henning.
Carroll.....	Carroll.....	1,265	32	71.9	+ 4.1	95	15†	43	3	37	3.85	-0.93	0.83	0	9	23	3	sw.	Mrs. Jos. J. Wolfe.
Cedar Rapids.....	Linn.....	733	40	74.2	+ 3.6	99	23	45	1	32	0.49	-3.24	0.40	0	3	22	3	sw.	R. S. Toogood.
Clinton.....	Clinton.....	593	49	73.0	+ 2.6	95	23	45	1	33	0.93	-3.37	0.81	0	4	23	7	sw.	Dr. A. P. Bryant.
Davenport.....	Scott.....	580	51	73.4	+ 2.5	95	23	47	1	29	1.22	-2.89	0.90	0	4	14	12	sw.	U. S. Weather Bureau.
Denison.....	Crawford.....	1,180	28	73.0	+ 4.9	97	23	41	3	39	1.48	-2.51	0.52	0	9	21	7	sw.	V. L. Byers.
Des Moines.....	Polk.....	861	44	74.0	+ 3.6	95	15	48	3	28	1.63	-3.33	0.76	0	7	15	12	sw.	U. S. Weather Bureau.
Dubuque.....	Dubuque.....	639	49	71.2	+ 1.6	94	23	44	1	30	1.20	-3.35	0.82	0	9	15	6	sw.	U. S. Weather Bureau.
Fairport.....	Muscataine.....	567	1	74.8	-----	95	23†	47	2	35	0.79	-----	0.42	0	3	23	4	sw.	R. L. Barney.
Fort Dodge.....	Webster.....	1,114	22	72.0	+ 3.4	98	23	42	3	36	1.71	-2.47	1.15	0	6	14	14	sw.	Samuel Sampson.
Grinnell.....	Poweshiek.....	1,031	28	73.4	+ 3.4	95	23	46	3	30	0.59	-3.73	0.47	0	3	14	15	sw.	Paul P. Meyers.
Grundy Center.....	Grundy.....	976	31	71.8	+ 3.0	94	15†	42	1	34	1.12	-3.90	0.72	0	4	21	8	sw.	M. G. Heiberger.
Guthrie Center.....	Guthrie.....	1,077	27	72.3	+ 2.5	95	23	42	3	35	1.08	-3.13	0.40	0	5	20	9	sw.	E. L. Nesselroad.
Harlan.....	Shelby.....	1,192	23	73.0	+ 4.7	96	14†	43	3	38	2.55	-1.74	0.75	0	6	27	3	sw.	W. K. Colburn.
Independence.....	Buchanan.....	921	58	70.8	+ 3.1	94	23	44	2†	30	0.84	-3.65	0.48	0	5	23	5	sw.	Dr. George Boody.
Iowa City.....	Johnson.....	733	62	71.2	+ 1.4	95	23	40	1	34	0.28	-4.17	0.20	0	4	18	10	sw.	Prof. J. F. Reilly.
Iowa Falls.....	Hardin.....	1,107	29	70.4	+ 3.1	94	23	40	1†	37	0.85	-4.55	0.36	0	6	20	8	sw.	J. B. Parmelee.
Jefferson.....	Greene.....	1,052	23	71.8	+ 2.8	95	22	41	3	35	2.09	-----	0.72	0	9	18	5	sw.	W. I. Lyon.
Little Sioux.....	Harrison.....	1,040	17	73.6	+ 3.3	98	23	41	3	42	1.60	-----	0.54	0	9	20	7	sw.	G. H. Gibson.
Logan.....	Harrison.....	1,035	55	73.8	+ 3.8	97	23	44	3	36	2.12	-3.12	0.60	0	9	23	6	sw.	Mary Jean Stern.
Marshalltown.....	Marshall.....	947	30	73.0	+ 3.8	96	15†	44	1	33	0.95	-3.31	0.34	0	8	24	4	sw.	C. O. Pigman.
Monroe.....	Jasper.....	922	10	74.2	-----	94	15†	47	1†	30	1.09	-----	0.54	0	5	28	1	s.	J. A. Dibel.
Olin.....	Jones.....	760	23	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	sw.	Dr. F. W. Port.
Onawa.....	Monona.....	1,051	22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	sw.	-----
Perry†.....	Dallas.....	975	21	73.6 ^b	+ 3.8	93 ^b	23	48 ^c	1	30 ^c	1.81	-2.78	0.83	0	6	-----	-----	sw.	F. N. Bartlett.
Rockwell City†.....	Calhoun.....	1,134	26	-----	-----	95 ^b	23	43 ^b	4	33 ^b	1.32	-3.27	0.50	0	4	-----	-----	sw.	A. W. McIsaac.
Sac City.....	Sac.....	1,344	46	-----	-----	97 ^b	23	44 ^c	3	40 ^c	1.34	-3.42	0.46	0	7	-----	-----	sw.	F. P. Kessler.
Sioux City.....	Woodbury.....	1,135	33	73.1	+ 3.7	98	23	45	3	34	2.03	-1.85	0.56	0	7	14	6	sw.	U. S. Weather Bureau.
Tipton.....	Cedar.....	807	23	73.0	-----	97	15	43	1	31	0.69	-3.23	0.50	0	3	18	11	sw.	C. H. Obye.
Toledo.....	Tama.....	856	28	72.8	+ 4.0	96	15†	42	1†	35	1.52	-2.13	0.73	0	6	22	6	sw.	I. F. Giger.
Waterloo.....	Black Hawk.....	862	39	71.8	+ 3.3	96	23	41	1†	40	0.66	-3.13	0.30	0	6	23	6	sw.	R. B. Slippy.
Waukeo.....	Dallas																		

Climatological Data for June, 1922—Continued

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest	Date.	Lowest	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more	Clear			Partly cloudy.	Cloudy.
Southern Division																				
Afton	Union	1,212	28	73.0	+ 2.2	94	23	46	1	31	4.93	-0.01	2.80	0	5	23	6	1	sw.	S. R. Brown.
Albia	Monroe	959	24	73.3	+ 3.8	96	23	45	1	30	0.65	-3.47	0.28	0	5	16	14	0	sw.	O. E. McBride.
Atlantic	Cass	1,164	31	72.9	+ 3.3	95	13	44	3	36	3.39	-1.73	1.66	0	8	23	6	1	se.	J. N. Reynolds.
Bonaparte	Van Buren	31	72.8	+ 2.4	94	23	45	1	30	2.59	-1.65	1.15	0	4	26	4	0	ne.	B. R. Vale.	
Burlington	Des Moines	544	26	74.5	+ 2.6	98	23	49	1	32	0.69	-3.70	0.35	0	4	26	2	2	ne.	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	17	73.0	---	94	23	46	1	32	2.48	-1.70	1.20	0	6	17	10	3	sw.	Leo J. Allen.
Chariton	Lucas	1,042	27	72.2	+ 3.5	93	23	45	1	29	1.74	-2.54	0.55	0	4	15	14	1	ne.	C. C. Burr.
Clarinda	Page	1,009	32	74.7	+ 4.7	99	23	46	3	36	3.58	-1.24	1.35	0	9	17	12	1	s.	A. S. Van Sandt.
Columbus Jet	Louisa	595	21	73.2	+ 2.9	94	23	44	7	43	1.37	-2.79	0.57	0	4	27	3	0	sw.	J. B. Johnston.
Corning	Adams	1,117	30	72.7 ^b	+ 3.3	95 ^a	13	43 ^c	3	35 ^c	7.19	+3.18	3.20	0	6	---	---	---	s.	Jerome Smith.
Corydon	Wayne	1,101	29	74.0	+ 3.7	97	14	43	1	34	3.31	-0.98	1.43	0	8	14	15	1	s.	May C. Miller.
Creston	Union	1,312	17	72.0	+ 3.5	90	15 [†]	50	1 [†]	23	3.18	---	1.05	0	5	11	18	1	sw.	Dr. H. M. Stanley.
Cumberland (near)	Cass	1,225	23	---	---	---	---	---	---	---	4.42	-0.02	1.50	0	9	18	9	3	s.	Carl E. Pollock.
Earlham	Madison	1,126	20	70.9	+ 3.2	94	23	40	3	36	2.92	-1.32	1.59	0	6	25	5	0	sw.	George Phillips.
Fairfield	Jefferson	780	38	72.4	+ 1.7	98	23	42	1	34	1.41	-3.36	0.45	0	5	17	11	2	nw.	Prof. R. M. McKenzie.
Glenwood	Mills	1,100	24	75.2	---	97	23	45	2	36	2.71	---	1.38	0	4	24	5	1	sw.	Dr. George Mogridge.
Greenfield	Adair	1,368	30	71.4	+ 1.2	93	23	43	1	34	3.03	-1.90	1.89	0	4	19	11	0	se.	C. E. McCaslen.
Indianola	Warren	972	31	72.9	+ 2.6	95	23	46	1	30	1.09	-3.37	0.37	0	6	21	8	1	s.	Seth F. Shenton.
Keokuk	Lee	614	51	75.0	+ 2.5	96	23	51	3	29	1.08	-3.27	0.68	0	6	14	12	4	n.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	50	73.2 ^a	+ 1.9	98 ^a	23	42 ^a	3	29	1.71	-2.32	0.70	0	5	---	---	---	se.	J. H. Landes.
Knoxville	Marion	920	27	72.8	+ 1.7	95	23	42	1	36	1.80	-2.15	0.65	0	4	18	10	2	sw.	W. J. Casey.
Lacona	Warren	233	---	---	---	---	---	---	---	---	3.06	-1.41	1.60	0	7	11	14	5	---	J. B. Alter.
Lamoni	Decatur	1,100	15	72.3	+ 1.4	94	23	43	1	31	2.93	-1.98	1.11	0	7	21	9	0	s.	O. E. Wight.
Lenox	Taylor	1,250	27	73.3	+ 3.7	94	13 [†]	45	1	32	4.18	+0.12	2.25	0	7	21	9	0	s.	J. L. Hurley.
Mt. Ayr	Ringgold	1,236	29	72.4	+ 1.8	93	14	46	1	29	4.05	-0.79	1.52	0	8	23	6	1	s.	Alex Maxwell.
Mt. Pleasant	Henry	729	41	73.8	+ 2.4	96	23	45	1	31	2.14	-2.97	0.83	0	5	11	18	1	nw.	John H. Jericho.
Oakland	Pottawattamie	1,105	3	74.2	---	98	15 [†]	43	3	40	2.15	---	0.84	0	3	25	3	2	s.	M. E. Gray.
Oskaloosa	Mahaska	825	46	72.4	+ 2.2	94	15 [†]	45	1 [†]	31	1.38	-2.49	0.57	0	4	14	9	7	sw.	Roy R. Robinson.
Ottumwa	Wapello	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	W. H. Powell.
Pella	Marion	877	29	71.8	+ 1.4	93	15 [†]	41	1	34	1.57	-1.92	0.75	0	5	25	2	3	s.	J. H. Ver Stoeg.
Sigourney	Keokuk	790	26	72.6	+ 1.8	95	23	43	1	34	1.52	-2.37	0.75	0	4	22	6	2	ne.	W. E. Utterback.
Stockport	Van Buren	754	20	71.5	+ 0.9	96	23	43	1 [†]	36	2.03	-2.52	1.01	0	5	24	5	1	ne.	O. L. Beswick.
Thurman	Freemont	25	75.2	+ 3.9	98	23 [†]	45	2	37	3.00	-2.61	0.78	0	6	3	27	0	sw.	C. R. Paul.	
Washington	Washington	763	40	72.6	+ 1.6	95	23	45	1	30	1.24	-2.64	0.47	0	4	15	12	3	sw.	Wm. A. Cook.
Wescott (near)	Lee	---	---	72.0	---	92	16 [†]	45	1	30	0.34	---	0.32	0	2	17	7	6	sw.	George H. Smith.
Winterset	Madison	1,129	31	73.8 [†]	+ 3.6	94	15 [†]	45 ^c	1	31 ^c	0.96	-4.07	0.31	0	5	28	2	0	sw.	H. S. Ely.
Omaha, Neb.	---	1,040	51	75.6	+ 4.0	98	23	52	3	32	2.68	-2.37	1.02	0	9	16	10	4	s.	U. S. Weather Bureau.
Means and extremes	---	---	---	73.1	+ 2.8	99	23	40	3	43	2.46	-1.93	3.20	0	6	19	9	2	sw.	---
State means and extremes	---	---	---	72.2	+ 3.1	104	23	38	1 [†]	43	1.82	-2.56	3.20	0	6	19	8	3	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 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 (%)				Wind				Sunshine					
	Mean	Highest	Date	Lowest	Date	Mean.		Total movement	Maximum		Per cent of possible	Departure from normal						
						7 a. m.	12 Noon. †		Miles	From			Date					
Charles City	29.96	30.31	25	29.56	10	77	52	56	34	1	4,156	5.8	23	se.	15	74	0	
Davenport	29.98	30.29	25	29.63	10	75	50	52	34	29	4,758	6.6	29	sw.	10	82	+11	
Des Moines	29.95	30.25	1	29.57	10	76	49	51	31	24	4,767	6.6	32	sw.	15	74	+7	
Dubuque	29.99	30.33	25	29.60	10	77	60	57	39	23	3,900	5.4	20	sw.	16	70	+6	
Keokuk	29.99	30.25	25	29.68	10	68	47	48	28	29	4,195	5.8	34	nw.	13	81	+8	
Sioux City	29.93	30.37	25	29.53	10	72	48	45	21	13	7,620	10.6	67	s.	8	61	-2	
Omaha, Neb.	29.94	30.24	24	29.55	10	74	49	49	26	24	4,680	6.5	54	nw.	12	81	+14	
Means and extremes	29.96	30.37	25	29.53	10	74	51	51	21	13	---	6.8	---	s.	8	---	---	
Normals and records	29.93	30.61	10	29.04	5 th	79	---	60	---	---	---	7.6	---	---	22 ¹	69	---	
			1913	1880	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 75, or 6 per cent above the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 74; Davenport, 82; Des Moines, 74; Dubuque, 70; Keokuk, 81; Sioux City, 61; Omaha, Nebr., 81.

MISCELLANEOUS PHENOMENA.

Fog: 2d, 3d.
 Hail: 4th, 5th, 9th, 10th, 12th, 13th, 15th, 18th, 25th, 26th.
 Halos (lunar and solar): 1st, 4th, 10th, 14th, 16th, 24th.
 Strong Winds: 4th, 5th, 6th, 8th, 12th, 13th, 15th, 18th, 22d, 23d, 24th.
 Thunderstorms: All days during the month except on the 1st, 2d, 3d, 4th, 7th, 17th, 21st, 23d, 29th.

RIVERS.

Low, gradually falling stages prevailed on the Mississippi River till the middle of the month, after which nearly stationary stages prevailed. Low and nearly stationary stages prevailed on all interior rivers. A moderate rise occurred on the Missouri River at the beginning of the month and a general rising tendency prevailed most of the time.

Daily Precipitation for June, 1922—Continued

Stations.	Drainage Basin	Day of Month.																															Totals
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Southern Division</i>																																	
Afton	Grand	T.											.93							.87						.10	.23		T.		2.80	4.93	
Albia	Des Moines		T.			.01				T.			.28							.17	T.					.13				.06	0.65		
Atlantic	Nishnabotna				.37	.12							.10							1.06					.01		.27			.72	3.39		
Bonaparte	Des Moines		.39										.25			T.				1.15						T.			.80	2.59			
Burlington	Mississippi		.23	.03									.35														.08				0.69		
Centerville	Chariton					.02							.27							.58							.33	.08		1.20	2.48		
Chariton	Chariton		T.			.42							.35							.42						T.			.55	1.74			
Clarinda	Nodaway				.06	.02							.48							.92				.05	.01	.37		.32	1.35	3.58			
Columbus Jct.	Iowa		.35										.57			T.				.03						T.			.42	1.37			
Corning	Nodaway				T.								.38							3.20					T.	.40	.20		.05	2.96	7.19		
Corydon	Chariton	T.	T.		.25								.39							.56					.05	T.	.44	.15	.04	1.43	3.31		
Creston	Missouri		T.										.75							1.05						T.	.35		.03	1.00	3.18		
Cumberland	Nodaway				1.50								.49			.02				1.42					.03	.30	.18		.01		4.42		
Earlham	Des Moines												.65			T.									1.59	.18	.08			.22	2.92		
Fairfield	Skunk		.12										.45							.26							.18			.40	1.41		
Glenwood	Missouri								.16				1.38				T.									T.	.44		T.	.73	2.71		
Greenfield	Nodaway												.50												1.89	.04			.60	3.03			
Indianola	Des Moines		.04										.29							.27						T.	.06	.06		.37	1.09		
Keokuk***	Mississippi		.13										.68	.10						.07							.04			.06	1.08		
Keosauqua	Des Moines		.18										.33							.28							T.	.22		.70	1.71		
Knoxville	Des Moines		T.		.40															.65						T.	.10			.65	1.80		
Lacona	Des Moines		.02	.02									.75							1.60							.07	.08		.52	3.06		
Lamon	Grand		.03			.07							.15							1.11							.48		.16	.93	2.93		
Lenox	Missouri				.05								.35							2.25						T.	.31	.16		.11	.95	4.18	
Mt. Ayr	Grand		.02	.01		T.							.38							1.22						T.	.17	.52		.21	1.52	4.05	
Mt. Pleasant	Skunk		.38										.83							.06								.17			.70	2.14	
Oakland	Nishnabotna												.17			T.				.84							.58			.73	2.15		
Oskaloosa	Des Moines		T.										.17							.57							T.	.09		.55	1.38		
Pella	Skunk		.06			T.							.08							.75						T.	T.	.08		.60	1.57		
Sigourney	Skunk		T.										.75							.13							.04	T.		.60	1.52		
Stockport	Skunk		.40										.29	T.	T.					.19							.14		1.01	2.03			
Thurman	Missouri		T.						T.				.52							.22						.42	T.	.68	T.	.38	.78	3.00	
Washington	Skunk		.32										.47							.06										.39	1.24		
Wescott (near)	Mississippi		.32										T.			T.														T.	0.34		
Winterset	Des Moines												.27													.15	.11	.12		.31	0.96		
Omaha, Nebr.***	Missouri		T.						T.	.18			.98							.10							.04	.28		.03	.02	1.02	2.68

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.
 e Estimated.

Daily Maximum and Minimum Temperatures for the Month of June, 1922.

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
Northern Division																																
Algona	70	72	78	74	78	85	87	86	82	84	86	89	84	85	93	87	75	82	84	90	8	91	95	88	75	77	80	80	87	85	83.1	
Alta	50	51	47	57	63	62	62	65	62	62	56	59	63	62	72	62	59	57	58	60	62	66	70	66	59	55	56	60	60	60	60.1	
Alton	68	67	81	86	87	90	91	87	79	83	84	92	90	83	75	75	75	75	86	87	94	97	100	95	81	74	81	81	84	86	84.9	
Belmond	42	50	40	57	64	58	63	62	61	55	55	63	67	60	68	63	60	54	52	57	63	68	72	66	58	52	50	61	56	64	58.4	
Charles City	42	53	43	55	55	63	61	66	66	70	66	52	61	59	71	67	59	60	65	67	60	62	68	64	55	54	56	58	58	60	59.9	
Decorah	72	68	76	83	83	86	86	88	86	82	79	85	82	84	89	81	75	83	81	86	82	85	93	90	74	78	85	82	91	84	82.6	
Forest City	38	55	41	48	50	58	66	65	65	67	58	60	56	65	69	64	63	61	58	54	55	59	67	65	55	46	53	53	50	65	57.6	
Inwood	45	51	44	54	57	61	60	63	63	68	54	53	59	59	69	66	60	59	57	57	56	60	69	65	57	48	54	57	55	65	58.1	
Mason City	75	73	82	87	90	90	91	85	78	83	83	92	89	91	89	82	81	75	89	89	93	97	104	89	74	79	83	85	86	85	85.8	
Milford (near)	39	50	46	60	62	59	61	59	61	65	53	56	61	58	64	59	57	57	52	57	62	67	71	59	58	51	48	59	56	62	57.6	
New Hampton	71	64	78	82	86	90	89	89	83	83	81	82	84	83	94	85	73	83	84	87	82	87	90	87	76	79	84	81	88	88	83.4	
Northwood	40	52	42	54	58	63	61	64	63	71	56	50	49	54	68	66	62	59	56	60	56	55	66	64	58	48	55	53	50	67	57.4	
Pocahontas	68	64	75	83	85	88	88	83	75	77	86	81	84	89	84	89	84	72	77	77	80	84	92	89	86	70	76	74	75	83	80.5	
Postville	46	51	46	53	62	61	57	61	69	66	57	63	61	69	63	59	56	57	61	63	65	69	64	60	52	56	61	58	64	59.3		
Central Division																																
Belle Plaine	69	72	76	82	83	88	89	90	85	85	86	89	87	94	87	79	81	79	84	84	87	95	86	80	82	83	87	88	85	85	84.2	
Boone	42	47	42	49	53	59	58	61	66	57	61	54	62	57	69	69	61	62	62	57	62	58	66	64	57	57	58	59	53	63	58.2	
Carroll	68	67	78	81	82	86	87	89	84	86	84	90	91	90	86	86	77	82	84	88	90	94	97	88	83	80	80	85	80	86	85.0	
Davenport	43	52	39	48	54	56	54	59	65	68	57	50	61	55	65	61	55	55	62	55	61	63	64	64	56	53	53	54	62	56.6		
Des Moines	72	71	80	83	76	84	86	88	83	87	84	89	88	92	95	86	77	82	84	89	89	91	95	86	81	80	78	84	90	85	84.5	
Dubuque	46	51	43	55	59	60	61	65	63	68	58	58	66	62	65	64	60	55	59	58	61	61	69	60	60	58	58	56	58	65	59.3	
Fort Dodge	70	67	74	80	82	87	87	89	88	84	84	86	88	86	91	93	82	79	79	84	83	85	95	85	76	80	85	87	88	80	83.5	
Grinnell	47	54	50	57	60	64	66	68	72	72	68	61	59	68	71	73	65	64	63	62	63	68	70	71	59	54	62	67	62	68	63.3	
Guthrie Center	66	67	74	80	79	86	86	88	84	88	88	91	89	95	86	76	83	80	87	88	91	94	86	84	82	82	86	86	88	84	84.1	
Independence	50	55	48	53	60	63	64	66	71	69	62	60	70	66	75	72	65	64	67	65	68	64	70	65	64	62	63	64	65	68	64.0	
Iowa City	71	67	75	79	80	86	86	87	86	84	81	81	83	85	88	88	78	77	78	83	79	80	94	81	72	74	82	80	85	79	81.0	
Little Sioux	44	56	50	54	57	65	64	67	70	71	64	61	60	64	66	71	64	62	61	60	64	57	65	67	65	60	61	55	68	61	61.3	
Marshalltown	71	67	78	84	81	89	88	89	83	85	84	82	89	90	95	86	77	84	87	88	89	95	98	90	89	83	78	82	83	86	85.0	
Olin	44	51	42	55	58	61	61	64	65	68	56	52	63	57	73	65	58	58	62	57	60	64	68	65	54	56	54	57	54	65	58.9	
Sioux City	69	65	77	81	82	86	87	89	85	82	84	82	89	94	88	80	84	83	86	87	87	89	95	88	86	84	83	88	83	85	81.0	
St. Charles	46	55	47	54	59	61	63	63	67	69	61	63	62	63	72	71	60	63	63	61	61	60	67	65	60	58	62	63	60	63	61.8	
Union	67	70	75	82	77	84	85	84	85	88	86	90	91	93	83	81	84	83	87	80	91	95	88	82	80	79	86	87	87	87	84.1	
Waverly	43	52	42	57	61	62	65	66	69	59	56	68	63	72	67	59	56	56	62	60	61	64	67	67	67	67	67	67	67	67	60.5	
Winterset	74	67	74	76	80	85	84	84	85	84	84	84	84	89	89	82	82	80	79	84	84	84	94	91	84	83	81	82	86	84	82.8	
Wright	53	44	44	51	53	60	59	66	66	67	59	54	60	68	67	67	67	56	61	56	60	57	64	67	56	60	57	65	60	65	58.9	
Iowa Falls	70	64	74	79	83	86	86	90	88	84	83	86	87	91	90	80	81	84	86	86	95	86	79	85	86	79	82	85	89	89	85	83.6
Keokuk	40	53	41	49	51	58	62	68	69	63	55	62	58	70	74	61	60	62	56	61	56	63	66	64	56	58	60	55	64	60	58.8	
Keosauqua	68	65	74	78	81	85	85	86	84	82	82	85	86	87	88	88	78	79	84	83	86	94	87	80	77	80	83	86	82	82	82.5	
Keosauqua	40	52	40	52	57	64	65	65	67	69	57	50	56	55	71	65	58	52	62	57	61	61	68	66	55	55	59	49	66	58.3		
Keosauqua	73	73	81	86	87	87	90	91	85	91	86	95	93	96	93	89	79	82	82	87	91	93	96	98	92	82	82	80	85	87	87.4	
Keosauqua	49	45	41	58	65	60	63	64	63	68	58	53	62	69	75	59	58	52	57	55	65	67	68	62	61	58	57	57	60	64	59.8	
Keosauqua	68	65	77	82	83	87	89	89	84	83	85	90	91	90	88	80	82	81	87	87	90	96	88	81	82	82	86	90	86	84	84.8	
Keosauqua	44	55	45	55	58	62	63	65	69	70	60	57	64	60	72	71	61	62	65	60	64	61	68	65	59	60	60	60	65	61.2		
Southern Division																																
Albia	68	69	76	80	82	87	87	89	86	85	88	89	91	92	95	88	82	83	81	85	90	89	96	91	88	83	86	89	90	84	85.6	
Atlantic	45	54	46	52	57	57	61	63	67	69	62	59	66	64	65	73	60	62	63	57	63	61	66	66	60	58	63	63	62	66	61.0	
Bloomfield	69	71	78	81	78	82	85	88	86	89	92	92	95	94	94	87	79	87	83	89	89											

CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, JULY, 1922 No. 7

GENERAL SUMMARY.

July was cool and wet. Since State-wide records began in 1890 there have been but five times that the mean temperature for July has been lower and only four times has there been more rainfall. The month was characterized by remarkably uniform temperature, the entire absence of hot periods and an unusual number of damaging wind, hail and thunderstorms.

The mean temperature for the month was 2.6° below normal and the deficiency was uniform over all divisions. This is the first month of the year that the mean temperature has been below normal and the second since August, 1920. Over most of the northern division, about half of the central and a large portion of the southern division the maximum temperature was below 90° and only once since 1890 has the maximum for the State been lower.

There was a decided excess in precipitation and all stations, except a few in the northern division, reported more than the normal. The first general rainstorm set in on the 5th, and the drouth that had prevailed over portions of the State since May was effectually broken, except in a few small areas, and thereafter rather general thunderstorms occurred at frequent intervals and at the end of the month there was sufficient moisture over the entire State. Nearly all the rains were attended by severe hail, strong winds and destructive lightning and the damage from these sources was unusually heavy. The first hailstorm of a damaging character occurred on the evening of the 5th, starting near the junction of Calhoun, Green and Webster Counties and moving southeastward across Boone County to the southern portion of Story County and the northern portion of Polk County. Many thousand acres of corn were severely damaged and areas covering whole sections were entirely ruined. One township in Story County reported damage ranging from 10 to 85 per cent to 20,000 acres and the entire loss in this storm from wind and hail probably exceeded \$1,000,000. Another severe hail and windstorm occurred in Bremer and Blackhawk Counties on the 15th that damaged corn and other crops over a large area. On the late afternoon of the 16th a severe hail, wind and electric storm developed in the northern portion of Green County and moved southeastward to Jasper County. At Paton, Boone, Colfax and Newton tornadic characteristics developed and many buildings were wrecked, fruit and shade trees uprooted and cornfields leveled, but the greatest damage came from hail, which entirely destroyed many fields. Floyd and Bremer Counties were visited by a severe wind and hailstorm on the night of the 29th-30th that did much damage to crops and small buildings. The storm apparently originated in Minnesota and moved across Mitchell County into Floyd and Bremer Counties and increased in severity and disappeared in Chickasaw County. Tornadic characteristics were evident at Colwell, Floyd County, but the principal damage was caused by hail and straight winds. A large number of scattered hail and windstorms occurred over the State that did considerable damage. A detailed account will appear in the August report.

The losses caused by the destructive storms were more than offset by the benefit derived from the copious rainfall and the

corn crop generally became excellent in condition, other growing crops greatly revived and pastures and meadows were almost as green as in early spring. The soil was in good condition for plowing and many acres were prepared for winter wheat. Small grain, both in the shock and standing, were damaged greatly by the continued wet weather and wind. The apple crop is unusually heavy and many trees are breaking down under the great load of fruit.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 30.00 inches. The highest pressure recorded was 30.35 inches, at Dubuque, on the 13th, and the lowest was 29.46 inches, at Sioux City, on the 9th. The monthly range was 0.54 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 98 stations, was 71.5°, or 2.6° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 69.8°, or 2.9° lower than the normal; Central, 71.7°, or 2.6° lower than the normal; Southern, 73.0°, or 2.2° lower than the normal. The highest monthly mean was 75.5°, at Keokuk, and the lowest was 67.2°, at Postville. The highest temperature recorded was 98°, at Burlington, on the 9th, and the lowest was 40°, at Estherville, on the 7th. The temperature range for the State was 58°.

HUMIDITY.

The average relative humidity for the State at 7 a. m. was 79 per cent, and at 7 p. m. it was 57 per cent. The mean for the State was 68 per cent, which is the normal. The highest monthly mean was 72 per cent, at Charles City, and the lowest was 62 per cent at Keokuk.

COMPARATIVE DATA FOR THE STATE—JULY.

YEAR	Temperature				Precipitation				Number of Days			
	Mean	Departure	Highest	Lowest	Total	Greatest	Least	Snowfall	With pre. .01 in. or more	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	2	13	13	5
1892	73.0	-1.1	104	38	5.29	+1.33	12.86	1.71	9	16	10	5
1893	75.0	+0.9	102	47	3.33	-0.63	8.84	1.49	7	19	10	2
1894	76.4	+2.3	109	39	0.63	-3.33	3.50	T.	3	22	8	1
1895	72.1	-2.0	104	35	3.40	-0.56	10.10	0.45	7	15	12	4
1896	73.6	-0.5	104	42	6.90	+2.94	12.67	1.61	9	14	11	6
1897	75.6	+1.5	106	42	3.26	-0.70	7.60	1.01	6	18	10	3
1898	73.4	-0.7	102	42	2.98	-0.98	12.88	0.55	7	19	9	3
1899	73.1	-1.0	101	38	3.07	-0.89	8.66	0.42	7	16	10	5
1900	73.4	-0.7	102	37	6.15	+2.19	18.45	1.80	9	16	10	5
1901	82.4	+8.3	113	46	2.34	-1.62	5.97	0.27	5	21	9	1
1902	73.1	-1.0	99	41	8.67	+4.71	13.57	4.82	13	14	10	7
1903	72.9	-1.2	100	40	4.83	+0.87	12.72	0.94	9	17	9	5
1904	70.6	-3.5	109	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	1.70	8	16	10	5
1909	72.3	-1.8	102	46	4.77	+0.81	12.26	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	74.6	+0.5	108	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	74.3	+0.2	106	38	2.27	-1.69	6.06	0.23	7	21	8	1
1918	73.1	-1.0	105	40	3.17	-0.79	8.05	0.26	6	19	8	4
1919	77.4	+3.3	104	41	2.86	-1.10	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
1921	77.9	+3.8	104	41	2.53	-1.43	7.45	0.42	7	19	9	3
1922	71.5	-2.6	98	40	6.31	+2.35	11.72	3.13	11	14	12	5

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



Climatological Data for July, 1922.

Stations	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days				Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.	Clear.	Partly cloudy.		Cloudy.	Prevailing direction of wind.	
Northern Division																					
Algona	Kossuth	1,213	49	69.9	-3.4	87	15†	47	3	30	4.14	+1.12	1.32	0	10	21	5	5	sw.	W. E. Laird.	
Allison	Butler	1,044	10	69.4	---	87	30	44	3	35	10.51	---	4.00	0	14	10	15	6	sw.	J. A. Bell.	
Alta	Buena Vista	1,513	31	69.8	3.0	90	15	50	7	29	3.95	-0.60	1.40	0	10	13	13	5	s.	D. E. Hadden.	
Alton	Sioux	1,305	17	71.6	-1.4	92	15†	47	3	39	4.13	---	1.28	0	9	13	11	7	nw.	W. S. Slagle.	
Belmond	Wright	1,205	12	70.3	---	92	23	44	3	36	5.40	---	1.85	0	14	7	19	5	sw.	Geo. P. Hardwick.	
Britt	Hancock	1,236	25	69.1a	-3.6	89a	9	44a	6	39a	4.84	+0.85	1.79	0	7	---	---	---	---	---	L. M. Goodman.
Charles City	Floyd	1,015	31	68.7	-4.8	86	9	47	3	32	7.25	+3.67	2.30	0	14	10	12	9	sw.	U. S. Weather Bureau.	
Cherokee	Cherokee	1,196	29	70.6	---	92	15†	47	3	35	4.81	---	2.24	0	14	12	17	2	s.	J. E. Wirth.	
Decorah	Winneshiek	875	29	68.7	-4.7	86	9†	42	4†	38	3.60	-0.35	1.25	0	11	14	4	13	nw.	M. D. Whitney.	
Estherville	Emmet	1,298	27	68.8	-1.9	89	15	40	7	32	4.64	+0.11	1.50	0	8	17	13	1	s.	A. O. Peterson.	
Fayette	Fayette	1,003	32	69.2	-2.9	85	5†	44	4†	39	9.55	+5.59	4.32	0	13	15	12	4	nw.	R. Z. Latimer.	
Forest City	Winneshiek	1,226	28	69.4	-3.2	88	22†	46	8	34	3.49	-0.15	1.14	0	8	7	16	8	sw.	Dr. M. B. Neil.	
Humboldt	Humboldt	1,095	34	70.8	-2.4	89	15†	46	3	38	5.17	+1.51	2.00	0	9	7	18	6	s.	H. C. Snitkey.	
Inwood	Lyon	1,474	18	70.8	-2.1	91	30	45	7	39	4.63	+1.48	2.27	0	11	16	12	3	s.	F. B. Hanson.	
LeMars	Plymouth	1,224	26	71.5	-1.2	95	15	47	3	41	3.20	-0.81	1.10	0	8	15	13	3	sw.	Mrs. M. C. Wooley.	
Mason City	Cerro Gordo	1,148	25	68.8	-4.1	88	9	42	4	44	4.97	+1.35	1.75	0	11	13	13	5	nw.	Northern Sugar Corp.	
Millford (near)	Dickinson	1,430	2	66.4	---	86	15	59	3†	30	3.27	---	1.56	0	10	7	22	2	nw.	Dr. F. J. Smith.	
New Hampton	Chickasaw	1,169	25	69.4	-2.8	86	9†	45	8	33	5.63	+1.88	1.74	0	10	15	13	3	n.	A. F. Kemman.	
Nora Springs	Floyd	1,064	10	70.8	---	90	30	45	4	42	7.21	---	2.43	0	13	11	17	3	s.	Arthur Betts.	
Northwood	Worth	1,222	26	69.4a	-2.5	89a	30	46a	3	38a	3.13	-0.86	0.92	0	11	13	12	6	sw.	Chas. Dwelle.	
Pocahontas	Pocahontas	1,248	18	70.4	-2.1	90	15†	49	3	32	6.10	+2.00	2.87	0	13	15	6	10	nw.	F. E. Hronek.	
Postville	Clayton	1,180	23	67.2	-4.5	82	9	46	8	28	4.79	+0.27	1.28	0	12	10	16	5	sw.	Fr. L. Williams.	
Rock Rapids	Lyon	1,358	23	69.9	-3.9	89	30	47	3	34	5.04	+1.96	1.85	0	15	19	9	3	se.	J. K. Medberry.	
Sanborn	O'Brien	1,553	8	70.7	---	90	15†	44	7	34	3.59	---	1.47	0	10	18	10	3	ne.	J. W. Dow.	
Sioux Center	Sioux	1,426	23	---	---	92†	22	53†	18	34†	5.18	+0.79	1.65	0	7	---	---	---	---	J. de Ruyter.	
Spencer	Clay	1,319	8	70.6	---	91	22	42	4	43	4.95	---	1.85	0	14	10	16	5	ne.	E. W. Little.	
Storm Lake	Buena Vista	1,440	33	70.3	-2.6	90	23	50	3	32	5.08	+1.19	1.84	0	12	16	10	5	s.	Geo. H. Fracker.	
Washta	Cherokee	1,157	24	69.8	-2.9	93	23	44	3	45	5.17	+0.97	1.50	0	9	16	8	7	s.	H. L. Felter.	
Waverly	Bremer	948	26	69.2	-3.8	86	9	41	4	40	7.98	+4.04	4.05	0	14	22	7	2	nw.	D. H. Murphy.	
West Bend	Palo Alto	1,197	29	72.0	-1.0	90	22	52	18	32	5.59	+2.02	1.69	0	11	14	13	4	nw.	Jos. Dorweiler.	
Mean and extremes.				69.8	-2.9	95	15	40	7	45	5.23	+1.35	4.32	0	11	13	13	5	s.		
Central Division																					
Ames	Story	926	45	69.5†	-4.5	86	9†	46m	4	34m	8.50	+4.16	3.04	0	11	12	15	4	ne.	Iowa State College.	
Audubon	Audubon	1,301	28	71.0	-2.3	90	31	49	3	33	5.66	+1.93	1.19	0	11	15	14	2	s.	Geo. Kibby.	
Baxter	Jasper	998	22	72.0a	-1.6	91a	31	50a	3†	32a	10.04	+5.98	2.85	0	10	11	16	4	s.	Henry Geise.	
Belle Plaine	Benton	886	32	71.6	-1.8	89	9	44	4	39	6.87	+2.89	1.62	0	14	9	17	5	s.	O. C. Burrows.	
Boone	Boone	1,134	17	70.2	-4.1	88	9	43	4	39	8.78	+4.84	3.15	0	11	15	5	11	s.	O. F. Henning.	
Carroll	Carroll	1,265	32	71.2	-1.6	89	18†	51	3†	38	4.65	+1.04	1.52	0	10	21	7	3	sw.	Mrs. Jos. J. Wolfe.	
Cedar Rapids	Linn	733	40	73.8	-1.8	92	9	52	8	30	5.70	+2.01	2.02	0	10	20	3	8	nw.	R. S. Toogood.	
Clinton	Clinton	593	49	73.4	-1.7	96	9	49	4†	34	4.27	+0.21	1.50	0	11	21	8	2	s.	Dr. A. P. Bryant.	
Davenport	Scott	580	51	74.2	-1.2	95	9	55	3	27	5.66	+2.11	2.21	0	10	12	11	8	nw.	U. S. Weather Bureau.	
Denison	Crawford	1,180	28	71.6	-1.9	90	23	49	3	35	4.96	+1.30	2.26	0	12	10	13	8	s.	V. L. Byers.	
Des Moines	Polk	861	44	73.0	-2.5	90	31	53	4	28	7.13	+3.27	2.64	0	13	11	10	10	s.	U. S. Weather Bureau.	
Dubuque	Dubuque	639	49	71.0	-3.7	92	9	50	8	28	6.01	+1.71	1.86	0	14	8	11	12	nw.	U. S. Weather Bureau.	
Fairport	Muscatine	567	1	73.9b	---	97b	9	51b	8	34†	5.26	---	1.41	0	13	19	9	3	s.	R. L. Barney.	
Fort Dodge	Webster	1,114	22	70.2	-3.4	88	16†	48	4	33	9.32	+5.64	3.24	0	14	---	---	---	---	Samuel Sampson.	
Grinnell	Poweshiek	1,031	28	73.0	-1.5	88	9†	50	8	34	5.82	+1.71	1.98	0	16	9	13	9	sw.	Paul P. Meyers.	
Grundy Center	Grundy	976	31	70.7	-3.6	89	1	47	3†	32	6.10	+2.16	1.50	0	12	17	7	7	nw.	M. G. Heiberger.	
Guthrie Center	Guthrie	1,077	27	71.6	-3.2	88	16†	51	3	30	4.85	+0.57	1.37	0	13	16	12	3	s.	E. L. Nesselroad.	
Harlan	Shelby	1,192	23	71.6	-1.9	90	31	48	3	32	6.46	+2.35	1.80	0	10	28	2	1	s.	W. K. Colburn.	
Independence	Buchanan	921	58	70.0	-2.7	86	9	46	8	31	5.99	+1.57	1.04	0	12	16	7	8	nw.	Dr. George Boody.	
Iowa City	Johnson	733	62	71.8	-2.9	92	9	46	4	38	6.46	+2.18	2.06	0	13	9	17	5	nw.	Prof. J. F. Reilly.	
Iowa Falls	Hardin	1,107	29	69.5	-2.4	85	9	44	4	36	6.15	+1.96	2.57	0	14	16	9	6	s.	J. B. Parmelee.	
Jefferson	Greene	1,052	23	70.6	-3.4	89	31	47	3†	33	4.66	---	1.54	0	9	14	7	10	sw.	W. I. Lyon.	
Little Sioux	Harrison	1,040	17	72.4	-2.8	90	15†	48	3	36	6.14	---	3.63	0	9	11	13	7	sw.	G. H. Gibson.	
Logan	Harrison	1,035	55	72.8	-1.9	90	16†	50	8	35	6.82	+2.18	3.23	0	9	13	14	4	sw.	Mary Jean Stern.	
Marshalltown	Marshall	947	30	72.2	-1.8	88	22†	50	3	32	8.11	+3.94	2.49	0	12	18	6	7	sw.	O. O. Pigman.	
Monroe	Jasper	922	10	74.0	-1.4	90	31	54	3	34	9.08	---	2.69	0	9	16	7	8	s.	J. A. Dibel.	
Olin	Jones	760	23	72.8	-0.9	94	9	46	4	39	5.50	+1.98	1.70	0	9	13	17	1	nw.	Dr. F. W. Port.	
Onawa	Monona	1,051	22	71.3	---	90	15†	48	3	36	7.09	+2.81	4.26	0	8	14	11	6	s.	Mrs. H. E. Colby.	
Perry	Dallas	975	21	71.4b	-3.6	88b	26	48b	4	32b	6.52	+2.48	2.14	0	11	---	---	---	---	F. N. Bartlett.	
Rockwell City	Calhoun	1,134	26	---	---	89c	8	46c	3	36c	8.98	+5.08	2.97	0	12	---	---	---	---	A. W. McIsaac.	
Sac City	Sac	1,344	46	70.1b	-2.8	89a	15	51b	3	29c	4.19	+0.38	1.25	0	10	10	15	6	s.	F. P. Kessler.	
Sioux City	Woodbury	1,135	33	71.7	-2.5	92	23	50	3	33	5.97	+2.36	3.25	0	9	8	13	10	s.	U. S. Weather Bureau.	
Tipton	Cedar	907	23	72.9	---	96	9	48	4†	35	4.78	+1.11	1.75	0	13	13	14	4	s.	O. H. Obye.	
Toledo	Tama	856	28	71.8	-2.0	88	9†	45	4	38	6.50	+2.87	1.63	0							

