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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, JANUARY, 1929 No. 1

GENERAL SUMMARY

The main characteristics of January, 1929, were abnormally low temperatures, numerous and sudden temperature changes, and record breaking snowfall for the month. Severe winter weather prevailed almost the entire month, and the mean temperature was the lowest since 1918. Except for an occasional day, the temperature was continuously below normal, the warmest weather generally occurring on the 10th and 11th, when temperatures were 6 to 12 above normal. The brief periods of mild temperatures were followed by abrupt changes to colder, and six distinct cold waves occurred over almost the entire state. One of the most singular features in connection with the temperature was a warm wave that passed over the State during the night of the 10th-11th, the peak of the wave passing the central portion about midnight, with a maximum of from 36° to 39°, and within a period of six hours dropped to below zero, making a range of 40° at two stations. While this month was considerably warmer than a number of other cold Januarys, the cold was persistent and aggravated by numerous blizzards, with the worst drifting of snow in recent years.

The first, and by far the worst, blizzard, began on the 4th and continued until late on the 5th. A great many highways that were closed during this storm remained closed throughout the month. The main highways were kept open with the greatest effort, and owing to the lack of thawing the work of opening roads was required to be done over and over. One town in the northeastern portion of the State was completely isolated for a period of more than two weeks. Rail traffic was seriously interrupted and at times it was necessary to detour trains around impassable drifts to maintain service. One branch line in the northeastern portion was not able to operate for a period of ten days. It was reported that snowfall as light as one inch was sufficient to fill cuts from three to five feet by drifting. Snow fences were buried. The delivery of mail was impossible on a large number of rural routes, and on other routes the number of deliveries was greatly curtailed. Street car service in the larger cities was badly hampered and was temporarily suspended in many cases; a large number of automobiles were stranded, on the 5th, and it was not possible to move some for several days. All roads leading out of Des Moines were blocked with abandoned autos. Some that attempted to detour around drifts stuck in the snow where they remained at the end of the month. It was impossible to remove the snow from the city streets, and the snow generally packed to the consistency of ice, which made travel very difficult and dangerous. Most travel was confined to single tracks, and the concentrated travel with heavy trucks equipped with chains did enormous damage to paving. The heavy snowfall damaged roofs and caused the suspension of all outside work except such as was absolutely necessary. The snow and unrelenting cold made it necessary to put all livestock on heavy feed practically the entire month. The consumption of feed was unusually large. The icy condition of the packed snow injured farm animals.

The monthly snowfall at a number of stations was the greatest ever reported in January, and at Dubuque the total was the greatest for any month. The ice harvest was completed during the month, but the snow cover added considerably to the cost of harvesting. The ground was generally frozen to unusual depths. The complete cover of snow made it impossible for birds to obtain feed, and large numbers perished in various portions of the state.

F. L. D.

COMPARATIVE DATA FOR THE STATE—JANUARY

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departure	Highest		Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1873	12.0	— 6.5	55	—38	2.53	+ 1.46	3.56	0.50	.....	.....	.....	.....	.....
1874	19.6	+ 1.1	64	—24	1.67	+ 0.60	4.72	0.