Climatological Data for July, 1922—Continued

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest	Date.	Lowest	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more	Clear			Partly cloudy.	Cloudy.
<i>Southern Division</i>																				
Afton	Union	1,212	28	72.7	- 2.8	92	22†	47	20	34	8.06	+4.01	2.82	0	9	12	12	7	sw.	S. R. Brown.
Albia	Monroe	959	24	73.1	- 1.6	91	26	50	3	31	7.02	+2.96	1.44	0	11	16	11	4	nw.	O. E. McBride.
Atlantic	Cass	1,164	31	72.2†	- 2.5	92†	31	49†	3†	36†	5.67	+2.03	2.10	0	7	20	8	3	sw.	J. N. Reynolds.
Bonaparte†	Van Buren	585	21	73.2	- 1.9	95	9	50	4†	33	5.14	+1.60	1.53	0	9	22	7	2	sw.	B. R. Vale.
Burlington	Des Moines	544	26	74.8	- 1.2	98	9	53	8	35	5.14	+1.60	1.53	0	9	22	7	2	ne.	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	17	73.6	---	90	27	49	4	31	8.35	+5.45	2.25	0	10	12	16	3	e.	Leo J. Allen.
Chariton	Lucas	1,042	27	72.5	- 1.3	90	27†	49	3	30	7.46	+3.00	3.37	0	5	10	21	0	s.	C. O. Burr.
Clarinda	Page	1,069	32	73.9	- 1.3	95	26	49	4	32	6.50	+2.02	2.40	0	14	14	13	4	s.	A. S. Van Sandt.
Columbus Jct.	Louisa	585	21	73.7	- 1.3	95	9	52	12	31	6.72	+2.82	1.87	0	9	24	7	0	sw.	J. B. Johnston.
Corning	Adams	1,117	30	71.6	- 2.8	92	31	48	3	33	8.92	+4.92	2.59	0	7	18	7	6	sw.	Jerome Smith.
Corydon	Wayne	1,101	29	74.0	- 1.5	94	27	49	3†	34	9.30	+5.53	2.80	0	10	13	15	3	s.	May C. Miller.
Creston	Union	1,312	17	71.8	- 2.0	85	9†	52	7	25*	8.30	+2.91	0	0	11	10	20	1	sw.	Dr. H. M. Stanley.
Cumberland (near)	Cass	1,225	23	---	---	---	---	---	---	---	5.76	+1.57	2.91	0	10	12	9	10	s.	Carl E. Pollock.
Earlham	Madison	1,126	20	70.2	- 3.1	88	31	43	4	36	5.43	+1.40	1.30	0	9	21	6	4	sw.	George Phillips.
Fairfield	Jefferson	780	38	73.1 ^a	- 2.9	97 ^a	9	44 ^a	4	41 ^a	7.20	+3.34	2.29	0	10	11	8	12	nw.	Prof. R. M. McKenzie.
Greenwood	Mills	1,100	24	73.9	---	94	26	51	4	29	5.59	---	1.78	0	12	12	18	1	se.	Dr. George Mogridge.
Greenfield	Adair	1,368	30	71.2	- 3.4	90	27†	49	3	31	5.07	+0.99	2.09	0	7	10	18	3	nw.	C. E. McCaslen.
Indianola	Warren	972	31	72.6	- 2.5	90	31	51	3†	29	7.30	+3.56	2.14	0	12	16	12	3	sw.	Seth F. Shenton.
Keokuk	Lee	614	51	75.5	- 1.5	96	9	57	4	26	6.35	+2.32	3.65	0	7	11	9	11	s.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	30	73.6	- 2.1	97	9	45	4	38	6.89	+2.89	2.87	0	8	18	10	3	se.	J. H. Landes.
Knoxville	Marion	320	27	72.9	- 2.8	88	9	46	4	39	8.12	+4.11	2.37	0	6	13	9	9	se.	W. J. Casey.
Lacona	Warren	23	---	---	---	---	---	---	---	---	6.70	+3.10	1.80	0	14	9	15	7	---	J. B. Alter.
Lamon††	Decatur	1,100	15	72.6	- 3.5	93	31	47	4	33	10.78	+6.82	4.36	0	12	17	10	4	s.	C. E. Wight.
Lenox	Taylor	1,250	27	72.8	- 2.1	92	26†	50	3	30	7.72	+3.36	1.75	0	11	13	16	2	s.	J. L. Hurley.
Mt. Ayr	Ringgold	1,236	29	72.4	- 3.6	90	31	52	3†	26	11.72	+7.05	3.05	0	8	15	7	9	n.	Alex Maxwell.
Mt. Pleasant	Henry	729	41	74.3	- 1.5	97	9	51	8	34	3.58	+0.16	1.94	0	6	16	11	4	nw.	John H. Jericho.
Oakland	Pottawattamie	1,105	3	73.1	---	94	26	48	3	31	8.13	---	3.25	0	10	18	7	6	s.	M. E. Gray.
Oskaloosa	Wahaska	825	46	72.2	- 2.4	88	9†	49	4	32	8.32	+4.71	2.30	0	12	11	12	8	se.	Roy R. Robinson.
Ottumwa	Wapello	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	W. H. Powell.
Pella	Marion	877	29	71.7	- 3.5	89	31	45	5	39	9.59	+6.36	2.08	0	8	18	2	11	nw.	J. H. Ver Stoeg.
Sigourney	Keokuk	796	26	72.6	- 3.0	91	9	47	4	36	5.40	+1.47	1.65	0	10	16	7	8	se.	W. E. Utterback.
Stockport	Van Buren	754	20	72.6	- 2.4	95	9	46	4	37	7.03	+2.63	2.65	0	10	17	11	3	s.	C. L. Beswick.
Thurman	Fremont	25	74.6	- 1.8	92	16†	51	4	33	5.57	+0.53	3.06	0	7	4	25	2	sw.	C. R. Paul.	
Washington	Washington	766	40	72.6	- 1.2	94	9	51	4†	35	6.46	+3.07	2.00	0	8	10	15	6	sw.	Wm. A. Cook.
Wescott (near)	Lee	---	---	72.0	---	92	10	49	8	35	5.26	---	1.80	0	9	15	7	9	s.	George H. Smith.
Winterset	Madison	1,122	31	72.3	- 3.2	91	31	45	3	35	8.10	+3.43	1.75	0	11	18	9	4	se.	H. S. Ely.
Omaha, Neb.	---	1,044	51	74.0	- 2.5	91	16	56	3	27	5.60	+1.27	1.95	0	13	11	15	5	se.	U. S. Weather Bureau.
Means and extremes	---	---	---	3.0	- 2.2	98	9	43	4	41	7.11	+3.09	3.65	0	10	14	12	5	s.	---
State means and extremes	---	---	---	71.5	- 2.6	98	9	40	7	45	6.31	+2.35	4.32	0	11	14	12	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. †, 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 (%)				Wind				Sunshine		
	Mean	Highest	Date	Lowest	Date	Mean.			Total movement	Average hourly velocity	Maximum		Per cent of possible	Departure from normal		
						7 a. m.	12 Noon.†	7 p. m.			Miles	From			Date	
Charles City	30.00	30.31	13	29.61	9	82	64	32	4	3,532	4.7	23	sw.	5	65	-16
Davenport	30.01	30.32	13	29.59	7	76	53	29	13	4,464	6.0	42	s.	16	65	-10
Des Moines	29.99	30.31	13	29.57	9	80	57	28	4	4,423	5.9	37	s.	9	56	-13
Dubuque	30.02	30.35	13	29.60	7	80	56	31	32	4,305	5.1	22	s.	15	60	-10
Keokuk	30.02	30.31	13	29.66	7	72	49	52	26	4,528	6.1	26	n.	12	75	0
Sloux City	29.98	30.31	13	29.46	9	80	56	53	30	7,131	9.6	48	ne.	8	53	-19
Omaha, Neb.	29.99	30.30	13	29.54	9	80	61	61	38	4,534	6.1	35	nw.	29	74	+ 1
Means and extremes	30.00	---	---	---	---	79	56	57	---	---	6.2	---	---	---	64	-10
Normals and records	29.95	---	7th	29.46	9	---	---	26	4	---	---	---	---	8	---	---
	---	*30.47	1892	29.37	1905	---	---	113	1894	---	6.7	---	---	---	13th	74
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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

Climatological Data for July, 1922.

Stations.	Drainage Basin	Day of Month.																															Totals		
		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			
Northern Division																																			
Algona	Des Moines	.03			.40	.15		.85							.30	.50								.32	.10			.17	1.32					4.14	
Allison	Cedar				.02	4.00	.53	1.66	.05		.10				.95	.72							.02		.04	.26	T.	.02	1.26		.88		10.51		
Alta	Raccoon		T.		.37	.96									T.	.05	.07							.20	.05	.86		.03	1.40		.02		3.95		
Alton	Floyd	.03					.04	.64								.26								.96	.40		.06	.46	1.28				4.13		
Belmond	Iowa	T.			.04	1.85	.40		.23	.04	.05	.06			.07	.75							T.	.02		.14	.30	T.	.10	1.35			5.40		
Britt	Iowa	.05			.02	1.34	.16		1.00																			.51	1.79				4.84		
Charles City***	Cedar	.01			.24	1.60	.27	1.39	.01	.06					2.30								T.	.02	.01	.06		.63	.43	.22			7.25		
Cherokee	Little Sioux	.03			.04	.33	.10	.19	.07	.01					.02	.15						T.		.31	.32	.30		.03	1.40				4.81		
Decorah	Mississippi	.03			.47	1.19		1.25			.05					.12	.18						.05		.06			.18	.02				3.60		
Estherville	Des Moines				T.	.08		1.50		.04	.05	.10												.85		.60			1.42				4.54		
Fayette	Mississippi				3.00	1.32		.81	.04		.15				.10	.07	.43						2.00		T.	.10			1.14	.32	.07		9.55		
Forest City	Cedar	T.	.03		.27	.97		1.14	.03						T.							T.	T.		T.	.18	.05		.82		T.		3.49		
Humboldt	Des Moines	.14			T.	2.00				T.	.22				.07	.76									.21	.32	.30	T.	1.15	T.			5.17		
Inwood	Big Sioux	.01	.08		T.	.12		2.27			.15				.09								T.		.80		.19	.11	.10	.71			4.63		
LeMars	Floyd	.03			T.	.05				T.	.05				.29									1.10	.58		.13	.42	.60				3.20		
Mason City	Cedar	.01			.01	1.12	.18		1.75	T.					.19										T.	.01	.01		.04	.94		.71		4.97	
Milford (near)	Little Sioux	T.			T.	.08	.01	T.	1.56	.05	T.	.17			.18	T.	T.							.35	.28		T.	.25	.34				3.27		
New Hampton	Wapsipicon				.10	1.20	.54		1.32						.10	.10								.12		T.	.20	T.	.70	1.25			5.63		
Nora Springs	Cedar	.04			.05	2.43		1.36	.05	.07					1.49	T.								.03	.07	.12		.60	.57	.33			7.21		
Northwood	Cedar				.62	.92	.10		.90	.03		.06			.60	.06										.05			.35	.35				3.13	
Pocahontas	Des Moines				T.	2.75	.12		.01	.05	.02				.41	.07							T.		.41	.54	.02	.10	.20	1.40				6.10	
Postville	Mississippi				T.	1.20	1.28		.70		.08	.05			.23	.03	T.						T.	.73		T.	.21	T.	.20	.06	.02		4.79		
Rock Rapids	Big Sioux	.12			.06	.10		1.85			.08				.04	.33							.02	.28		1.08	.03	.18	.02	.07			5.04		
Sanborn	Floyd	.04						1.47	T.	.29					.04	.04								.18		.08	.45		.38	.62				3.59	
Sioux Center	Floyd							1.65			.68												T.		.66	.36		.12	.57	1.14				5.18	
Spencer	Little Sioux	.04			.02	.05		1.47		.10	.15				.15	.02							.05	.02		.45	.58		.35	1.50				4.95	
Storm Lake	Raccoon	T.	.02		.45	1.41	.12		T.	.02	T.				.04	.15							T.	T.		.26	.73	T.	.04	.47	1.37			5.08	
Washta	Little Sioux				.13	.68					T.				T.	.07									.90	1.50		.07	.40	1.13		.29		5.17	
Waverly	Cedar				.05	2.89	1.16		1.17	.03		.08			.06	.75								.16		.01	.07	.03		.16	1.37		.15		7.98
West Bend	Des Moines	.04			1.20	.25		.67	.07						.35	.60							T.		T.		.40	.16		.37	1.69				5.59
Central Division																																			
Ames	Skunk				2.48	.80			.14	.02	.29				.32	3.04	.20										.07			1.10	.04			8.50	
Audubon	Nishnabotna				.70	.30			.14	.25					.38	T.							T.	T.	.15		.76	.51		.20	1.08	1.19			5.66
Baxter	Skunk				2.85	1.05		.76	.29	.33					.51	2.85								.15		T.	.20		.01	.05				10.04	
Belle Plaine	Iowa				T.	.72	1.62		T.	.98	.07	.38			.08	.92	.01							.08	T.	T.	.91	.01		.96	.03	.10		6.87	
Boone	Des Moines	.06			1.83	1.20		T.	.15	.05	.24				T.	.47	3.15								T.		.20		1.29	.14				8.78	
Carroll	Raccoon		T.			.96			.08		.06				.11	.13								.20	.10			1.15		1.52		.34		4.65	
Cedar Rapids	Cedar	T.			T.	2.02		1.02	.04	.35					.60	.03								T.	.20		T.	.33	T.	.18	.53	.40		5.70	
Clinton	Mississippi	T.				.06		.07	1.19	.43	1.50				.44	.01								.08	.01				.14	.34				4.27	
Davenport***	Mississippi				T.	.06	T.	1.22	.99	.77	1.39				.47													.17		.45	.11	.03		5.66	
Denison	Missouri				1.00	.05			.07	.06	.08				.22									.45		.08	.66		.03	.44	1.82			4.96	
Des Moines***	Des Moines				T.	1.63	.14		.48	.38	.39				.23	2.31	.34						.01	T.		.04	.05		.30	.83				7.13	
Dubuque**	Mississippi				T.	.91	.95		.20	.83	.29	.29			.03	.10	1.22						T.	.54		.01	.04		.04	.56	T.			6.01	
Fairport	Mississippi					.13		.23	.96	.64	1.41				.83	.02								.04	.17		.06		.35	.33	.09			5.26	
Fort Dodge	Des Moines	.03			.55	3.24		.01	.05		.08				.59	1.55									.68		.05	.37		.01	2.06	.05		9.32	
Grinnell	Iowa				.48	2.82		.09	.43	.01	.30				.22	1.98	.30							.09		.01		.17	.01		.80	.01	.10		5.82
Grundy Center	Cedar				.13	1.50	.95		.20	.08	.25				.56	.96	.04						T.	T.			.10	.28	T.		1.05	T.		6.10	
Guthrie Center	Raccoon				.66	.86			.21	.03	.20				.03	.03	.08									.31	.48	.46		.11	1.37		.05		4.85
Harlan	Nishnabotna				1.67	.15			.11	.67						.38								.10		1.03	.30		.25	1.80				6.46	
Independence	Wapsipicon				.91	.84			.11		.31				.07	.52	.07							T.	.51		.11		.89	1.04		.61		5.99	
Iowa City	Iowa	.26			.14	.72		1.88	.30	.54					1.25	.06								.04	T.		T.	.29	T.		.27	.62	.09	6.46	
Iowa Falls	Iowa	.25			.09	2.57		.07	.05		.11				1.21	.03									.04	.01			.36		.03	1.05	.28		6.15
Jefferson	Raccoon	T.			T.	.41	.35	T.	T.	.10	T.	.15			1.25									.23		.16	.47		T.	1.54				4.66	
Le Claire	Mississippi	.01			T.	.01			2.75	.89	1.50				.40	T.								T.	.10			.01	.01		.13	.35	.01	6.17	
Little Sioux	Little Sioux				.20				.09	.62					.33										.17		T.	.78		.02	.30	3.63		6.14	
Logan	Missouri				.78			.10	.47						.39									.60		.10	.60		.55	3.23				6.82	
Marshalltown	Iowa	.04			1.70	1.49		T.	.70	T.	.32				2.49	.22								.06	T.		T.	.17		.02	.55	.35		8.11	
Monroe	Skunk				.13		2.46		.89	T.	.33				.02	2.69	.78								T.		T.		T.		.80	.03		9.08	
Muscatine	Mississippi	.17			.12	.16		1.50	.52	1.60					.82	.02												.14	T.		.28	.21	.07	5.61	
Olin	Wapsipicon				.12	.75		T.	1.70	.08	.50				T.	.75	T.								.35			.50		.75	T.	T.		5.50	
Onawa	Missouri				.33					.20																.03		.16	1.89						

Climatological Data for July, 1922—Continued

Stations.	Drainage Basin	Day of Month.																															Totals	
		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		
Southern Division																																		
Afton	Grand					.10	.88			2.23	.05	.73					.10	.70														2.82	.45	8.06
Albia	Des Moines	.44					.72			.92	.43	.97					1.44					T.		T.	.03				.64	.83	.59	.01	7.02	
Atlantic	Nishnabotna					.09	2.04			.34	.27											.55	.36							2.27		**	7.02	
Bonaparte	Des Moines	T.				.11				2.10	.82	1.21					.36	T.												.66	.41		5.67	
Burlington	Mississippi	.37				T.	.03			.76	1.17	1.53					.22	.01												.27	.78		5.14	
Centerville	Charlton	.05					.24			2.04	1.08	2.25				T.	.29	.38					.02							1.98		.02	8.35	
Charlton	Charlton						.77			1.40	T.	1.15					T.	.77												3.37			7.46	
Clarinda	Nodaway	.12	.03	.01			2.40			1.26	.07	.68					.04	.12	.03				.02			.08	T.			1.67	.02		6.50	
Columbus Jct.	Iowa					T.	.22			T.	1.03	.46	1.87				1.09	.08					T.		T.					1.18	.07	.73	6.73	
Corning	Nodaway	T.					1.82			.25	2.17	.98	.80				.32												2.59			8.93		
Corydon	Charlton	T.				T.	.89			T.	2.05	.23	1.02				.12	1.95				T.	T.		.09	T.		.14		2.80		.01	9.30	
Creston	Missouri	.18					1.40			2.91	.27	.68					.14	.10				T.	.02	.04					2.43	.17		8.30		
Cumberland	Nodaway						2.27			.48	.17	.40					.10	.05				T.	.04	.10	T.				2.91			5.76		
Earlham	Des Moines						2.31	.19		.70	T.	.54					T.	.24							.31	.84			1.30		.08	5.43		
Fairfield	Skunk	T.					.18			1.67	.53	2.29	.02				.54	.64					T.					.18		1.64	.51		7.20	
Glenwood	Missouri		.38				.80			.40	.56	.25					.60	.23					.30		.10	.04		.15		1.78			5.59	
Greenfield	Nodaway						.30	.95			.75	T.					.15	.30					T.		T.	.53	T.		2.09			5.07		
Indianola	Des Moines						.03	2.40		1.55	.59	T.	.53				.04	.29	.64						.08		.02		T.	1.40		.13	7.30	
Keokuk	Mississippi	.10					T.	.03		T.	1.16	1.90	2.32				T.	.11					T.		T.	T.			.73			6.35		
Keosauqua	Des Moines	T.					T.	.28			2.87	.81	1.22				T.	.43	.03										.73	.52		6.89		
Knoxville	Des Moines						1.45			T.	2.37		.65				T.	.30	1.90				T.	T.					1.45			8.12		
Lacona	Des Moines						.01	1.00		.25	1.35		.60					1.52					.04	.15		.01	.02		.02	1.80		.14	6.70	
Lamon	Grand	.18					1.17			2.35	.28	.57					.01	1.36		.12			.01			.01			1.40	.32		10.78		
Lenox	Missouri	.08					T.	1.50		.68	1.65	.57	.75				.17	.50					T.		T.			.02	.05	1.75			7.72	
Mt. Ayr	Grand						T.	2.20		.18	2.88	.28	1.14				.13	1.05					T.	T.	T.	T.	T.		T.	1.86			11.72	
Mt. Pleasant	Skunk									1.94	.59							.12							T.				.54	.35	.04	3.58		
Oakland	Nishnabotna						.18	2.32			.13		.24				.19	.20						.85				.09	.68	3.25			8.13	
Oskaloosa	Des Moines						.09	.91		.04	2.30	.07	.82				.81	1.55					T.	T.		.02			.16	1.53		.02	8.32	
Pella	Skunk						T.	.68	2.00		2.05		.53				.51	1.55	2.05				T.	T.	T.			T.	.80			9.59		
St. Ignace	Skunk						.02			T.	1.65	.21	.74				.17	1.05	.29				T.	T.				.02	1.23	.02	T.	5.40		
Stockport	Skunk	.03					.24			2.65	.71	1.20					.43	.13						.03	T.				.78	.83		7.03		
Thurman	Missouri	T.	.26				T.	.72		.80	.17	.48					T.	.08					T.	T.	T.	T.			3.06			5.57		
Washington	Skunk						.19			2.00	.31	1.35					1.54	.08											.93		.10	6.46		
Wescott (near)	Mississippi						.10			.80	1.80	1.62					.02	.05											.45	.40	.02	5.26		
Winterset	Des Moines						.20	1.55		.15	.97	.03	.60				T.	.08	1.62				T.	T.		.05	1.45		1.40			8.10		
Omaha, Nebr.***	Missouri		.67				.42			.04	.21	.08					.01	.32	.14				T.		1.62		.04	.10	.47	1.48		5.60		

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.

° Estimated.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 100 stations, was 6.31 inches, or 2.35 inches more than the normal. By divisions the means were as follows: Northern, 5.23 inches, or 1.35 inches more than the normal; Central, 6.59 inches, or 2.61 inches more than the normal; Southern, 7.11 inches, or 3.09 inches more than the normal. The greatest amount, 11.72 inches, occurred at Mt. Ayr, and the least, 3.13 inches, at Northwood. The greatest amount in 24 consecutive hours was 4.32 at Fayette, on the 6th and 7th.

WIND.

The prevailing direction of the wind was from the south. The highest velocity reported from a regular Weather Bureau station was 48 miles per hour, from the northeast, at Sioux City, on the 8th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 64, or 10 per cent less than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 65; Davenport, 65; Des Moines, 56; Dubuque, 60; Keokuk, 75; Sioux City, 53; Omaha, Nebr., 74.

MISCELLANEOUS PHENOMENA.

Fog: 11th, 30th.

Hail: 5th, 6th, 8th, 9th, 15th, 16th, 25th, 26th, 28th, 30th.

Halos (Lunar and Solar): 6th, 11th, 20th, 21st, 28th.

Rainbow: 15th, 31st.

Thunderstorms: All dates during the month except 3d, 4th, 13th, 18th.

Tornado: 16th, 29th.

RIVERS.

Moderate stages prevailed on the principal rivers with very little change except following the heavy rainstorms. Stages were generally low in the interior rivers, though rather high in the lower reaches of the Des Moines and Skunk Rivers following the heaviest rains. Most of the rains were absorbed by the soil and the run-off was gradual.

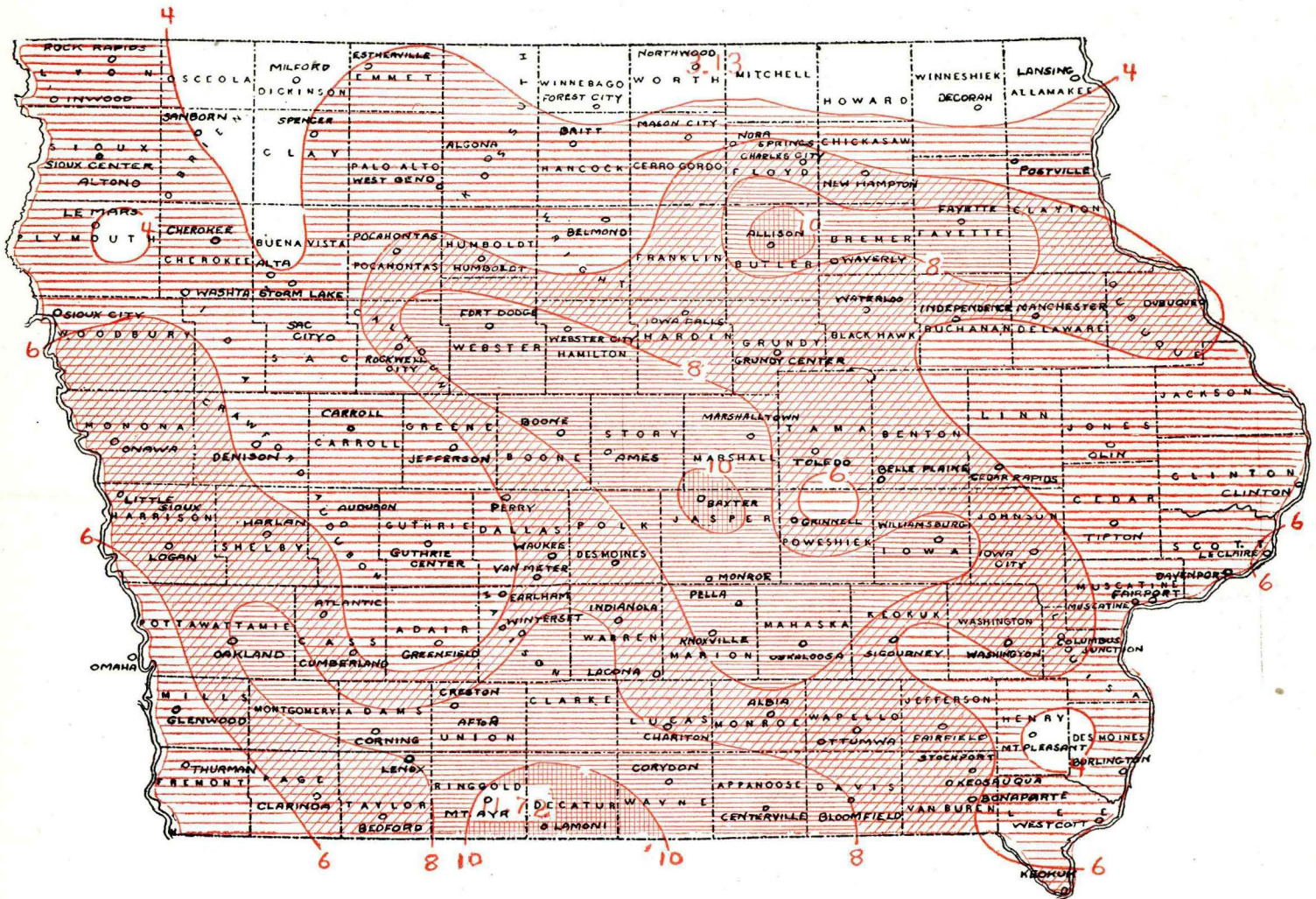
Daily Maximum and Minimum Temperatures for the Month of July, 1922.

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	
Northern Division																																	
Algona	81	70	77	81	81	77	72	79	82	75	80	80	82	86	87	85	79	90	84	82	80	86	86	86	81	77	84	83	79	70	86	85	80.6
Alta	61	57	52	55	62	58	50	54	65	60	55	56	57	61	68	67	59	55	60	62	66	67	60	63	64	63	67	61	61	57	65	60.3	
Alton	80	76	81	82	83	79	78	83	78	73	76	80	85	87	92	88	83	83	86	85	87	90	92	85	78	81	84	80	78	91	91	83.0	
Belmond	96	78	80	82	81	75	73	82	83	82	86	82	81	86	87	85	82	82	76	85	84	82	91	92	82	73	85	84	82	68	86	88	82.4
Charles City	75	72	76	80	82	73	64	76	86	74	79	78	81	84	84	83	77	76	80	82	81	85	84	79	76	82	82	81	66	86	82	78.9	
Decorah	67	75	80	80	84	72	67	72	86	78	84	81	82	86	81	83	77	76	85	82	84	85	84	79	82	85	84	84	74	86	84	80.5	
Forest City	64	64	55	48	49	59	60	56	46	63	57	54	57	53	58	65	58	51	52	61	65	70	57	57	56	60	65	59	60	65	84	81.0	
Inwood	62	74	80	83	89	75	78	83	79	74	79	79	88	88	90	89	81	83	88	85	87	87	87	90	82	75	82	84	74	79	91	89	82.8
Mason City	59	55	48	48	62	59	45	52	62	55	50	55	62	70	66	56	57	50	60	62	66	67	51	64	64	68	68	62	58	62	58.8		
Milford (near)	62	52	44	48	60	53	50	60	59	54	57	52	56	64	65	48	49	49	62	65	72	54	56	55	61	62	62	66	60	61	54	59	56.3
New Hampton	77	76	76	82	84	74	66	76	86	77	80	78	82	85	83	84	79	78	83	84	81	84	86	79	79	84	84	82	73	85	86	80.4	
Northwood	80	77	80	87	81	77	68	83	77	80	80	83	86	85	83	79	80	83	83	81	87	86	79	76	85	85	82	78	72	89	84	81.3 ^a	
Pocahontas	80	72	77	81	83	73	80	82	74	80	78	80	86	89	84	80	81	82	85	84	81	89	88	82	74	83	83	81	79	87	88	81.3	
Postville	61	56	49	51	60	63	51	51	64	59	54	57	53	59	66	66	66	53	56	60	66	71	56	62	62	61	67	62	62	55	63	59.4	
Central Division																																	
Belle Plaine	83	82	77	83	86	80	74	81	89	80	83	81	84	86	88	86	80	80	82	86	77	88	88	81	81	87	85	85	76	86	87	82.9	
Boone	66	52	45	43	55	60	55	50	67	62	60	59	49	54	64	65	60	50	54	58	66	71	54	62	63	62	66	64	60	62	58.4		
Carroll	61	57	51	53	61	62	53	51	57	61	55	54	58	61	67	61	51	55	61	65	66	67	64	62	61	67	65	62	57	64	59.9		
Davenport	86	85	77	81	85	85	77	83	95	79	84	81	84	86	84	85	82	81	81	84	87	85	87	82	82	86	88	86	72	83	87	83.5	
Des Moines	69	62	55	57	62	72	60	56	68	67	67	62	65	66	67	67	62	61	62	63	67	67	65	64	65	67	68	65	65	68	65.0		
Dubuque	77	80	75	80	83	79	68	77	92	78	82	78	81	82	82	84	79	76	79	82	83	82	83	77	81	83	84	81	68	82	82	80.0	
Fort Dodge	64	59	54	52	61	67	57	50	64	67	64	62	58	64	66	68	66	58	56	60	67	67	67	63	63	63	63	63	63	67	61.7		
Grinnell	82	82	78	81	85	84	80	84	88	85	82	79	85	83	84	85	79	80	84	82	85	87	86	84	83	88	88	85	78	86	88	83.6	
Guthrie Center	63	61	52	54	58	65	57	50	71	64	62	60	63	63	63	65	56	58	62	65	72	63	65	63	63	63	63	69	67	63	65	67	62.3
Independence	81	81	78	80	85	78	71	77	86	84	79	78	81	82	81	81	81	81	84	84	82	81	84	84	82	81	82	81	82	78	84	84	80.9
Iowa City	85	84	78	84	85	83	81	82	92	85	84	79	82	85	83	83	81	79	81	85	85	86	85	80	82	86	86	85	72	84	85	83.1	
Iowa Falls	80	79	79	80	83	70	69	77	85	79	79	77	81	83	82	82	76	77	82	80	79	83	84	81	76	83	80	81	71	88	83	79.5	
Little Sioux	61	61	48	56	62	66	54	60	72	62	52	53	62	69	68	62	49	56	63	68	71	56	68	90	90	83	90	84	82	76	87	90	83.9
Marshalltown	82	82	78	83	85	73	72	81	87	73	82	79	84	87	84	86	79	81	85	85	86	88	88	83	80	86	83	84	76	86	88	82.5	
Olin	85	88	80	85	82	80	76	82	94	86	85	81	85	87	83	84	83	82	82	86	85	83	87	81	87	85	86	86	80	85	87	84.1	
Sioux City	80	70	77	79	84	78	76	80	80	73	77	79	82	87	91	85	78	85	86	79	84	89	92	82	77	83	82	73	76	89	90	81.4	
Southern Division																																	
Albia	86	82	78	82	86	86	78	82	89	83	83	81	84	85	86	84	81	82	84	85	86	89	88	82	84	91	90	86	80	86	90	84.5	
Atlantic	66	58	50	51	59	59	57	52	71	63	64	59	57	63	63	63	58	56	57	60	67	71	63	63	62	64	70	66	64	65	66	61.7	
Bloomfield	61	57	49	49	60	66	57	55	72	62	51	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Burlington	84	82	76	85	88	86	79	88	98	90	85	79	86	87	88	88	80	80	79	83	90	88	87	81	85	88	88	86	81	84	88	85.2	
Columbus Jet.	85	83	77	82	85	85	81	84	95	87	83	78	83	84	84	83	80	78	78	84	86	85	89	81	79	86	89	86	79	81	85	83.4	
Corning	82	79	78	79	80	85	75	79	86	76	80	78	81	84	85	87	83	84	84	83	84	90	89	85	86	91	86	87	80	84	88	83.4	
Corydon	86	83	78	83	86	84	77	82	89	82	85	81	87	87	87	90	81	84	88	87	87	93	88	84	88	93	94	90	85	89	93	86.2	
Fairfield	67	58	49	49	56	65	58	54	73	64	66	59	56	60	61	65	55	57	59	65	71	61	65	62	63	69	66	65	67	66	61.8		
Keokuk	89	82	77	81	85	86	78	84	96	78	84	80	83	85	87	89	66	57	82	84	89	88	71	64	64	61	64	68	66	63	68	61.4 ^a	
Lamoni	70	65	58	57	62	64	62	58	74	66	67	61	65	64	66	69	78	80	84	85	86	88	86	84	88	89	87	83	89	89	84.8 ^a		
Pella	85	82	78	80	84	83	77	80	87	84	81	78	84	86	81	81	79	81	83	81	84	87	86	80	81	88	86	84	76	85	80	82.6	
Sigourney	66	56	49	46	45	66	58	52	71	64	62	61	64	64	64	66	55	49	54	72	61	64	63	65	67	64	66	67	66	60	60.8		
Thurman	67	58	52	47	57	65	51	71	64	64	63	61	57	61	63	63	67	56	55	60	61	72	63	64	62	65	65	65	62	66	65	61.5	
Winterset	68	62	52	51	65	80	58	62	7																								

HAIL STORMS DURING JUNE, 1922

Date	County	Township	Direction from	Width of path	Area covered	Character	Size of stones	Damage
4	Audubon	Viola	S.			Moderate		Considerable
4	Carroll	Arcadia	N.			Light	1 inch	None
4	Clay	Freeman	W.			Light		None
4	Pocahontas	Lake	S. W.	2 miles	18 sq. mi.	Heavy	Marbles	Considerable
5	Carroll	Kniest	S.	1 mile	7 sq. mi.	Moderate	3/4 inch	Slight
5	Clay	Freeman	W.	6 miles	36 sq. mi.	Light	1/2 inch	None
5	Clay	Meadow	S. E.			Moderate	Medium	Slight
5	Dickinson	Superior	S. W.	2 miles	6 sq. mi.	Heavy	Cherries	Considerable
5	Kossuth	Algona				Heavy		Considerable
5	Kossuth	Union	S. W.	2 miles	12 sq. mi.	Moderate	Marbles	Considerable
5	Pocahontas	Swan Lake	N. W.	miles	9 sq. mi.	Moderate	1/3 inch	None
5	Sac	Coon Valley	S.	miles	15 sq. mi.	Heavy	1/4 to 2 inches	Considerable
9	Monona	Fairview	W.			Heavy	1/2 to 1 1/2 inches	Considerable
10	Howard	Forest City	S. W.			Light	3/4 inch	None
12	Adair	Prussia	W.	2 miles	12 sq. mi.	Light		Slight
12	Adair	Lee	N. W.			Moderate		Slight
12	Adair	Walnut	W.			Light	Peas	Slight
12	Boone	Beaver	S. W.	3 miles	24 sq. mi.	Light		Considerable
12	Buena Vista	Storm Lake		1 mile	3 sq. mi.	Moderate	Marbles	Considerable
12	Buena Vista	Nokomis				Light		None
12	Butler	Pittsford	W.			Moderate	Large	Slight
12	Cass	Massena	N. W.	6 miles	36 sq. mi.	Light	Small	None
12	Cerro Gordo	Mason	S. W.	2 miles	12 sq. mi.	Heavy	1/4 to 3 inches	Considerable
12	Cherokee	Marcus	S. W.			Light	5/8 inch	None
12	Crawford	Union	N. W.	2 miles	6 sq. mi.	Heavy	1/2 to 1 1/2 inches	Considerable
12	Crawford	Paradise	N. W.			Heavy	1/2 to 2 inches	Considerable
12	Floyd	Rock Grove	S. W.	2 miles	10 sq. mi.	Moderate	1/2 to 1 1/2 inches	None
12	Floyd	Pleasant Grove	E.			Light	Beans	None
12	Franklin	West Fork	E.	2 miles	6 sq. mi.	Moderate		Slight
12	Greene	Junction	S. W.	4 miles	30 sq. mi.	Light	Small	None
12	Hancock	Britt	S. W.			Heavy	1/2 to 1 inch	Considerable
12	Keokuk	Lancaster	W.	3 miles	9 sq. mi.	Light	Hazel Nuts	None
12	Kossuth	Luverne	S. W.			Light	1 1/2 inches	None
12	Mills	Glenwood	N. W.	6 miles	36 sq. mi.	Light	Small	None
12	Mitchell	Stacyville	N. E.	3 miles	18 sq. mi.	Light	3/8 inch	None
12	Montgomery	Sherman	N. W.			Light		Slight
12	Montgomery	West	N. W.	2 miles	6 sq. mi.	Light	Small	None
12	Montgomery	Grant	N.	6 miles	36 sq. mi.	Light		Considerable
12	Page	Grant	N. W.	3 miles	26 sq. mi.	Moderate		Considerable
12	Palo Alto	Vernon	N. W.	2 miles	10 sq. mi.	Moderate	Medium	Slight
12	Palo Alto	Fairfield	W.			Heavy		Considerable
12	Plymouth	Le Mars	S. W.			Light	Peas	None
12	Scott	Le Claire	S. W.			Light	1/2 inch	None
12	Shelby	Jackson	N. W.			Heavy	1 to 2 inches	Considerable
12	Woodbury	Arlington	N. W.	6 miles	36 sq. mi.	Light	1 inch	None
12	Wright	Belmond	S. W.	4 miles	26 sq. mi.	Light	1/2 to 1 inch	Slight
13	Jefferson	Fairfield				Light		None
13	Lee	Jackson				Light		None
13	Pocahontas	Cummings	W.	3 miles	18 sq. mi.	Light	1/2 to 1 inch	None
15	Calhoun	Calhoun	S. W.			Heavy	1 1/2 inches	Considerable
18	Montgomery	Grant	N. W.			Heavy		Considerable
18	Montgomery	Garfield	S. W.	2 miles	5 sq. mi.	Heavy	1 inch	Considerable
18	Montgomery	West	N.	6 miles	36 sq. mi.	Heavy	1/2 inch	Considerable
18	Pottawattamie	Crescent	W.			Moderate	1/2 to 1 inch	Considerable
18	Shelby	Clay	N. W.			Light	Beans	None
18	Fremont	Fisher	S. W.	6 miles	36 sq. mi.	Light	Small	Small
24	Mills	Glenwood				Light		None
25	Page	Grant	S. W.	6 miles	36 sq. mi.	Light	Marbles	None
25	Sioux	Grant	N. W.	3 miles	12 sq. mi.	Light	Peas	None
26	Kossuth	Irvington	W.	2 miles	18 sq. mi.	Heavy	Hen Eggs	Slight

TOTAL PRECIPITATION, JULY, 1922



SCALE OF SHADES—IN INCHES.



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, AUGUST, 1922 No. 8

GENERAL SUMMARY.

August was the warmest month of the season. The mean temperature for the State averaged two degrees above the normal and the excess was general except over small areas along the south-central border and the extreme northeastern corner. Most of the excess in temperature occurred in the period beginning about the middle of the second week and continuing until the 24th, when the daily mean temperature was continuously above normal, though there were no periods of unusually high temperatures and only a few days had very high maxima. Over most of the State the highest temperature occurred on the 24th when a decided change to cooler occurred, the drop in temperature amounting to nearly 50 degrees at a number of stations. The only cool periods occurred immediately preceding and following the principal warm period.

The precipitation was characterized by contrasts and more than 75 per cent of the State had considerably less than the normal for August. A few stations along the Mississippi river in the east-central portion had less than half an inch while in the west-central portion two stations reported more than nine inches. Harlan with over nine inches had but four days with appreciable precipitation and Davenport with only 0.48 inch had appreciable precipitation on eleven days, Le Claire had nine days with .01 inch, or more, and the total amount was only 0.33 inch. In the area of the greatest precipitation some damage resulted to grain that was still in the shock and over much of the northern and eastern portions of the State the lack of rainfall interfered with plowing and, in connection with low humidity that prevailed, caused a large amount of corn to ripen prematurely and burned pastures brown and cut short gardens and truck crops.

A large portion of the State was visited by hail storms which caused much damage to crops. The first storm occurred on the 1st and affected portions of Dubuque, Jackson, Delaware, Linn and Jones Counties. Light hail fell over most of the counties mentioned but the severe hail was confined to numerous patches. Dubuque reported one of the most severe storms ever experienced but the greatest destruction to crops occurred in an irregular strip from one-half to four miles wide and forty miles long from the north-west corner of Delaware County southeastward. Hail drifted to a depth of six inches and the total damage was nearly \$500,000. The most severe hail storm occurred on the 9th, and covered a large area in the west-central portion, but the greatest damage occurred in Crawford, Shelby, Audubon and Guthrie Counties. The principal damage was to corn but chickens and young pigs were reported killed by the score and two cows were killed. Many thousand acres of corn were damaged in varying degrees and in portions of the area whole sections were hailed out so completely that not a single whole stalk of corn was left standing. In Guthrie County fields were white with hail and

ditches two feet deep were completely filled. Four days after the storm there was sufficient hail in ditches to make ice cream. The damage from this storm exceeded \$500,000. Another severe storm occurred on the 16th over much of the same counties as the 9th, but no reliable estimate could be made of the damage done on account of the previous damage.

Severe local wind squalls occurred in the vicinity of Mason City on the 18th and at Cedar Rapids on the 24th that caused considerable damage to small buildings, broke telephone and telegraph wires, leveled corn fields and knocked apples off. The heavy rains on the 30th caused washouts and road traffic was interrupted for several days.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the State was 29.97 inches. The highest recorded was 30.21 inches, at Dubuque and Davenport, on the 14th, and the lowest was 29.59 inches, at Dubuque, on the 31st. The monthly range was 0.62 inch.

TEMPERATURE.

The mean temperature for the State, as shown by the records of 100 stations, was 73.8°, or 2.0° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 72.9°, or 2.5° higher than the normal; Central, 74.0°, or 2.3° higher than the normal; Southern, 74.4°, or 1.2° higher than the normal. The highest monthly mean was 76.8° at Thurman, and the lowest was 69.1° at Postville. The highest temperature recorded was 102°, at Belmond, on the 17th and Clarinda on the 24th, and the lowest was 42°, at Mason City, on the 8th. The temperature range for the State was 60°.

COMPARATIVE DATA FOR THE STATE—AUGUST.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890.....	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	-----	5	18	9	4
1893.....	69.4	-2.4	101	30	2.32	-1.26	6.22	0.40	-----	5	19	9	3
1894.....	74.6	+2.8	108	38	1.58	-2.10	4.53	T.	-----	4	21	8	2
1895.....	71.9	+0.1	103	37	4.43	+0.75	10.63	0.67	-----	7	17	9	5
1896.....	71.7	-0.1	104	34	3.52	-0.16	12.25	0.86	-----	8	15	11	5
1897.....	68.9	-2.9	104	35	1.86	-1.82	4.98	0.47	-----	6	15	11	5
1898.....	71.2	-0.6	103	40	3.44	-0.24	10.55	0.58	-----	6	17	9	5
1899.....	74.4	+2.6	100	41	3.68	0.00	10.45	1.12	-----	7	17	10	4
1900.....	77.4	+5.6	103	44	4.65	+0.97	10.43	1.26	-----	6	18	10	3
1901.....	73.8	+2.0	105	40	1.29	-2.39	4.46	T.	-----	5	20	9	2
1902.....	69.1	-2.7	98	37	6.58	+2.99	15.47	1.57	-----	11	11	11	9
1903.....	69.1	-2.7	101	41	6.64	+2.96	17.74	2.55	-----	11	12	10	9
1904.....	69.1	-2.7	97	35	3.43	-0.25	6.75	0.66	-----	7	17	8	6
1905.....	74.3	+2.5	104	44	4.05	+0.37	8.47	1.04	-----	9	16	9	6
1906.....	74.1	+2.3	101	33	3.95	+0.27	10.51	0.92	-----	9	17	9	5
1907.....	71.1	-0.7	99	37	4.33	+0.65	9.67	1.05	-----	9	17	9	5
1908.....	70.0	-1.8	101	38	4.77	+1.09	10.55	1.35	-----	9	17	9	5
1909.....	76.1	+4.3	103	33	1.81	-1.87	8.21	T.	-----	5	21	8	2
1910.....	71.9	+0.1	104	36	3.88	+0.20	11.22	0.37	-----	8	15	10	6
1911.....	71.7	-0.1	107	34	3.32	-0.36	9.47	0.44	-----	9	16	10	5
1912.....	71.0	-0.8	101	40	3.78	+0.10	7.90	0.89	-----	10	15	10	6
1913.....	76.6	+4.8	108	40	2.68	-1.00	7.13	0.68	-----	6	17	10	4
1914.....	73.7	+1.9	103	40	2.19	-1.49	4.90	0.42	-----	7	17	10	4
1915.....	65.9	-5.9	91	30	2.81	-0.87	9.14	0.27	-----	8	16	8	7
1916.....	74.0	+2.2	106	35	2.58	-1.10	6.23	0.49	-----	7	18	9	4
1917.....	69.4	-2.4	102	31	2.29	-1.39	6.31	0.70	-----	7	19	8	4
1918.....	76.0	+4.2	113	38	3.61	-0.07	8.38	0.54	-----	8	16	10	5
1919.....	71.5	-0.3	103	38	2.59	-1.09	5.72	0.97	-----	7	19	9	3
1920.....	69.3	-2.5	98	39	3.35	-0.33	8.52	0.44	-----	7	18	8	5
1921.....	72.1	+0.3	102	37	5.04	+1.36	9.04	2.20	-----	8	16	11	4
1922.....	73.8	+2.0	102	42	3.06	-0.62	9.80	0.33	-----	8	19	8	4

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



Climatological Data for August, 1922.

Stations	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches.				Number of Days				Prevailing direction of wind.	Observers.	
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.	Clear.	Partly cloudy.			Cloudy.
Northern Division																				
Algona	Kossuth	1,213	49	72.8	+ 2.0	96	17	48	8	32	1.30	-2.37	0.98	0	5	26	5	0	se.	W. E. Laird.
Allison	Butler	1,044	10	72.6	-----	97	17	45	8	37	1.71	-----	0.94	0	7	18	8	5	sw.	J. A. Bell.
Alta	Buena Vista	1,513	31	72.6	+ 2.0	95	17	51	8	28	2.93	-0.96	1.66	0	5	19	10	2	s.	D. E. Hadden.
Alton	Sioux	1,365	17	74.0	+ 2.6	97	17	47	8	33	4.31	-----	2.30	0	5	22	8	1	se.	W. S. Slagle.
Belmond	Wright	1,205	12	73.9	-----	102	17	45	8	38	1.74	-----	0.75	0	7	13	14	4	se.	Geo. P. Hardwick.
Britt	Hancock	1,236	25	73.6 ^b	+ 3.4	98 ^b	17	50 ^b	26	31 ^b	2.08	-1.72	0.87	0	6	-----	-----	-----	s.	L. M. Goodman.
Charles City	Floyd	1,015	31	71.6	+ 0.9	94	17	47	8	32	1.99	-1.43	0.91	0	11	18	8	5	se.	U. S. Weather Bureau
Cherokee	Cherokee	1,196	38	73.1	-----	98	17	48	8	35	3.03	-----	1.64	0	5	19	12	0	s.	J. E. Wirth.
Decorah	Winneshiek	875	29	71.3	+ 0.1	95	17	44	8	36	1.39	-1.97	0.59	0	6	26	1	4	se.	M. D. Whitney.
Estherville	Emmet	1,298	27	72.4	+ 3.3	97	17	45	8	32	1.69	-2.41	0.92	0	7	17	14	0	s.	A. O. Peterson.
Fayette	Fayette	1,003	32	71.2	+ 1.6	93	24	45	26†	37	0.88	-2.54	0.55	0	4	25	2	4	se.	R. Z. Latimer.
Forest City	Winnebago	1,226	28	73.1	+ 3.0	99	17	46	8	36	3.45	+0.01	1.23	0	7	15	12	4	se.	Dr. M. B. Nell.
Humboldt	Humboldt	1,095	34	74.5 ^c	+ 3.7	99	17	50 ^f	26†	37 ^f	2.02	-1.34	1.23	0	8	20	8	3	s.	H. C. Smitkey.
Inwood	Lyon	1,474	18	73.2	+ 2.2	97	17	43	8	36	3.42	+0.54	1.90	0	6	24	6	1	s.	F. B. Hanson.
LeMars	Plymouth	1,224	26	73.7	+ 2.9	98	17	45	8	33	3.28	+0.49	1.95	0	6	25	5	1	sw.	Mrs. M. C. Wooley.
Mason City	Cerro Gordo	1,148	25	72.1	+ 2.1	98	17	42	8	38	2.58	-1.56	1.09	0	7	21	7	3	se.	Northern Sugar Corp.
Milford (near)	Dickinson	1,436	3	71.6 ^a	-----	94 ^a	17	52 ^a	8†	27 ^a	2.35	-----	1.40	0	7	-----	-----	-----	nw.	Dr. F. J. Smith.
New Hampton	Chickasaw	1,169	25	72.1	+ 2.8	94	17†	48	8†	34	2.13	-1.54	0.75	0	6	19	7	5	se.	A. F. Kemman.
Nora Springs	Floyd	1,064	10	73.7	-----	98	17†	45	8	39	2.43	-----	1.25	0	10	20	9	2	s.	Arthur Betts.
Northwood	Worth	1,222	26	72.3	+ 2.7	97	17	46	8	35	2.53	-1.51	1.60	0	5	15	11	5	sw.	Chas. Dwell.
Pocahontas	Pocahontas	1,248	18	73.2	+ 2.4	98	17	47	8	35	2.40	-1.51	1.38	0	9	19	10	2	sw.	F. E. Hronek.
Postville	Clayton	1,180	23	69.1	- 0.1	88	24	49	8	27	1.84	-1.72	0.57	0	6	18	9	4	sw.	F. L. Williams.
Rock Rapids	Lyon	1,358	23	72.4	+ 1.0	93	17	45	8	36	1.95	-0.32	1.25	0	6	26	5	0	nw.	J. K. Medberry.
Sanborn	O'Brien	1,553	8	73.8	-----	98	17	48	8	33	3.41	-----	1.73	0	7	25	5	1	sw.	J. W. Dow.
Sioux Center	Sioux	1,426	23	73.5	+ 3.1	99	17	48	8†	32	3.29	+0.11	1.52	0	6	21	9	1	s.	J. de Ruyter.
Spencer	Clay	1,319	8	74.2	-----	100	17	46	8	35	5.55	-----	1.70	0	9	17	8	6	se.	E. W. Little.
Storm Lake	Buena Vista	1,440	32	74.2 ^a	+ 3.1	96 ^a	17	53 ^a	25	32 ^a	2.79	-0.54	1.49	0	7	-----	-----	-----	s.	Geo. H. Fracker.
Washta	Cherokee	1,157	24	75.4	+ 4.2	98	17	50	8	35	2.90	-0.23	2.38	0	5	24	5	2	s.	H. L. Felter.
Waverly	Bremer	948	26	71.5 ^a	+ 0.9	95 ^a	24	45 ^a	26†	39 ^a	1.82	-1.56	0.77	0	6	-----	-----	-----	se.	D. K. Murphy.
West Bend	Palo Alto	1,197	29	73.3	+ 3.1	98	17†	47 ^a	8	36 ^a	2.12	-1.77	1.23	0	7	15	16	0	sw.	Jos. Dorweiler.
Mean and extremes.	-----	-----	-----	72.9	+ 2.5	102	17	42	8	39	2.50	-0.98	2.38	0	7	20	9	2	se.	-----
Central Division																				
Ames	Story	926	45	73.6 ^a	+ 1.3	95	17†	50 ^h	27	33 ^h	2.43	-1.38	1.10	0	8	20	6	5	s.	Iowa State College.
Audubon	Audubon	1,301	28	73.9	+ 2.6	97	24	50	8	32	7.08	+3.43	2.30	0	7	20	10	1	sw.	Geo. Kibby.
Baxter	Jasper	998	22	74.2	+ 2.4	97	24	48	8	36	1.92	-1.70	0.74	0	7	20	9	2	s.	Henry Geise.
Belle Plaine	Benton	886	32	73.6	+ 2.3	99	24	47	26	38	1.88	-1.62	0.58	0	12	15	9	7	s.	O. C. Burrows.
Boone	Boone	1,134	17	72.2	+ 0.4	97	24	46	8	37	4.05	+0.27	1.40	0	10	20	6	5	s.	C. F. Henning.
Carroll	Carroll	1,265	32	74.0	+ 3.4	96	17†	49	8	34	4.84	+0.93	1.34	0	10	27	2	2	sw.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	40	75.5	+ 2.7	98	24	51	9	34	1.08	-2.43	0.38	0	7	20	3	8	w.	R. S. Toogood.
Clinton	Clinton	593	49	74.3	+ 2.4	98	24	46	9	34	1.61	-2.10	0.53	0	8	20	7	4	s.	Dr. A. P. Bryant.
Davenport	Scott	580	51	75.3	+ 2.3	97	24	52	9	27	9.48	-3.16	0.15	0	11	14	8	9	sw.	U. S. Weather Bureau.
Denison	Crawford	1,180	28	74.8	+ 3.1	96	17	47	8	35	4.06	-0.05	2.36	0	7	18	8	5	sw.	V. L. Byers.
Des Moines	Polk	861	44	74.8	+ 1.8	97	24	53	27	28	6.63	+3.02	2.60	0	9	19	5	7	s.	U. S. Weather Bureau.
Dubuque	Dubuque	639	49	72.5	+ 0.5	93	24	51	9	26	1.99	-1.05	1.03	0	6	14	13	4	s.	U. S. Weather Bureau.
Fairport	Muscatine	567	1	75.8	-----	98	24	48	9	35	0.86	-----	0.36	0	6	21	7	3	s.	R. L. Barney.
Fort Dodge	Webster	1,114	22	73.3	+ 1.7	97	18†	47	9	37	2.17	-2.18	1.46	0	8	22	4	5	s.	Samuel Sampson.
Grinnell	Poweshiek	1,031	28	75.0	+ 2.3	98	24	52	8	34	2.18	-1.88	1.00	0	10	18	6	7	se.	Paul P. Meyers.
Grundy Center	Grundy	976	31	72.6	+ 0.8	96	24	47	8	36	2.10	-1.53	0.82	0	9	21	3	7	sw.	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	27	74.8	+ 2.3	97	24	49	8	38	4.74	+0.53	1.45	0	7	22	7	2	s.	E. L. Nesselroad.
Harlan	Shelby	1,192	23	74.0	+ 2.5	97	24	50	8	35	9.46	+5.48	3.80	0	4	29	2	0	s.	W. K. Colburn.
Independence	Buchanan	921	58	72.8	+ 2.0	92	17	47	26†	39	0.51	-2.80	0.31	0	5	21	4	6	sw.	Dr. George Boddy.
Iowa City	Johnson	733	62	73.6	+ 1.4	98	24	45	9	34	1.03	-3.21	0.37	0	7	14	10	7	se.	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	29	71.9	+ 2.4	94	24	44	8	36	1.73	-1.98	1.13	6	5	21	4	6	s.	J. B. Parmelee.
Jefferson	Greene	1,052	23	72.2	+ 0.2	95	17†	46	8	34	3.58	-----	1.29	0	9	21	6	4	sw.	W. I. Lyon.
Little Sioux	Harrison	1,040	17	75.2	+ 1.6	97	17	47 ^a	8	37 ^a	3.27	-----	1.15	0	8	18	10	3	se.	G. H. Gibson.
Logan	Harrison	1,035	55	76.2	+ 3.0	97	17†	54	25	35	3.66	+2.89	2.70	0	6	22	9	0	sw.	Mary Jean Stern.
Marshalltown	Marshall	947	30	74.4	+ 2.6	98	24	49	8	34	1.22	-1.95	0.58	0	8	19	9	3	se.	C. C. Pigman.
Monroe	Jasper	922	10	75.6 ^e	-----	97	24	53 ^j	8	29 ^j	3.69	-----	1.11	0	7	24	2	5	s.	J. A. Dibel.
Olin	Jones	760	23	73.2	+ 1.7	97	24	45	9	36	3.88	-3.82	0.50	0	3	22	9	0	nw.	Dr. F. W. Port.
Onawa	Monona	1,051	22	74.4	-----	96	17	49	8	35	1.72	-2.64	1.05	0	11	25	1	5	s.	Mrs. H. E. Colby.
Perry	Dallas	975	21	73.4	+ 1.0	93	17†	51 ^a	27	36 ^a	3.21	-1.43	0.88	0	10	18	10	3	s.	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	73.0	+ 1.2	95	17	47	8	31	2.80	-1.16	1.30	0	7	23	5	3	s.	A. W. McIsaac.
Sac City	Sac	1,344	46	74.6	+ 3.5	97	17	52	29	23	3.17	-0.40	1.50	0	5	-----	-----	-----	s.	F. P. Kessler.
Sioux City	Woodbury	1,135	33	75.4	+ 2.8	97	17	51	8	34	2.92	-0.08	2.07	0	9	15	11	5	s.	U. S. Weather Bureau.
Tipton	Cedar	807	23	74.0	-----	97	24	46	9	36	1.10	-3.15	0.33							

Daily Precipitation for August, 1922.

Stations.	Drainage Basin	Day of Month.																															Totals		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
<i>Northern Division</i>																																			
Algona	Des Moines									.03				.07			.10	.12			.08														1.30
Allison	Cedar					.23	T.			.03	.12							.01			.04	T.				.55			.03					1.71	
Alta	Raccoon										.27							.05			1.06		.02								.92			2.93	
Alton	Floyd									T.	.28						2.30			1.00								.02			.72			4.31	
Belmond	Iowa			T.		.05	.05			.50	.18					T.		.18			.75	.03								T.	T.		1.74		
Britt	Iowa									.04	.16			T.				.01	.26		T.	.87	T.			.74								2.08	
Charles City***	Cedar				.07	.01	T.			.04	.02	.54				.07		.15	.30	.61				.17								.01		1.99	
Cherokee	Little Sioux		T.				T.				.03						.03			1.31	.32					T.				T.	1.64		3.03		
Decorah	Mississippi									.18	.35						.20			.59				.02								.72		1.39	
Estherville	Des Moines									.10	.09	.15	.10					.15			.92					.18							.05		1.69
Fayette	Mississippi	T.					T.				T.	.20									.55			.06	.07									0.88	
Forest City	Cedar									.12	.02	.16			.95			1.23		.90						.07								3.45	
Humboldt	Des Moines				.21	.15				.09	.08							.12			1.23	.04										T.	.10	2.02	
Inwood	Big Sioux					.02					.32	.11						.94			1.90											.13		3.42	
LeMars	Floyd																.78	.03			1.95	.02				.03				T.	.47		3.28		
Mason City	Cedar					.05	.01			.13								1.00			1.02				.07							.03		2.38	
Milford (near)	Little Sioux			.13						.20		.29						.07			1.40				.21						.03	T.	T.	2.33	
New Hampton	Wapsipicon					.75					.41	.18				.02		.10			.67													2.13	
Nora Springs	Cedar				.08		.01			.10	.02	.29					.38			.12	1.25			.12								.06		2.43	
Northwood	Cedar					.05	T.			T.		.08						.65		.15	1.60													2.53	
Pocahontas	Des Moines					.20				.16	.02	.12						.16			1.38	.03								.03	.30		2.40		
Postville	Mississippi					.39					.52	.17	.06							.57				.13									1.84		
Rock Rapids	Big Sioux									.04		.32						.07			T.	1.25									.02	.25		1.95	
Sanborn	Floyd				.01	.07	T.			.08		.74					.36				1.73										.02	.42		3.41	
Sioux Center	Floyd	T.				T.				.02		.54					.37				1.52	T.			T.					.02	.82	T.	3.29		
Spencer	Little Sioux					.15				.65		.20					.80	.20			1.70				.30				.55	1.00			5.55		
Storm Lake	Raccoon									.29		.12						.02			1.49		.03			.01					.83		2.79		
Washta	Little Sioux	T.					T.				.12						.05				2.38	.06				.06					T.	.35		2.90	
Waverly	Cedar					.13				.61		.77	.10							.68					.13									1.82	
West Bend	Des Moines					.07				.08	.16	.18						.26			1.33	T.			.04						T.			2.12	
<i>Central Division</i>																																			
Ames	Skunk					.12				.26	.08	.26									.86	.24			.46					.15			2.43		
Audubon	Nishnabotna									.32	.02									1.86	2.30			.90			T.	.48	1.20				7.08		
Baxter	Skunk						T.			.25	.40				T.		.11			.74	.12	.25		T.		T.			.05				1.92		
Belle Plaine	Iowa					.33	T.			.11	.02	.11	.05				.11			.58	.06	.03		.41			.03			.04			1.88		
Boone	Des Moines									.94	.38	.08	.20					.14			1.03		.37	.08	.03	1.37			.41				4.05		
Carroll	Raccoon									.02	.87	.02	.06					.04			1.34		.72		.15	.35				1.27			4.84		
Cedar Rapids	Cedar					.08	T.			.04	T.	.28	.05							.26	T.	.05		.38									1.03		
Clinton	Mississippi					.45	.01			T.	.01	.02								.53		.02	.14										1.61		
Davenport***	Mississippi	T.	.43							.04		.01	.02	T.		.08				.06	.10	T.	.12	.03	.01					T.	.01		0.48		
Denison	Missouri			.02							.28	.03								2.17	.19				.20			.06	1.13				4.06		
Des Moines***	Des Moines					T.		T.		1.09		.46						.11			.74	2.60			.64	.13	.07	.79					6.63		
Dubuque***	Mississippi	.51				1.03	T.			.19	.03	.01		T.		T.				.22			T.								T.		1.99		
Fairport	Mississippi									.09		.14							.11	.36	.13		.03										0.86		
Fort Dodge	Des Moines					.08				.27	.07	.03								1.46		.16									.07			2.17	
Grinnell	Iowa									.09	.11	.17							.08		.45	.11	.02		.14			1.00	.01				2.18		
Grundy Center	Cedar					.21	.15			.21	T.	.20									.82	.36	.05		.08			.06					2.10		
Guthrie Center	Raccoon									.21	.09							.05			1.10	1.36			.48					1.45			4.74		
Harlan	Nishnabotna									.36										3.00	3.80												9.46		
Independence	Wapsipicon									.06	.06	.02								.06	T.			.31									0.51		
Iowa City	Iowa									.17	.01	.12			T.					.26	.09	.37								T.			1.03		
Iowa Falls	Iowa					.04					.45		.11								.75	.38			T.								1.73		
Jefferson	Raccoon						T.			.27	.05	.11						.03			1.17	.51			.12				T.	1.29	.03		3.58		
Le Claire	Mississippi		.01		.05				.03		.02	.01	.01								T.	.10	.08		T.							.02	0.33		
Little Sioux	Little Sioux			.03							.19	.02									.79	.44			.44					.21	1.15		3.27		
Logan	Missouri						.34													1.65	1.47						.10	2.70					6.66		
Marshalltown	Iowa							T.			.02		.13								.58	.17	.12			.14	.05			T.			1.22		
Monroe	Skunk							T.		.33	T.	.70								.73		1.11			.18					.47			3.69		
Muscataine	Mississippi									.02			T.	T.						.05	.06	.15		T.		.05						T.	0.37		
Olin	Wapsipicon				.50						T.	T.	.12	T.						.26	T.												0.88		
Onawa	Missouri																				1.05	.15				.42			.10				1.72		
Perry	Raccoon					.03				.22	.02	.23							.12		.88	.68	.01		.17					.84			3.21		
Rockwell City	Raccoon									.29	.20	.08								T.	1.30	.31			.10					.52			2.80		
Sac City	Raccoon									.41		.10								T.	1.03	.13								1.50			3.17		
Sioux City***	Missouri									.13		.02						.08			2.01	.06	.07		.12			.37					2.92		
Tipton	Cedar	.07	.26								.04	T.	.10								.20	.06	.10		.25				T.		T.		1.10		
Toledo	Iowa							.06		.17		.18							.11																

Daily Precipitation for August, 1922.—Continued.

Stations.	Drainage Basin	Day of Month.																															Totals	
		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		
Southern Division																																		
Afton	Grand					.34				.05	.07								.15			.97	.09					.35	.05	.03	4.41			6.51
Albia	Des Moines							.01	.01		.13	.10	.55						.12	.24		.48	T.	1.50					.21		.03	.65	.23	4.26
Atlantic	Nishnabotna										.76										2.29		.05					.23	.04		.12	5.83		9.80
Bonaparte	Des Moines					.48						.76									.22		.82	T.	.82			T.	T.	.04		.16		1.70
Burlington	Mississippi	.08	.56										.02	.02							.03		.04	.01	.25						.04	T.	1.05	
Centerville	Chariton							T.		.42	.05	.19							.05			.45		2.60				.29	.01	.03	1.12		5.21	
Chariton	Chariton							T.	T.	.39	.35	.15							.36			.67	T.	T.		.26		.16	.07	1.75		4.16		
Clarinda	Nodaway					.41	.15			.07	.03									.23		2.20		.04			.03	.12	.01		.40		3.63	
Columbus Jet	Iowa		.25							.07	.10	.10										.28	T.	.27						.07	T.	1.14		
Corning	Nodaway									.75	.02									.25		1.49					.39	T.		1.76		4.66		
Corydon	Chariton							T.		.26	.13	.24							.17			.64	.11	.10			.10	.25	1.53		3.53			
Creston	Missouri								.05		.09	.01					T.			T.		1.13	.05	.01			.09	.23		4.55		6.21		
Cumberland	Nodaway					.75				.86												2.09	T.				.29		.11	19.34		7.66		
Earlham	Des Moines							T.	T.	T.	T.	T.							T.			1.06	.80				.44	.11	.66	1.87		3.94		
Fairfield	Skunk						.04		.01	T.	.04	.06				.08			.14			.38	T.	1.60			.06		.16		.17		2.74	
Glenwood	Missouri									.23												.44		.68			.10					1.60		
Greenfield	Nodaway		.15				1.30				.10					T.					.23		.86				.02					5.86		
Indianaola	Des Moines									.87	.08	.28									.17		.85	.70			.45		.13	1.43		4.96		
Keokuk	Mississippi								.05		.09	.08				T.			2.08			.27	.51	T.			.04			.15	.10	3.37		
Keosauqua	Des Moines								T.	T.	T.	T.	.01	.02		T.			.29			.34	.17	.77	.01					.28		1.80		
Knoxville	Des Moines					T.			T.	.47	T.	.42					T.		.18			.83	.08	2.50			.28		.03	T.	1.00	5.79		
Lacona	Des Moines					.01				.75	.12					.01						.69	1.02	.12			.45			1.60		5.58		
Lamon	Grand									.05	.04	.40									.35		.78	.05				.11		.16	2.86	.10	4.90	
Lenox	Missouri					.10				.25	.10								.37			1.58	.10				.22			.22	2.56		5.28	
Mt. Ayr	Grand					.25				.10	.19								.73			.90	T.				.22		.06	3.09		5.34		
Mt. Pleasant	Skunk		.12						.54	.04		T.	.13	.08			T.			.01			.25	T.	1.51			.07	T.	.09		2.84		
Oakland	Nishnabotna										.15	.10	.26		.04				.15			1.63					.33		.13	1.07		3.28		
Oskaloosa	Des Moines					T.			.02		.15	.10	.26		.04				.17			.63	T.	1.29			.11		.10	.30		3.08		
Pella	Skunk							T.		.15	.08	.40							.12			.78	.21	.29			.12		.12	.32		2.50		
Sigourney	Skunk								.03		.08	.05	.19									.63		.20			.01		.05		.09		1.23	
Stockport	Skunk							T.	T.	T.		T.	T.	.03					.25			.33		1.56			.19		.08	.18		5.62		
Thurman	Missouri					T.		.24				T.							T.			.86	T.				T.			.08		1.18		
Washington	Skunk										.08	.20	.12									.32	.63	.48			.04		.04		.03	1.34		
Wescott (near)	Mississippi		.08						.06										.10			.12	T.	1.95		.10			.02			2.64		
Winterset	Des Moines											.22							.92			1.00	1.12				.35		.25	1.95		5.81		
Omaha, Nebr.***	Missouri		.02			T.		.03											.06			.80	.91				.68		.01			1.01		

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.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 71, or 1 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau Stations was as follows: Charles City, 73; Davenport, 73; Des Moines, 67; Dubuque, 60; Keokuk, 73; Sioux City, 72; Omaha, Nebr., 80.

MISCELLANEOUS PHENOMENA

Aurora: 24th, 25th.
 Fog: 9th, 10th, 22d, 23d, 24th.
 Hail: 1st, 6th, 8th, 9th, 10th, 17th, 23d, 25th, 26th, 28th, 30th.
 Halos: (Lunar and Solar) 2d, 6th, 26th.
 Thunderstorms: All dates except 3d, 4th, 5th, 12th, 14th, 16th, 19th, 27th.

RIVERS.

Low, gradually falling stages prevailed on the Mississippi River and moderate stages with considerable fluctuation, but mostly falling stages prevailed on the Missouri River. A few moderate rises occurred on the interior rivers in the southern portion of the State on the 24th and high stages occurred in the southwestern portion following the heavy rain on the 30th.

Daily Maximum and Minimum Temperatures for the Month of August, 1922.

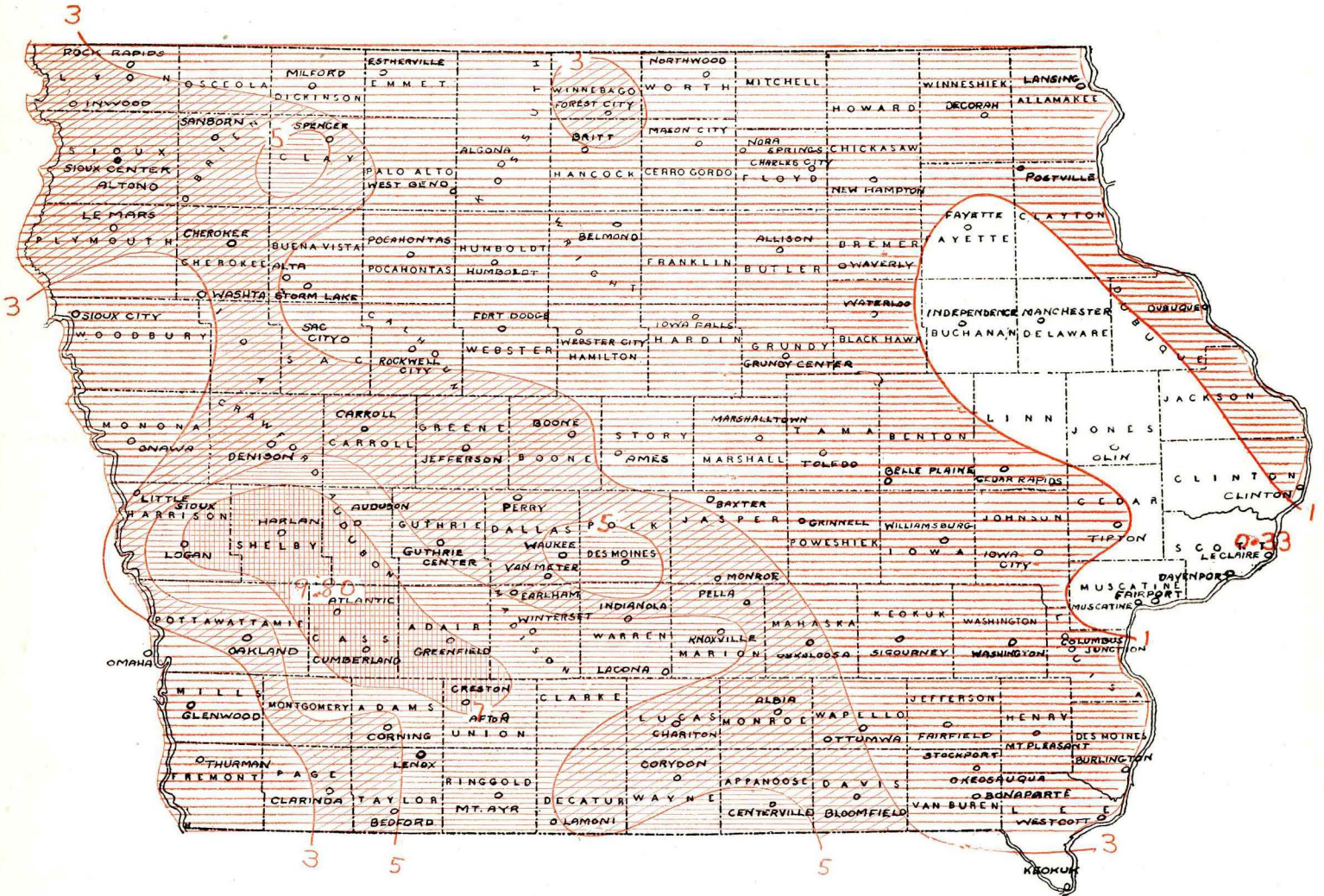
Table with columns for Stations, days 1-31, and Mean. Rows are categorized by Northern Division (Albion to Postville), Central Division (Belle Plaine to Independence), and Southern Division (Albia to Omaha, Nebr.). Each station entry includes Maximum and Minimum temperature values for each day.

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

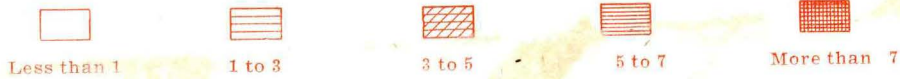
HAIL STORMS DURING JULY, 1922.

Date	County	Township	Direction From	Width of Path	Area Covered	Character	Size of Stones	Damage
5	Boone	Amagua	N. W.	2 miles	14 sq. mi.	Heavy	1 inch	Considerable
5	Boone	Des Moines	N. W.	2 miles	8 sq. mi.	Heavy	1/2 to 1 1/2 inches	Considerable
5	Boone	Grant	N. W.	2 miles	10 sq. mi.	Heavy	1/2 to 1 inch	Considerable
5	Boone	Pilot Mound	N. W.	1 mile	5 sq. mi.	Heavy	1/2 to 1 inch	Considerable
5	Boone	Worth	N. W.	3 miles	23 sq. mi.	Heavy	1/2 to 1 1/2 inches	Considerable
5	Boone	Yell	N. W.	3 miles	25 sq. mi.	Heavy	1/2 to 1 inch	Considerable
5	Hamilton	Clear Lake	N. W.	2 miles	8 sq. mi.	Heavy	1/2 to 1 inch	Considerable
5	Hamilton	Ellsworth	N. W.	2 miles	12 sq. mi.	Heavy	3/4 to 1 inch	Considerable
5	Hamilton	Hamilton	E.	2 miles	16 sq. mi.	Heavy	Acorns	Considerable
5	Hamilton	Lincoln	S.	1 mile	4 sq. mi.	Moderate		Considerable
5	Hamilton	Melrose	N. W.	1 mile	4 sq. mi.	Heavy	Large	Considerable
5	Hamilton	Scott	N. W.	1 mile	3 sq. mi.	Heavy	Walnuts	Considerable
5	Hamilton	Webster	N. W.	1 mile	2 sq. mi.	Moderate	Hickory Nuts	Considerable
5	Polk	Jefferson	N. W.	2 miles	12 sq. mi.	Heavy	1/2 to 3/4 inch	Considerable
6	Story	Howard	N. W.	2 miles	9 sq. mi.	Heavy	1/4 to 1 inch	Considerable
5	Story	Lafayette	N. W.			Heavy	Walnuts	Considerable
5	Story	Milford	S. W.	1 mile	4 sq. mi.	Heavy	1/2 inch	Considerable
5	Webster	Dayton	W.	1 mile	2 sq. mi.	Moderate	Small	Slight
5	Webster	Lost Grove	N. W.	1 mile	6 sq. mi.	Heavy		Considerable
6	Pottawattamie	Belknap	N. W.	2 miles	10 sq. mi.	Moderate	1/2 to 1 inch	Considerable
6	Pottawattamie	James	N.	6 miles	36 sq. mi.	Moderate	3/4 to 1/2 inch	Slight
8	Clinton	Liberty	S. W.			Light	1/2 inch	Considerable
8	Sioux	Garfield		1 mile	3 sq. mi.	Light		Slight
9	Floyd	Saint Charles				Light		None
9	Madison	Douglas				Light		None
9	Marshall	Linn				Light		None
9	Scott	Le Claire	W.			Light	Small	Slight
9	Warren	Linn	S. W.	1 mile	3 sq. mi.	Light	Large	Slight
9	Worth	Grove				Light		None
15	Black Hawk	Barclay	N. W.	2 miles	6 sq. mi.	Heavy	Walnuts	Considerable
15	Black Hawk	Bennington	N. W.	4 miles	18 sq. mi.	Heavy	1/2 to 1 inch	Considerable
15	Black Hawk	Dewar	N. W.	4 miles		Heavy	3/4 inch	Considerable
15	Black Hawk	Fox	N. W.			Heavy		Considerable
15	Black Hawk	Lester	N. W.	3 miles		Heavy	Hen Eggs	Considerable
15	Black Hawk	Mt. Vernon	N. W.	2 miles	6 sq. mi.	Heavy	Walnuts	Considerable
15	Black Hawk	Poyner	N. W.	2 miles	12 sq. mi.	Heavy		Considerable
15	Bremer	Jefferson	N. W.	6 miles	36 sq. mi.	Heavy	1/2 to 1 inch	Considerable
15	Bremer	Warren		1/2 mile	2 sq. mi.	Moderate		Considerable
15	Butler	Madison	W.	1 mile	3 sq. mi.	Heavy	1 inch	Considerable
15	Cerro Gordo	Daugherty	S. W.	1 mile	9 sq. mi.	Moderate	3/4 inch	Considerable
15	Fayette	Eden	N. E.	2 miles	6 sq. mi.	Moderate	Hickory Nuts	Considerable
15	Floyd	Pleasant Grove	N. E.	2 miles	12 sq. mi.	Moderate	Marbles	Considerable
15	Floyd	Rockford	N. W.	1 mile	6 miles	Moderate	Marbles	Considerable
15	Floyd	Rock Grove	W.			Heavy	Small	Considerable
15	Floyd	Saint Charles				Light		None
15	Hamilton	Blairsburg	E.	2 miles	6 sq. mi.	Moderate	Hen Eggs	Slight
15	Howard	New Oregon	S.	1 mile	12 sq. mi.	Moderate	Walnuts	Considerable
15	Howard	Oakdale	S. E.	2 miles	10 sq. mi.	Moderate	1-16 to 2 inches	Considerable
15	Howard	Vernon Springs	E.	1 1/2 miles	6 sq. mi.	Moderate	Hickory Nuts	Slight
15	Marshall	Linn				Light		None
15	Worth	Grove				Light		Slight
15	Wright	Woolstock	N. E.	1 1/2 miles	9 sq. mi.	Light	Small	Considerable
16	Allamakee	Jefferson	W.	1 1/2 miles	9 sq. mi.	Light	1/2 to 1 inch	Slight
16	Allamakee	Ludlow	W.	1 mile	6 sq. mi.	Heavy	1/2 to 1 inch	Considerable
16	Boone	Amagua	N.	6 miles	36 sq. mi.	Moderate	1/2 to 1 inch	Considerable
16	Boone	Beaver	N. E.	2 miles	8 sq. mi.	Moderate	1/4 to 1/2 inch	Considerable
16	Boone	Des Moines	N. W.	6 miles	36 sq. mi.	Moderate	1/2 inch	Considerable
16	Boone	Peoples	N. W.	2 miles	14 sq. mi.	Moderate	1/2 to 1 1/2 inches	Considerable
16	Boone	Union	N. E.	6 miles	36 sq. mi.	Moderate	1/2 to 1 inch	Considerable
16	Boone	Worth		1 mile	6 sq. mi.	Moderate		None
16	Boone	Yell	N. E.			Light	Small	None
16	Cherokee	Amherst	S. W.	1 mile	5 sq. mi.	Moderate	1 inch	Considerable
16	Cherokee	Marcus	S. W.	1 1/2 miles	6 sq. mi.	Light	3/8 inch	Slight
16	Clay	Gillett's Grove	S. W.	1 mile	4 sq. mi.	Light		Slight
16	Hamilton	Webster	N.			Light	Peas	None
16	Marion	Lake Prairie				Light		None
16	Plymouth	Remsen	W.	2 miles	20 sq. mi.	Heavy	1 inch	Considerable
16	Plymouth	Marion	W.	2 miles		Moderate	1 1/2 inches	Considerable
16	Polk	Beaver	N.	6 miles	36 sq. mi.	Light	Small	None
16	Polk	Jefferson	N. W.	2 miles	8 sq. mi.	Heavy	1/4 to 1 1/2 inches	Considerable
16	Polk	Webster	N. W.	3 miles	22 sq. mi.	Moderate		Considerable
16	Story	Palestine	N. W.	6 miles	36 sq. mi.	Light		None
16	Warren	Allen	N.	6 miles	36 sq. mi.	Light	1/4 inch	Slight
25	Shelby	Douglas	N. W.			Light	3/8 inch	Slight
26	Shelby	Union	E.	1 mile	2 sq. mi.	Moderate	Pigeon Eggs	Considerable
28	Shelby	Union	N.			Light	Marbles	None
28	Audubon	Leroy	W.	2 miles	6 sq. mi.	Heavy	Walnuts	Considerable
28	Monroe	Troy	N. W.			Moderate	1 inch	Considerable
28	Montgomery	Washington	W.	2 miles	12 sq. mi.	Light		Slight
30	Bremer	Frederika	N. E.	6 miles	36 sq. mi.	Heavy	Walnuts	Considerable
30	Buchanan	Fairbank	N. W.			Light	Small	None
30	Buchanan	Washington	W.			Light	Peas	None
30	Butler	Pittsford	E.			Moderate	Hazel Nuts	Considerable
30	Chickasaw	New Hampton	N.			Heavy	3/4 inch	Considerable
30	Floyd	Cedar				Moderate		None
30	Howard	Atton				Light		None
30	Howard	Howard	N. W.	1 mile	4 sq. mi.	Heavy	Large	Considerable
30	Mahaska	Lincoln				Light		None
30	Mitchell	Stacyville	N. W.	4 miles	24 sq. mi.	Moderate	1/2 to 2 inches	Considerable
30	Mitchell	Union	N. W.	1 mile	4 sq. mi.	Moderate		Considerable
30	Mitchell	Liberty	N. W.	1 mile	6 sq. mi.	Moderate		Considerable
30	Mitchell	Douglas	N. W.	1 mile	6 sq. mi.	Moderate		Considerable

TOTAL PRECIPITATION, AUGUST, 1922



SCALE OF SHADES—IN INCHES.



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
 IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, SEPT. 1922 No. 9

GENERAL SUMMARY

September was warm and considerably drier than the average. The chief characteristic of the month was a remarkably warm period that prevailed the first eight days. Another outstanding feature was a period of almost continuous sunshine that occurred from the 20th till the 27th. The first week ranked with the warmest of the season and over most of the State the highest temperatures of the year occurred. A large number of stations in the eastern and northern portions of the State, including two regular Weather Bureau stations, reported the highest September maxima of record and the record of one station extends over a period of more than 50 years. Light frost occurred over the northwestern portion of the State on the 10th and on the 11th light frost was general in low lands over nearly all sections. Light frost also occurred on the 16th, 25th, 26th and 27th. Only one station reported a temperature below freezing, but no damage whatever resulted from frost.

The precipitation was below normal over practically the entire State and there were only two shower periods of any consequence, and taking the State as a whole, more than half of the monthly total occurred during a single 24-hour period. While the precipitation was generally deficient, there was sufficient to keep pastures in good condition and benefited truck crops, but the lack of rain over the northern and western portions of the State caused a suspension of plowing, prevented the germination of winter wheat and caused a shortage of stock water. The weather was unusually favorable for the maturing of the corn crop and at the end of the month not more than 6 per cent was susceptible to injury from frost. Low humidity, hot weather and an excess of sunshine caused some corn to mature too rapidly so it became loose on the cob and lessened the yield somewhat. The dry weather retarded the seeding of winter wheat somewhat, but much seeding was intentionally delayed to avoid the Hessian fly pest.

No severe storms of any character occurred during the month. The only damage reported was from a local wind squall in the northern portion of Cerro Gordo County that blew down a number of telephone poles, frail buildings and trees. Roads were in good condition except somewhat rough after the rainy periods and all outside work was carried on with very little interruption.

F. L. D.

PRESSURE

The mean pressure (reduced to sea level) for the State was 30.07 inches. The highest recorded was 30.54 inches, at Dubuque, on the 16th, and the lowest was 29.62 inches, at Des Moines, on the 1st, and Sioux City, on the 5th. The monthly range was 0.92 inch.

TEMPERATURE

The mean temperature for the State, as shown by the records of 100 stations, was 67.1°, or 3.7° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 66.0°, or 4.2° higher than the normal; Central, 67.3°, or 3.8° higher than the normal;

Southern, 68.1°, or 3.1° higher than the normal. The highest monthly mean was 70.4°, at Fairport, and the lowest was 63.0°, at Postville. The highest temperature reported was 103°, at Belle Plaine and Mason City, on the 6th, and the lowest was 31°, at Washta, on the 11th. The monthly range for the State was 72°.

PRECIPITATION

The average precipitation for the State, as shown by the records of 103 stations, was 2.03 inches, or 1.33 inches less than the normal. By divisions, the averages were as follows: Northern, 1.69 inches, or 1.36 inches less than the normal; Central, 2.24 inches, or 1.22 inches less than the normal; Southern, 2.17 inches, or 1.39 inches less than the normal. The greatest amount, 4.34 inches, occurred at Iowa Falls, and the least, 0.31 inch, occurred at Inwood and Milford. The greatest amount in 24 consecutive hours, 3.05 inches, occurred at Le Mars, on the 18th.

HUMIDITY

The average relative humidity for the State at 7 a. m. was 81 per cent, and at 7 p. m. was 60 per cent. The mean for the month was 70 per cent, or 4 per cent below the normal. The highest monthly mean was 77 per cent at Charles City, and the lowest was 62 per cent, at Sioux City.

SUNSHINE

The average per cent of the possible amount of sunshine was 71, which is 9 per cent above the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 71; Davenport, 73; Des Moines, 69; Dubuque, 63; Keokuk, 71; Sioux City, 73; Omaha, Neb., 77.

COMPARATIVE DATA FOR THE STATE—SEPTEMBER.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	59.3	-4.1	96	23	2.97	-0.39	4.85	1.36		7	13	10	7
1891	67.3	+3.9	104	28	1.33	-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	1.00		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	0.59		7	13	8	9
1905	65.8	+2.4	96	36	3.81	+0.45	13.18	0.00		8	14	8	8
1906	67.2	+3.8	100	27	4.16	+0.80	11.10	1.64		8	16	8	6
1907	62.8	-0.6	98	25	2.75	-1.61	6.06	0.38		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	1.19		9	14	7	9
1911	65.8	+2.4	103	32	5.12	+1.76	13.73	1.18		10	11	9	10
1912	62.1	-1.3	104	24	3.98	+0.62	10.12	0.28		11	12	8	10
1913	64.5	+1.1	107	19	3.31	-0.05	7.44	0.45		9	15	8	7
1914	64.5	+1.1	99	30	7.88	+4.52	16.24	2.48		10	16	7	7
1915	63.7	+0.3	91	30	6.03	+2.67	12.45	2.88		11	11	8	11
1916	62.5	-0.9	98	21	3.89	+0.53	9.71	1.45		7	17	8	5
1917	62.6	-0.8	97	28	2.90	-0.46	8.68	0.39		7	15	7	8
1918	58.6	-4.8	93	20	1.87	-1.49	4.62	0.48		6	16	8	6
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	-0.66	7.21	0.69		8	17	8	5
1921	67.3	+3.9	99	31	6.72	+3.36	11.95	1.72		11	14	8	8
1922	67.1	+3.7	103	31	2.03	-1.33	4.34	0.31		6	20	6	4

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



Climatological Data for September, 1922.

Stations	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.					Precipitation, in Inches.				Number of Days			Observers.				
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more		Clear.	Partly cloudy.	Cloudy.	Prevailing direction of wind.
Northern Division																				
Algona	Kossuth	1,213	49	65.6	+ 3.4	99	6	38	25	36	1.00	-2.24	0.49	0	5	23	4	3	se.	W. E. Laird.
Allison	Butler	1,044	10	65.9	-----	100	6	38	11	35	3.09	-----	1.70	0	5	19	5	6	s.	J. A. Bell.
Alta	Buena Vista	1,513	31	66.0	+ 4.1	93	7	43	10	30	1.36	-1.72	1.02	0	5	19	6	3	s.	D. E. Hadden.
Alton	Sioux	1,305	17	66.8	+ 4.4	96	7	38	11	38	0.73	-----	0.48	0	3	22	6	2	se.	W. S. Slagle.
Belmond	Wright	1,205	12	66.8	-----	100	6	37	11	39	1.58	-----	0.96	0	6	16	10	4	sw.	Geo. P. Hardwick.
Britt	Hancock	1,236	25	67.2	+ 5.7	101	6	36	11	39	2.51	-1.99	0.75	0	7	17	6	7	se.	L. M. Goodman.
Charles City	Floyd	1,015	31	64.6	+ 2.9	98	6	39	25	34	2.22	-0.58	1.23	0	8	17	7	6	se.	U. S. Weather Bureau.
Cherokee	Cherokee	1,196	22	66.4	-----	95	1†	37	11	40	0.83	-----	0.77	0	2	20	6	2	s.	J. E. Wirth.
Decorah	Winneshek	875	29	63.8	+ 1.6	99	6	34	25	35	2.17	-1.77	0.82	0	9	22	2	6	nw.	M. D. Whitney.
Estherville	Emmet	1,298	27	65.4	+ 5.3	100	6	35	25†	44	0.53	-3.16	0.15	0	7	21	7	2	sw.	A. O. Peterson.
Fayette	Fayette	1,003	32	66.0†	+ 4.7	101†	7	37†	11	39†	2.51	-0.88	1.14	0	7	23	3	4	sw.	R. Z. Latimer.
Forest City	Winnebago	1,226	28	65.4	+ 4.1	101	6	36	11	38	1.50	-1.95	0.72	0	6	15	10	5	se.	Dr. M. B. Neil.
Humboldt	Humboldt	1,095	34	67.2	+ 4.9	102	6	36	11	40	1.51	-1.53	0.78	0	4	21	4	5	s.	H. C. Snitkey.
Inwood	Lyon	1,474	18	67.2	+ 4.7	100	6	35	10	40	0.31	-2.50	0.20	0	7	23	5	2	sw.	F. B. Hanson.
LeMars	Plymouth	1,224	26	66.5	+ 4.1	97	6	40	25	39	3.13	-0.12	3.05	0	3	23	4	3	sw.	Mrs. M. C. Wooley.
Mason City	Cerro Gordo	1,148	25	64.5	+ 3.1	103	6	34	11†	45	3.18	+0.73	1.69	0	7	23	3	4	se.	Northern Sugar Corp.
Milford (near)	Dickinson	1,430	2	65.2	-----	94	5	43	10	30	0.31	-----	0.10	0	7	12	14	4	s.	Dr. F. J. Smith.
New Hampton	Chickasaw	1,169	25	65.2	+ 4.3	100	6	39	11†	36	2.57	-0.55	1.26	0	5	20	6	4	s.	A. F. Kemman.
Nora Springs	Floyd	1,064	10	66.8	-----	102	6	37	11†	42	3.07	-----	1.10	0	9	19	7	4	s.	Arthur Betts.
Northwood	Worth	1,222	26	64.2	+ 3.2	98	6	37	11	33	1.91	-1.35	1.10	0	6	16	10	4	s.	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	18	67.0	+ 4.6	98	6	37	11	40	1.51	-2.28	0.98	0	5	22	2	6	se.	F. E. Hronek.
Postville	Clayton	1,180	23	63.0	+ 1.9	93	6†	38	25	34	2.27	-1.42	1.02	0	7	20	5	5	sw.	F. L. Williams.
Rock Rapids	Lyon	1,358	23	65.3	+ 3.3	96	6	37	11†	41	0.72	-1.70	0.32	0	5	23	5	2	sw.	H. C. Medberry.
Sanborn	O'Brien	1,553	8	67.1	-----	99	6	39	10	42	0.90	-----	0.77	0	3	21	7	2	sw.	J. W. Dow.
Sioux Center	Sioux	1,426	23	66.0	+ 4.2	96	1†	39	10†	39	0.79	-2.27	0.42	0	3	21	6	3	s.	J. de Ruyster.
Spencer	Clay	1,319	8	67.4	-----	99	6	35	11	44	0.96	-----	0.78	0	5	23	4	3	sw.	E. W. Little.
Storm Lake	Buena Vista	1,440	33	67.2	+ 5.0	94	1†	43	10†	33	1.17	-1.89	0.90	0	4	25	2	3	se.	Geo. H. Fracker.
Washta	Cherokee	1,157	24	67.4	+ 4.1	96	5†	31	11	46	2.80	-0.72	2.29	0	5	20	6	4	s.	H. L. Felter.
Waverly	Bremer	948	26	64.8	+ 2.6	99	6†	35	25†	44	3.04	+0.05	1.47	0	6	23	4	3	s.	D. H. Murphy.
West Bend	Palo Alto	1,197	29	68.1	+ 6.5	99	2†	37	11	41	1.12	-1.95	0.63	0	6	19	8	3	s.	Jos. Dorweiler.
Mean and extremes				66.0	+ 4.2	103	6	31	11	46	1.69	-1.36	3.05	0	6	20	6	4	s.	
Central Division																				
Ames	Story	926	45	66.0	+ 2.6	96	6†	33	27	43	1.52	-2.15	0.89	0	5	21	6	3	s.	Iowa State College.
Audubon	Audubon	1,301	28	66.5	+ 4.0	95	1†	41	26	35	2.59	-0.81	1.10	0	5	22	3	5	s.	Geo. Kibby.
Baxter	Jasper	998	22	67.2	+ 3.7	95	6†	41	26	36	2.94	-0.68	1.19	0	4	21	7	2	s.	Henry Geise.
Belle Plaine	Benton	886	32	67.8	+ 4.6	103	6	36	27	43	2.61	-0.53	1.89	0	5	16	8	6	s.	O. C. Burrows.
Boone	Boone	1,134	17	65.5	+ 3.0	96	6†	34	27	42	2.06	-1.50	1.35	0	6	20	3	7	s.	C. F. Henning.
Carroll	Carroll	1,265	52	67.4	+ 5.4	96	6	40	11	34	2.71	-0.37	1.37	0	6	25	3	2	sw.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	40	68.5	+ 4.5	101	6	42	26†	36	1.99	-1.04	0.90	0	4	19	3	8	sw.	R. S. Toogood.
Clinton	Clinton	593	49	68.8	+ 5.3	102	8	41	25†	41	2.40	-0.93	1.13	0	5	22	3	5	s.	Dr. A. P. Bryant.
Davenport	Scott	580	51	68.9	+ 4.2	100	6	44	25	34	1.91	-1.23	1.01	0	7	18	5	7	sw.	U. S. Weather Bureau.
Dav'port (Pine Acres)	Scott	690			-----	100	6	39	27											Alfred C. Hansen.
Denton	Crawford	1,180	28	67.0	+ 3.5	95	6	38	11	37	1.86	-1.07	0.96	0	6	20	7	3	sw.	V. L. Byers.
Des Moines	Polk	861	44	68.0	+ 3.0	96	7	43	11	30	3.00	-0.07	1.44	0	4	16	9	5	s.	U. S. Weather Bureau.
Dubuque	Dubuque	639	49	65.9	+ 1.9	99	6	39	25	33	3.40	-0.19	1.60	0	5	13	10	7	s.	U. S. Weather Bureau.
Fairport	Muscatine	567	1	70.4	-----	100	6	41	27	46	1.83	-----	1.14	0	3	20	2	8	s.	R. L. Barney.
Fort Dodge	Webster	1,114	22	67.0	+ 4.4	100	7	37	12	38	2.10	-2.12	0.90	0	7	26	1	3	s.	Samuel Sampson.
Grinnell	Poweshiek	1,031	28	68.4	+ 3.8	98	6†	42	26	33	2.49	-1.10	1.00	0	6	19	7	4	se.	Paul P. Meyers.
Grundy Center	Grundy	976	31	67.0	+ 3.4	98	7	37	27	39	2.01	-1.42	0.92	0	5	22	4	4	sw.	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	27	68.4	+ 4.7	96	7	40	25	34	1.96	-1.57	0.60	0	6	22	5	3	sw.	E. L. Nesselroad.
Harlan	Shelby	1,192	23	66.0	+ 2.8	95	1†	39	11	35	1.74	-2.44	0.70	0	5	24	3	3	s.	W. K. Colburn.
Independence	Buchanan	921	58	66.6	+ 4.0	100	7	39	25†	39	2.86	-1.00	1.40	0	4	23	3	4	sw.	Dr. George Boody.
Iowa City	Johnson	733	62	67.2	+ 3.6	100	6	35	27	42	2.91	-0.77	1.76	0	5	16	8	6	se.	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	29	65.0	+ 4.1	96	6†	37	27	36	4.34	+0.80	2.80	0	7	21	3	6	s.	J. B. Parmelee.
Jefferson	Greene	1,052	23		-----	37†			11		2.34	-----	1.23	0						W. I. Lyon.
Little Sioux	Harrison	1,040	17	69.0	+ 3.4	100	7	40	11	39	1.12	-----	0.33	0	9	16	10	4	se.	G. H. Gibson.
Logan	Harrison	1,035	55	69.8	+ 5.3	99	6†	40	11†	40	1.29	-2.05	0.57	0	5	19	8	3	sw.	Mary Jean Stern.
Marshalltown	Marshall	947	30	67.6	+ 4.2	99	7	41	25†	36	2.17	-1.57	1.03	0	5	23	4	3	s.	C. C. Pigman.
Monroe	Jasper	922	10	69.0 ^a	-----	98 ^a	7	44 ^a	11†	34 ^b	1.61	-----	0.86	0	3	21	0	9	s.	J. A. Dibel.
Olin	Jones	760	23	65.6	+ 2.6	98	6	36	27	39	2.45	-0.75	1.10	0	3	22	5	3	sw.	Dr. F. W. Port.
Onawa	Monona	1,051	22	67.2	-----	98	6	40	11	37	1.23	-2.23	0.75	0	3	23	3	4	s.	Mrs. H. E. Colby.
Perry	Dallas	975	21	66.0 ^b	+ 2.2	94 ^b	6	38 ^b	27	36 ^b	1.78	-1.36	0.73	0	4	-----	-----	-----	-----	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	65.9	+ 3.1	96	6	39	25	35	1.77	-2.18	0.62	0	6	21	6	3	s.	A. W. McIsaac.
Sac City	Sac	1,344	46	65.9 ^a	+ 2.8	96 ^a	6	41 ^a	11	32 ^a	2.13	-1.10	1.34	0	5	20	6	4	s.	F. P. Kessler.
Sioux City	Woodbury	1,137	33	68.1	+ 4.0	99	6	45	9	34	0.49	-1.98	0.34	0	5	13	12	5	s.	U. S. Weather Bureau.
Tipton	Cedar	807	23	67.4	-----	100	6	38	26†	37	2.3									

Climatological Data for September, 1922—Continued.

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit.						Precipitation, in Inches				Number of Days			Observers.			
				Mean.	Departure from normal.	Highest	Date.	Lowest	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more	Clear		Partly cloudy.	Cloudy.	Prevailing direction of wind.
<i>Southern Division</i>																				
Afton.....	Union.....	1,212	28	67.7	+ 3.2	98	6†	41	26	35	1.65	-2.32	0.60	0	6	21	5	4	sw.	S. H. Brown.
Albia.....	Monroe.....	959	24	68.4	+ 3.2	97	7	40	11	32	1.58	-1.67	0.71	0	8	23	5	4	sw.	O. E. McBride.
Atlantic.....	Cass.....	1,164	31	67.8 ^a	+ 3.7	96 ^a	6†	33 ^a	11	38 ^a	1.85	-1.67	0.98	0	5	21	4	5	se.	J. N. Reynolds.
Bonaparte.....	Van Buren.....	---	31	68.0	+ 2.5	97	6†	39	27	36	2.06	-2.14	0.86	0	5	21	4	5	se.	B. R. Vale.
Burlington.....	Des Moines.....	544	26	70.0	+ 3.9	100	6	45	26†	34	2.14	-1.51	1.30	0	5	23	1	6	sw.	Mrs. E. M. Donnelly.
Centerville.....	Appafoose.....	1,013	17	68.2	---	95	1†	42	11†	33	1.88	-2.37	1.06	0	7	18	4	6	sw.	Leo J. Allen.
Chariton.....	Lucas.....	1,042	27	67.9	+ 3.2	94	7†	41	11	33	2.22	-1.10	0.80	0	6	16	5	4	sw.	C. C. Burr.
Clarinda.....	Page.....	1,009	32	68.8	+ 4.7	101	1	38	11	40	2.95	-0.04	1.34	0	9	18	5	4	s.	A. S. Van Sandt.
Columbus Jet.....	Louisa.....	595	21	70.0	+ 4.7	99	6	42	26	33	1.45	-1.71	1.12	0	5	25	0	5	sw.	J. B. Johnston.
Corning.....	Adams.....	1,117	30	67.1 ^a	+ 3.2	96 ^a	6†	37 ^a	11	43 ^a	3.19	-0.09	1.17	0	5	---	---	---	sw.	Jerome Smith.
Corydon.....	Wayne.....	1,101	29	68.9	+ 2.9	97	6†	39	11	37	2.59	-0.89	0.91	0	8	17	8	5	se.	May C. Miller.
Cumberland (near).....	Union.....	1,312	17	66.4	+ 2.8	90	7	44	11	30	1.74	---	0.52	0	7	17	12	1	se.	Dr. H. M. Stanley.
Earlham.....	Cass.....	1,225	23	---	---	---	---	---	---	---	1.66	-2.12	0.68	0	5	19	5	3	s.	Carl E. Pollock.
Earlham.....	Madison.....	1,126	20	65.8	+ 2.5	95	6	35	25†	38	2.04	-1.56	0.93	0	6	25	1	4	sw.	George Phillips.
Fairfield.....	Jefferson.....	780	38	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Prof. R. M. McKenzie.
Glenwood.....	Mills.....	1,100	24	70.3	---	100	1†	39	11	37	2.34	---	1.65	0	5	18	6	6	se.	Dr. George Mogridge.
Greenfield.....	Adair.....	1,368	30	66.8	+ 3.1	95	6	41	24	35	3.34	-0.05	2.15	0	3	16	11	3	se.	C. E. McCaslen.
Indianola.....	Warren.....	972	31	67.2	+ 2.2	94	5†	40	11	32	2.26	-1.16	1.07	0	5	17	9	4	se.	Seth F. Shenton.
Keokuk.....	Lee.....	614	51	70.0	+ 3.6	98	7	46	26	31	2.92	-1.05	2.42	0	6	20	8	4	s.	U. S. Weather Bureau.
Keosauqua.....	Van Buren.....	644	30	68.0	+ 3.5	99	7†	34	26†	44	2.58	-1.68	1.00	0	6	19	5	6	se.	J. H. Landes.
Knoxville.....	Marion.....	920	27	67.6	+ 2.3	95	7†	41	11	33	2.61	-0.97	1.50	0	4	16	7	7	sw.	W. J. Casey.
Lacona.....	Warren.....	---	23	---	---	---	---	---	---	---	2.20	-1.54	1.50	0	6	11	14	5	---	J. B. Alter.
Lamoni.....	Decatur.....	1,100	15	66.8	+ 1.5	95	1†	39	11†	36	2.72	-1.17	0.90	0	8	22	4	4	s.	C. E. Wight.
Lenox.....	Taylor.....	1,250	27	67.8	+ 3.1	96	1†	39	11	36	1.97	-1.43	0.46	0	8	21	5	4	s.	J. L. Hurley.
Mt. Ayr.....	Ringgold.....	1,236	29	67.0	+ 1.1	93	6†	43	26	29	2.66	-0.92	1.28	0	9	20	4	6	s.	Alex Maxwell.
Mt. Pleasant.....	Henry.....	729	41	69.1	+ 3.7	99	6†	39	26	36	1.15	-2.08	0.51	0	5	16	9	5	ne.	John H. Jericho.
Oskland.....	Pottawattamie.....	1,105	3	68.4	---	100	1	37	11	41	1.77	---	1.08	0	6	21	1	8	s.	M. E. Gray.
Oskaloosa.....	Mahaska.....	825	46	67.5	+ 2.8	97	7	39	26	35	2.21	-0.84	1.14	0	5	18	4	8	s.	Roy R. Robinson.
Ottumwa.....	Wapello.....	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pella.....	Marion.....	877	29	67.4	+ 2.2	97	5†	36	27	40	2.12	-1.11	0.94	0	3	22	2	6	s.	J. H. Ver Staeg.
Sigourney.....	Keokuk.....	790	26	67.7	+ 2.7	99	7	37	27	39	1.75	-1.47	1.02	0	3	21	4	5	se.	W. E. Utterback.
Stockport.....	Van Buren.....	754	20	66.9	+ 2.0	97	6†	33	27	44	1.57	-2.36	0.86	0	7	22	1	7	s.	C. L. Beswick.
Thurman.....	Fremont.....	---	25	69.8 ^a	+ 4.6	99 ^b	6†	38	11	37 ^b	2.48	-2.02	0.80	0	7	13	14	3	sw.	C. R. Paul.
Washington.....	Washington.....	769	40	68.0	+ 3.3	97	6†	42	26	33	1.09	-1.92	0.73	0	2	15	10	5	sw.	Wm. A. Cook.
Wescott (near).....	Lee.....	---	---	66.1	---	93	7	39	27	34	3.49	---	1.42	0	6	18	4	8	sw.	George H. Smith.
Winterset.....	Madison.....	1,129	31	68.5	+ 3.7	95	6†	41	11	33	1.70	-1.64	1.05	0	5	26	2	2	sw.	H. S. Ely.
Omaha, Neb.....	---	1,040	51	71.0	+ 5.2	101	1	50	11	33	1.29	-1.74	0.78	0	9	18	7	5	se.	U. S. Weather Bureau.
Means and extremes.....	---	---	---	68.1	+ 3.1	101	1†	33	27	44	2.17	-1.39	2.42	0	6	19	6	5	sw.	---
State means and extremes.....	---	---	---	67.1	+ 3.7	103	6	31	11	46	2.03	-1.33	3.05	0	6	20	6	4	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 (%)			Wind					Sunshine		
	Mean	Highest	Date	Lowest	Mean.			Total movement	Average hourly velocity	Maximum			Per cent of possible	Departure from normal	
					7 a. m.	12 Noon. †	7 p. m.			Miles	From	Date			
Charles City	30.08	30.53	16	29.64	1.87	54	67	28	28	3,813	5.3	20	se.	28	71 + 8
Davenport...	30.09	30.45	16	29.69	1.83	48	58	19	28	3,713	5.2	26	nw.	8	73 + 9
Des Moines...	30.06	30.46	16	29.62	1.80	50	63	29	24	4,319	6.0	23	sw.	30	63 + 7
Dubuque.....	30.11	30.54	16	29.70	1.86	54	64	30	28	3,371	4.7	18	n.	10	63 + 4
Keokuk.....	30.09	30.41	16	29.72	1.77	51	61	24	27	3,535	4.9	24	s.	1	71 + 11
Sioux City...	30.03	30.48	16	29.62	5.76	48	48	26	24	7,687	10.7	33	n.	8	73 + 10
Omaha, Neb...	30.04	30.46	16	29.66	1.76	51	58	30	6	4,683	6.5	37	n.	2	77 + 13
Means and extremes.....	30.07	---	---	29.62	---	81	51	60	---	---	6.2	---	---	---	71 + 9
Normals and records	30.02	---	26 th	---	30 th	83	---	64	---	28 th	7.2	---	---	7 th	62
	---	*30.65	19 th	29.27	1878	---	---	---	---	18	1921	---	---	---	---

*Dubuque. §Omaha. ¶Davenport. †Local mean time. †And other dates.

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 33 miles per hour, from the north, at Sioux City, on the 8th.

RIVERS

Low stages prevailed on all rivers with very little fluctuation, but with a falling tendency prevailing. Only once in September has a lower mean stage been recorded at Dubuque.

MISCELLANEOUS PHENOMENA

Fog: 1st, 2d, 3d, 4th, 14th, 15th, 18th, 19th, 20th, 21st, 22d, 23d, 26th, 27th, 28th.

Frost, light: 10th, 11th, 16th, 25th, 26th, 27th.

Hail: 8th, 17th.

Halos: 1st, 10th, 15th.

Rainbow: 7th.

Thunderstorms: 1st, 2d, 4th, 6th, 7th, 8th, 9th, 10th, 13th, 15th, 16th, 17th, 18th, 19th, 29th, 30th.

Daily Precipitation for September, 1922—Continued.

Stations.	Drainage Basin	Day of Month.																															Totals
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Southern Division</i>																																	
Afton	Grand								.60						.25	.15		.36	.03												.26	1.65	
Albia	Des Moines			T.				.55	.71				.01			.19	.02	.14	.35	.01													1.98
Atlantic	Nishnabotna				.01			.98	.23							.02	.02	.42	.01												.16	1.85	
Bonaparte	Des Moines			T.				.86	.53						.07	.18		T.	.42											T.		2.06	
Burlington	Mississippi							.28	1.30	T.						.14	.02		.40	T.												2.14	
Centerville	Chariton				T.				1.06	.34						.12	.10		.20	.02											.04	1.88	
Chariton	Chariton							.80	.46							.25	.11		.50												.10	2.22	
Clarinda	Nodaway			T.	T.	.35	.01		.35	.07						.34		1.34	.08										.03		.38	2.95	
Columbus Jct.	Iowa			T.					1.12	.05		.05						.20			.03									T.		1.45	
Corning	Nodaway							.85	.32							T.	.58		1.00												.44	3.19	
Corydon	Chariton				.06				.91	.51						.10	.17		.38	.01									T.		.45	2.59	
Creston	Missouri								.41	.52						.13			.24	.11	.02									.33	1.74		
Cumberland (near)	Nodaway			T.				.20	.68	.02			T.		T.	T.	T.		.53		T.									.23	1.66		
Earlham	Des Moines							.67	.93	.09									.25	.01										.09	2.04		
Fairfield	Skunk																		.16											.02	**		
Glenwood	Missouri				.10				1.25	.40							T.		.34											.25	2.34		
Greenfield	Nodaway								2.15	.61						T.		T.		T.										.58	3.34		
Indianola	Des Moines			T.				.10	1.07	.21			T.						.80	.05										T.		2.26	
Keokuk**	Mississippi			.05	T.				T.	2.13	.37		T.			T.	.65		.11	.21	T.											2.92	
Keosauqua	Des Moines			T.					1.00	.60			.02			.51	.20		.25	T.												2.58	
Knoxville	Des Moines	.03	T.						1.50	.40			T.						.68										T.	T.		2.61	
Lacona	Des Moines		.01	.01					1.50							.01			.63													2.20	
Lamoni	Grand				.05				.90	.80						.65	.41		.09	.30										.12	2.72		
Lenox	Missouri				.15				.05	.46	.19					.25	.11		.40											.35	1.97		
Mt. Ayr	Grand			T.		.07			.27	1.28	.09					.20	.22		.20	.03									T.		.18	2.66	
Mt. Pleasant	Skunk			T.					.51	.18			T.				.08		.03	.40										T.		1.15	
Oakland	Nishnabotna		.03						1.08	.16							.20		.15												.15	1.77	
Oskaloosa	Des Moines	.02	T.						.61	.41			T.	T.				1.14	T.											.03	2.21		
Pella	Skunk			T.					T.	.94	.57								.61											T.		2.12	
Scourney	Skunk			T.					1.02	.25			T.						.48													1.75	
Stockport	Skunk			T.					.86	.20			T.			.15	.11		.65	.18										.02	1.57		
Thurman	Missouri			T.		.04			.80	.33						.15	.10		T.	.28										.78	2.48		
Washington	Skunk								.73										.36													1.09	
Wescott (near)	Mississippi				.04				.52	1.32						T.		.09		.10	1.42											3.49	
Winterset	Des Moines								.63	1.05	.22								.33											T.		.07	1.70
Omaha, Nebr.***	Missouri	.01	T.		.02			.01	.78	T.				T.		.66		T.	.08	.03										.04	.26	1.29	

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 Temperature for the Month of September, 1922

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
Northern Division																																
Algona	96	85	90	93	95	99	94	86	74	66	74	73	71	74	74	68	70	65	58	66	76	79	82	72	70	72	74	75	86	75	77.4	
Alta	92	81	87	89	92	92	93	78	69	64	74	74	75	75	73	70	61	57	66	76	80	81	72	72	73	74	82	83	74	76.6		
Alton	94	90	90	92	95	95	96	88	73	66	76	74	74	73	71	70	67	58	68	78	82	82	78	74	75	78	84	83	78	79.3		
Belmond	96	90	91	94	97	100	96	86	75	68	73	80	73	77	81	71	69	66	60	65	76	80	88	74	72	72	76	82	88	73	79.6	
Charles City	93	82	87	90	95	98	96	91	75	65	71	72	65	71	74	66	67	54	58	68	73	78	80	69	68	70	73	78	87	74	76.3	
Decorah	95	85	86	91	94	99	98	92	76	67	70	72	68	68	79	64	65	60	56	62	72	77	80	69	68	68	71	70	85	72	76.0	
Forest City	98	87	89	93	97	101	95	87	75	65	74	75	65	74	76	68	69	65	58	65	76	80	81	70	72	74	75	82	88	77	78.4	
Inwood	98	86	93	93	97	100	93	82	78	45	39	46	54	52	49	40	48	49	51	51	44	51	56	47	40	42	42	50	52	60	52.5	
Mason City	96	85	85	91	98	103	98	86	76	65	73	72	65	74	74	62	55	57	52	38	50	54	50	45	46	49	48	52	61	58	53.9	
Milford (near)	92	83	88	88	94	93	89	84	72	49	34	48	54	53	48	39	46	49	51	48	47	52	57	44	34	43	38	55	43	57	51.8	
New Hampton	94	85	89	93	96	100	99	95	78	70	72	75	65	71	7	66	68	55	58	68	74	80	83	70	69	72	75	79	87	76	77.9	
Northwood	92	82	86	91	94	98	93	85	74	65	73	73	68	72	73	65	68	60	60	67	74	78	80	69	68	70	72	78	85	73	76.2	
Pocahontas	95	84	93	92	97	98	96	85	85	65	76	76	76	77	75	74	73	63	58	68	79	81	83	75	75	76	78	84	89	77	80.1	
Postville	89	82	82	85	90	93	93	91	70	65	65	70	63	65	70	61	61	53	64	64	69	75	77	65	62	65	69	75	82	73	72.9	
Central Division	65	64	55	57	67	74	75	68	56	52	39	50	51	52	47	41	42	48	50	47	48	54	55	44	45	46	44	54	58	60	53.0	
Belle Plaine	98	85	90	95	99	103	102	101	75	68	75	79	76	74	78	73	71	60	64	72	78	83	91	74	71	75	79	84	91	76	81.3	
Boone	93	84	87	90	93	96	96	86	77	66	73	77	74	75	76	73	70	64	61	72	75	80	85	74	71	73	76	80	88	79	78.8	
Carroll	95	88	91	95	92	96	95	95	75	65	74	79	78	77	77	74	72	65	65	69	76	80	84	75	75	74	77	81	86	76	80.0	
Davenport	97	91	90	92	95	100	99	98	73	63	71	78	79	76	77	70	68	64	62	70	78	81	87	73	66	72	77	82	87	80	79.9	
Des Moines	93	83	86	91	96	95	96	92	72	66	72	77	75	72	77	72	69	61	60	71	74	79	88	74	69	72	76	81	88	74	78.4	
Dubuque	95	84	86	90	94	99	97	97	73	64	68	75	69	63	73	66	63	55	59	68	74	79	86	69	64	69	74	77	85	76	76.4	
Fort Dodge	70	67	59	60	67	75	73	68	58	51	47	54	56	58	52	50	46	51	53	52	49	52	60	49	39	42	44	44	52	62	55.4	
Grinnell	67	65	62	56	68	70	72	70	64	49	46	37	51	52	51	49	42	47	50	52	52	45	51	56	42	48	43	43	50	57	53.7	
Guthrie Center	95	85	92	95	96	98	98	96	86	66	74	77	76	74	79	73	72	63	60	70	75	80	88	77	70	74	77	83	88	77	80.5	
Independence	69	68	60	65	70	72	73	59	53	45	55	57	53	52	51	46	50	54	54	50	54	57	51	44	42	45	50	58	60	58	56.3	
Iowa City	96	87	89	94	96	100	99	99	84	68	72	79	77	74	78	72	69	60	62	68	78	81	89	79	68	74	77	81	89	72	80.4	
Iowa Falls	93	83	88	91	95	96	96	88	75	64	70	73	71	70	73	67	66	60	59	65	72	78	80	69	67	69	72	78	87	75	76.3	
Little Sioux	98	87	91	91	97	99	100	91	75	67	79	80	85	79	78	76	70	60	59	70	79	83	84	78	77	78	81	88	87	78	82.0	
Marshalltown	97	84	91	95	97	98	99	92	76	67	74	77	74	73	79	73	71	61	59	68	75	81	87	73	70	74	77	82	88	78	79.6	
Olin	95	89	87	92	95	98	97	98	89	71	67	72	75	70	74	75	49	49	50	54	54	50	54	50	41	42	41	47	55	74	75.7	
Sioux City	97	85	90	92	98	99	96	82	73	67	79	76	77	76	74	72	72	63	59	69	81	84	83	74	74	75	78	88	82	77	79.7	
Southern Division	72	61	64	72	74	77	72	57	45	45	45	55	55	52	50	47	57	54	54	45	52	55	58	46	48	51	51	58	62	62	56.5	
Albia	94	87	86	87	95	96	97	95	81	68	74	81	85	77	73	79	72	61	61	69	76	82	88	75	71	74	78	82	89	74	80.2	
Atlantic	95	84	90	86	92	96	95	86	76	64	79	84	76	76	75	73	63	59	70	75	80	86	76	77	71	80	83	86	76	71	80.0a	
Burlington	98	92	85	91	96	100	99	97	89	71	69	79	84	74	70	70	68	66	66	78	82	86	75	68	75	77	81	87	78	81	81.2	
Columbus Jet.	94	89	89	92	95	99	98	97	86	70	76	78	80	78	75	71	69	61	62	66	76	81	86	88	67	72	76	80	87	75	80.4	
Corning	95	85	90	87	94	96	96	94	67	66	80	74	73	72	71	71	63	69	69	74	84	90	76	74	75	86	83	88	76	74	79.9a	
Corydon	68	65	60	69	73	71	72	65	59	48	37	45	47	55	53	51	51	53	51	42	45	52	38	42	41	54	49	59	60	61	54.3a	
Fairfield	96	90	89	90	96	97	97	96	84	70	76	82	84	79	74	74	63	61	70	77	81	89	77	74	76	79	83	89	79	81	81.4	
Keokuk	70	67	67	69	68	70	70	71	62	53	39	54	54	58	56	54	47	50	57	53	48	51	56	49	43	40	44	53	59	60	56.4	
Lamoni	96	92	81	90	94	97	98	96	76	69	70	79	82	85	75	69	68	68	66	66	77	81	85	75	68	72	76	81	86	80	80.0	
Pella	72	72	68	67	72	78	76	76	69	52	49	55	62	63	61	56	49	52	58	57	55	56	61	54	48	46	48	50	59	63	60.1	
Sigourney	95	85	90	88	92	94	95	93	75	65	73	79	83	75	71	65	61	71	74	79	86	74	71	73	76	82	87	73	73	79.0		
Thurman	67	67	62	67	66	67	66	66	58	51	39	50	55	56	56	53	48	50	55	51	43	52	55	51	42	39	40	56	53	52	54.5	
Winterset	92	87	86	91	97	96	97	97	84	76	73	81	80	75	77	75	70	62	60	68	75	80	89	77	70	77	76					

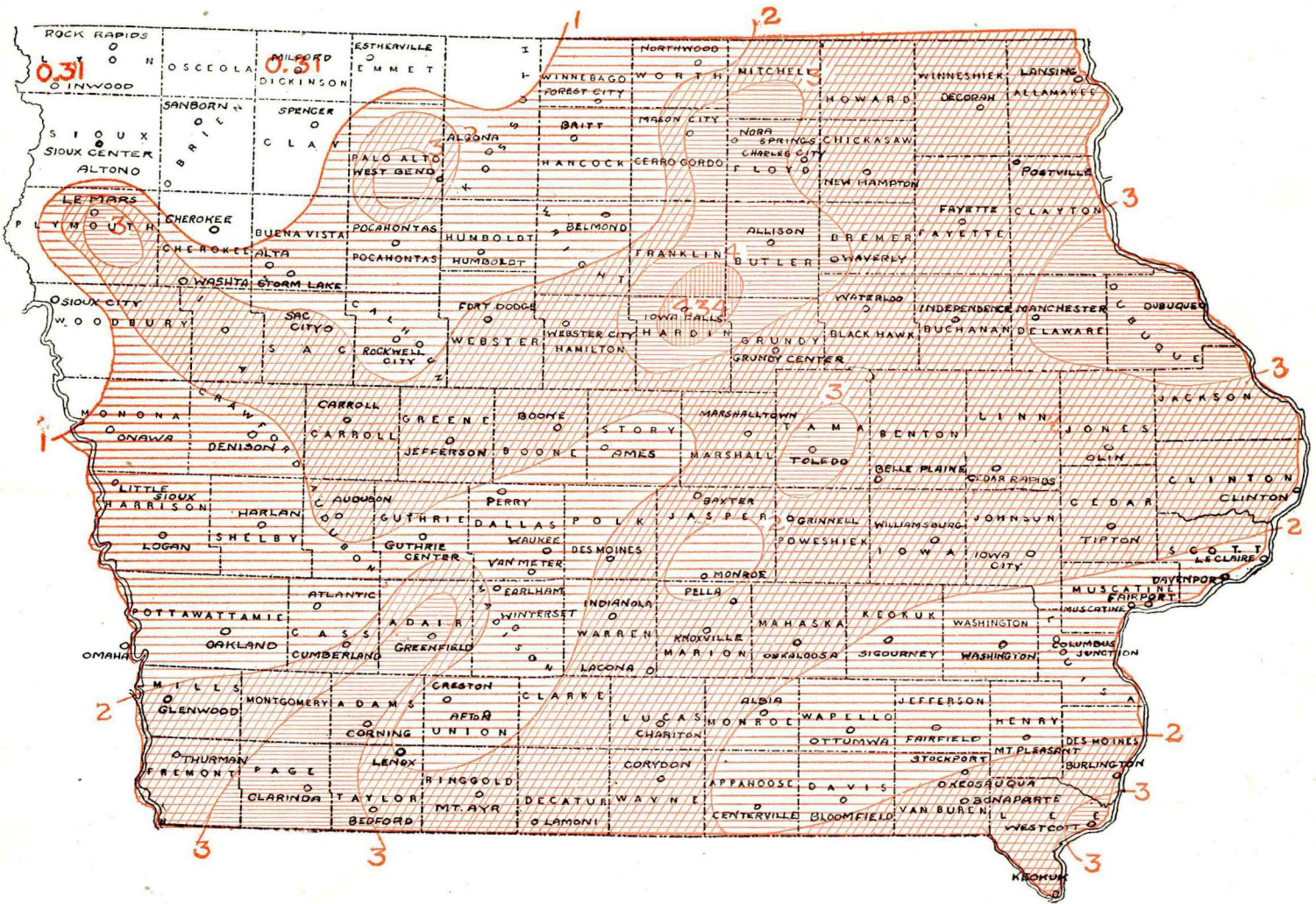
HAIL STORMS DURING AUGUST, 1922.

Date	County	Township	Direction From	Width of Path	Area Covered	Character	Size of Stones	Damage
1	Cedar	Springdale	N. E.	2 miles	8 sq. mi.	Moderate	¼ inch	Considerable
1	Delaware	Richland	N.	-----	Large	Moderate	¼ to 1 inch	Considerable
1	Delaware	Coffin's Grove	N. W.	2 miles	12 sq. mi.	Moderate	Peas to walnuts	Considerable
1	Delaware	Delaware	N. W.	2 miles	6 sq. mi.	Moderate	¼ to 1 inch	Considerable
1	Delaware	Milo	N.	2 miles	12 sq. mi.	Heavy	Peas to walnuts	Severe
1	Delaware	Hazel Green	N.	2 miles	12 sq. mi.	Heavy	Peas to walnuts	Severe
1	Clayton	Cass	N.	2 miles	6 sq. mi.	Moderate	Peas	Considerable
1	Dubuque	Peru	N. W.	2 miles	10 sq. mi.	Heavy	½ inch	Severe
1	Dubuque	Julien	N. W.	2 miles	6 sq. mi.	Heavy	½ inch	Severe
1	Jackson	Jackson	N. W.	1 mile	4 sq. mi.	Light	½ inch	Considerable
1	Jackson	Prairie Spring	N. W.	½ mile	3 sq. mi.	Moderate	¼ to 1½ inch	Slight
1	Jackson	Richland	N. W.	½ mile	3 sq. mi.	Moderate	¼ to 1½ inch	Slight
1	Jones	Castle Grove	N. W.	2 miles	6 sq. mi.	Heavy	Peas to pigeon eggs	Considerable
1	Linn	Boulder	N.	¾ mile	5 sq. mi.	Heavy	Up to 1 inch	Considerable
1	Linn	Buffalo	N.	2 to 4 mi.	-----	Light	Peas to hen's eggs	Considerable
1	Linn	Linn	N.	-----	-----	Heavy	Up to 1 inch	Severe
6	Fremont	Riverton	N. W.	3 miles	12 sq. mi.	Light	Hazelnuts	Slight
8	Pottawatomie	Lincoln	N. E.	1 mile	5 sq. mi.	Moderate	Walnuts	Slight
9	Adair	Summit	N. E.	2 to 3 mi.	18 sq. mi.	Heavy	Walnuts	Considerable
9	Audubon	Audubon	N. E.	Wide	Large	Heavy	1½ inches	Considerable
9	Audubon	Cameron	N.	5 to 6 mi.	30 sq. mi.	Heavy	Large	75 per cent crop
9	Audubon	Greeley	N. E.	5 miles	25 sq. mi.	Heavy	Up to 2 inches	Severe
9	Audubon	Hamlin	N.	3 miles	15 sq. mi.	Heavy	Large	Severe
9	Audubon	Leroy	N.	2 miles	12 sq. mi.	Heavy	Hen's eggs	Severe
9	Audubon	Lincoln	N. W.	6 miles	36 sq. mi.	Heavy	Up to 3 inches	Severe
9	Audubon	Oakfield	N.	1 mile	6 sq. mi.	Heavy	Small	Considerable
9	Audubon	Viola	N. W.	6 miles	36 sq. mi.	Heavy	Very large	75 per cent crop
9	Boone	Dodge	W.	2 to 3 mi.	15 sq. mi.	Heavy	Up to 2 inches	70 per cent crop
9	Boone	Pilot Mound	N. W.	4 miles	24 sq. mi.	Heavy	Up to 2½ inches	Severe
9	Cass	Pymosa	N. E.	½ to 3 mi.	12 sq. mi.	Moderate	Various	Considerable
9	Cass	Benton	N. E.	½ to 4 mi.	16 sq. mi.	Moderate	Medium	Considerable
9	Cass	Union	N. E.	½ to 2 mi.	10 sq. mi.	Moderate	Medium	Considerable
9	Cass	Franklin	N.	3 miles	18 sq. mi.	Heavy	½ to ¾ inch	¼ to ½ crop
9	Cass	Grant	N.	2 miles	6 sq. mi.	Heavy	¾ inch	60 per cent crop
9	Cass	Grove	E.	Narrow	Small	Moderate	Peas and larger	Considerable
9	Crawford	East Boyer	N. W.	1½ miles	9 sq. mi.	Heavy	Large	Considerable
9	Crawford	Nishnabotna	N.	½ mile	3 sq. mi.	Heavy	1 inch	Severe
9	Crawford	West Side	N.	2 to 4 mi.	20 sq. mi.	Heavy	Grapes	Considerable
9	Crawford	Stockholm	N. W.	1½ to 3 mi.	10 sq. mi.	Heavy	½ inch	Considerable
9	Dallas	Lincoln	N.	Narrow	Small	Light	½ inch	Slight
9	Dickinson	Excelsior	N.	1 mile	6 sq. mi.	Heavy	Large	Severe
9	Dickinson	Okoboji	N. W.	1 mile	5 sq. mi.	Moderate	Walnuts	Considerable
9	Dickinson	Silver Lake	N. W.	2 miles	12 sq. mi.	Heavy	Up to 1 inch	Considerable
9	Dickinson	Lakeville	N. W.	2 miles	5 sq. mi.	Moderate	Up to 1 inch	Slight
9	Dickinson	Westport	N. W.	1 mile	2 sq. mi.	Heavy	½ to 1 inch	Considerable
9	Emmet	Lincoln	N.	Wide	Large	Heavy	½ inch	Considerable
9	Greene	Franklin	S. E.	3 miles	12 sq. mi.	Heavy	½ to ¾ inches	Considerable
9	Guthrie	Orange	S. E.	6 miles	36 sq. mi.	Heavy	Up to 2½ inches	Severe
9	Guthrie	Union	S. E.	6 miles	36 sq. mi.	Heavy	Large	Severe
9	Guthrie	Bear Grove	N. E.	6 miles	36 sq. mi.	Heavy	Large	Severe
9	Guthrie	Grant	N. E.	6 miles	36 sq. mi.	Heavy	Large	Severe
9	Guthrie	Highland	N. E.	2 to 3 mi.	14 sq. mi.	Heavy	Large	Severe
9	Guthrie	Seely	N. E.	2 to 3 mi.	14 sq. mi.	Heavy	Large	Severe
9	Guthrie	Baker	N. E.	2 to 4 mi.	18 sq. mi.	Heavy	Up to 3 inches	Severe
9	Guthrie	Thompson	S. E.	1 mile	3 sq. mi.	Light	Small	Slight
9	Lyon	Lyon	N. W.	1 to 4 mi.	9 sq. mi.	Moderate	¼ to ½ inch	Slight
9	Poweshiek	Lincoln	S. E.	-----	2 sq. mi.	Light	½ inch	Slight
9	Poweshiek	Malcom	W.	-----	4 sq. mi.	Light	½ inch	Slight
9	Shelby	Center	N.	3 miles	18 sq. mi.	Heavy	Up to 1½ inches	Considerable
9	Shelby	Douglas	N.	3½ miles	21 sq. mi.	Heavy	1½ inches	½ crops
9	Shelby	Greeley	N.	3 miles	18 sq. mi.	Heavy	1½ inches	Severe
9	Shelby	Montroe	N.	3 miles	18 sq. mi.	Heavy	1½ inches	Severe
9	Polk	Des Moines	N. W.	-----	-----	Moderate	Small	Slight
9	Polk	Webster	N. W.	1 mile	4 sq. mi.	Heavy	Up to ¾ inch	Considerable
9	Webster	Dayton	N. W.	3½ miles	20 sq. mi.	Heavy	1 inch	Severe
9	Wright	Belmond	N. W.	1 mile	6 sq. mi.	Light	Peas	Slight
16	Audubon	Greeley	N. W.	¼ to 3 mi.	10 sq. mi.	Heavy	Up to 1 inch	Considerable
16	Audubon	Cameron	E.	3 miles	9 sq. mi.	Heavy	Up to hen eggs	Considerable
16	Audubon	Leroy	E.	3 miles	9 sq. mi.	Heavy	Up to hen eggs	Considerable
16	Audubon	Viola	E.	3 miles	6 sq. mi.	Heavy	Up to hen eggs	Considerable
16	Carroll	Newton	S. E.	¾ to 4 mi.	10 sq. mi.	Heavy	Hen eggs	Severe
16	Cass	Benton	S. E.	5 miles	32 sq. mi.	Heavy	Up to hen eggs	Severe
16	Guthrie	Seeley	N. W.	1 to 3 mi.	14 sq. mi.	Heavy	Up to 1 inch	Considerable
17	Clay	Freeman	W.	2 to 5 mi.	27 sq. mi.	Light	½ inch	Considerable
17	Clay	Riverton	S. W.	2 to 4 mi.	10 sq. mi.	Moderate	½ inch	Slight
17	O'Brien	Dale	W.	-----	-----	Moderate	Up to ¾ inch	Considerable
17	Worth	Hartland	S. W.	1 mile	3 sq. mi.	Light	-----	Considerable
23	Polk	Jefferson	N. W.	2 miles	12 sq. mi.	Moderate	¼ inch	Considerable
24	Black Hawk	Union	N. W.	-----	-----	Light	Peas	Slight
24	Clay	Freeman	N. W.	Wide	Large	Heavy	Up to 1 inch	Considerable
24	Clay	Meadow	-----	-----	Small	Moderate	-----	Considerable
24	Dickinson	West Port	N. W.	Wide	Large	Light	Marbles	Slight
25	Muscatine	Montpelier	N. W.	3 miles	20 sq. mi.	Moderate	Hazelnuts	Considerable
26	Keokuk	Plank	N. E.	-----	-----	Light	Cherries	Slight
26	Polk	Des Moines	W.	Wide	Large	Light	¼ to ½ inch	Slight

HAIL STORMS DURING SEPTEMBER, 1922.

Date	County	Township	Direction From	Width of Path	Area Covered	Character	Size of Stones	Damage
8	Mills	Glenwood	-----	-----	Small	Light	-----	Slight
17	Cerro Gordo	Mason	-----	-----	Small	Light	-----	Slight

TOTAL PRECIPITATION, SEPTEMBER, 1922



SCALE OF SHADES—IN INCHES



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, OCTOBER, 1922 No. 10

GENERAL SUMMARY.

October was warm and dry, being considerably warmer and drier than October, 1921, and since records of the state have been kept there have been but four Octobers with higher mean temperatures. Of the last 26 consecutive months, this month makes 24 that have been warmer than the normal. There were two unusually warm periods, the first six and last eight days. At a number of stations in all sections the maxima for October were equalled, and never before have such high maxima occurred so late in the season as occurred on the 27th and 28th. Killing frosts occurred on the 9th over a large area in the northwestern portion and on the 12th over most of the state except a few Mississippi River counties which did not experience a killing frost till the 18th. The corn crop was practically all matured when the frosts occurred and the damage was of very little consequence.

Precipitation was deficient over all sections, though there were local areas in all sections that had an excess, but only one station had an important excess. The lack of precipitation was magnified by the fact that at a large number of stations most of the total occurred on the last two days and at most other stations the greater portion occurred in a single shower period on the 5th-6th.

The weather was favorable for all out door work and while the dry weather prevented fall plowing in some sections, conditions were very favorable for gathering corn and at the close of the month a large amount had been cribbed. The dry weather also retarded the germination of some wheat fields but over most of the state the precipitation was ample for germination and the average condition was very good considering that seeding had been generally delayed to avoid Hessian fly.

The month was free from severe storms and except for short periods the roads were usually good. Clear days averaged 21 over the state which has never been exceeded in October.

There was a serious shortage of freight cars and this condition prevented the marketing of valuable truck crops. In the chief truck growing center every available warehouse was filled and some fields were not gathered for lack of storage room.

F. L. D.

PRESSURE.

The mean pressure (reduced to sea level) for the state was 30.00 inches. The highest recorded was 30.43 inches at Sioux City, on the 12th, and the lowest was 29.45 inches at Sioux City, on the 28th. The monthly range was .98 inch.

TEMPERATURE.

The mean temperature for the state, as shown by the records of 98 stations, was 56.1°, or 5.3° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 54.4°, or 5.4° higher than the normal; Central, 56.4°, or 5.5° higher than the normal; Southern, 57.4°, or 4.8° higher than the normal. The highest monthly mean was 59.6°, at Columbus Junction, and the

lowest was 52.0°, at Estherville. The highest temperature reported was 96°, at Guthrie Center on the 4th, and the lowest was 14° at Little Sioux on the 17th. The temperature range was 82°.

HUMIDITY.

The average relative humidity for the state at 7 a. m. was 77 per cent, and at 7 p. m. it was 53 per cent. The mean for the month was 65 per cent, or 6 per cent less than the normal. The highest monthly mean was 74 per cent at Charles City, and the lowest was 59 per cent at Sioux City. The lowest observed was 20 per cent at Keokuk on the 11th, and Sioux City on the 24th.

PRECIPITATION.

The average precipitation for the state, as shown by the records of 103 stations, was 1.81 inches, or 0.65 inch less than the normal. By divisions, the averages were as follows: Northern, 2.06 inches, or 0.28 inch less than the normal; Central, 1.66 inches, or 0.83 inch less than the normal; Southern, 1.70 inches, or 0.84 inch less than the normal. The greatest amount, 3.93 inches, occurred at Fayette, and the least 0.06 inch, at Davenport (Pine Acres). The greatest amount in 24 consecutive hours, 2.75 inches, occurred at Fayette, on the 6th and 7th.

SUNSHINE AND CLOUDINESS.

The average per cent of the possible amount of sunshine was 72, or 12 per cent greater than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 68; Davenport, 70; Des Moines, 72; Dubuque, 69; Keokuk, 71; Sioux City, 77; Omaha, Nebr., 75.

COMPARATIVE DATA FOR THE STATE—OCTOBER.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pers. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	49.2	-1.6	86	16	3.48	+1.02	6.82	1.59	-----	7	11	11	9
1891	50.0	-0.8	92	19	2.77	+0.31	6.53	0.55	-----	6	18	7	6
1892	54.5	+3.7	96	14	1.55	-0.91	2.58	0.01	0.0	4	21	6	4
1893	52.4	+1.6	94	10	1.28	-1.18	4.53	0.02	0.0	4	16	6	6
1894	51.7	+0.9	90	20	2.67	+0.21	5.25	0.03	0.2	5	16	6	9
1895	46.0	-4.8	83	4	0.47	-1.99	1.33	0.00	T.	19	4	7	7
1896	47.9	-2.9	88	12	3.13	+0.67	5.05	1.51	T.	18	6	6	6
1897	56.8	+6.0	97	12	1.14	-1.32	3.30	0.03	0.0	4	17	6	6
1898	47.5	-3.3	83	17	3.56	+1.10	5.75	1.27	3.6	7	17	6	6
1899	56.7	+5.9	95	17	1.73	-0.73	4.64	0.15	0.0	7	16	7	8
1900	59.3	+8.5	98	21	3.91	+1.45	8.00	1.20	0.0	6	17	7	7
1901	54.2	+3.4	83	20	1.95	-0.48	4.23	0.45	T.	5	16	8	7
1902	53.5	+2.7	83	20	2.54	+0.08	6.66	0.28	T.	5	16	8	7
1903	52.2	+1.4	90	16	1.95	-0.51	4.50	0.82	0.0	5	19	6	6
1904	53.1	+2.3	96	16	1.67	-0.79	4.43	0.14	T.	6	15	6	8
1905	49.2	-1.6	95	16	3.40	+0.94	5.36	1.20	1.6	8	16	6	9
1906	50.5	-0.3	87	7	1.93	-0.50	4.25	0.50	0.1	6	14	7	10
1907	50.4	-0.4	85	10	1.50	-0.96	3.71	0.30	0.0	5	20	5	6
1908	51.1	+0.3	89	17	3.33	+0.92	3.33	0.58	2.6	8	16	6	9
1909	49.7	-1.1	97	10	2.22	-0.24	4.70	0.48	T.	6	16	6	9
1910	55.2	+4.4	93	10	0.77	-1.69	1.73	T.	0.1	4	21	4	6
1911	45.7	-2.1	87	14	3.34	+0.88	7.03	0.73	0.6	10	12	8	11
1912	52.2	+1.4	92	16	2.98	+0.52	5.77	1.03	T.	6	21	3	7
1913	49.2	-1.6	89	-2	3.03	+0.57	7.29	0.35	1.2	9	15	8	8
1914	55.9	+5.1	88	14	3.23	+0.77	6.64	0.74	T.	9	16	6	9
1915	54.4	+3.6	86	19	1.31	-1.15	3.25	T.	2	5	19	6	6
1916	54.9	+4.1	92	6	2.00	-0.46	4.33	0.20	2.0	8	16	7	8
1917	42.9	-7.9	85	0	1.41	-1.05	4.00	0.15	2.2	6	10	11	10
1918	55.1	+4.3	93	21	3.64	+1.18	7.56	1.36	0.8	7	13	7	11
1919	50.7	-0.1	89	8	3.09	+0.56	8.65	0.45	T.	10	11	8	12
1920	57.7	+6.9	90	11	2.13	-0.33	4.64	0.48	T.	6	19	6	6
1921	54.6	+3.8	96	21	1.94	-0.50	3.61	0.21	T.	6	17	8	6
1922	56.1	+5.3	96	14	1.81	-0.65	3.93	0.06	T.	5	21	4	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, 1922.

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit					Precipitation, in Inches				Number of Days				Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation, .01 in. or more.	Clear.		Partly cloudy.	Cloudy.	Prevailing direction of wind.
Northern Division																				
Algona	Kossuth	1,213	49	54.8	+ 6.0	86	4	22	17	36	1.86	-0.38	1.04	0	3	22	5	4	nw.	W. E. Laird.
Allison	Butler	1,044	10	55.2	---	89	5	24	17	41	2.10	---	1.43	T.	8	22	1	8	sw.	J. A. Bell.
Alta	Buena Vista	1,513	31	54.8	+ 6.0	84	4	21	17	37	1.87	-1.08	1.25	0	6	17	10	4	s.	D. E. Hadden.
Alton	Sioux	1,305	17	54.0	+ 5.0	84	4	20	17	45	1.76	---	0.85	0	5	19	6	6	nw.	W. S. Slagle.
Belmond	Wright	1,205	12	55.3	---	88	5	23	18	41	2.29	---	1.10	T.	5	13	12	6	sw.	Geo. P. Hardwick.
Britt	Hancock	1,236	25	54.2 ^a	+ 5.6	87 ^a	4	20 ^a	17 [†]	48 ^a	1.43	-0.90	0.74	0	4	21	7	3	s.	L. M. Goodman.
Forest City	Floyd	1,015	31	53.7	+ 5.5	86	4	24	18	38	2.38	+0.35	1.76	T.	6	14	10	7	se.	U. S. Weather Bureau.
Cherokee	Cherokee	1,196	---	54.6	---	87	4	21	17 [†]	44	2.63	---	1.61	0	5	18	7	6	s.	J. E. Wirth.
Decorah	Winneshek	875	29	52.2	+ 3.1	85	5	21	18	37	2.11	-0.66	1.28	0	7	22	3	6	s.	M. D. Whitney.
Estherville	Emmet	1,298	27	52.0	+ 4.7	90	4	21	17	42	3.05	+0.63	1.10	0	4	23	4	4	s.	A. O. Paterson.
Fayette	Fayette	1,003	32	53.2	+ 4.5	86	4 [†]	21	18	43	3.93	+1.47	2.75	0	5	23	1	7	se.	R. Z. Latimer.
Forest City	Winnebago	1,226	28	54.6	+ 6.3	88	4	22	17 [†]	37	1.62	-0.79	0.80	T.	5	18	9	4	se.	Dr. M. B. Neil
Humboldt	Humboldt	1,095	34	56.2	+ 5.4	89	4	22	18	48	2.55	+0.43	1.37	T.	5	17	8	6	s.	H. C. Snitkey.
Inwood	Lyon	1,474	18	54.6	+ 5.7	89	3 [†]	17	17	46	1.22	-1.00	0.78	0	6	24	2	5	s.	F. B. Hanson.
Le Mars	Plymouth	1,224	26	55.4	+ 6.1	89	4	19	29	45	1.68	-0.54	1.04	T.	3	25	0	6	se.	Mrs. M. C. Wooley.
Mason City	Carro Gordo	1,148	25	53.2	+ 4.4	86	4	20	18	38	1.68	-0.46	1.35	T.	4	22	4	5	sw.	Northern Sugar Corp.
Milford (near)	Dickinson	1,430	2	52.6	---	86	4	21	17	34	1.00	---	1.00	0	1	17	10	4	sw.	Dr. F. J. Smith.
New Hampton	Chickasaw	1,169	25	54.1	+ 6.0	86	2 [†]	24	18	38	2.81	+0.54	1.55	0	5	15	9	7	s.	A. F. Kemman.
Nora Springs	Floyd	1,064	10	56.0	---	88	2	22	18	44	1.65	---	1.00	0	6	20	6	5	s.	Arthur Betts.
Northwood	Worth	1,222	26	54.4 [†]	+ 6.7	85 ^e	4	25 ^e	17 [†]	35	1.74	-0.86	0.68	0	6	18	7	6	sw.	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	18	55.7	+ 6.3	87	4	20	17 [†]	45	2.18	-0.29	0.90	0	5	24	3	4	s.	F. E. Hronek.
Postville	Clayton	1,180	23	52.5	+ 3.4	82	4 [†]	25	18	33	1.38	-1.20	0.82	0	6	23	2	6	sw.	F. L. Williams.
Rock Rapids	Lyon	1,358	23	53.2	+ 6.3	87	4	19	18	43	1.53	-0.79	0.63	T.	6	25	1	5	se.	J. K. Medberry.
Sanborn	O'Brien	1,553	8	55.0	---	88	4	19	17	42	2.65	---	1.25	0	5	22	3	6	s.	J. W. Dow.
Sioux Center	Sioux	1,426	23	54.5	+ 5.8	88	4	19	17	42	2.30	+0.24	1.30	T.	5	20	3	8	s.	J. de Ruyter.
Spencer	Clay	1,319	8	54.3	---	89	5	19	17	46	2.15	---	1.15	T.	6	18	6	7	sw.	E. W. Little.
Storm Lake	Buena Vista	1,440	33	54.4	+ 6.2	85	2 [†]	22	17	42	1.27	-0.61	0.87	0	4	25	1	5	se.	Geo. H. Fracker.
Washta	Cherokee	1,157	24	53.4	+ 3.8	87	4	17	18	48	2.16	+0.12	1.37	0	5	23	2	6	s.	H. L. Felter.
Waverly	Bremer	948	26	53.8 ^b	+ 3.7	87 ^b	4	28 ^b	18	44 ^b	2.42	+0.06	1.13	0	5	---	---	---	nw.	D. H. Murphy.
West Bend	Palo Alto	1,197	29	55.5	+ 7.4	88	4	20	17	47	1.67	-0.26	0.92	0	6	23	4	4	sw.	Jos. Dorweiler.
Means and extremes.				54.4	+ 5.4	90	4	17	17 [†]	48	2.06	-0.28	2.75	T.	5	20	5	6	s.	
Central Division																				
Ames	Story	926	45	55.4	+ 4.1	87	4 [†]	24	18	45	3.06	+0.32	1.69	T.	5	24	3	4	s.	Iowa State College.
Audubon	Audubon	1,301	28	56.6	+ 6.3	89	6	20	17	37	1.43	-0.85	0.60	0	6	23	3	5	sw.	Geo. Kibby.
Baxter	Jasper	998	22	56.7	+ 5.2	87	2 [†]	25	18	38	1.94	-0.85	0.95	T.	6	22	5	4	sw.	Henry Geise.
Belle Plaine	Benton	886	32	56.2	+ 5.2	91	5	24	18	48	2.61	+0.05	1.29	0	7	17	8	6	nw.	O. C. Burrows.
Boone	Boone	1,134	17	54.8	+ 4.2	88	5	21	18	50	1.92	-0.79	0.71	0	6	22	3	6	s.	C. F. Henning.
Carroll	Carroll	1,265	32	56.8	+ 7.3	87	4 [†]	21	17	43	1.12	-1.44	0.60	T.	3	21	4	6	sw.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	40	57.8	+ 6.9	89	4 [†]	30	18	37	0.96	-1.47	0.48	0	4	22	3	6	sw.	R. S. Toogood.
Clinton	Clinton	593	49	57.8	+ 6.8	91	3 [†]	25	18	47	6.13	-2.26	0.11	0	2	20	5	6	s.	Dr. A. P. Bryant.
Davenport	Scott	584	51	58.6	+ 4.9	89	3	31	18	36	0.42	-1.97	0.22	0	3	20	3	8	sw.	U. S. Weather Bureau.
Davenport (Pine Acres)	Scott	690	---	57.8	---	90	5	28	18	38	0.66	---	0.65	0	2	22	3	6	---	Alfred C. Hansen.
Denison	Crawford	1,180	28	56.6	+ 5.8	86	4 [†]	20	17 [†]	45	0.81	-1.31	0.62	T.	4	21	4	6	s.	V. L. Byers.
Des Moines	Polk	861	44	57.4	+ 4.0	88	5	28	18	38	3.41	+0.73	1.94	0	8	19	6	6	sw.	U. S. Weather Bureau.
Dubuque	Dubuque	639	49	55.4	+ 3.5	87	5	32	18	35	0.72	-1.96	0.51	0	6	15	7	9	s.	U. S. Weather Bureau.
Fairport	Muscatine	597	1	---	---	---	---	---	27	18	0.41	---	0.13	0	4	17	7	7	s.	R. L. Barney.
Fort Dodge	Webster	1,114	22	55.8	+ 5.9	88	4	23	17 [†]	45	1.46	-1.53	0.59	0	7	23	2	6	sw.	Samuel Sampson.
Grinnell	Poweshiek	1,031	28	58.0	+ 5.6	89	4 [†]	27	17	37	2.01	-0.67	0.91	0	5	18	7	6	sw.	Paul P. Meyers.
Grundy Center	Grundy	976	31	55.4	+ 4.6	88	5	25	18	44	2.17	-0.43	0.60	T.	6	20	3	8	sw.	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	27	57.8	+ 6.5	96	4	24	17 [†]	41	1.73	-0.80	0.89	0	5	24	2	5	sw.	E. L. Nesselroad.
Harlan	Shelby	1,192	23	55.6	+ 5.2	85	4 [†]	21	17	45	1.41	-1.13	0.64	0	5	25	1	5	s.	W. K. Colburn.
Independence	Buchanan	921	58	57.0	+ 7.1	87	5	27	19	43	1.52	-0.96	0.89	T.	5	22	3	6	sw.	Dr. Geo. Boody.
Iowa City	Johnson	733	62	56.1	+ 5.1	89	5	23	18	47	1.06	-1.66	0.44	0	6	22	4	5	s.	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	29	54.2	+ 5.8	86	4 [†]	23	18	44	2.10	-0.26	0.89	0	7	21	4	6	s.	J. B. Parmelee.
Jefferson	Greene	1,032	23	54.8	+ 3.8	86	4	21	17 [†]	47	1.90	---	1.06	T.	6	21	2	8	sw.	W. I. Lyon.
Little Sioux	Harrison	1,040	17	57.6 ^a	+ 4.8	89 ^a	4	14 ^a	17	52 ^a	1.39	---	1.23	0	3	---	---	---	se.	G. H. Gibson.
Logan	Harrison	1,035	55	---	---	90	4	20	17	49	1.39	-0.96	0.93	0	3	24	3	4	sw.	Mary Jean Stern.
Marshalltown	Marshall	947	39	57.4	+ 6.8	89	5	27	17 [†]	42	1.76	-0.96	0.64	T.	7	23	1	7	nw.	C. C. Pigman.
Monroe	Jasper	922	10	58.6	---	89	5	28	17	36	2.89	---	1.48	T.	4	22	1	8	s.	J. A. Dibel.
Olin	Jones	760	23	54.6	+ 3.8	85	5	27	20	41	1.30	-1.08	0.45	0	4	23	6	2	sw.	Dr. F. W. Port.
Onawa	Monona	1,051	22	54.6	---	90	4	17	17	40	1.35	-0.85	1.35	0	1	22	2	7	s.	Mrs. H. E. Colby.
Perry	Dallas	975	21	55.4 ^a	+ 4.1	86 ^a	4	23 ^a	18	45 ^a	1.24	-1.50	0.50	0	5	21	5	5	s.	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	55.7	+ 5.0	87	2 [†]	22	17	46	2.05	-0.49	0.75	0	6	17	5	9	s.	A. W. McIsaac.
Sac City	Sac	1,344	46	---	---	86 ^d	4	27 ^d	12	36 ^d	2.56	+0.41	1.22	0	4	---	---	---	s.	F. P. Kessler.
Sioux City	Woodbury	1,135	33	56.1	+ 5.0	88	4	23	17	43	1.11	-0.68	0.74	0	5	15	11			

Climatological Data for October, 1922—Continued

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.	Clear.			Partly cloudy.	Cloudy.
<i>Southern Division</i>																				
Afton	Union	1,212	28	57.0	+ 5.5	88	5	25	17	40	2.60	-0.07	0.86	0	6	22	4	5	sw.	S. R. Brown.
Albia	Monroe	959	24	58.0	+ 6.1	88	2†	27	17†	38	1.66	-0.88	0.55	0	8	23	5	6	sw.	O. E. McBride.
Atlantic	Cass	1,104	31	56.6	+ 5.6	87	27	23	17†	45	1.56	-1.00	0.48	0	7	21	5	5	s.	J. N. Reynolds.
Bonaparte	Van Buren		31	57.8	+ 4.4	90	2	27	18	41	1.61	-0.90	0.53	0	5	25	0	6	nw.	B. R. Vale.
Burlington	Des Moines	544	26	58.9	+ 5.2	89	3	31	17†	35	0.68	-1.58	0.28	0	4	23	2	6	sw.	Mrs. E. M. Donnelly.
Centerville	Appanoose	1,013	17	57.6	---	87	2	27	17	39	1.55	-1.02	0.48	0	5	25	1	5	se.	Leo. J. Allen.
Chariton	Lucas	1,042	27	58.0	+ 5.2	87	2	25	17	40	2.07	-0.44	0.75	0	6	21	2	8	sw.	C. C. Burr.
Clarinda	Page	1,009	32	57.2	+ 5.3	89	4†	23	17	45	2.60	+0.02	1.40	T.	6	22	4	5	s.	A. S. Van Sandt.
Columbus Jet	Louisia	595	21	59.6	+ 6.7	88	4†	29	18	33	0.17	-2.34	0.05	0	4	22	4	5	sw.	J. B. Johnston.
Corning	Adams	1,117	30	56.8 ^a	+ 5.4	87 ^a	6	20 ^a	17†	45 ^a	0.90	-1.77	0.60	0	3	---	---	---	sw.	Jerome Smith.
Corydon	Wayne	1,101	29	58.2	+ 4.3	88	2†	25	17	39	1.95	-0.87	0.88	0	6	22	4	5	sw.	May C. Miller.
Creston	Union	1,312	17	55.7	+ 4.4	84	5†	24	17	29	1.62	---	0.65	0	6	20	8	3	sw.	Dr. H. M. Stanley.
Cumberland (near)	Cass	1,225	23	---	---	---	---	---	---	---	1.01	-1.91	0.39	0	7	23	4	4	s.	Carl E. Pollock.
Earlham	Madison	1,126	29	55.6	+ 3.8	88	5	20	18	50	2.37	-0.28	1.56	0	5	23	4	4	sw.	Geo. Phillips.
Fairfield	Jefferson	780	38	57.2 ^c	+ 4.5	91 ^c	2†	25 ^c	18	44 ^c	1.55	-1.28	0.90	0	6	22	2	7	sw.	Prof. R. M. McKenzie.
Glenwood	Mills	1,100	24	58.2	---	90	5	21	17	46	0.66	---	0.41	0	2	21	5	5	se.	Dr. Geo. M. Grigridge.
Greenfield	Adair	1,368	30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C. E. McCasien.
Indianola	Warren	972	31	56.8	+ 3.9	87	5	26	17	42	2.70	+0.22	1.32	0	7	19	7	5	s.	Seth F. Shenton.
Keokuk	Lee	614	51	59.4	+ 4.0	90	3	32	17	36	0.77	-1.72	0.34	0	5	18	6	7	sw.	U. S. Weather Bureau.
Keosauqua	Van Buren	644	30	56.1	+ 3.9	89	2†	23	18	47	0.97	-1.62	0.50	0	5	23	2	6	se.	J. H. Landes.
Knoxville	Marion	920	27	57.8	+ 4.3	88	5	27	18	41	2.27	-0.12	0.82	0	6	21	2	8	sw.	W. J. Casey.
Lacona	Warren		23	---	---	---	---	---	---	---	2.31	-0.63	1.08	0	5	11	14	6	---	J. B. Alter.
Lamoni	Decatur	1,100	15	58.6	+ 5.7	87	3†	23	17	45	3.56	+0.51	1.93	0	4	22	4	5	s.	C. E. Wight.
Lenox	Taylor	1,250	27	56.9	+ 4.7	88	5†	21	17	40	1.34	-1.52	0.38	0	5	22	5	4	s.	J. L. Hurley.
Mt. Ayr	Ringgold	1,236	29	57.0	+ 3.4	86	5	24	17	36	3.27	+0.48	1.11	0	6	22	4	5	s.	Alex. Maxwell.
Mt. Pleasant	Henry	729	41	58.2	+ 5.5	90	3	28	18	38	0.70	-1.76	0.35	0	5	16	10	5	nw.	John H. Jericho.
Oakland	Pottawattamie	1,105	3	57.2 ^b	---	90 ^a	4	20 ^c	17†	47 ^d	2.60	---	1.70	0	4	25	2	4	s.	M. E. Gray.
Oskaloosa	Mahaska	825	46	56.8	+ 4.3	88	5	26	18	43	2.13	-0.65	0.76	T.	6	20	6	5	se.	Roy R. Robinson.
Ottumwa	Wapello	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pella	Marion	877	29	57.2	+ 4.1	89	5	24	18	48	2.56	-0.18	1.00	0	6	23	1	7	s.	J. H. Ver Steeg.
Sigourney	Keokuk	790	26	56.8	+ 4.2	90	2†	26	18	46	2.35	-0.01	0.93	0	4	23	1	7	sw.	W. E. Utterback.
Stockport	Van Buren	754	20	55.8	+ 3.0	91	2†	23	18	46	0.55	-1.24	0.41	0	6	22	2	7	s.	C. L. Beswick.
Thurman	Fremont		25	56.2	+ 3.6	85	27	18 ^a	17	49 ^a	0.94	-1.94	0.68	0	2	17	10	4	sw.	C. R. Paul.
Washington	Washington	769	40	57.2	+ 4.7	89	5	27	18	40	1.34	-0.83	0.51	0	5	21	5	5	sw.	Wm. A. Cook.
Wescott (near)	Lee		---	55.2	---	85	4	30	17	34	0.64	---	0.35	0	4	21	3	7	sw.	Geo. H. Smith.
Winterset	Madison	1,129	31	58.3	+ 6.0	88	5	24	17	36	2.86	+0.38	1.79	0	5	24	1	6	sw.	H. S. Ely.
Omaha, Nebr.		1,040	51	59.6	+ 5.4	90	27	27	17	42	1.45	-0.90	1.13	T.	5	19	9	3	nw.	U. S. Weather Bureau.
Means and extremes				57.4	+ 4.8	91	2†	20	17†	50	1.70	-0.84	1.93	T.	5	21	4	6	sw.	
State means and extremes				56.1	+ 5.3	96	4	14	17	52	1.81	-0.65	2.75	T.	5	21	4	6	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 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 (%)			Wind					Sunshine					
	Mean.	Highest.	Date.	Lowest.	Date.	Mean.		Total movement.	Average hourly velocity.		Maximum		Per cent. of possible.	Departure from normal.				
						7 a. m.	12 Noon†		Miles.	From.	Date							
Charles City	30.00	30.38	12	29.64	24	83	52	64	34	26	3,951	5.3	25	se.	13	68	+10	
Davenport	30.00	30.38	12	29.69	7	77	42	52	23	11	4,472	6.0	27	nw.	16	70	+12	
Des Moines	9.99	30.41	12	29.57	28	78	45	53	28	18	4,852	6.5	32	sw.	13	72	+9	
Dubuque	30.02	30.39	18	29.65	24	82	48	58	29	11	4,309	5.8	24	s.	13	69	+14	
Keokuk	30.02	30.40	12	29.68	7	73	41	53	20	11	4,419	5.9	33	nw.	16	71	+11	
Sioux City	30.93	30.43	12	29.45	28	75	43	43	20	24	8,463	11.4	42	nw.	16	77	+18	
Omaha, Neb.	9.99	30.43	12	29.49	28	72	44	47	22	18	4,988	6.7	37	nw.	16	75	+14	
Means and extremes	30.00	---	---	---	---	---	---	---	---	---	---	6.8	---	---	---	---	---	---
	---	30.43	12	29.45	28	77	45	53	---	---	---	---	42	nw.	16	---	---	
Normals and records	30.03	---	21 st	---	20 th	81	---	62	---	---	25 th	8.1	---	---	16 th	60	---	
	---	*30.69	1913	\$28.96	1876	---	---	---	---	---	---	---	---	*60	sw.	1880	---	

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

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 42 miles per hour, from the northwest, at Sioux City on the 16th.

SNOW.

A few light snow flurries occurred in each division, but no station reported more than a trace.

MISCELLANEOUS PHENOMENA.

- Fog: 1st, 2d, 3d, 9th, 10th, 14th, 15th, 16th, 26th, 31st.
- Frost (Killing): 9th, 12th, 15th, 17th, 18th.
- Hail: 11th.
- Halos (Lunar and Solar): 3d, 4th, 27th, 28th.
- Sleet: 13th.
- Thunderstorms: 6th, 7th, 8th, 10th, 13th, 14th, 16th, 20th, 21st, 22d, 30th, 31st.

RIVERS.

Low and nearly stationary stages prevailed on all the rivers of the state. At most places along the principal rivers the extreme variations of the stages were less than half a foot.

Daily Precipitation for October, 1922.

Stations.	Drainage Basin.	Day of Month																															Totals	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Northern Division</i>																																		
Algona	Des Moines					.71	.11																										1.04	1.86
Allison	Cedar					.29	1.43	.03					.02	.05		.06							.06									.16	2.10	
Alta	Raccoon					.38	.03						.14		.02																.05	1.25	1.87	
Alton	Floyd					.85	.03						.02		T.							T.	T.								.08	.78	1.76	
Belmond	Iowa					1.19	.18	T.					.18			.13														.70	1.10	3.05		
Britt	Iowa		T.			.43	.25	.01								T.															.74	1.43		
Charles City***	Cedar					1.50	.27	T.					.09		T.	.07							.01	T.							.44	2.38		
Cherokee	Little Sioux	.05				.94	.05						.14																	.13	1.48	2.63		
Decorah	Mississippi	.0				.40	1.28						.14										.02	.06							.12	2.11		
Estherville	Des Moines					1.10	.15																							.70	1.10	3.05		
Fayette	Mississippi	.0				1.03	1.72									1.00								.11									3.93	
Forest City	Cedar					.60		T.					.08			.06							.08	T.							.80	1.62		
Humboldt	Des Moines					1.37	.14						.18			.07															T.	.79	2.55	
Inwood	Big Sioux					.78	.04	.02								.03															.10	.25	1.22	
Le Mars	Floyd					.55							T.			T.														.09	1.04	1.68		
Mason City	Cedar					.71	.64						T.			.08							T.	T.							.25	1.68		
Milford (near)	Little Sioux					T.							T.			T.							T.							T.	1.00	1.00		
New Hampton	Wapsipinicon					.84	1.55						.12			.15								.15							.15	2.81		
Nora Springs	Cedar					.72	.28						.18			.10							T.	.01							.36	1.65		
Northwood	Cedar					.68	.55	.02					.12			T.							.20								.17	1.74		
Pocahontas	Des Moines					.58	.47						.06			T.															.17	.90	2.18	
Postville	Mississippi	T.				.10	.82						.13	.13		.10								.10							.01	.87	1.38	
Rock Rapids	Big Sioux	.01				.63	.12									.04															.19	.54	1.53	
Sanborn	Floyd					1.25	.11																								.14	1.04	2.65	
Sioux Center	Floyd					T.	1.30	.04								T.								.02							.04	.90	2.30	
Spencer	Little Sioux					.75	.15	.03									.02														.05	1.15	2.15	
Storm Lake	Raccoon					.33							.06																		.01	.87	1.27	
Washita	Little Sioux					.54							.10			.02															.13	1.37	2.16	
Waverly	Cedar					.34	.77									.10									.08							.13	2.42	
West Bend	Des Moines					.39	.11	T.					.07			.04															.14	.92	1.67	
<i>Central Division</i>																																		
Ames	Skunk					.93	.07							.30		.07																1.69	3.06	
Audubon	Nishnab					.55							.04			.03								.05							.16	.60	1.43	
Baxter	Skunk					.95	.10						.30			.04																.43	1.94	
Belle Plaine	Iowa					.52	.07	.03					T.	.59		.04																1.29	2.61	
Boone	Des Moines					.50	.09						T.	.71		.08								.06							.48	1.92		
Carroll	Raccoon															.03															.49	.60	1.12	
Cedar Rapids	Cedar					.68	.34							.48		T.								.06							T.	.96		
Clinton	Mississippi													.02										.11								.13	0.13	
Davenport***	Mississippi						T.	T.					T.	.04		T.								.22								.16	0.42	
Davenport (Pine Acres)	Mississippi						T.	T.								.05								.01									0.06	
Denison	Missouri													.04		.03														.12	.62	0.81		
Des Moines***	Des Moines					1.24	.05	.04					.03		.06	.02								.10								1.87	3.41	
Dubuque***	Mississippi	T.				.03	.04	T.					.06	.45		.08								.11							T.	.72		
Fairport	Mississippi					.13								.03										.13	.12							.43	0.41	
Fort Dodge	Des Moines	.05				.50	.06						.11			.07															.05	.50	1.46	
Grinnell	Iowa					.91							.53		.01									.08							.48	2.01		
Grundy Center	Cedar					.55	.60	T.						.38		.12															.12	.40	2.17	
Guthrie Center	Raccoon					.89							.22											.03								.56	1.73	
Harlan	Nishnabotna					.18		.03					.17											.20							.22	.64	1.41	
Independence	Wapsipinicon					.89							.31		.07									.11							.14	1.52		
Iowa City	Iowa	.09				.03	.44						T.	.28		T.								.14							.08	1.06		
Iowa Falls	Iowa	T.				.89	.76						.05	.03	T.	.07								.08							.22	2.10		
Jefferson	Raccoon					.54	.02	T.					.05	.10		T.								.13							T.	1.06	1.90	
Le Claire	Mississippi	.05					T.	.01	T.					T.	.07									.15								.28		
Little Sioux	Little Sioux																														.14	1.23	1.39	
Logan	Missouri												.34																		.12	.93	1.39	
Marshalltown	Iowa	T.				.64	.25	.03					T.	.26		.03								.13							.42	1.76		
Monroe	Skunk					T.	1.48	T.					T.	.63		T.								.12							.66	2.89		
Muscatine	Mississippi					.18							.02		.03											.18						.41		
Olin	Wapsipinicon	T.				.35	.35							.45										.15								1.30		
Onawa	Missouri																														1.35	1.35		
Perry	Raccoon					.45	.06									.16								.67							.50	1.24		
Rockwell City	Raccoon					.50	.10						.35			.10															.25	.75	2.05	
Sac City	Raccoon					1.22							.08			T.															.35	.91	2.56	
Sioux City***	Missouri					.30	T.						.01			.03															.18	.59	1.11	
Tipton	Cedar					T.	.13							.15		T.																.43		
Toledo	Iowa					T.	1.55							.45		.06															.30	2.44		
Van Meter	Raccoon					.63																									.63	1.26		
Waterloo	Cedar					.77	1.05						T.	.28		.07									.10						.25	2.55		
Waukeo	Raccoon					.88	.07	.04					T.	.18		.04									.18									

Daily Precipitation for October, 1922—Continued.

Stations.	Drainage Basin.	Day of Month																															Totals
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Southern Division</i>																																	
Afton	Grand						.55	.52	.02						.41	T.							.24										.86
Albia	Des Moines	.05					T.	.41	.04	.01					.39	.01							.20										.55
Atlantic	Nishnabotna						.38							.05	.25	.06								.02							.33	.48	
Bonaparte	Des Moines						.08	.15							.09								.53										.16
Burlington	Mississippi														.15								.18	.28								.07	
Centerville	Chariton							.48	.01						.37								.21									.43	
Chariton	Chariton	T.	.10				.60	.30	T.						.75								.20									.12	
Clarinda	Nodaway	.22					1.40		.03					T.	.20	T.							.22							.11	.42		
Columbus Jct.	Iowa						.05							T.	.05								.05									.02	
Corning	Nodaway						.12							T.		T.							.18							T.	.60		
Corydon	Chariton	.01					T.	.88	.07					T.	.60	T.							.23									.16	
Creston	Missouri						.65	.04	.04						.20	T.							.17									.52	
Cumberland (near)	Nodaway						.21		.01					T.	.05	.06							.05							.28	.39		
Earlham	Des Moines						1.56	.06	.05						.10	T.							T.									.60	
Fairfield	Skunk		.03				.90	.27	.05						.04								.26									T.	
Glenwood	Missouri																						T.							.25	.41		
Greenfield	Nodaway																																
Indianola	Des Moines						1.23	.09	.06					.01	.30	T.							.17									.84	
Keokuk***	Mississippi						.16	.01	T.						.09								.34									.17	
Keosauqua	Des Moines						T.	.31							.11								.45	.05								.05	
Knoxville	Des Moines						.06	.82	.08						.55	T.							.18									.58	
Lacona	Des Moines						1.08	.17							.60	.06																.44	
Lamoni	Grand	.42													1.93								.23									.98	
Lenox	Missouri						.34	.03							.35	T.							.24							T.	.38		
Mt. Ayr	Grand						1.11	.16	.02					T.	1.00	T.							.21									.77	
Mt. Pleasant	Skunk						.19	.03							.09								.35									.04	
Oakland	Nishnabotna						.06		T.						.57								T.							.31	1.70		
Oskaloosa	Des Moines						.02	.76	.02						T.	.58	T.						.20									.55	
Pella	Skunk						.25	1.00	.06						.62	T.							.13									.56	
Sigourney	Skunk						T.	.57	T.						T.	.35	T.						.50									.93	
Stockport	Skunk	T.					.01	.24	.03						T.	.09							.41									.07	
Thurman	Missouri														T.	T.														.26	.68		
Washington	Skunk						.51	.28							.07								.17									.31	
Wescott (near)	Mississippi						.05	T.							.19								T.	.35								.05	
Winterset	Des Moines							1.79									.18						.14									.75	
Omaha, Nebr.***	Missouri						T.		T.					.04			.0						.15							.31	.94		

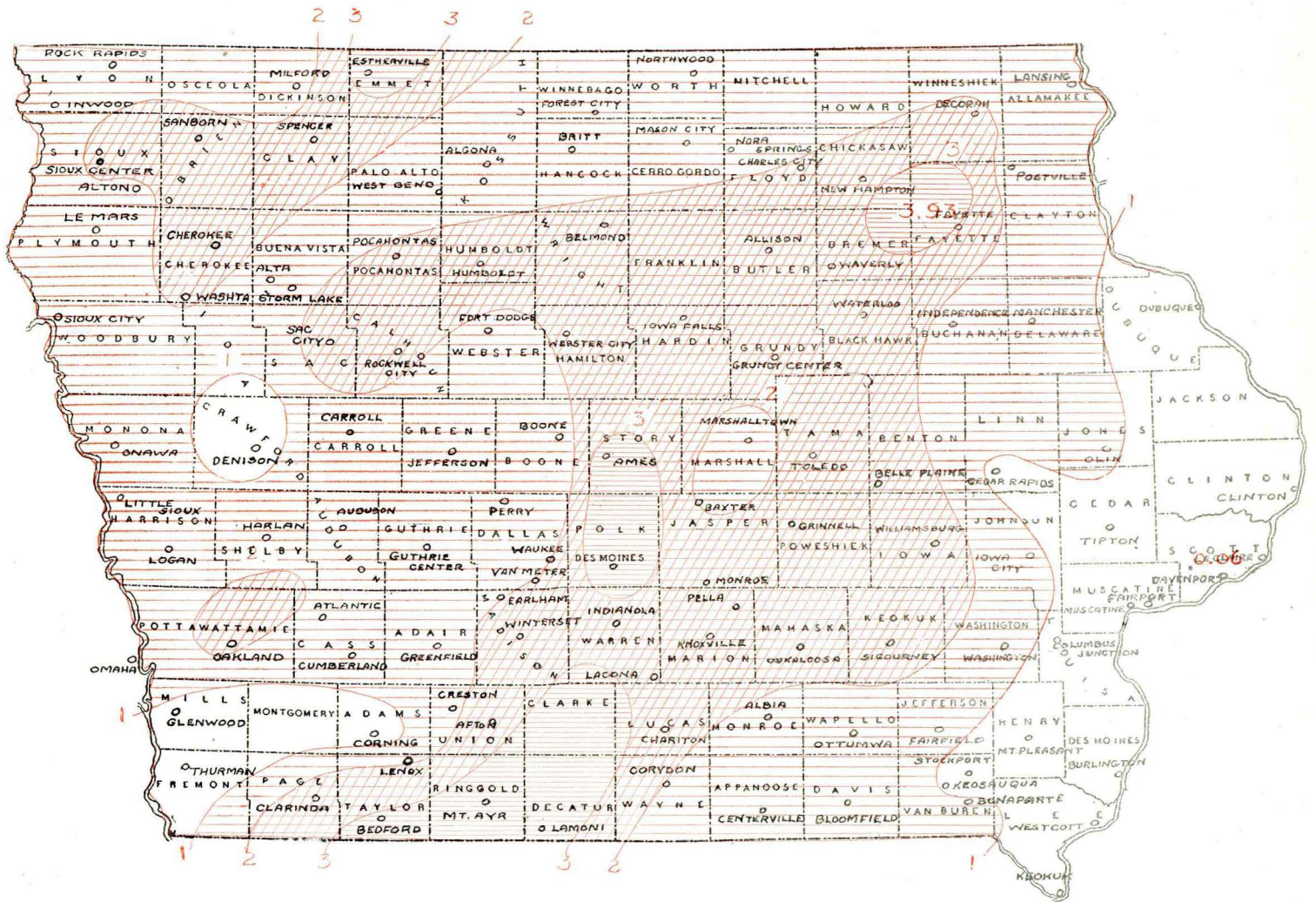
Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for 24 hours ending at the time of observation.
 †††Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.
 ***Regular Weather Bureau Station;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

Daily Maximum and Minimum Temperature for the Month of October, 1922

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

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

TOTAL PRECIPITATION, OCTOBER, 1922



SCALE OF SHADES—IN INCHES



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, NOVEMBER, 1922 No. 11

GENERAL SUMMARY.

November was decidedly warm and wet. Since state wide records began in 1890, there have been but three warmer Novembers and only one with more precipitation. The temperature excess was uniform over the state and nearly continuous, there being only five days below normal, and over no portion of the state were there more than two consecutive days below normal. The minimum temperature for the state, 11 degrees, was the highest ever recorded in November and the range in temperature, 63 degrees, the least.

Precipitation, as well as temperature, showed an excess at every station. Compared with the state average, the distribution was the most uniform ever experienced in November. Only three times in the last 33 years has the precipitation shown an excess at every station in the state in November. Over 90 per cent of the precipitation occurred during the first 18 days and there were four general rainy periods, the principal one extending from the 11th to the 13th. The rain that occurred on the 5th, in connection with a rather severe storm that passed along the western border, was accompanied by strong winds that blew down some corn, and owing to the soft condition of the fields, corn husking was nearly impossible the greater portion of the first three weeks so that a small per cent that was down started to germinate and rot in the muddy fields. After the 18th the weather was favorable for all out door work; corn husking was pushed and at the close of the month 14 per cent or about the normal amount remained to be gathered.

The warm, wet weather caused all vegetation to make unusual growth. Pastures were in excellent condition generally, dandelions were in bloom and reports were numerous from all portions of the state of ripe strawberries and hardy vegetables taken from the garden at the end of the month. The weather was generally favorable for winter wheat, particularly the late sown, but some of the early sown was injured by the Hessian fly. Bees were able to make a good flight during the high temperature that was general on the 30th and were ready to go into winter quarters in good condition.

Unusually high wind velocities accompanied the storms that passed over the state on the 5th and the 30th. On the 30th Des Moines experienced the highest wind velocity of record for November (52 miles per hour from the southwest) and in the last 45 years there have been but three times in any month that a higher wind velocity has been reached.

The roads were in bad condition most of the first three weeks, and especially bad after the general rain from the 11th to the 13th. It is reliably reported that 1,000 automobiles were stranded on the principal highways leading out of Iowa City following a home coming celebration on the 11th, to which a large number of persons had motored from surrounding states.

PRESSURE.

The mean pressure (reduced to sea level) for the state was 30.08 inches. The highest was 30.49 inches at Sioux City, on the 24th, and the lowest was 29.30 inches at Sioux City, on the 5th. The monthly range was 1.19 inches.

TEMPERATURE.

The mean temperature for the state, as shown by the records of 97 stations, was 42.2°, or 7.2° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 40.1°, or 7.3° higher than the normal; Central, 42.7°, or 7.6° higher than the normal; Southern, 43.8°, or 6.7° higher than the normal. The highest monthly mean was 45.4°, at Keokuk, and the lowest was 37.6°, at Sanborn. The highest temperature reported was 74°, at Clarinda, on the 4th, and the lowest was 11°, at Decorah, on the 25th. The temperature range for the state was 63°.

PRECIPITATION.

The average precipitation for the state, as shown by the records of 100 stations, was 3.54 inches, or 2.03 inches more than the normal. By divisions, the averages were as follows: Northern, 3.58 inches, or 2.17 inches more than the normal; Central, 3.36 inches, or 1.83 inches more than the normal; Southern, 3.69 inches, or 2.11 inches more than the normal. The greatest amount, 5.28 inches, occurred at Iowa City, and the least, 1.96 inches, at Perry. The greatest amount in 24 consecutive hours, 2.08 inches, occurred at Glenwood, on the 1st.

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 southwest, at Sioux City, on the 30th.

COMPARATIVE DATA FOR THE STATE—NOVEMBER.

YEAR	Temperature				Total	Precipitation				Number of Days			
	Mean	Departure	Highest	Lowest		Departure	Greatest	Least	Snowfall	With precipitation .01 in. or more	Clear	Partly cloudy	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	0.68	-----	7	10	8	12
1892	33.3	-1.7	70	-3	1.10	-0.41	3.16	0.05	1.8	4	11	8	11
1893	34.0	-1.0	86	-13	1.17	-0.34	2.56	0.05	4.6	4	16	8	6
1894	32.7	-2.3	72	-5	0.92	-0.59	2.42	T.	0.4	4	9	11	10
1895	34.3	-0.7	86	-12	1.51	0.00	3.01	0.45	4.9	6	9	8	13
1896	29.6	-5.4	82	-15	1.83	+0.32	4.51	0.16	2.9	6	9	8	13
1897	34.3	-0.7	81	-19	0.66	-0.85	2.24	T.	1.2	5	12	8	10
1898	32.2	-2.8	78	-17	1.50	-0.01	3.61	0.33	8.7	6	14	8	8
1899	43.9	+8.9	86	8	1.20	-0.31	2.97	0.13	0.5	5	12	8	10
1900	33.5	-1.5	79	-6	1.06	-0.45	3.35	T.	3.7	6	12	7	11
1901	35.8	+0.8	77	2	0.86	-0.65	2.30	0.20	2.6	3	18	6	6
1902	41.2	+6.2	79	4	2.13	+0.62	4.19	0.16	1.8	7	9	7	14
1903	34.2	-0.8	76	-5	0.52	-0.99	1.74	T.	1.1	3	13	8	9
1904	41.0	+6.0	80	4	0.15	-1.36	0.50	0.00	0.5	1	20	6	4
1905	38.4	+3.4	70	-12	2.84	+1.33	5.30	0.90	0.6	5	16	7	7
1906	35.4	+0.4	76	-5	2.03	+0.52	3.86	0.35	4.4	8	9	7	14
1907	36.7	+1.7	68	-4	1.03	-0.48	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	+2.3	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
1921	33.6	-1.4	70	-5	0.58	-0.93	1.61	T.	3.4	5	10	5	16
1922	42.2	+7.2	74	11	3.54	+2.03	5.28	1.96	0.3	9	11	6	13

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



Climatological Data for November, 1922.

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days			Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation, .01 in. or more.	Clear.		Partly cloudy.	Cloudy.	Prevailing direction of wind.
Northern Division																				
Algona	Kossuth	1,213	49	41.2	+ 8.5	63	30	18	24†	29	2.70	+1.40	1.15	0	6	15	4	11	nw.	W. E. Laird.
Allison	Butler	1,044	10	41.3	-----	63	30	13	25	32	2.25	-----	1.00	T.	9	6	8	16	nw.	J. A. Bell.
Alta	Buena Vista	1,513	31	39.4	+ 7.0	62	3†	17	25	32	4.06	+2.68	1.80	0	10	10	7	13	s.	D. E. Hadden.
Alton	Sioux	1,305	17	39.4	+ 6.8	62	30	15	25	29	3.26	-----	0.99	T.	8	6	10	14	nw.	W. S. Slagle.
Belmond	Wright	1,205	12	40.6	-----	61	30	13	25	34	2.37	-----	0.60	T.	10	5	11	14	nw.	Geo. P. Hardwick.
Britt	Hancock	1,236	25	38.2 ^a	+ 6.3	61 ^a	16	12 ^a	25	34 ^a	2.12	+0.73	0.60	0	6	7	6	17	s.	L. M. Goodman
Charles City	Floyd	1,015	31	40.0	+ 7.0	64	30	15	25	34	3.14	+1.75	1.28	0.8	10	4	9	17	sw.	U. S. Weather Bureau.
Cherokee	Cherokee	1,196	-----	39.8	-----	62	30	14	25	31	4.18	-----	1.89	T.	9	11	6	13	nw.	J. E. Wirth.
Decorah	Winneshiok	875	29	43.0	+ 9.3	71	5	11	25	37	4.26	+2.43	1.29	2.0	9	8	4	18	nw.	M. D. Whitney.
Estherville	Emmet	1,298	27	39.0	+ 7.5	60	2†	16	24	28	4.30	+2.91	2.00	0	8	5	21	4	nw.	A. O. Peterson.
Fayette	Fayette	1,003	32	39.8	+ 7.1	60	5†	12	25	29	3.78	+2.20	1.05	2.0	12	8	6	16	nw.	R. Z. Latimer.
Forest City	Winnebago	1,226	28	39.8	+ 8.1	63	30	14	25	36	2.88	+1.45	0.72	0.5	11	6	7	17	sw.	Dr. M. B. Neil
Humboldt	Humboldt	1,095	34	41.2	+ 6.9	66	30	17 ^a	25	36 ^a	3.90	+2.31	1.02	T.	9	7	7	16	nw.	H. C. Snitkey.
Inwood	Lyon	1,474	18	38.8 ^b	+ 7.0	60	30	17 ^c	24†	27 ^c	3.91	+3.07	1.00	3.0	8	11	7	12	nw.	F. B. Hanson.
Le Mars	Plymouth	1,224	26	39.7	+ 6.6	64	16	15	25	33	4.30	+3.23	1.49	T.	7	13	5	12	sw.	Mrs. M. C. Wooley.
Mason City	Cerro Gordo	1,148	25	40.3	+ 7.4	64	30	13	25	32	2.98	+1.30	0.72	0.2	11	14	1	15	nw.	Northern Sugar Corp.
Miford (near)	Dickinson	1,430	2	39.6	-----	60	30	15	25	31	3.64	-----	1.30	T.	10	7	9	14	sw.	Dr. F. J. Smith.
New Hampton	Chickasaw	1,169	25	39.9	+ 6.9	63	5	13	25†	32	3.62	+1.99	1.02	2.0	9	6	9	15	nw.	A. F. Kemman.
Nora Springs	Floyd	1,064	10	42.4	-----	68	30	15	25	38	3.67	-----	0.87	0.1	15	6	6	18	s.	Arthur Betts.
Northwood	Worth	1,222	26	38.2 ^b	+ 6.2	62 ^b	30	14 ^b	25	30 ^c	2.85	+1.09	1.03	1.0	11	5	7	18	nw.	Chas. Dwelle.
Pocahontas	Pocahontas	1,248	18	41.0	+ 8.2	65	30	14	25	37	3.27	+1.61	1.23	0	10	10	5	15	w.	F. E. Hronek.
Postville	Clayton	1,180	23	40.2	+ 6.9	61	30	13	25	32	4.09	+2.44	1.08	1.0	13	6	8	16	nw.	F. L. Williams.
Rock Rapids	Lyon	1,358	23	39.0	+ 7.5	66	4	15	25	30	3.54	+2.48	0.75	1.0	10	8	8	14	nw.	J. K. Medberry.
Rockwell	O'Brien	1,553	8	37.6	-----	60	3†	13	24	42	4.22	-----	1.07	T.	11	7	2	18	sw.	J. W. Dow.
Sioux Center	Sioux	1,426	23	38.9 ^a	+ 7.0	63 ^a	3	15 ^a	25	34 ^a	3.40	+2.60	0.79	T.	9	7	4	19	s.	J. de Ruyter.
Spencer	Clay	1,319	8	39.4	-----	69	16	13	25	39	4.15	-----	1.75	0	10	9	8	13	nw.	E. W. Little.
Storm Lake	Buena Vista	1,440	33	40.8	+ 7.2	62	3	18	25	27	4.04	+2.91	1.70	0	10	13	6	11	nw.	Geo. H. Fracker.
Washta	Cherokee	1,157	24	40.2	+ 6.8	62	17†	13	25	38	4.41	+3.28	1.33	0	9	14	3	13	n.	H. L. Felter.
Waverly	Bremer	948	26	41.0 ^a	+ 6.9	64 ^a	30	14 ^a	25	33 ^a	3.41	+1.82	1.13	T.	10	10	-----	-----	s.	D. H. Murphy.
West Bend	Palo Alto	1,197	29	41.0	+ 8.5	69	30	15	25	34	3.14	+1.70	1.43	0	9	-----	-----	-----	nw.	Jos. Dorweller.
Means and extremes	-----	-----	-----	40.1	+ 7.3	71	5	11	25	42	3.58	+2.17	2.00	0.5	10	9	7	14	nw.	-----
Central Division																				
Ames	Story	926	45	42.6	+ 7.2	68	30	18	25	36	2.84	+1.51	0.81	T.	8	11	8	11	nw.	Iowa State College.
Audubon	Audubon	1,301	28	41.0	+ 6.1	70	3	19	24	31	2.63	+1.27	0.95	0	8	13	7	10	nw.	Geo. Kibby.
Baxter	Jasper	998	22	42.8	+ 7.0	68	30	15	25	35	3.09	+2.29	1.46	0	10	10	11	9	sw.	Henry Geise.
Belle Plaine	Benton	886	32	43.2	+ 7.8	66	4	14	25	36	4.41	+2.68	1.39	0.3	12	7	10	13	nw.	O. C. Burrows.
Boone	Boone	1,134	17	43.0	+ 8.4	68	30	14	25	39	2.53	+1.16	1.03	0	9	12	6	12	s.	C. F. Henning.
Carroll	Carroll	1,265	32	41.9	+ 8.5	65	3†	15	25	32	2.36	+1.11	0.74	0	8	16	3	11	nw.	Mrs. Jos. J. Wolfe.
Cedar Rapids	Linn	733	40	43.8	+ 8.8	64	5†	18	25	30	4.32	+2.91	1.14	0.9	10	6	1	23	nw.	R. S. Toogood.
Clinton	Clinton	593	49	44.2	+ 8.2	65	5	15	25	28	3.09	+1.15	0.88	1.0	9	10	5	15	s.	Dr. A. P. Bryant.
Davenport	Scott	580	51	43.9	+ 4.9	65	5	19	25	26	3.12	+1.36	1.02	1.5	9	6	8	16	sw.	U. S. Weather Bureau.
Davenport (Pine Acres)	Scott	690	-----	43.6 ^b	-----	65 ^b	5	16 ^b	25	26 ^b	3.24	-----	0.95	1.0	7	-----	-----	-----	sw.	Alfred C. Hansen.
Denison	Crawford	1,180	28	42.0	+ 7.3	66	3	16	25	30	3.84	+2.66	1.21	0	8	12	6	12	nw.	V. L. Byers.
Des Moines	Polk	861	44	44.0	+ 5.6	69	30	19	25	35	2.54	+1.06	0.90	T.	9	14	6	10	sw.	U. S. Weather Bureau.
Dubuque	Dubuque	639	49	42.7	+ 5.7	64	2	19	25	27	4.41	+2.60	1.42	1.2	10	4	8	18	nw.	U. S. Weather Bureau.
Fairport	Muscatine	567	1	-----	-----	-----	15	25	25	4.46	-----	1.60	2.0	10	8	8	14	sw.	R. L. Barney.	
Fort Dodge	Webster	1,114	22	41.6	+ 8.0	65	30	16	25	32	2.01	+ .53	0.48	0	8	13	2	15	nw.	Samuel Sampson.
Grinnell	Poweshiek	1,031	28	43.4	+ 6.9	67	4	16	25	33	2.95	+1.23	1.24	0	10	8	10	12	sw.	Paul P. Meyers.
Grundy Center	Grundy	976	31	42.4 ^a	+ 7.0	69 ^a	4	15 ^a	25	34 ^a	2.80	+1.40	1.02	0	9	-----	-----	-----	nw.	M. G. Heiberger.
Guthrie Center	Guthrie	1,077	27	43.6	+ 8.2	67	3	15	25	35	2.24	+ .81	0.88	0	8	15	7	8	sw.	E. L. Nesselroad.
Harlan	Shelby	1,192	23	42.7 ^d	+ 8.3	70 ^d	3	18 ^d	25	34 ^d	2.55	+1.36	1.32	0	7	-----	-----	-----	s.	W. K. Colburn.
Independence	Buchanan	921	58	43.6	+ 9.1	67	30	14	25	34	4.12	+2.74	1.57	1.0	9	11	1	18	sw.	Dr. Geo. Boody.
Iowa City	Johnson	733	62	43.3	+ 8.4	65	5	14	25	32	5.28	+3.02	1.35	T.	11	6	13	11	nw.	Prof. J. F. Reilly.
Iowa Falls	Hardin	1,107	29	41.5	+ 8.9	65	30	13	25	32	3.31	+1.77	1.58	T.	10	11	3	16	nw.	J. B. Parmelee.
Jefferson	Greene	1,052	23	41.8	+ 6.8	66	30	13	25	34	2.57	-----	1.12	0	10	15	3	12	sw.	W. I. Lyon.
Little Sioux	Harrison	1,040	17	42.8 ^a	+ 7.0	71 ^a	3	16 ^a	25	33 ^a	4.33	-----	1.56	0	9	-----	-----	-----	sw.	G. H. Gibson.
Logan	Harrison	1,035	55	-----	-----	-----	19	25	25	4.32	+3.05	2.15	0	9	15	6	9	nw.	Mary Jean Stern.	
Marshalltown	Marshall	947	30	42.2	+ 7.6	65	4†	17	25	32	3.16	+1.69	1.13	T.	11	14	3	13	sw.	C. C. Pigman.
Monroe	Jasper	922	10	44.1	-----	67	30	18	25	33	4.15	-----	1.65	0	8	8	5	17	nw.	J. A. Dibel.
Olin	Jones	760	23	42.8	+ 7.7	63	16	15	25	37	4.92	+3.46	1.75	3.0	6	9	9	12	sw.	Dr. F. W. Fort.
Onawa	Monona	1,051	22	-----	-----	66	4	16	24	31	4.53	+3.30	1.75	0	6	16	0	14	nw.	Mrs. H. E. Colby.
Perry	Dallas	975	21	43.1	+ 7.6	72	3	16	25	36	1.96	+ .34	0.69	0	9	13	4	13	nw.	F. N. Bartlett.
Rockwell City	Calhoun	1,134	26	41.0 ^a	+ 6.6	63 ^a	10	16 ^a	25	29 ^a	2.64	+1.06	0.86	0	9	2	7	21	w.	A. W. McIsaac.
Sac City	Sac	1,344	46	41.4	+ 7.5	65	30	17	25	30	3.68	+2.42	1.77	0	9	10	7	13	nw.	F. P. Kessler.
Sioux City	Woodbury																			

Climatological Data for November, 1922—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days				Observers.		
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.	Clear.	Partly cloudy.		Cloudy.	Prevailing direction of wind.
Southern Division																				
Afton.....	Union.....	1,212	28	44.0	+ 7.0	72	3	16	25	31	3.93	+2.44	1.18	0	9	18	4	8	nw.	S. R. Brown.
Albia.....	Monroe.....	959	24	43.9	+ 7.1	67	4	16	25	31	3.16	+1.46	1.25	0	10	12	8	10	nw.	O. E. McBride.
Atlantic.....	Cass.....	1,164	31	43.8	+ 8.2	73	3	19	25	32	4.29	+3.07	1.63	0	10	14	3	13	nw.	J. N. Reynolds.
Bonaparte.....	Van Buren.....	31	44.4	+ 6.2	65	1†	16	25	31	3.28	+1.45	1.25	0	11	14	5	11	sw.	B. R. Vale.	
Burlington.....	Des Moines.....	544	26	44.7	+ 6.5	67	1	18	25	26	3.31	+1.42	1.08	0	10	15	4	11	sw.	Mrs. E. M. Donnelly.
Centerville.....	Appanoose.....	1,013	17	44.6	---	67	4	17	25	28	4.43	+2.83	1.37	0	10	14	7	9	w.	Leo. J. Allen.
Chariton.....	Lucas.....	1,042	27	45.2	+ 8.1	69	3	16	25	32	4.47	+3.00	1.50	0	8	11	9	10	nw.	O. C. Burr.
Clarinda.....	Page.....	1,009	32	45.2	+ 9.2	74	4	22	21	35	3.68	+2.24	1.20	0	10	16	3	11	sw.	A. S. Van Sandt.
Columbus Jet. ††	Louisa.....	595	21	44.6	+ 7.1	64 ^a	1†	17	25	26 ^a	3.23	+1.97	1.65	T.	10	15	7	8	nw.	J. B. Johnston.
Corning.....	Adams.....	1,117	30	42.9	+ 7.2	72	3	15	25	33	2.90	+1.53	1.02	0	6	19	3	8	sw.	Jerome Smith.
Corydon.....	Wayne.....	1,161	29	44.0	+ 5.8	71	3	17	25	28	4.08	+2.64	1.39	0	9	12	8	10	sw.	May C. Miller.
Creston.....	Union.....	1,312	17	43.0	+ 7.8	69	3	19	25	26	3.42	---	1.15	0	9	12	11	7	sw.	Dr. H. M. Stanley.
Cumberland (near)	Cass.....	1,225	23	---	---	---	---	---	---	---	2.67	+1.62	1.10	0	6	14	5	11	sw.	Carl E. Pollock.
Earlham.....	Madison.....	1,126	20	43.0	+ 8.2	68	30	13	25	35	2.83	+1.17	1.05	0	8	17	2	11	sw.	Geo. Phillips.
Fairfield.....	Jefferson.....	780	38	43.5	+ 5.6	67	11	14	25	33	4.59	+2.33	1.57	0	9	17	3	10	sw.	Prof. R. M. McKenzie.
Glenwood.....	Mills.....	1,100	24	44.6	---	72	3	18	25	32	3.96	---	2.08	0	7	16	4	10	nw.	Dr. Geo. Mogridge.
Greenfield.....	Adair.....	1,368	30	42.6	+ 6.5	72	1	15	25	38	2.84	+1.70	0.86	0	5	13	9	8	nw.	C. F. McCaslen.
Indianola.....	Warren.....	972	31	43.6	+ 6.5	68	4†	17	25	33	4.10	+2.62	1.43	0	8	15	5	10	nw.	Seth F. Shenton.
Keokuk.....	Lee.....	614	51	45.4	+ 4.3	65	3	22	25	25	3.38	+1.53	0.99	0	11	9	13	8	sw.	U. S. Weather Bureau.
Keosauqua.....	Van Buren.....	644	30	43.6	+ 6.4	66	1†	15	25	33	4.53	+2.96	1.93	0	11	13	6	11	se.	J. H. Landes.
Knoxville.....	Marion.....	920	27	44.4	+ 6.5	68	30	17	25	32	3.85	+2.33	1.61	0	9	13	6	11	sw.	W. J. Casey.
Laona.....	Warren.....	23	---	---	---	---	---	---	---	---	3.41	+1.72	1.06	0	9	8	12	10	---	J. B. Alter.
Lamoni.....	Decatur.....	1,100	15	43.6	+ 5.7	72	3	16	25	34	4.91	+3.42	1.35	0	8	16	4	10	sw.	C. E. Wight.
Lenox.....	Taylor.....	1,250	27	43.4	+ 6.9	72	3	17	25	34	3.32	+1.92	1.28	0	7	13	9	8	s.	J. L. Hurley.
Mt. Ayr.....	Ringgold.....	1,236	29	44.0	+ 6.1	72	3	18	25	31	4.60	+3.08	1.40	0	9	17	5	8	nw.	Alex. Maxwell.
Mt. Pleasant.....	Henry.....	729	41	44.6	+ 6.8	66	3†	16	25	30	3.75	+1.96	1.38	0	11	12	6	12	nw.	John H. Jericho.
Oakland.....	Pottawattamie.....	1,105	3	42.8 ^a	---	73	3	17 ^b	25	35 ^b	2.84	---	1.01	0	7	18	4	8	s.	M. E. Gray.
Oskaloosa.....	Mahaska.....	825	46	43.5	+ 6.7	66	4†	15	25	33	3.47	+1.92	1.53	T.	10	9	11	10	nw.	Roy R. Robinson.
Ottumwa.....	Wapello.....	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pella.....	Marion.....	877	29	44.5	+ 7.1	67	30	20 ^a	24†	33 ^a	3.27	+1.59	1.10	T.	8	16	0	14	s.	J. H. Ver Steeg.
Sigourney.....	Keokuk.....	790	26	43.8	+ 6.9	65	5	15	25	32	4.06	+2.39	1.12	0	10	12	2	16	nw.	W. E. Utterback.
Stockport.....	Van Buren.....	754	20	43.0	+ 5.5	65	1†	13	25	34	4.27	+2.60	1.60	0	11	15	5	10	s.	C. L. Beswick.
Thurman.....	Freemont.....	25	42.6	+ 5.8	68	4	18	25†	30	4.29	+2.68	1.35	0	9	12	10	8	nw.	C. R. Paul.	
Washington.....	Washington.....	769	40	43.2	+ 6.0	65	10	16	25	31	4.96	+3.29	1.32	0	10	10	12	8	sw.	Wm. A. Cook.
Wescott (near).....	Lee.....	---	---	42.2	---	60	1†	16	25	25	3.10	---	1.08	0	9	13	3	14	nw.	Geo. H. Smith.
Winterset.....	Madison.....	1,129	31	44.2	+ 7.6	68	3†	16	25	32	3.00	+1.51	0.87	0	7	19	6	5	nw.	H. S. Ely.
Omaha, Nebr.....	---	1,040	51	44.2	+ 6.5	72	3	25	24	32	2.55	+1.49	1.16	0	10	15	5	10	nw.	U. S. Weather Bureau
Means and extremes.....	---	---	---	43.8	+ 6.7	74	4	13	25	38	3.69	+2.11	2.08	T.	9	14	6	10	nw.	---
State means and extremes.....	---	---	---	42.2	+ 7.2	74	4	11	25	42	3.54	+2.03	2.08	0.3	9	11	6	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 (%)				Wind				Sunshine			
	Mean.	Highest.	Date.	Lowest.	Date.	Mean.	7 a. m.	12 Noon†	7 p. m.	Lowest.	Date.	Total movement.	Average hourly velocity.	Maximum		Per cent. of possible.	Departure from normal.
														Miles.	From.		
Charles City	30.05	30.40	3	29.41	30	88	73	80	46	22	6,344	8	34	sw.	30	22	-21
Davenport..	30.09	30.42	9	29.55	27	82	66	72	46	16	6,095	8	34	ne.	12	45	-6
Des Moines..	30.06	30.42	25	29.48	30	83	69	73	41	24	6,598	8	33	sw.	30	53	-3
Dubuque.....	30.08	30.44	9	29.59	27	80	68	71	34	23	5,273	8	34	nw.	23	31	-16
Keokuk.....	30.12	30.43	9	29.56	27	78	62	68	38	17	6,373	8	36	s.	5	53	+2
Sioux City..	30.07	30.49	24	29.30	5	80	67	71	35	30	10,930	15.2	56	sw.	39	47	+9
Omaha, Neb..	30.08	30.47	24	29.41	5	81	70	70	32	16	6,464	9.0	43	nw.	27	57	+2
Means and extremes..	30.08	30.49	24	29.30	5	82	68	72	32	16	---	9.6	56	sw.	30	---	-7
Normals and records..	30.07	---	---	---	---	81	---	70	---	---	---	8.2	---	---	---	52	---
		*30.96	1896	29.03	1918	---	---	---	---	---	116	---	---	---	---	---	---

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

Daily Maximum and Minimum Temperature for the Month of November, 1922

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

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with
IOWA WEATHER AND CROP SERVICE
CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, DECEMBER, 1922 No. 12

GENERAL SUMMARY

December was an unusually pleasant month with the temperature very near the normal. The month opened with a mild period extending to the 5th over most of the State, followed by a rather severe cold period that continued through the 20th. Zero weather was general over the entire State. A number of stations in the northern portion of the State reported zero weather on 12 days which gradually diminished to the south and at Keokuk zero was reached on but a single day. From the 21st till the end of the month an unusually mild period prevailed, and while no abnormally high temperatures were experienced, the high record for Christmas was exceeded at many places in all portions of the State. For the State as a whole the temperature averaged 0.1° higher than the normal, the northern half being generally below and the southern half generally above normal.

The precipitation, 0.37 inch, was with one exception the least of record for December, the same amount having been recorded in 1910. The average number of days with 0.01 inch, or more, of precipitation was three and this also equaled the record for December. There were but two periods of general precipitation, 6th-7th and 14th. On the 6th-7th a light rain over most of the State froze to all exposed surfaces. This thin sheet of ice continued for several days. It was not sufficiently heavy to seriously interfere with rail traffic, but walking, especially in cities, was difficult and dangerous and many accidents to pedestrians resulted. Many automobiles were damaged by skidding and a great many that were without chains slid into ditches and had to be temporarily abandoned.

The month was free from severe storms. The snowfall was unusually light, but during the most severe weather, most of the State was covered sufficiently to prevent serious damage to winter wheat. It did not drift nor interfere with traffic. Building operations were checked temporarily by cold weather but conditions were generally favorable for out door work and at the close of the month very little corn remained to be gathered.

During the cold weather the ice rapidly increased in thickness and some was harvested but the continued mild weather reduced the thickness and made it too soft and spongy to store. More cold weather is needed to insure an adequate ice harvest.

Except for the ice that prevailed during the early part of the month the roads were in good condition, but the alternate freezing and thawing made all roads somewhat rough the latter part of the month.

The Mississippi River at Keokuk reached the lowest stage ever experienced, 3.1 feet below the zero of the gage. The continued low stage caused great trouble and expense to manufacturing interests.

PRESSURE

The mean pressure (reduced to sea level) for the State was 30.12 inches. The highest recorded was 30.76 inches, at Dubuque, on the 18th, and the lowest was 29.43 inches, at Sioux City, on the 29th. The monthly range was 1.33 inches.

TEMPERATURE

The mean temperature for the State, as shown by the records of 100 stations, was 24.0°, or 0.1° higher than normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 19.8°, or 1.4° lower than the normal; Central, 24.4°, or 0.3° higher than normal; Southern, 27.7°, or 1.3° higher than normal. The highest monthly mean was 30.5°, at Keokuk, and the lowest 16.4°, at Sanborn. The highest temperature recorded was 65°, at Thurman, on the 29th, and the lowest was 25° below zero at Decorah, Nora Springs and Rock Rapids, on the 18th. The temperature range for the State was 90°.

HUMIDITY

The average relative humidity for the State at 7 a. m. was 79 per cent, and at 7 p. m. was 68 per cent. The mean for the month was 74 per cent, which is 7 per cent below the normal. The highest monthly mean was 86 per cent at Charles City, and the lowest was 68 per cent at Keokuk.

SUNSHINE AND CLOUDINESS

The average per cent of the possible amount of sunshine was 50, or 2 per cent greater than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 51; Davenport, 42; Des Moines, 59; Dubuque, 40; Keokuk, 46; Sioux City, 52; Omaha, Nebr., 58.

COMPARATIVE DATA FOR THE STATE—DECEMBER.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1899	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	-----	8	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	-3.8	58	-27	0.41	-0.81	1.96	T.	3.7	4	11	9	11
1904	23.4	-0.5	67	-10	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	-3.3	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	2.73	0.00	1.3	4	15	5	11
1914	15.7	-8.1	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	+8.3	68	-7	1.30	+0.08	3.30	0.37	5.1	8	9	8	14
1919	15.0	-8.9	52	-36	0.54	-0.68	1.55	0.08	5.8	4	11	7	13
1920	26.4	+2.5	65	-26	1.16	-0.06	2.64	0.26	7.4	5	10	8	13
1921	28.2	+4.3	69	-22	1.02	-0.20	3.72	T.	2.9	4	14	9	8
1922	24.0	+0.1	65	-25	0.37	-0.85	0.97	T.	2.2	3	16	7	8

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



Climatological Data for December, 1922.

Stations.	Counties	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit					Precipitation, in Inches				Number of Days				Prevailing direction of wind.	Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation, .01 in. or more.	Clear.			Partly cloudy.	Cloudy.	
Northern Division																					
Algona.....	Kossuth.....	1,213	49	20.6	- 0.7	48	3	-15	17	30	0.51	-0.46	0.50	5.1	2	21	3	7	nw.	W. E. Laird.	
Allison.....	Butler.....	1,044	10	21.8	-----	50	3	-17	15†	33	0.35	-----	0.25	2.5	2	16	6	9	nw.	J. A. Bell.	
Alta.....	Buena Vista.....	1,305	17	19.9	- 1.1	50	3	-16	17	30	0.25	-0.70	0.10	2.5	4	13	10	8	nw.	D. E. Hadden.	
Alton.....	Sioux.....	1,513	31	20.0	- 1.3	49	3†	-20	15	36	0.45	-----	0.30	4.5	4	15	7	9	nw.	W. S. Slagle.	
Belmond.....	Wright.....	1,205	12	20.2	-----	50	2†	-18	15†	32	0.52	-----	0.30	4.3	6	10	16	5	nw.	Geo. P. Hardwick.	
Britt.....	Hancock.....	1,230	25	18.8	- 0.9	51	3†	-21	15	45	0.49	-0.34	0.17	3.2	5	17	8	6	n.	L. M. Goodman.	
Charles City.....	Floyd.....	1,015	31	19.1	+ 0.1	49	2	-21	18	36	0.43	-0.85	0.43	5.8	6	11	11	9	se.	U. S. Weather Bureau.	
Cherokee.....	Cherokee.....	1,196	-----	20.0	-----	51	3†	-17	17	35	0.13	-----	0.10	2.0	2	14	10	7	s.	J. E. Wirth.	
Decorah.....	Winneshiek.....	875	29	21.6	- 0.6	52	4	-25	18	38	0.40	-0.94	0.40	4.0	1	12	7	12	s.	M. D. Whitney.	
Estherville.....	Emmet.....	1,298	27	16.7	- 3.2	45	3	-19	18	29	0.31	-0.50	0.14	4.0	5	14	15	2	nw.	A. O. Peterson.	
Fayette.....	Fayette.....	1,003	32	20.6	- 0.3	48	1	-23	18	32	0.51	-1.02	0.27	4.0	2	15	8	8	sw.	R. Z. Latimer.	
Filford City.....	Winnebago.....	1,226	28	19.1	+ 0.2	49	25	-20	15	34	0.36	-0.61	0.28	3.8	2	13	11	7	nw.	Dr. M. B. Neil.	
Humboldt.....	Humboldt.....	1,065	34	21.4	- 1.8	52	2†	-16	18	36	0.89	+0.03	0.71	4.0	3	12	7	12	nw.	H. C. Snitkey.	
Inwood.....	Lyon.....	1,474	18	18.2	- 1.8	48	3	-24	17	37	0.31	-0.37	0.23	3.1	6	19	5	7	nw.	F. B. Hanson.	
Le Mars.....	Plymouth.....	1,224	26	20.4	- 2.1	51	25	-18	17	40	0.28	-0.65	0.24	3.5	2	19	4	8	sw.	Mrs. M. C. Wooley.	
Mason City.....	Cerro Gordo.....	1,148	25	18.6	- 2.9	48	3	-24	18	37	0.80	-0.60	0.60	5.5	2	20	4	7	nw.	Northern Sugar Corp.	
Milford (near).....	Dickinson.....	1,430	2	17.0	-----	47	3	-20	18	36	0.66	-----	0.60	8.0	3	15	9	7	nw.	Dr. F. J. Smith.	
New Hampton.....	Chickasaw.....	1,169	25	18.8°	- 2.1	47	2†	-20†	18	31†	0.40	-0.73	0.30	4.0	2	14	5	12	w.	A. F. Kemman.	
Nora Springs.....	Floyd.....	1,064	10	22.3	-----	58	1	-25	18	40	0.90	-----	0.58	3.9	4	13	10	8	s.	Arthur Betts.	
Northwood.....	Worth.....	1,222	26	18.0	- 2.0	47	25	-21	18	31	0.48	-0.76	0.40	4.5	3	12	11	8	nw.	Chas. Dwelle.	
Pocahontas.....	Pocahontas.....	1,248	18	20.8	- 1.1	50	3†	-15	15†	33	0.45	-0.41	0.25	3.5	4	16	5	10	nw.	F. E. Hronek.	
Postville.....	Clayton.....	1,180	23	20.3	- 1.1	54	1	-21	18	35	0.50	-0.96	0.40	4.0	2	12	10	9	sw.	W. L. Williams.	
Rock Rapids.....	Lyon.....	1,358	23	18.3	- 1.3	46	3	-25	18	38	0.33	-0.25	0.22	6.1	4	21	1	9	nw.	J. K. Medberry.	
Saiborn.....	O'Brien.....	1,553	8	16.4	-----	47	3†	-21	15†	32	0.50	-----	0.40	4.0	2	18	6	7	sw.	J. W. Dow.	
Sioux Center.....	Sioux.....	1,426	23	18.9	- 2.2	50	3	-21	17	35	0.52	-0.37	0.40	5.2	4	20	3	8	w.	J. de Ruyter.	
Spencer.....	Clay.....	1,319	8	18.4	-----	50	3	-22	17	40	0.15	-----	0.15	0.4	1	19	4	8	nw.	E. W. Little.	
Storm Lake.....	Buena Vista.....	1,440	33	21.8	- 0.6	51	3	-15	17	30	0.19	-0.63	0.15	2.4	2	23	4	4	n.	Geo. H. Fracker.	
Washta.....	Cherokee.....	1,157	24	20.6	- 1.9	50	3†	-17	18	40	0.15	-0.65	0.10	1.0	2	16	9	6	s.	H. L. Felter.	
Waverly.....	Bremers.....	948	26	21.8	- 1.0	49	3†	-19	15†	34	0.31	-0.95	0.31	3.1	1	20	8	3	w.	D. H. Murphy.	
West Bend.....	Palo Alto.....	1,197	29	20.3	- 1.5	54	3	-20	17	34	0.31	-0.92	0.19	3.5	3	18	6	7	nw.	Jos. Dorweiler.	
Means and extremes.....	-----	-----	-----	19.8	- 1.4	58	1	-25	18	40	0.43	-0.64	0.71	3.8	3	16	7	8	nw.	-----	
Central Division																					
Ames.....	Story.....	926	45	22.4	- 2.0	52	3	-18	18	38	0.30	-0.92	0.15	2.5	3	19	4	8	nw.	Iowa State College.	
Audubon.....	Audubon.....	1,301	28	22.8	- 1.1	55	3	-12	15	34	0.16	-0.83	0.10	3.0	2	13	14	4	nw.	Geo. Kibby.	
Baxter.....	Jasper.....	998	22	24.7	+ 0.4	61	1	-15	18	35	0.50	-0.50	0.40	4.0	2	15	9	7	nw.	Henry Geise.	
Belle Plaine.....	Benton.....	886	32	24.2	+ 0.3	53	3	-17	18	34	0.43	-1.00	0.21	3.0	5	14	6	11	nw.	O. C. Burrows.	
Boone.....	Boone.....	1,134	17	23.3	+ 0.2	53	2	-21	18	42	0.25	-0.72	0.18	2.5	3	15	7	9	nw.	C. F. Henning.	
Carroll.....	Carroll.....	1,265	32	23.6	+ 0.4	63	3	-10	17	37	0.23	-0.79	0.13	1.5	4	18	8	5	nw.	Mrs. Jos. J. Wolfe.	
Cedar Rapids.....	Linn.....	733	40	26.2	+ 2.2	61	1	-15	18	31	0.35	-1.05	0.13	1.5	4	15	4	12	w.	R. S. Toogood.	
Clinton.....	Clinton.....	593	49	27.0	+ 1.3	59	1	-12	18	32	0.81	-1.04	0.35	0.5	5	14	9	8	s.	Dr. A. P. Bryant.	
Davenport.....	Scott.....	580	51	27.0	- 0.1	56	25	- 4	18	29	0.60	-1.09	0.30	0.8	7	9	8	14	nw.	U. S. Weather Bureau.	
Davenport (Pine Acres)††.....	Scott.....	690	-----	28.4	-----	56	25	-10	18	37	-----	-----	-----	2.8	4	12	5	14	-----	Alfred C. Hansen.	
Denison.....	Crawford.....	1,180	28	23.3	- 1.2	54	29	-12	17	36	0.18	-0.75	0.12	1.0	2	18	9	4	nw.	V. L. Byers.	
Des Moines.....	Polk.....	861	44	25.6	- 0.4	53	22	- 7	18	34	0.25	-1.06	0.15	1.9	5	12	8	11	nw.	U. S. Weather Bureau.	
Dubuque.....	Dubuque.....	639	49	23.8	- 0.9	51	3	-14	18	32	0.41	-1.31	0.18	3.4	8	8	7	16	nw.	U. S. Weather Bureau.	
Fairport.....	Muscatine.....	567	1	29.0	-----	62	1	- 7	18	33	0.50	-----	0.38	-----	4	12	4	15	s.	Bureau of Fisheries.	
Fort Dodge.....	Webster.....	1,114	22	22.0	+ 0.1	52	2	-15	18	36	0.29	-0.33	0.29	2.0	1	22	1	8	nw.	Samuel Sampson.	
Grinnell.....	Poweshiek.....	1,031	28	26.2	+ 0.7	64	1	-10a	15†	29a	0.37	-0.76	0.17	3.5	3	15	9	7	sw.	Paul P. Meyers.	
Grundy Center.....	Grundy.....	976	31	23.6	- 0.1	54	3	-17	18	35	0.15	-1.03	0.10	1.0	2	15	12	4	w.	M. G. Heiberger.	
Guthrie Center.....	Guthrie.....	1,077	27	25.8	+ 0.6	59	1	-11	18	35	0.63	-0.55	0.30	4.0	6	17	8	6	nw.	E. L. Nesselroad.	
Harlan.....	Shelby.....	1,192	23	24.7b	+ 0.9	56b	29	- 9b	15†	35b	T.	-1.06	T.	T.	0	-----	-----	-----	n.	W. K. Colburn.	
Independence.....	Buchanan.....	921	58	24.2	+ 1.4	64	1	-20	18	42	0.39	-0.99	0.20	2.0	4	18	3	10	nw.	Dr. Geo. Boody.	
Iowa City.....	Johnson.....	733	62	26.4	+ 2.3	62	1	-14	18	35	0.49	-1.12	0.22	0.5	5	9	11	11	nw.	Prof. J. F. Reilly.	
Iowa Falls.....	Hardin.....	1,107	29	22.4	+ 1.1	51	1†	-17	18	34	0.46	-0.91	0.25	2.5	3	14	6	11	nw.	J. B. Parmelee.	
Jefferson.....	Greene.....	1,052	23	22.6	+ 1.6	54	25	-17	18	41	0.33	-----	0.20	2.5	3	17	7	7	w.	W. I. Lyon.	
Little Sioux.....	Harrison.....	1,040	17	25.2	- 0.2	57	29	-10	15†	38	0.15	-----	0.10	1.5	2	13	9	9	nw.	G. H. Gibson.	
Logan.....	Harrison.....	1,035	55	27.0	+ 1.8	57	29	- 8	18	40	0.10	-1.08	0.10	1.0	1	18	9	4	sw.	Mary Jean Stern.	
Marshalltown.....	Marshall.....	947	30	24.6	+ 1.5	53	3	-13	18	30	0.43	-0.92	0.27	3.2	5	19	3	9	nw.	C. C. Pigman.	
Monroe.....	Jasper.....	922	10	27.8	-----	64	1	- 9	18	37	0.11	-----	0.11	2.4	1	14	2	15	s.	J. A. Dibel.	
Olin.....	Jones.....	760	23	25.3	+ 0.3	60	1	-19	18	37	0.35	-1.14	0.20	2.0	2	16	7	8	nw.	Dr. F. W. Port.	
Onawa.....	Monona.....	1,051	22	21.9c	-----	56†	29	-11†	17	37†	-----	-----	-----	-----	-----	-----	-----	-----	-----	nw.	Mrs. H. E. Colby.
Perry.....	Dallas.....	975	21	23.0c	- 1.8	51c	2	-18c	18	39c	0.22	-0.97	0.16	3.0	3	-----	-----	-----	-----	sw.	F. N. Bartlett.
Rockwell City.....	Calhoun.....	1,134	26	21.2c	- 2.7	51c	29	-12c	17	31c	0.31	-0.74	0.20	2.0	3	-----	-----	-----	-----	nw.	A. W. McIsaac.
Sac City.....	Sac.....	1,244	46	21.8	- 2.0	50	3†	-12	17	36	0.10	-1.05	0.10	1.0	1	14	12	5	nw.	F. P. Kessler.	

Climatological Data for December, 1922—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in Degrees Fahrenheit						Precipitation, in Inches				Number of Days			Prevailing direction of wind.	Observers.			
				Mean.	Departure from normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Precipitation .01 in. or more.	Clear.			Partly cloudy.	Cloudy.	
Southern Division																					
Afton.....	Union.....	1,212	28	26.9	+ 0.7	57	1†	- 7	18	32	0.28	-1.06	0.20	2.0	3	19	6	6	nw.	S. R. Brown.	
Albia.....	Monroe.....	959	24	28.4	+ 3.1	61	1	- 5	18	34	0.28	-0.87	0.10	1.0	5	14	5	12	sw.	O. E. McBride.	
Atlantic.....	Cass.....	1,164	31	25.6 ^a	+ 0.8	57 ^a	3	- 7 ^a	18	35 ^a	0.11	-1.09	0.06	1.2	3	---	---	---	se.	J. N. Reynolds.	
Bonaparte.....	Van Buren.....	31	29.0	---	+ 1.1	64	25	- 6	18	39	0.15	-1.20	0.15	T.	1	16	3	12	se.	B. R. Vale.	
Burlington.....	Des Moines.....	544	26	30.2	+ 2.3	58	1†	- 3	18	29	0.64	-1.14	0.28	1.0	4	17	3	11	sw.	Mrs. E. M. Donnelly.	
Centerville.....	Appanoose.....	1,013	17	30.0	---	62	1†	- 4	18	35	0.22	-1.07	0.17	0.2	4	18	5	8	nw.	Leo. J. Allen.	
Chariton.....	Lucas.....	1,042	27	29.0	+ 2.6	64	1	- 6	18	38	0.20	-1.12	0.10	1.0	2	13	10	8	nw.	C. C. Burr.	
Clarinda.....	Page.....	1,009	32	28.4	+ 3.7	61	25	- 3	12†	36	0.19	-0.98	0.10	T.	2	17	7	7	sw.	A. S. Van Sandt.	
Columbus Jet.....	Louisa.....	595	21	28.8	+ 1.1	61	1	- 7	18	33	0.52	-0.79	0.32	1.1	5	19	4	8	sw.	J. B. Johnston.	
Corning.....	Adams.....	1,117	30	26.2	+ 1.5	63	25	- 7	15	43	0.15	-1.19	0.15	1.5	1	19	6	6	nw.	Jerome Smith.	
Corydon.....	Wayne.....	1,101	29	28.8	+ 1.4	58	25	- 4	18	33	0.34	-1.08	0.17	0.3	4	13	11	7	nw.	May C. Miller.	
Creston.....	Union.....	1,312	17	25.8 ^a	+ 1.1	55 ^a	25	- 5 ^a	12†	29 ^a	0.19	---	0.10	1.0	3	---	---	---	nw.	Dr. H. M. Stanley.	
Cumberland (near).....	Cass.....	1,225	23	---	---	---	---	---	---	---	T.	-1.10	T.	T.	0	17	5	9	nw.	Carl E. Pollock.	
Earlham.....	Madison.....	1,126	20	24.8	- 0.6	57	2	-13	18	39	0.15	-1.26	0.10	1.5	2	19	3	9	sw.	Geo. Phillips.	
Fairfield.....	Jefferson.....	780	38	27.8	+ 0.6	62	1	- 8	18	36	T.	-1.09	0.20	0.2	6	17	2	12	s.	Prof. R. M. McKenzie.	
Glenwood.....	Mills.....	1,100	24	27.8	---	60	25†	- 4	12†	35	T.	---	T.	T.	0	14	9	8	nw.	Dr. Geo. Mogridge.	
Greenfield.....	Adair.....	1,368	30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C. E. McCaslen.
Indianola.....	Warren.....	972	31	26.7	+ 0.4	59	1	-11	18	33	0.30	-1.15	0.20	2.0	2	18	5	8	nw.	Seth F. Shenton.	
Keokuk.....	Lee.....	614	51	30.5	+ 1.1	63	25	- 2	18	32	0.63	-1.24	0.20	1.3	6	10	9	12	nw.	U. S. Weather Bureau.	
Keosauqua.....	Van Buren.....	644	30	28.8 ^a	+ 2.1	62 ^a	25	- 6 ^a	18	35 ^a	0.35	-1.08	0.21	T.	3	---	---	---	sw.	J. H. Landes.	
Knoxville.....	Marion.....	920	27	27.6	+ 1.1	61	1	-11	18	34	0.35	-1.02	0.20	0.5	3	19	3	9	nw.	W. J. Casey.	
Lacona.....	Warren.....	23	---	---	---	---	---	---	---	---	0.70	-1.00	0.30	3.0	3	10	13	8	---	J. B. Alter.	
Lamoni.....	Decatur.....	1,100	15	26.9	+ 0.2	60	25	- 6	18	37	0.21	-1.01	0.17	0.2	2	20	6	5	nw.	O. E. Wight.	
Lenox.....	Taylor.....	1,250	27	27.2	+ 1.5	62	25	- 4	12†	35	0.35	-0.78	0.15	1.0	3	20	7	4	nw.	J. L. Hurley.	
Mt. Ayr.....	Ringgold.....	1,236	29	28.6	+ 1.6	61	25	- 4	12	36	0.19	-1.20	0.09	0.4	3	17	8	6	s.	Alex. Maxwell.	
Mt. Pleasant.....	Henry.....	729	41	29.3	+ 1.5	61	1†	- 6	18	34	0.50	-0.86	0.26	0.2	3	11	10	10	nw.	John H. Jericho.	
Oakland.....	Pottawattamie.....	1,105	3	26.2	---	58	25	- 7 ^a	18	39 ^a	0.05	---	0.05	0.5	1	20	1	10	s.	M. E. Gray.	
Oskaloosa.....	Mahaska.....	825	46	27.2	+ 1.1	59	1	-12	18	34	0.45	-0.70	0.16	1.9	5	13	5	13	nw.	Roy R. Robinson.	
Ottumwa.....	Wapello.....	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pella.....	Marion.....	877	29	26.5 ^a	- 0.1	64	1	-18 ^b	14	39 ^b	0.43	-0.65	0.22	2.0	2	20	1	10	s.	J. H. Ver Steeg.	
Sigourney.....	Keokuk.....	790	26	27.1	+ 0.4	62	1	-11	18	36	0.54	-0.69	0.34	1.1	3	18	3	10	nw.	W. E. Utterback.	
Stockport.....	Van Buren.....	754	20	28.0	+ 0.4	62	1	- 8	18	39	0.69	-0.59	0.29	T.	3	16	6	9	s.	C. L. Beswick.	
Thurman.....	Fremont.....	25	25.8	---	+ 0.1	65	29	- 4	18	40	T.	-1.35	T.	T.	0	7	20	4	nw.	C. R. Paul.	
Washington.....	Washington.....	769	40	27.0	- 0.1	57	25	- 9	18	32	0.50	-0.86	0.26	---	5	12	12	7	w.	Wm. A. Cook.	
Wescott (near).....	Lee.....	---	---	26.4	---	58	3	- 8	18	29	0.97	---	0.39	2.0	4	16	4	11	se.	Geo. H. Smith.	
Winterset.....	Madison.....	1,129	31	26.4	+ 0.3	58	1	- 5	15†	33	0.21	-1.09	0.10	2.0	3	22	5	4	nw.	H. S. Ely.	
Omaha, Nebr.....	---	1,040	51	27.2	+ 0.1	58	29	- 5	17	35	0.07	-0.84	0.03	0.5	3	13	9	9	nw.	U. S. Weather Bureau	
Means and extremes.....	---	---	---	27.7	+ 1.3	65	29	-18	14	43	0.36	-0.99	0.39	0.9	3	16	6	9	nw.	---	
State means and extremes.....	---	---	---	24.0	+ 0.1	65	29	-25	18	43	0.37	-0.85	0.71	2.2	3	16	7	8	nw.	---	

The departures from normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete records are used in determining means.
 Reference letters a, b, c, 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 (%)				Wind				Sunshine					
	Mean.	Highest.	Date.	Lowest.	Date.	Mean.			Total movement.	Average hourly velocity.	Maximum		Per cent of possible.	Departure from normal.				
						7 a. m.	Noon	7 p. m.			Miles.	From.			Date.			
Charles City	30.11	30.73	18	29.61	30	89	73	82	43	3	5,421	7.3	28	nw.	11	51	+ 7	
Davenport	30.12	30.73	18	29.62	7	80	63	68	24	15	5,960	8.0	27	nw.	11	42	- 1	
Des Moines	30.10	30.74	18	29.58	30	80	61	67	40	22	5,683	7.6	26	nw.	11	59	+ 7	
Dubuque	30.13	30.76	18	29.65	7	79	68	70	36	3	5,194	7.0	28	nw.	4	40	- 2	
Keokuk	30.14	30.74	18	29.62	7	74	56	62	18	12	6,014	8.1	29	nw.	11	46	- 8	
Sioux City	30.11	30.71	12	29.43	29	76	61	63	27	12	8,978	12.1	46	nw.	11	52	+ 3	
Omaha, Neb.	30.12	30.71	12	29.47	29	76	59	63	38	22	6,167	8.3	37	nw.	4	58	+ 7	
Means and extremes	30.12	---	---	---	---	79	63	68	---	---	---	8.3	---	---	---	---	50	+ 2
Normals and records	30.12	---	---	---	---	79	63	68	---	---	---	8.3	---	---	---	---	50	+ 2
		*31.09	1917	\$29.00	1921	---	---	---	---	---	---	---	*58	nw.	1907	---	---	---

* Sioux City. † Dubuque. ‡ Keokuk. † Local mean time.

Daily Precipitation for December, 1922—Continued.

Stations.	Drainage Basin.	Day of Month																															Totals	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Southern Division</i>																																		
Afton	Grand					.05	.03								.20																		T.	.28
Albia	Des Moines			.08		.05	.10	.02							.03																			.28
Atlantic	Nishnabotna					.02	T.		.03						.06																	T.		0.11
Bonaparte	Des Moines			T.		T.	.15			.03					T.																		T.	.15
Burlington	Mississippi			.04			T.							.10																			.28	.22
Centerville	Chariton					.03	.17	.01							.01																		T.	.22
Chariton	Chariton			T.		T.	.10								.10																			.20
Clarinda	Nodaway					.10	.09								T.																			.19
Columbus Jct.	Iowa			.05			.32							T.																		.05	.05	
Corning	Nodaway					T.	T.							.15																				.15
Corydon	Chariton			.04		T.	.17	T.			T.				.02																	T.	.11	.34
Creston	Missouri					.02	.07				T.				.10																			.19
Cumberland (near)	Nodaway			T.		T.	T.								T.																			T.
Earlham	Des Moines					T.	T.			.05		T.			.10																			.15
Fairfield	Skunk		.02		.09		.10	.20																									.18	.60
Glenwood	Missouri					T.	T.																											T.
Greenfield	Nodaway																																	
Indianola	Des Moines					T.	.10								.20																			.30
Keokuk**	Mississippi			.17		.18	.02								.10																	.15	.01	.63
Keosauqua	Des Moines			T.		.09	.12								T.	T.	T.															.14	.35	
Knoxville	Des Moines			T.		.10	.20								.05																		T.	.35
Lacona	Des Moines					.28	.12								.30																			.70
Lamoni	Grand						.17								.04																			.21
Lenox	Missouri					.15	.10					T.			.10																			.35
Mt. Ayr	Grand					.06	.09					T.			.04																			T.
Mt. Pleasant	Skunk			.26			.22								T.																		T.	.50
Oakland	Nishnabotna					T.				.05		T.																						.05
Oskaloosa	Des Moines			.11		.07	.16	T.			T.		T.		.09																			.45
Pella	Skunk			T.		T.	.22								.21																			.43
Sigourney	Skunk			.14		T.	.34								.06																			.54
Stockport	Skunk			.29		T.	.24								T.																			.69
Thurman	Missouri					T.	T.								T.																			T.
Washington	Skunk			.08		.26									.02																			.50
Westcott (near)	Mississippi			.11			.39								.20																			.97
Winterset	Des Moines					.01				.10					.10																			T.
Omaha, Nebr.***	Missouri					.02	T.			.02		T.		.03	T.		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.

PRECIPITATION

The average precipitation for the State, as shown by the records of 101 stations, was 0.37 inch, or 0.85 inch less than the normal. By divisions the averages were as follows; Northern, 0.43 inch, or 0.64 inch less than the normal; Central, 0.31 inch, or 0.94 inch less than the normal; Southern, 0.36 inch, or 0.99 inch less than the normal. The greatest amount, 0.97 inch occurred at Westcott, and the least, a trace, at Cumberland, Glenwood, Harlan and Thurman. The greatest amount in 24 consecutive hours, 0.71 inch, occurred at Humbolt, on the 14th.

SNOWFALL

The average snowfall for the State was 2.2 inches, or 4.0 inches less than the normal. The greatest amount, 8.0 inches, occurred at Milford, and the least was a trace at Bonaparte, Clarinda, Cumberland, Glenwood, Harlan, Keosauqua, Stockport and Thurman.

WIND

The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 46 miles per hour, from the northwest, at Sioux City, on the 11th.

MISCELLANEOUS PHENOMENA

Aurora: 17th
Fog: 4th, 7th, 8th, 22d, 23d, 24th, 25th, 27th, 28th.
Hail: 4th.
Halos: (Lunar and Solar): 1st, 17th, 25th, 28th, 29th, 30th, 31st.
Sleet: 4th, 6th, 7th, 21st, 27th, 30th, 31st.
Thunderstorms: 4th.

RIVERS

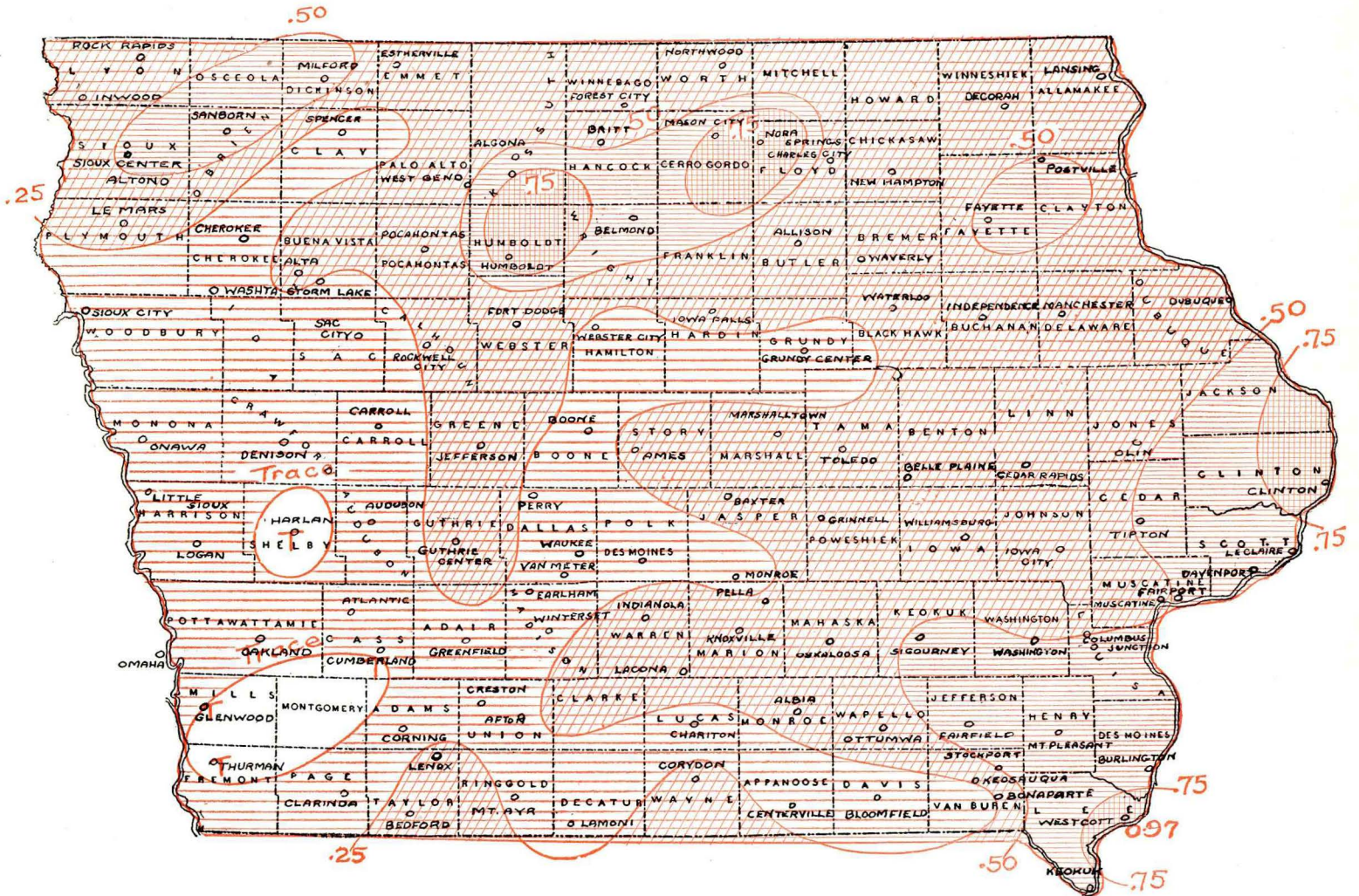
Low stages prevailed on all rivers. There were sharp fluctuations on the Missouri River and slight fluctuations on the Mississippi due to ice gorges. The Mississippi River at Dubuque closed on the 13th and remained frozen the rest of the month. The lowest stage of record, 3.1 feet below the zero of the gage, probably due to the manipulation of the dam, was recorded at Keokuk.

Daily Maximum and Minimum Temperature for the Month of December, 1922

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

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

TOTAL PRECIPITATION, DECEMBER, 1922



SCALE OF SHADES—IN INCHES



CLIMATOLOGICAL DATA.

IOWA SECTION

In cooperation with

IOWA WEATHER AND CROP SERVICE

CHARLES D. REED, Meteorologist

VOL. XXXIII DES MOINES, IOWA, ANNUAL, 1922 No. 13

GENERAL SUMMARY

The year 1922, with a mean temperature of 50.2, was next to the warmest of the 33 years of state-wide record. The average daily excess of temperature above the normal was 2.8°. Each of the months was above normal except July, which was 2.6° below, which made the midsummer season pleasant. Of the 28 consecutive months ending with December, 1922, 26 were above normal; and during this period the average daily temperature was 3.7° above normal—a most remarkable record. Precipitation averaged 29.98 inches, or 1.99 inches below normal. Snowfall, 13.5 inches, is a new low record for a calendar year, though the snowfall of the three winter months of 1921-1922 was only 9.5 inches. Wind movement averaged slightly less than normal, but unusual gales occurred on November 5th and 30th.

Crop production was unusually good. Corn was next to the largest crop of record, small grains were satisfactory, potatoes very good, apples unusually good, and other fruits above the average.

SYNOPSIS BY MONTHS

January temperatures varied extremely, but averaged slightly above normal. On the 6th minimum temperatures ranged from 29 below zero at Charles City to 11 above at Keokuk. As much as 14 inches of snow fell in the storm of the 4th-5th in the northern part of the State, greatly impeding highway traffic, while further south the precipitation fell as rain and froze to all exposed surfaces, where it remained for many days. The injury of this "glaze" to winter wheat and young clover was not as great as at first believed. A good crop of ice was harvested.

Sudden temperature changes continued in February, but there were no prolonged cold periods and the temperature averaged considerably above normal, particularly in the southeast counties. Excessive rainfall, 21st-23d, caused unusual floods for the time of year in the northeast portion of the State. The frozen ground favored rapid run-off. Railways and highways were damaged, many bridges lost, and traffic suspended for 10 days. Families were forced to vacate. The storm terminated in an ice coating or "glaze" that greatly damaged telephone, telegraph and power wires. Many valuable fruit and other trees were broken by the weight of ice. February snowfall was the least of record and the total for the three winter months, 9.5 inches, is also the least of record. The least winter snowfall heretofore was 12.0 inches during the winter of 1906-07.

Mild weather continued in March, the month being less stormy than usual. However, on the 19th a storm damaged wires considerably in the central and west-central portions of the State. Precipitation above normal kept the soil wet and delayed farm work so practically no spring seeding was done, but winter grains and grasses made a good start, while fruit buds were not sufficiently advanced to be endangered. Building became active.

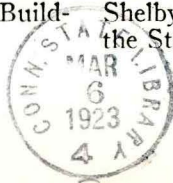
The first nine days of April were warm, but the balance of the month was cool, which beneficially retarded fruit buds. Most of the precipitation occurred in the first 11 days, after which the soil dried rapidly and spring seeding made good progress. The drouth became so pronounced toward the close of the month that in the drier western counties oats failed to germinate and made a poor stand. A tornado occurred in the north portions of Dallas and Polk counties on the 6th and severe hail storms in the west portion of the State on the same date. Destructive local storms occurred in the southwest counties and a heavy snowstorm in the northwest on the 11th. An unusual flood moved down the Mississippi between the 12th and 24th.

May temperatures were unusually uniform and for the second time in 33 years did not reach the freezing point, the lowest temperature, 34, being the highest May minimum of record. A few light, harmless frosts occurred on the 13th. Conditions were very favorable for fruit. Temperatures were generally above normal the first 12 days and below thereafter. Drouth continued throughout the month over much of the State and became acute in the west-central and portions of the northwest and north-central districts. In a few locations in the central and southeastern districts excessive downpours of rain occurred 23rd-26th. There was much rain flood damage in Burlington. Damaging hailstorms were unusually prevalent, particularly on the 5th. Tornadoes occurred on the 6th and 11th.

June was considerably warmer than normal and unusually dry. The warmest day over much of the State was the 23d, when temperatures of 100° or higher were reported from a number of stations in the northwest portion and the highest temperature of the year, 104°, occurred at Inwood. Severe drouth covered most of the State, the average rainfall being the same as June, 1911, which was part of a notably drouthy year. Corn was not injured, but oats suffered greatly in the west-central and northwest counties, where considerable of the crop was too short to harvest and was grazed off. However, thrashing returns over most of the State showed a better yield than the short straw indicated, the average being slightly above the 10-year average and the quality much better than last year. Winter wheat, spring wheat and barley were not injured as much as expected, the yield being satisfactory. Truck crops suffered much. Considerable damage to crops, farm buildings, windmills and trees resulted from straight wind squalls, but no tornadoes were reported. There was more than usual hail damage, particularly on the 12th.

In contrast with June, July was cool and wet, which went far to repair the crop damage. In only a few southern counties did the temperature get as high as 90°. Beginning with a general rainstorm, 5th-7th, frequent, copious rains effectually broke the drouth. Much damaging hail attended the rain. On the 5th the damage probably exceeded \$1,000,000, yet the benefits of the storms far outweighed the damage. Some of the local storms had tornadic characteristics in small areas. Small grains standing in shock were damaged by the wind and rain. Much fruit was blown from the trees, yet an abundance remained for full development.

August averaged the warmest month of the year, the greatest temperature excess occurring about the 15th-24th, followed by an abrupt change to 50° colder at a number of stations. Excessive rainfall in some southwest counties was centered in Shelby county, where 9.46 inches occurred at Harlan, but for the State as a whole precipitation was deficient. Shocked grain



was damaged in the wet area, while corn, pastures and truck crops were injured by drouth in some eastern counties. Much of the State was visited by severe hailstorms and considerable damage was done by wind squalls.

September was warm and considerably drier during the average, the warmest period being the first eight days during which over much of the State the highest temperatures of the year occurred. Many northern and eastern stations had the highest September temperatures of record—at one station the highest in 50 years. Light frosts occurred on the 10th, 11th, 16th, 25th, 26th and 27th, but no damage resulted. Deficient rainfall impeded plowing and preparation for winter wheat seeding, and together with the heat wave is thought to have shortened the corn yield slightly, but this was offset by hastening maturity of the corn. Winter wheat seeding was delayed to avoid Hessian fly, which was unusually numerous till near the close of the month.

October was warm and dry. Of the last 26 consecutive months, 24 have been warmer than normal. The first six and last eight days were unusually warm. Killing frosts occurred on the 9th over a large area in the northwestern portion, and on the 12th over most of the State, except a few Mississippi River counties which did not experience a killing frost until the 18th. Corn dried rapidly and much was cribbed toward the close of the month. Ninety-seven per cent of the corn matured without frost damage. Clear days, 21, is the greatest of record. Much winter wheat seeding was done and moisture was mostly ample for germination and growth.

November was decidedly warm and wet. The minimum for the State, 11 degrees, was the highest ever recorded in November and the range in temperature, 63 degrees, the least. The rain was uniformly above normal at all stations. Downpours of rain, 11th-13th, in eastern Iowa made roads impassable. Strong winds on the 5th blew down much corn, which lay on the muddy ground and started to rot and germinate. The fields were too soft for husking much during the first three weeks. Gales on the 30th blew down more corn.

December opened mild, turned cold on the 5th with considerable zero weather till the 20th, and then became unusually mild. New high temperature records for Christmas were established at several stations. Snow and rain were deficient. A glaze storm, 6th-7th, left a coating of ice on all exposed surfaces for several days over most of the State. Building operations were checked by the cold, but became active after the 20th. At the close of the month very little corn remained to be gathered. The Mississippi River at Keokuk reached the lowest stage ever experienced, 3.1 feet below the zero of the river gage. The continued low stage caused great trouble and expense to manufacturing interests.

SUPPLEMENTAL PRECIPITATION TABLE, YEAR 1922.

Stations	January	February	March	April	May	June	July	August	September	October	November	December	Annual
<i>Northern Division</i>													
Lansing				3.30	3.72	3.25	5.98	1.27	3.61	1.37	3.55		
<i>Central Division</i>													
Boone	0.68	1.42	1.50		6.76	1.20	8.78	4.05	2.06	1.92	2.53	0.25	
Fort Dodge		1.41	1.16	3.50		1.71	9.32	2.17	2.19	1.46	2.01	0.29	
Grinnell		1.29	2.42	2.60	3.00	0.59	5.82	2.18	2.49	2.01	2.95	0.37	
Harlan	0.40		2.55	4.19	1.47	2.55	6.46	9.46	1.74	1.41	2.55	T.	
Le Claire			3.19	4.15	5.25	1.33	6.17	0.33	1.80	0.28	3.31		
Manchester	0.56	2.18	3.19										
Muscataine			1.70	2.70	2.57	0.26	5.61	0.37	1.43	0.41	3.07		
Olin							5.50	0.88	2.45	1.30	4.92	0.35	
Onawa	1.50	1.00	1.30	3.70	2.21		7.09	1.72	1.23	1.35	4.53		
Rockwell City	2.30					1.32	8.98	2.80	1.77	2.05	2.64	0.31	
Sac City	1.05	2.05			1.21	1.34	4.19	3.17	2.13	2.56	3.68	0.10	
Van Meter			2.39	3.27	4.69	1.76	5.61	1.99	1.70	1.64	2.93		
Webster City		1.97	2.20	3.44	2.34	1.01	9.05	1.40	2.48	2.19	2.30	0.20	
<i>Southern Division</i>													
Atlantic	0.59	1.08	1.34	3.34	2.06	3.39		9.80	1.85	1.56	4.29	0.11	
Cumberland				2.59	2.31	4.42	5.76	7.69	1.66	1.01	2.6	T.	
Greenfield	1.16	1.55	1.83	2.63	3.15	1.41	7.20	7.74	1.55	4.56	0.64		
Greenfield	0.76	0.66	0.76	3.69		3.03	5.67	5.86	3.34		2.8		
Ottumwa	0.77	1.84	3.30	2.20	4.21	1.98	7.32	3.10	1.14	2.28	3.05		
Wescott				3.45	4.63	0.34	5.26	2.64	3.49	0.61	3.10	0.97	

COMPARATIVE DATA FOR THE STATE—Annual.

Year	Temperature			Precipitation in Inches				
	Mean annual	Highest	Lowest	Date	Annual	Greatest annual	Least annual	Av. snowfall
1890	48.0	110	July 13	-----	31.30	45.74	16.00	-----
1891	47.3	106	August 9	-----	32.90	49.05	23.48	-----
1892	46.6	104	July 11	-----	36.58	48.77	24.78	34.2
1893	45.7	102	July 13	-----	37.19	48.77	24.78	34.2
1894	49.7	109	July 26	-----	27.59	33.27	19.19	37.2
1895	47.2	104	May 28	-----	31.94	29.81	15.65	19.2
1896	48.6	104	July 3	-----	26.77	35.25	18.57	26.0
1897	47.8	106	July 23	-----	37.23	51.60	28.68	22.6
1898	47.7	103	August 20	-----	26.98	36.18	20.21	38.8
1899	47.3	104	September 6	-----	31.34	55.47	19.51	40.3
1900	49.3	103	August 3	-----	28.68	42.06	21.79	23.4
1901	49.0	113	July 22	-----	35.05	47.33	25.05	25.8
1902	47.7	98	July 30	-----	24.41	37.69	16.35	38.5
1903	47.2	101	August 24	-----	43.82	58.80	20.14	28.0
1904	46.3	100	July 17	-----	35.39	50.53	26.41	19.4
1905	47.2	104	August 11	-----	28.51	38.93	19.34	29.2
1906	48.4	102	July 21	-----	36.56	52.26	24.66	38.3
1907	47.4	102	July 5	-----	31.60	44.34	20.63	32.8
1908	49.5	101	August 3	-----	31.61	43.90	19.93	24.0
1909	47.4	103	August 15	-----	35.26	49.98	24.11	22.7
1910	48.6	108	July 16	-----	40.01	53.48	27.20	49.0
1911	49.5	111	July 3	-----	19.87	27.99	12.11	23.4
1912	46.4	104	September 8	-----	31.37	46.77	19.74	35.3
1913	49.7	108	July 16	-----	28.89	33.13	15.25	39.5
1914	49.1	109	July 12	-----	29.95	45.18	20.31	25.4
1915	47.8	99	May 14	-----	31.93	44.11	23.30	27.5
1916	47.2	106	August 4	-----	39.53	51.15	27.29	31.3
1917	44.8	106	July 30	-----	28.90	46.34	22.48	29.5
1918	49.2	113	August 4	-----	27.81	36.00	20.78	32.4
1919	48.6	104	July 30	-----	32.78	47.53	25.03	33.4
1920	48.2	102	July 23	-----	36.76	48.16	26.88	26.6
1921	52.2	104	July 11	-----	31.75	44.00	20.95	21.7
1922	50.2	104	June 23	-----	32.63	46.47	20.44	30.7
				-----	29.98	44.20	19.08	13.5

*And other dates.

CLIMATOLOGICAL DATA FOR THE YEAR, 1922.

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	Month	Least monthly		Month	Precipitation 0.01 in. or more	Clear	Partly cloudy		Cloudy
<i>Northern Division</i>																				
Algona	Kossuth	1,213	49	48.2	99	Sept. 6	-16	Jan. 6	49	25.66	6.70	April	0.47	May	56	238	51	76	se.	
Allison	Butler	1,044	10	48.3	100	Sept. 6	-23	Jan. 6	10	33.63	10.51	July	0.35	Dec.	16.0	82	155	99	111	sw.
Alta	Buena Vista	1,513	31	47.9	96	June 23	-16	Dec. 17	31	26.49	4.06	Nov.	0.25	Dec.	23.1	84	156	134	75	s.
Alton	Sioux	1,365	17	48.1	100	June 23	-20	Dec. 15	17	24.23	4.31	Aug.	0.45	Dec.	23.5	76	175	98	92	nw.
Belmond	Wright	1,265	12	48.4	102	Aug. 17	-21	Jan. 24	12	25.51	5.40	July	0.52	Dec.	21.7	102	101	176	82	sw.
Britt	Hancock	1,236	25	47.7	101	Sept. 6	-21	Dec. 15	25	20.25	4.84	July	0.34	Jan.	10.6	67	122	126	117	s.
Charles City	Floyd	1,015	31	46.9	98	Sept. 6	-17	Jan. 6	31	31.07	7.25	July	0.43	Dec.	36.3	113	122	126	117	se.
Cherokee	Cherokee	875	24	48.1	99	June 23	-17	Dec. 17	24	23.88	4.81	July	0.13	Dec.	9.2	73	164	140	61	s.
Decorah	Winnesiek	1,305	24	47.6	99	Sept. 6	-28	Jan. 6	24	29.30	4.26	Nov.	0.40	Dec.	23.5	88	192	58	115	nw.
Estherville	Emmet	1,298	27	46.3	100	Sept. 6	-19	Dec. 18	27	24.63	4.64	July	0.31	Dec.	31.5	84	169	164	32	sw.
Fayette	Fayette	1,003	32	47.5	101	Sept. 7	-23	Dec. 18	32	26.17	9.55	July	0.51	Dec.	20.0	94	113	120	99	sw.
Forest City	Winnebago	1,226	28	47.4	101	Sept. 6	-20	Dec. 15	28	22.77	3.49	July	0.35	June	17.4	84	146	120	99	sw.
Humboldt	Humboldt	1,065	34	49.4	102	Sept. 6	-23	Jan. 6	34	25.85	5.17	July	0.86	May	20.0	67	113	120	99	sw.
Inwood	Lyon	1,474	18	48.1	104	June 23	-24	Dec. 17	18	21.83	4.63	July	0.31	Dec.	32.6	85	146	120	99	s.
Le Mars	Plymouth	1,224	26	48.5	99	June 23	-18	Dec. 17	26	26.2	4.30	Nov.	0.28	Dec.	21.2	64	227	58	80	sw.
Mason City	Cerro Gordo	1,148	25	46.9	103	Sept. 6	-29	Jan. 24	25	27.91	4.97	July	0.30	June	23.1	88	215	66	84	se.
Milford (near)	Dickinson	1,430	2	46.1	99	June 23	-20	Dec. 18	2	19.48	3.64	Nov.	0.31	Sept.	23.3	76	113	122	66	nw.
New Hampton	Chickasaw	1,119	25	47.4	100	Sept. 6	-22	Jan. 6	25	32.48	5.63	July	0.40	Dec.	21.5	83	170	107	89	sw.
Nora Springs	Floyd	1,064	10	49.1	102	Sept. 6	-28	Jan. 6	10	36.01	7.21	July	0.74	June	16.7	109	171	115	89	sw.
Northwood	Worth	1,222	26	46.4	98	Sept. 6	-21	Dec. 18	26	27.63	4.60	April	0.48	Dec.	30.0	84	148	119	98	sw.
Pocahontas	Pocahontas	1,248	18	48.7	98	Aug. 17	-17	Jan. 24	18	29.55	6.10	July	0.45	Dec.	24.4	98	192	74	99	se.
Postville	Clayton	1,180	31	46.4	92	Sept. 6	-21	Dec. 18	31	28.64	4.79	July	0.32	Jan.	13.9	91	157	122	86	sw.
Rock Rapids	Lyon	1,358	23	46.9	100	June 23	-25	Dec. 18	23	23.57	5.04	July	0.33	Dec.	33.2	88	232	69	64	nw.
Sanborn	O'Brien	1,553	8	47.2	100	June 23	-21	Dec. 16	8	26.73	4.22	Nov.	0.50	Jan.*	26.6	75	206	81	88	sw.
Sioux Center	Sioux	1,426	23	47.2	99	Aug. 17	-21	Dec. 17	23	26.61	5.18	July	0.52	Dec.	38.9	74	148	119	98	s.
Spencer	Clay	1,319	8	47.7	102	June 23	-22	Dec. 17	8	26.89	5.55	Aug.	0.15	Dec.	26.4	80	168	109	88	sw.
Storm Lake	Buena Vista	1,440	33	48.8	99	Aug. 17	-15	Dec. 17	33	26.01	5.08	July	0.19	Dec.	13.6	83	170	107	89	s.
Washita	Cherokee	1,157	24	48.6	100	June 23	-24	Jan. 6	24	29.54	5.17	July	0.15	Dec.	12.5	70	201	77	87	s.
Waverly	Bremer	948	26	48.6	99	Sept. 6	-20	Jan. 24	26	26.6	7.98	July	0.31	Dec.	12.5	70	201	77	87	s.
West Bend	Palo Alto	1,197	29	48.6	99	Sept. 24	-20	Dec. 17	29	23.68	5.59	July	0.31	Dec.	16.0	82	168	109	88	nw.
<i>Central Division</i>																				
Ames	Story	926	42	49.7	96	Sept. 6	-18	Dec. 18	42	33.5	8.50	July	0.30	Dec.	8.1	85	120	101	60	sw.
Audubon	Audubon	1,301	28	49.6	97	Aug. 24	-12	Dec. 15	28	29.72	7.08	Aug.	0.16	Dec.	7.8	71	204	101	60	sw.
Baxter	Jasper	998	22	51.1	97	Aug. 24	-15	Dec. 18	22	34.55	10.04	July	0.50	Dec.	12.0	72	182	119	64	nw.
Belle Plaine	Benton	886	32	50.8	103	Sept. 6	-17	Dec. 18	32	35.19	6.87	July	0.43	Dec.	10.6	113	149	119	97	nw.
Boone	Boone	1,134	17	49.7	97	June 23	-21	Dec. 18	17	22.6	8.78	July	0.25	Dec.	7.0	72	182	119	64	nw.
Carroll	Carroll	1,265	32	50.1	96	Aug. 17	-12	Jan. 6	32	29.79	4.84	Aug.	0.23	Dec.	12.2	82	241	47	77	nw.
Cedar Rapids	Linn	733	40	52.0	101	Sept. 6	-15	Dec. 18	40	26.92	5.70	July	0.35	Dec.	6.8	74	200	41	124	nw.
Clinton	Clinton	503	49	52.3	102	Sept. 8	-12	Dec. 18	55	26.14	4.27	July	0.13	Oct.	3.8	89	2.9	76	80	s.
Davenport	Scott	580	51	52.4	100	Sept. 6	-5	Jan. 24	51	15.86	5.66	July	0.48	Aug.	7.1	96	144	92	129	sw.
Denison	Crawford	1,180	28	50.2	97	June 23	-12	Jan. 6	28	25.23	4.96	July	0.18	Dec.	9.1	79	174	99	92	nw.
Des Moines	Polk	861	43	51.8	97	Aug. 24	-7	Dec. 18	43	38.04	7.13	July	0.25	Dec.	8.5	100	156	100	109	sw.
Dubuque	Dubuque	639	49	49.8	99	Sept. 6	-14	Dec. 18	49	30.07	6.01	July	0.41	Dec.	13.3	111	125	110	130	nw.
Fairport	Muscatine	567	1	51.1	100	Sept. 6	-7	Dec. 18	1	25.59	5.26	July	0.41	Oct.	8.5	195	61	107	80	sw.
Fort Dodge	Webster	1,126	22	51.1	100	Sept. 7	-10	Dec. 15	22	22.2	9.32	July	0.29	Dec.	8.5	195	61	107	80	s.
Grinnell	Poweshiek	1,031	28	51.1	98	Aug. 24	-10	Dec. 15	28	22.2	5.82	July	0.37	Dec.	8.5	195	61	107	80	se.
Grundy Center	Grundy	976	31	50.0	98	Sept. 7	-17	Jan. 24	31	26.89	6.10	July	0.15	Dec.	10.9	75	120	101	60	sw.
Guthrie Center	Guthrie	1,077	27	51.3	97	Aug. 24	-11	Dec. 18	27	28.66	4.85	July	0.61	Jan.	14.0	79	215	81	69	sw.
Harlan	Shelby	1,182	23	50.5	97	Aug. 24	-9	Jan. 19	23	26.6	9.46	Aug.	0.1	Dec.	10.9	75	120	101	60	sw.
Independence	Buena Vista	921	58	49.8	100	Sept. 7	-20	Dec. 18	55	25.26	5.99	July	0.39	Dec.	8.3	81	214	38	113	sw.
Iowa City	Johnson	733	62	51.2	100	Sept. 6	-14	Dec. 18	59	31.27	6.46	July	0.28	June	7.0	95	141	127	97	s.
Iowa Falls	Hardin	1,107	29	48.4	96	Sept. 6	-20	Jan. 6	29	30.81	6.15	July	0.46	Dec.	16.3	96	181	78	106	sw.
Jefferson	Greene	1,052	23	51.3	100	Sept. 6	-17	Dec. 18	23	26.98	4.66	July	0.33	Dec.	14.5	85	166	104	95	nw.
Little Sioux	Harrison	1,040	17	51.4	100	Sept. 7	-12	Jan. 6	17	25.26	6.14	July	0.15	Dec.	11.0	76	120	101	60	sw.
Logan	Harrison	928	55	51.3	99	Sept. 6	-11	Jan. 6	55	30.80	6.82	July	0.10	Dec.	11.0	68	203	100	62	sw.
Marshalltown	Marshall	947	30	51.0	99	Sept. 7	-13	Dec. 18	30	29.73	8.11	July	0.43	Dec.	13.7	106	229	51	85	se.
Monroe	Jasper	922	10	52.7	98	Sept. 7	-9	Dec. 18	10	35.99	9.08	July	0.11	Dec.	6.7	67	210	42	113	sw.
Ohn	Jones	769	23	51.3	98	Sept. 6	-19	Dec. 18	23	26.6	5.50	July	0.35	Dec.	9.5	87	166	104	95	nw.
Perry	Dallas	975	21	50.3	94	Sept. 6	-18	Dec. 18	21	29.33	6.53	July	0.22	Dec.	7.2	87	166	104	95	nw.
Rockwell City	Calhoun	1,134	26	51.3	96	Sept. 6	-12	Jan. 6	26	26.6	8.98	July	0.31	Dec.	7.2	87	166	104	95	nw.
Sac City	Sac	1,344	46	51.3	97	Aug. 17	-18	Jan. 6	46	26.6	8.98	July	0.31	Dec.	7.2	87	166	104	95	nw.
Sioux City	Woodbury	1,135	33	49.8	99	Sept. 6	-12	Dec. 17	33	25.94	5.97	July	0.07	Dec.	26.1	86	132	111	122	s.
Tipton	Cedar	807	23	50.8	100	Sept. 6	-14	Dec. 18	23	26.81	4.93	May	0.43	Oct.						

CLIMATOLOGICAL DATA FOR THE YEAR, 1922—Continued.

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit					Precipitation, in Inches					Number of Days				Prevailing direction of wind		
				Mean	Highest	Date	Lowest	Date	Length of record, years	Total	Greatest monthly	Month	Least monthly	Month	Total snowfall (un-melted)	Precipitation 0.01 in. or more	Clear		Partly cloudy	Cloudy
<i>Southern Division</i>																				
Afton	Union	1,212	23	51.9	101	Aug. 24	-15	Dec. 18	23	41.12	8.06	July	0.28	Dec.	9.0	81	207	77	81	sw.
Albia	Monroe	959	24	52.6	98	Aug. 24	-5	Dec. 18	24	30.78	7.02	July	0.28	Dec.	7.5	106	184	83	98	sw.
Atlantic	Cass	1,164	31	51.3	98	Aug. 24	-8	Jan. 19	31	26.39	9.80	Aug.	0.11	Dec.	5.6	73	232	50	83	se.
Bonaparte	Van Buren	---	31	52.6	97	Sept. 6†	-6	Dec. 18	31	26.39	5.67	July	0.15	Dec.	2.0	93	238	43	84	se.
Burlington	Des Moines	544	26	53.9	100	Sept. 6	-3	Jan. 24†	26	29.77	6.17	May	0.64	Dec.	6.5	93	238	43	84	sw.
Centerville	Appanoose	1,013	17	52.9	96	Aug. 24	-4	Feb. 13†	22	35.86	8.35	July	0.22	Dec.	5.9	95	192	82	91	se.
Chariton	Lucas	1,042	27	52.3	99	Aug. 24	-6	Dec. 18	27	36.23	7.46	July	0.20	Dec.	4.0	66	166	121	78	nw.
Clarinda	Page	1,009	32	53.0	102	Aug. 24	-5	Jan. 19†	32	35.14	6.50	July	0.19	Dec.	11.8	101	191	94	80	s.
Columbus Jct.	Louisa	595	21	53.1	99	Sept. 6	-7	Dec. 18	21	27.39	6.73	July	0.17	Oct.	9.3	85	251	57	57	sw.
Corning	Adams	1,117	30	50.8	99	Aug. 24	-12	Jan. 19	30	39.31	8.93	July	0.15	Dec.	2.5	60	---	---	---	sw.
Corydon	Wayne	1,101	29	53.0	101	Aug. 24	-5	Feb. 13	29	37.24	9.20	July	0.34	Dec.	7.0	100	163	128	74	nw.
Creston	Union	1,312	17	50.9	92	Aug. 24	-7	Jan. 19	17	37.53	8.30	July	0.19	Dec.	14.0	84	---	---	---	sw.
Cumberland	Cass	1,224	23	---	---	---	---	---	23	---	7.69	Aug.	T.	Dec.	---	---	---	---	---	s.
Earlham	Madison	1,126	20	50.0	98	Aug. 24	-13	Jan. 6†	20	30.63	5.43	July	0.15	Dec.	9.0	75	229	47	89	sw.
Fairfield	Jefferson	780	38	---	98	June 23†	-8	Dec. 18	38	---	7.20	July	0.60	Dec.	8.9	---	---	---	---	nw.
Glenwood	Mills	1,100	24	53.0	100	Aug. 24†	-7	Jan. 19†	24	29.06	5.59	July	T.	Dec.	4.3	69	197	93	75	se.
Greenfield	Adair	1,372	31	---	97	Aug. 24	-9	Jan. 19	31	---	5.86	Aug.	---	---	---	---	---	---	---	se.
Indianola	Warren	969	31	51.7	96	Aug. 24	-11	Dec. 18	31	36.26	7.30	July	0.30	Dec.	13.5	98	176	115	74	se.
Keokuk	Lee	614	51	54.2	99	Aug. 24	-2	Dec. 18	51	30.09	6.35	July	0.63	Dec.	9.8	100	143	109	113	s.
Keosauqua	Van Buren	644	30	52.4	99a	Aug. 24	-6	Dec. 18	30	28.23	6.89	July	0.35	Dec.	5.5	86	---	---	---	se.
Knoxville	Marion	920	27	52.1	96	Aug. 24	-11	Dec. 18	27	37.57	8.12	July	0.35	Dec.	4.7	79	179	84	102	sw.
Laona	Warren	---	23	---	---	---	---	---	23	39.27	7.40	May	0.70	Dec.	15.0	100	106	169	90	---
Lamoni	Decatur	1,100	15	51.8	98	Aug. 24	-6	Jan. 19†	15	44.15	10.78	July	0.21	Dec.	7.4	95	211	87	67	s.
Lenox	Taylor	1,250	27	51.8	100	Aug. 24	-6	Feb. 13	27	34.43	7.72	July	0.35	Dec.	8.5	85	209	96	60	s.
Mt. Ayr	Ringgold	1,236	29	52.0	98	Aug. 24	-6	Feb. 13	29	44.20	11.72	July	0.19	Dec.	7.8	94	204	72	39	s.
Mt. Pleasant	Henry	729	41	53.3	99	Sept. 6†	-6	Dec. 18	29	25.69	3.75	Nov.	0.50	Dec.	4.1	88	146	129	90	nw.
Oakland	Pottawattamie	1,105	3	51.7	100	Sept. 1	-8	Feb. 13	3	29.95	8.13	July	0.05	Dec.	7.0	63	233	38	94	s.
Oskaloosa	Mahaska	825	46	51.6	97	Aug. 24	-12	Dec. 18	46	32.78	8.32	July	0.45	Dec.	9.0	98	148	101	116	se.
Ottumwa	Wapello	849	27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pella	Marion	877	20	51.5	97	Aug. 24†	-18	Dec. 14	20	32.75	9.59	July	0.43	Dec.	4.0	71	225	20	120	s.
Sigourney	Keokuk	877	26	51.5	99	Sept. 7	-11	Dec. 18	26	27.77	5.40	July	0.54	Dec.	6.9	88	---	---	---	nw.
Stockport	Van Buren	754	20	51.5	97a	Aug. 24†	-7	Dec. 18	20	29.80	7.03	July	0.69	Dec.	5.5	98	202	77	86	s.
Thurman	Fremont	---	25	52.4	99b	Sept. 6†	-8	Jan. 6	25	31.03	5.57	July	T.	Dec.	13.0	64	87	224	54	sw.
Washington	Washington	709	40	51.9	97	Sept. 6	-9	Dec. 18	33	28.57	6.46	July	0.50	Dec.	6.5	83	153	129	83	sw.
Wescott (near)	Lee	---	---	---	95	Aug. 17	-8	Dec. 18	---	---	5.26	July	0.34	June	---	---	---	---	---	---
Winterset	Madison	1,129	31	52.1	98	Aug. 24	-6	Feb. 13	31	35.04	8.10	July	0.21	Dec.	10.0	73	258	53	54	sw.
Omaha, Neb.	---	1,040	51	53.0	102	Aug. 24	-5	Dec. 17	51	22.46	5.60	July	0.07	Dec.	10.6	92	172	111	82	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 1922.

MONTH	Barometric Pressure, Inches (Sea level)					Temperature, Degrees, F.				Relative Humidity, Per Cent				Precipitation, Inches					Number of Days		Sunshine	Wind								
	Mean	Highest	Date	Lowest	Date	Mean	Departure from normal	Highest	Lowest	7 a. m.*	12 noon§	7 p. m.*	Departure from normal†	Lowest	Average	Departure from normal	Greatest	Least	Snowfall	With .01 inch or more precipitation	Clear	Partly cloudy	Cloudy	Per cent of the possible amount	Departure from normal	Average hourly velocity	Departure from normal	Prevailing direction		
January	30.20	30.95	23	29.44	4	19.8	+ 1.9	57	-29	80	63	69	-8	25	0.89	-0.16	2.30	0.32	5.3	4	17	6	8	63	-13	8.5	-0.2	se.		
February	30.14	30.97	29	29.24	1	23.7	+ 3.2	70	-20	79	61	66	-8	25	1.59	+0.44	4.56	0.40	1.3	4	14	7	7	65	+ 9	9.8	+0.5	nw.		
March	30.05	30.81	1	29.26	6	38.3	+ 5.0	74	-5	81	64	68	0	26	1.97	+0.20	3.73	0.76	3.4	7	12	6	13	49	- 9	10.0	+0.1	se.		
April	30.00	30.58	28	28.92	8	49.9	+ 1.2	87	17	79	59	59	+3	10	3.06	+0.20	6.70	1.04	1.0	9	11	9	10	53	- 7	9.1	-0.8	se.		
May	29.92	30.38	28	29.41	18	63.4	+ 2.9	91	34	77	55	58	0	16	3.53	-1.04	8.36	0.47	0	12	13	10	8	59	- 3	8.0	-0.7	se.		
June	29.96	30.37	25	29.53	10	72.2	+ 3.1	104	38	74	51	51	-2	21	1.82	-2.56	7.19	0.28	0	6	19	8	3	75	+ 6	6.8	-0.8	sw.		
July	30.00	30.35	13	29.46	9	71.5	- 2.6	98	40	79	56	57	0	16	6.31	+2.35	11.72	3.13	0	11	14	12	5	64	-10	6.2	-0.5	s.		
August	29.97	30.21	14	29.59	24	73.8	+ 2.0	102	42	80	55	60	-2	3	3.66	-0.62	9.80	0.33	0	8	19	8	4	71	+ 1	5.8	-0.5	s.		
September	30.07	30.54	16	29.62	1†	67.1	+ 3.7	103	31	81	51	60	-4	19	2.03	-1.33	4.34	0.31	0	6	20	6	4	71	+ 9	6.2	-1.0	s.		
October	30.00	30.43	12	29.45	25	56.1	+ 5.3	96	14	77	45	53	-6	2	1.81	-0.65	3.93	0.06	T.	5	21	4	6	72	+12	6.8	-1.3	sw.		
November	30.08	30.49	24	29.30	5	42.2	+ 7.2	74	11	82	68	72	+1	32	3.54	+2.63	5.28	1.96	0.3	9	11	6	13	45	- 7	9.6	+1.4	nw.		
December	30.12	30.76	18	29.43	29	24.0	+ 0.1	65	-25	79	63	68	-7	18	0.37	-0.85	0.97	T.	2.2	3	16	7	8	50	+ 2	8.3	+0.2	nw.		
Means and extremes	30.04	---	---	---	---	50.2	+ 2.8	---	---	79	58	62	-3	---	29.98	-1.99	---	---	T.	13	5	84	187	89	89	62	+ 1	7.9	-0.3	s.
Normals and records	30.02	---	Jan. 25	---	Feb. 28	47.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	nw.
	---	---	31.09	1905	28.69	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

*Normal Central Time.
 §Local Mean Time.
 †7 a. m. and 7 p. m. observations only.

MEAN MONTHLY AND ANNUAL TEMPERATURES, WITH DEPARTURES FROM THE NORMAL, FOR 1922.

STATIONS	January		February		March		April		May		June		July		August		September		October		November		December		Annual		
	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	
Northern Division																											
Algona	16.2	+ 1.9	18.9	+ 1.3	36.1	+ 5.5	48.0	+ 1.0	63.6	+ 4.3	70.9	+ 2.8	69.9	- 3.4	72.8	+ 2.0	65.6	+ 3.4	54.8	+ 6.0	41.2	+ 8.5	20.6	- 0.7	48.2	+ 2.7	
Allison	15.2		21.0		36.2		47.6		62.5		71.4	+ 3.8	69.8	- 3.0	72.6	+ 2.0	66.0	+ 4.1	54.8	+ 6.0	39.4	+ 7.0	19.8	- 1.1	47.9	+ 2.8	
Alta	16.1	+ 2.0	18.0	+ 1.9	36.6	+ 6.5	48.7	+ 2.4	61.6	+ 2.6	71.6	+ 3.9	71.6	- 1.4	74.0	+ 2.6	66.8	+ 4.4	54.0	+ 5.0	39.4	+ 6.8	20.0	- 1.3	45.1	+ 2.4	
Alton	17.2	+ 2.0	16.4	- 1.3	36.4	+ 5.1	49.1	+ 2.3	61.2	+ 1.7	72.8		70.3		73.9		66.8		55.3		40.6		20.2		48.4		
Belmond	15.2		19.7		36.4		47.2		62.5		71.7	+ 4.3	69.1	- 3.6	73.9 ^b	+ 3.4	67.2	+ 5.7	54.2 ^a	+ 5.6	38.2 ^a	+ 6.3	19.8	- 0.9	47.7	+ 2.8	
Britt	15.2	+ 1.5	18.0	+ 1.3	35.6	+ 5.5	46.8	+ 0.2	62.3 ^a	+ 4.4	70.0	+ 1.2	68.7	- 4.8	71.6	+ 0.9	64.6	+ 2.9	53.7 ^a	+ 5.6	40.0 ^a	+ 7.0	19.1	+ 0.1	46.9	+ 2.3	
Charles City	15.2	+ 1.8	18.0	+ 2.9	35.5	+ 7.1	46.0	- 0.3	62.3	+ 2.8	71.4		70.6		73.1		66.4		54.6		39.8		20.0		48.1		
Cherokee	17.4		18.0		36.8		48.8		60.8		70.1	+ 1.6	68.7	- 4.7	71.3	+ 0.1	63.8	+ 1.6	52.2	+ 3.1	43.0	+ 9.3	21.6	- 0.6	47.6	+ 1.9	
Decorah	15.0	+ 1.1	18.4	+ 0.8	35.8	+ 5.6	47.9	+ 1.0	62.8	+ 2.8	69.7	+ 3.4	68.8	- 1.9	72.4	+ 3.3	65.4	+ 5.3	52.2	+ 4.7	39.0	+ 7.5	16.7	- 3.2	46.3	+ 2.6	
Estherville	14.2	+ 1.5	17.2	+ 2.2	33.7	+ 5.1	46.0	+ 0.9	61.4	+ 2.8	69.3	+ 2.5	69.2	- 2.9	71.2	+ 1.6	66.0 ^a	+ 4.7	53.2	+ 4.5	39.8	+ 7.1	20.6	- 0.3	47.5	+ 2.7	
Fayette	16.3 ^a	+ 2.8	20.6	+ 3.2	35.0	+ 4.4	46.9	+ 0.5	62.3	+ 4.3	71.0	+ 3.5	69.4	- 3.2	73.1	+ 3.0	65.4	+ 4.1	54.6	+ 3.8	39.8	+ 8.1	19.8	+ 0.2	47.4	+ 3.0	
Forest City	15.0	+ 2.2	17.3	+ 2.2	34.7	+ 5.8	46.3	+ 0.4	62.0	+ 3.5	73.5	+ 5.4	70.8	- 2.4	74.5 ^b	+ 3.7	67.2	+ 4.9	56.2	+ 5.4	41.2	+ 6.9	21.4	- 1.2	49.4	+ 2.9	
Humboldt	16.7 ^b	+ 0.7	20.9	+ 1.7	37.5	+ 5.2	48.8	+ 0.6	63.6 ^a	+ 4.2	71.8	+ 3.7	71.5	- 1.2	73.7	+ 2.9	66.5	+ 4.1	55.4	+ 4.1	39.7	+ 6.6	20.4	- 2.1	48.5	+ 2.4	
Le Mars	14.4	+ 1.2	17.9	+ 0.4	37.1	+ 5.0	48.7	+ 1.3	61.4	+ 1.5	70.4	+ 3.0	68.8	- 4.1	72.1	+ 2.1	64.5	+ 3.1	53.2	+ 4.4	40.3	+ 7.4	18.6	- 2.9	46.9	+ 1.7	
Mason City	14.2	- 0.3	18.2	+ 0.9	34.8	+ 4.7	46.3	- 0.1	61.6	+ 2.8	69.9		68.4		71.6 ^a	+ 2.8	65.2		52.6		39.0		17.0		46.1		
Milford (near)	14.0		14.9		33.6		46.1		60.2		70.4	+ 3.2	69.4	- 2.8	72.1	+ 2.8	65.2	+ 4.3	54.1	+ 6.0	39.9	+ 6.9	18.8	- 2.1	47.4	+ 2.7	
New Hampton	15.2	+ 1.9	19.3	+ 2.7	35.2	+ 5.6	47.1	+ 0.7	62.6	+ 4.1	71.4		70.8		73.7		66.8	+ 3.2	56.0		42.4		22.3		49.1		
Nora Springs	16.6		20.8		37.2		48.2		63.0		71.4		69.9	- 3.1	69.4	- 2.5	72.7	+ 4.2	54.4 ^a	+ 6.7	38.2 ^b	+ 6.2	18.0	- 2.0	6.4	+ 2.1	
Northwood	13.5	+ 0.9	16.6 ^a	+ 0.3	33.9	+ 4.5	45.2 ^a	- 0.9	61.6	+ 3.2	71.6	+ 4.5	70.4	- 2.1	73.2	+ 2.4	67.0	+ 4.6	55.7	+ 6.3	41.0	+ 8.2	20.8	- 1.1	48.7	+ 3.1	
Pocahontas	16.8	+ 1.3	19.8	+ 2.2	37.0	+ 6.0	48.6	+ 1.6	62.4	+ 3.1	71.7	+ 4.7	70.4	- 2.1	73.2	+ 2.4	67.0	+ 4.9	52.5	+ 6.3	40.2	+ 6.9	20.3	- 1.1	46.4	+ 1.4	
Postville	15.4	+ 1.0	19.2	+ 1.5	34.2 ^a	+ 3.6	46.3	- 0.3	61.6	+ 2.9	71.0	+ 3.0	69.9	- 3.9	72.4	+ 1.0	65.1	+ 3.3	53.2	+ 6.3	39.0	+ 7.5	18.3	- 1.3	46.9	+ 2.3	
Rock Rapids	14.4	+ 1.8	14.8	- 0.8	35.2	+ 5.4	48.2	+ 3.1	61.4	+ 2.9	70.8		70.7		73.8		67.3		55.0		37.6		16.4		47.2		
Sanborn	14.4		16.0		35.7		47.6		60.9		71.7		70.6		74.2		67.4		54.3		39.4		18.4		47.7		
Spencer	14.4		16.8		36.0		47.8		61.6		71.8	+ 4.2	70.3	- 2.6	74.2 ^a	+ 3.1	67.2	+ 5.0	56.4	+ 6.2	40.8	+ 7.2	21.8	- 0.6	48.8	+ 3.0	
Storm Lake	18.1	+ 2.8	19.6	+ 2.5	35.4	+ 4.6	47.9	+ 1.1	61.9	+ 2.6	71.4	+ 4.0	69.8	- 2.9	75.4	+ 4.2	67.4	+ 4.1	53.4	+ 3.8	40.2	+ 6.8	20.6	- 1.9	48.6	+ 2.5	
Washta	18.5	+ 2.1	19.4	+ 0.7	37.6	+ 5.9	49.2	+ 2.1	60.6	+ 1.6	71.4		69.8	- 2.9	75.4	+ 4.2	67.4	+ 4.1	53.4	+ 3.8	40.2	+ 6.8	20.6	- 1.9	48.6	+ 2.5	
West Bend	16.0	+ 1.3	21.0 ^a	+ 3.5	36.9	+ 6.1	48.2	+ 1.0	63.5	+ 4.3	72.0		72.0	- 1.0	73.3	+ 3.1	68.1	+ 6.5	55.5	+ 7.4	41.0	+ 8.5	20.3	- 1.5	48.6	+ 2.5	
Central Division																											
Ames	18.9	+ 0.8	24.2 ^a	+ 3.5	38.4	+ 4.4	49.6	+ 0.0	63.0	+ 1.8	72.8 ^a	+ 3.6	69.5 ^a	- 4.5	73.6 ^a	+ 1.3	66.0	+ 2.6	55.4	+ 4.1	42.6	+ 7.2	22.4	- 2.0	49.7	+ 1.9	
Audubon	19.5	+ 1.6	22.7	+ 2.0	37.2	+ 3.6	48.8	+ 0.1	62.2	+ 2.0	72.4	+ 4.2	71.0	- 2.3	73.9	+ 2.6	66.5	+ 4.0	56.6	+ 6.3	41.0	+ 6.1	22.8	- 1.1	49.6	+ 2.5	
Baxter	17.4	+ 3.4	26.0	+ 4.9	39.6	+ 5.7	51.2	+ 1.9	64.1	+ 3.5	72.9	+ 3.9	72.0 ^a	- 1.6	74.2	+ 2.2	67.2	+ 3.7	56.7	+ 5.2	42.8	+ 7.0	24.7	- 0.4	51.1	+ 3.4	
Belle Plaine	14.4	+ 2.9	26.0	+ 5.6	39.2	+ 5.9	50.6	+ 1.7	64.5	+ 4.1	71.2	+ 2.2	71.6	- 1.8	73.6	+ 2.3	67.8	+ 4.6	56.2	+ 5.2	43.2	+ 7.8	24.2	+ 0.3	50.8	+ 3.5	
Boone	19.7 ^b	+ 2.9	26.0	+ 7.0	39.2	+ 6.4	49.9	+ 2.0	62.6	+ 2.9	70.8	+ 1.8	70.2	- 1.2	72.0	+ 0.4	65.5	+ 3.0	54.8	+ 4.2	43.0	+ 8.4	23.3	+ 0.2	49.7	+ 2.9	
Carroll	19.8	+ 2.8	23.3	+ 4.3	38.8	+ 6.8	49.9	+ 2.1	62.6	+ 3.4	71.9	+ 4.1	71.2	- 1.6	74.0	+ 3.4	67.4	+ 5.4	56.8	+ 7.3	41.9	+ 8.5	23.6	+ 0.4	50.1	+ 4.0	
Cedar Rapids	19.8	+ 4.6	26.0	+ 7.0	39.2	+ 6.4	49.9	+ 2.1	62.6	+ 3.4	71.9	+ 4.1	71.2	- 1.6	74.0	+ 3.4	67.4	+ 5.4	56.8	+ 7.3	41.9	+ 8.5	23.6	+ 0.4	50.1	+ 4.0	
Clinton	23.2	+ 2.6	28.3	+ 6.2	39.8	+ 6.3	51.0	+ 1.3	66.7	+ 5.2	73.0	+ 2.6	73.4	- 1.7	74.3	+ 2.4	68.8	+ 5.3	57.8	+ 6.8	44.2	+ 8.2	27.0	+ 1.3	52.3	+ 3.7	
Davenport	19.0	+ 1.2	28.0	+ 3.1	39.8	+ 3.7	50.9	+ 1.0	66.0	+ 4.7	73.0	+ 2.9	74.2	- 1.1	75.3	+ 2.2	68.9	+ 3.3	58.6	+ 4.9	43.9	+ 4.9	27.0	- 0.1	52.4	+ 2.5	
Denison	19.8	+ 2.0	23.2	+ 3.1	38.3	+ 4.5	50.9	+ 2.0	62.7	+ 4.8	73.0	+ 4.9	71.6	- 1.9	74.8	+ 3.1	67.0	+ 3.5	56.6	+ 5.8	42.0	+ 7.3	23.3	- 1.2	50.2	+ 3.0	
Des Moines	18.1	+ 2.5	26.4	+ 4.7	40.6	+ 4.7	50.8	+ 0.7	64.3	+ 3.8	74.0	+ 3.4	73.0	- 2.4	74.8	+ 1.7	68.0	+ 2.4	57.4	+ 4.0	44.0	+ 5.6	25.6	- 0.4	51.8	+ 2.3	
Dubuque	19.7	+ 0.6	23.4	+ 1.6	37.4	+ 3.4	48.8	+ 0.2	64.3	+ 4.5	71.2	+ 1.8	71.0	- 3.1	72.5	+ 0.8	65.9	+ 1.9	55.4	+ 3.5	42.0	+ 5.7	23.8	- 0.9	49.8	+ 1.7	
Fort Dodge			21.4 ^a	+ 3.5	37.4	+ 6.3	48.4	+ 1.2	64.4	+ 3.0	73.4	+ 3.4	73.0	- 1.5	75.0	+ 2.3	68.4	+ 3.8	58.0	+ 5.6	43.4	+ 6.9	26.2	+ 0.7	49.8	+ 1.7	
Grinnell	20.7	+ 3.8	24.0 ^c	+ 4.0	38.2	+ 5.6	49.6	+ 0.8	64.4	+ 3.9	71.8	+ 3.0	70.7	- 3.6	72.6	+ 0.8	67.0	+ 3.4	55.4	+ 4.6	42.8 ^a	+ 7.0	23.6	- 0.1	50.0	+ 2.8	
Guthrie Center	17.6	+ 2.0	25.6	+ 4.0	39.3	+ 5.9	51.4	+ 1.8	63.3	+ 3.9	72.3	+ 2.5	71.6	- 3.2	74.8	+ 2.3	68.4	+ 4.7	57.8	+ 6.5	43.6	+ 7.9	25.8	+ 0.6	51.3	+ 3.0	
Harlan	18.8	+ 3.1	23.9	+ 3.3	39.3	+ 5.3	50.8	+ 1.9	62.7	+ 2.7	73.0	+ 4.7	71.6	- 1.9	74.0	+ 2.5	66.0	+ 2.8	55.6	+ 5.2	42.7 ^a	+ 8.3	24.7 ^b	+ 0.9	50.5	+ 3.2	
Independence	18.8	+ 3.2	24.0	+ 4.7	36.6	+ 4.2	49.6	+ 1.8	62.7	+ 4.1	70.8	+ 1.1	70.0	- 2.7	72.8	+ 2.0	66.6	+ 4.0	57.0	+ 7.1	43.6	+ 9.1	24.2				

MONTHLY AND ANNUAL PRECIPITATION, WITH DEPARTURES FROM THE NORMAL, FOR 1922.

STATIONS	January		February		March		April		May		June		July		August		September		October		November		December		Annual		
	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	
<i>Northern Division</i>																											
Algona	0.71	+ 0.09	1.84	+ 0.75	1.51	+ 0.02	6.70	+ 4.19	0.47	- 3.66	2.32	- 2.12	4.14	+ 1.12	1.30	- 2.37	1.00	- 2.24	1.86	- 0.38	2.70	+ 1.40	0.51	- 0.46	25.06	- 3.81	
Allison	1.10	-----	2.67	-----	1.07	-----	2.98	-----	2.98	-----	2.98	-----	10.51	-----	1.71	-----	3.09	-----	2.10	-----	2.25	-----	0.35	- 0.46	33.63	-----	
Alta	0.72	+ 0.06	1.39	+ 0.47	2.40	+ 0.88	3.31	+ 6.27	1.06	- 3.96	2.79	- 2.12	3.35	- 0.60	2.93	- 0.95	1.36	- 1.72	1.87	- 1.08	4.06	+ 2.68	0.25	- 0.70	26.09	- 6.78	
Alton	0.69	-----	1.12	-----	1.15	-----	2.6	-----	2.6	-----	2.6	-----	4.13	-----	4.31	-----	0.73	-----	1.76	-----	3.26	-----	0.45	- 0.70	24.23	-----	
Belmond	1.08	-----	2.75	-----	1.27	-----	2.54	-----	2.76	-----	0.61	-----	5.40	-----	1.74	-----	1.98	-----	2.29	-----	2.37	-----	0.52	- 0.46	25.31	-----	
Britt	0.34	- 0.30	1.67	+ 0.86	1.15	- 0.21	2.55	- 0.13	1.36	- 3.3	0.72	- 3.27	4.84	+ 0.85	2.08	- 1.72	1.50	- 1.90	1.43	- 0.9	2.12	+ 0.73	0.49	- 0.34	20.25	- 9.52	
Charles City	1.44	+ 0.47	2.93	+ 1.96	1.31	- 0.61	3.05	+ 0.22	3.93	+ 1.01	1.00	- 4.10	7.25	+ 3.67	1.99	- 1.43	2.22	- 0.58	2.38	+ 0.35	3.14	+ 1.75	0.43	- 0.85	31.04	- 0.16	
Clerokee	0.35	-----	0.69	-----	1.08	-----	2.64	-----	1.40	-----	1.40	-----	4.81	-----	3.03	-----	0.83	-----	2.63	-----	4.18	-----	0.13	- 0.34	23.88	-----	
Decorah	1.15	- 0.07	3.92	+ 2.89	1.39	- 0.41	3.19	+ 0.75	3.87	+ 0.74	1.85	- 2.39	3.60	- 0.35	1.39	- 1.97	2.17	- 1.77	3.11	- 0.6	4.26	+ 2.43	0.40	- 0.94	29.30	- 3.23	
Estherville	0.86	+ 0.25	1.10	+ 0.32	0.93	- 0.36	2.52	- 0.33	1.85	- 3.2	2.85	- 1.86	4.64	+ 0.11	1.69	- 2.41	0.53	- 3.16	3.05	+ 0.63	4.30	+ 2.91	0.31	- 0.50	24.63	- 7.61	
Fayette	0.9	- 0.25	4.56	+ 2.80	1.59	- 0.45	2.77	+ 0.32	3.86	+ 1.2	1.2	- 3.47	9.55	+ 5.59	0.88	- 2.54	2.51	- 0.88	3.93	+ 1.47	3.78	+ 2.20	0.51	- 1.02	36.17	+ 1.93	
Forest City	0.96	+ 0.18	2.27	+ 1.43	1.23	- 0.21	2.83	+ 0.48	1.83	- 2.6	0.35	- 3.87	3.49	- 0.15	3.45	+ 0.01	1.50	- 1.95	1.62	- 0.7	2.88	+ 1.45	0.36	- 0.61	22.77	- 6.69	
Humboldt	1.84	+ 1.05	1.88	+ 1.04	1.36	- 0.11	2.93	+ 0.26	0.86	- 3.5	0.92	- 3.48	5.17	+ 1.51	2.02	- 1.34	1.51	- 1.53	2.55	+ 0.3	3.90	+ 2.31	0.89	+ 0.03	5.83	- 3.37	
Inwood	1.08	+ 0.54	0.97	+ 0.22	0.85	- 0.16	1.04	+ 0.55	2.38	- 1.5	1.71	- 3.44	4.63	+ 1.48	3.42	+ 0.54	0.31	- 2.5	1.22	- 1.0	3.91	+ 3.07	0.31	- 0.37	21.83	- 4.69	
Le Mars	0.44	- 0.11	0.54	- 0.23	1.25	+ 0.04	3.5	+ 0.63	2.39	- 2.2	2.37	- 1.99	3.20	- 0.81	3.28	+ 0.49	3.13	- 0.12	1.68	- 0.5	4.30	+ 3.23	0.28	- 0.65	- 6.27	- 2.26	
Mason City	2.05	+ 1.00	1.64	+ 0.83	1.61	+ 0.21	2.67	+ 0.18	3.65	+ 1.0	0.30	- 4.78	4.07	+ 1.35	2.38	- 1.56	3.18	+ 0.73	1.68	- 0.4	2.98	+ 1.30	0.80	- 0.60	27.91	- 2.81	
Milford (near)	0.57	-----	0.88	-----	0.96	-----	2.41	-----	0.96	-----	2.09	-----	3.27	-----	2.33	-----	0.31	-----	1.0	-----	3.64	-----	0.66	- 0.37	19.08	-----	
New Hampton	1.05	+ 0.15	2.89	+ 1.97	1.36	- 0.57	2.82	+ 0.40	5.22	+ 0.55	1.59	- 2.36	5.63	+ 1.88	2.13	- 1.54	2.57	- 0.55	2.61	+ 0.5	3.62	+ 1.99	0.40	- 0.73	32.08	+ 1.73	
Nora Springs	1.14	-----	3.76	-----	1.84	-----	4.62	-----	4.92	-----	0.7	-----	7.21	-----	2.43	-----	3.07	-----	1.65	-----	3.73	-----	0.90	- 0.90	36.01	-----	
Northwood	0.85	- 0.19	2.75	+ 1.45	1.65	- 0.11	4.6	+ 2.13	3.43	+ 1.6	1.71	- 2.91	3.13	- 0.86	2.53	- 1.51	1.91	- 1.35	1.74	- 0.80	2.85	+ 1.09	0.48	- 0.76	27.63	- 5.55	
Pocahontas	1.04	+ 0.39	1.67	+ 0.82	1.71	+ 0.43	4.52	+ 2.17	1.67	- 2.62	3.03	- 1.28	6.10	+ 2.00	2.40	- 1.51	1.25	- 2.28	1.18	- 0.29	3.27	+ 1.61	0.45	- 0.41	- 9.55	- 0.9	
Postville	0.32	- 0.84	3.89	+ 2.75	1.44	- 0.47	2.98	+ 0.60	3.36	+ 1.94	1.75	- 2.63	4.79	+ 0.27	1.81	- 1.72	2.27	- 1.4	1.38	- 1.2	4.09	+ 2.44	0.50	- 0.96	28.64	- 5.72	
Rock Rapids	0.77	+ 0.26	1.04	+ 0.64	1.23	+ 0.17	2.38	+ 0.27	3.49	+ 0.05	1.55	- 2.75	5.94	+ 1.96	1.95	- 0.32	0.72	- 1.70	1.53	- 0.71	3.54	+ 2.48	0.33	- 0.25	- 3.57	- 0.53	
Sanborn	0.50	-----	2.51	-----	1.17	-----	3.5	-----	1.8	-----	1.89	-----	3.59	-----	3.41	-----	0.90	-----	2.65	-----	4.22	-----	0.50	- 0.30	26.73	-----	
Sioux Center	1.00	+ 0.41	1.87	+ 1.17	1.29	+ 0.03	2.9	+ 0.34	2.29	+ 2.20	1.72	- 2.24	5.18	+ 0.79	3.29	+ 0.11	0.79	- 2.27	3.3	+ 0.2	3.40	+ 2.63	0.52	- 0.37	26.61	- 1.39	
Spencer	1.10	-----	0.40	-----	0.76	-----	4.17	-----	1.23	-----	1.32	-----	4.95	-----	5.55	-----	0.96	-----	2.15	-----	4.15	-----	0.15	- 0.50	- 6.89	-----	
Storm Lake	0.40	- 0.28	1.78	+ 0.43	2.69	+ 1.37	3.18	+ 0.34	0.95	- 3.09	3.66	- 1.32	5.08	+ 1.19	2.79	- 0.54	1.17	- 1.89	1.2	- 0.6	4.04	+ 2.91	0.19	- 0.63	26.00	- 2.12	
Washita	0.80	+ 0.28	0.76	- 0.06	1.75	+ 0.82	4.15	+ 1.74	2.00	- 3.15	2.9	- 1.59	5.17	+ 0.97	2.90	- 0.23	2.80	- 0.72	2.16	- 0.1	4.41	+ 3.28	0.15	- 0.65	29.54	+ 0.81	
Waverly	0.84	- 0.16	1.97	+ 0.85	1.75	-----	3.31	+ 0.45	3.45	- 1.7	0.97	- 3.05	7.98	+ 4.04	1.82	- 1.56	3.04	+ 0.15	2.42	- 0.66	3.41	+ 1.82	0.31	- 0.95	-----	-----	
West Bend	0.40	- 0.53	1.18	+ 0.29	1.32	- 0.35	4.05	+ 1.21	0.89	- 3.2	1.98	- 2.19	5.59	+ 2.03	2.12	- 1.77	1.12	- 1.95	1.67	- 0.2	3.14	+ 1.70	0.31	- 0.92	23.68	- 5.94	
<i>Central Division</i>																											
Ames	0.59	- 0.34	0.52	- 0.39	1.62	+ 0.10	2.96	+ 0.10	8.36	+ 3.5	0.87	- 3.67	8.50	+ 4.16	2.43	- 1.38	1.52	- 2.15	3.06	+ 0.3	2.84	+ 1.51	0.30	- 0.92	35.57	+ 0.93	
Audubon	0.80	- 0.04	1.37	+ 0.41	1.01	- 0.61	3.20	+ 0.11	1.96	- 2.45	1.83	- 2.00	5.66	+ 1.93	7.08	+ 3.43	2.59	- 0.81	1.43	- 0.87	2.63	+ 1.27	0.16	- 0.83	29.72	- 0.36	
Baxter	0.70	+ 0.21	0.80	- 0.12	2.12	+ 0.16	3.35	+ 0.89	5.05	- 0.25	0.96	- 3.27	10.44	+ 5.98	1.92	- 1.70	2.94	- 0.68	1.94	- 0.8	3.69	+ 2.29	0.50	- 0.50	34.55	+ 1.74	
Belle Plaine	1.04	- 0.61	1.37	+ 0.25	3.25	+ 0.92	3.04	+ 0.23	5.22	+ 0.5	2.45	- 1.59	6.87	+ 2.89	1.88	- 1.62	2.61	- 0.53	2.61	+ 0.65	4.41	+ 2.68	0.43	- 1.00	- 5.19	- 1.30	
Carroll	0.66	- 0.15	1.53	+ 0.46	1.31	- 0.55	4.81	+ 1.92	1.72	- 2.95	3.49	- 0.93	4.65	+ 1.04	4.84	+ 0.93	2.71	- 0.37	1.12	- 1.4	2.36	+ 1.11	0.23	- 0.79	29.79	- 1.72	
Cedar Rapids	0.49	- 0.8	1.43	+ 0.01	1.73	- 0.23	3.30	+ 0.40	5.08	+ 0.59	0.49	- 3.24	5.70	+ 2.01	1.08	- 2.43	1.99	- 1.04	0.96	- 1.47	4.32	+ 2.91	0.35	- 1.05	26.92	- 4.37	
Clinton	1.02	- 0.81	1.29	- 0.78	3.36	+ 0.49	3.00	+ 0.16	4.23	- 0.39	0.93	- 3.37	4.27	+ 0.21	1.61	- 2.10	2.40	- 0.9	0.13	- 2.24	3.09	+ 1.15	0.81	- 1.04	- 6.14	- 9.19	
Davenport	0.98	- 0.59	1.34	+ 0.22	3.40	+ 1.19	2.86	+ 0.62	3.87	- 0.32	1.22	- 2.89	5.66	+ 2.11	0.48	- 3.16	1.91	- 1.23	0.42	- 1.57	3.12	+ 1.36	0.60	- 1.09	25.86	- 6.83	
Denison	0.40	- 0.21	1.12	+ 0.20	1.12	- 0.48	4.40	+ 1.45	1.03	- 3.17	1.48	- 2.51	4.96	+ 1.30	4.06	- 0.65	1.86	- 1.67	0.81	- 1.3	3.84	+ 2.06	0.18	- 0.75	25.26	- 3.94	
Des Moines	0.85	- 0.36	0.64	- 0.44	2.25	+ 0.66	2.84	+ 0.14	6.87	+ 2.3	1.63	- 3.33	7.13	+ 3.27	6.63	+ 3.02	3.00	- 0.07	0.41	- 1.7	2.54	+ 1.06	0.25	- 1.06	38.04	+ 5.5	
Dubuque	1.16	- 0.33	1.44	+ 0.06	1.65	- 0.56	2.89	+ 0.03	4.79	+ 0.47	1.20	- 3.35	6.01	+ 1.71	1.90	- 1.05	3.40	- 0.19	0.72	- 1.9	4.41	+ 2.60	0.41	- 1.31	30.07	- 3.94	
Fairport	1.04	-----	1.47	-----	2.95	-----	2.61	-----	3.32	-----	0.79	-----	5.26	-----	0.86	-----	1.83	-----	0.41	-----	4.46	-----	0.50	- 0.50	25.50	-----	
Grundy Center	0.50	- 0.42	1.41	+ 0.55	1.20	- 0.61	3.27	+ 0.20	4.03	- 0.88																	

DATES OF KILLING FROSTS, 1922.

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>			<i>Central Division</i>			<i>Southern Division</i>		
Algona	April 20†	Oct. 9†	Ames	April 18†	Oct. 12	Afton	April 19†	Oct. 12†
Allison	April 29	Oct. 12	Audubon	April 20†	Oct. 12	Albia	April 20†	Oct. 12
Alta	April 19†	Oct. 12	Baxter	April 29†	Oct. 10	Atlantic	April 30†	Oct. 9†
Alton	April 20†	Oct. 9	Belle Plaine	April 29†	Oct. 12	Bonaparte	April 20†	Oct. 12†
Belmond	April 29†	Oct. 9†	Boone	April 30†	Oct. 9	Burlington	April 18†	Oct. 17†
Britt	April 29†	Oct. 9†	Boone	April 19†	Oct. 9	Centerville	April 29†	Oct. 12
Charles City	April 22	Oct. 12	Cedar Rapids	April 20	Oct. 17	Chariton	April 30†	Oct. 12†
Cherokee	April 20†	Oct. 9	Clinton	April 20†	Oct. 18	Clarinda	April 20†	Oct. 9†
Decorah	April 28†	Oct. 9†	Davenport	March 31†	Oct. 17	Columbus Jet.	April 20	Oct. 17
Estherville	April 28†	Oct. 10	Denison	April 19†	Oct. 9†	Corning	April 29†	Oct. 9†
Fayette	April 30†	Oct. 9	Des Moines	April 19	Oct. 12	Corydon	April 29†	Oct. 9†
Forest City	April 29†	Oct. 9†	Dubuque	April 20	Oct. 18	Creston	April 19†	Oct. 12
Humboldt	April 29†	Oct. 9	Fairport	April 1†	Oct. 17	Cumberland	-----	Oct. 12
Inwood	April 26†	Oct. 9	Fairport	April 29†	Oct. 9	Earlham	April 29†	Oct. 9†
Le Mars	April 20†	Oct. 9†	Fort Dodge	April 20†	Oct. 9	Fairfield	April 30†	Oct. 12†
Mason City	April 29†	Oct. 9	Grinnell	April 29†	Oct. 12†	Glenwood	April 19†	Oct. 9†
Milford (near)	April 19†	Oct. 12	Grundy Center	April 29†	Oct. 12†	Greenfield	April 19†	Oct. 9
New Hampton	April 22†	Oct. 12	Guthrie Center	April 19†	Oct. 12	Indianola	April 20†	Oct. 12†
Nora Springs	April 28	Oct. 9	Harlan	April 20†	Oct. 9	Keokuk	March 31†	Oct. 17
Northwood	April 28†	Oct. 12	Independence	April 28†	Oct. 15	Keosauqua	April 30	Oct. 12
Pocahontas	April 20†	Oct. 9†	Iowa City	April 29	Oct. 10†	Knoxville	April 29†	Oct. 12†
Postville	April 29†	Oct. 9	Iowa Falls	April 29†	Oct. 9	Lamoni	April 29†	Oct. 14†
Rock Rapids	April 28†	Oct. 9	Jefferson	April 29†	Oct. 9	Lenox	April 21	Oct. 12†
Sanborn	April 28†	Oct. 12	Little Sioux	April 19†	Oct. 9	Mt. Ayr	April 19†	Oct. 12
Sioux Center	April 20†	Oct. 9†	Logan	April 19†	Oct. 9†	Mt. Pleasant	April 29†	Oct. 12†
Spencer	April 29†	Oct. 9	Marshalltown	April 20†	Oct. 12	Oakland	April 21†	Oct. 9†
Storm Lake	April 20†	Oct. 12	Monroe	April 18†	Oct. 12	Oskaloosa	April 20†	Oct. 12
Washata	April 30†	Oct. 9	Olin	April 29†	Oct. 9	Pella	April 29	Oct. 12
Waverly	April 30†	Oct. 9	Onawa	-----	Oct. 9†	Sigourney	April 30	Oct. 9
West Bend	April 26†	Oct. 9	Perry	April 20†	Oct. 9†	Stockport	April 30†	Oct. 10†
			Rockwell City	-----	Oct. 9	Thurman	April 19†	Oct. 9
			Sac City	April 22†	Oct. 9†	Washington	April 29†	Oct. 17†
			Sioux City	April 12	Oct. 9	Washington (near)	-----	Oct. 17
			Tipton	April 29†	Oct. 15†	Winterset	April 29	Oct. 9
			Toledo	April 29†	Oct. 12	Omaha, Neb.	April 19	Oct. 12
			Waterloo	April 29†	Oct. 9†			
			Waukeo	April 20	Oct. 9			
			Webster City	April 29†	Oct. 9†			
			Williamsburg	April 29†	Oct. 10†			

†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 1922

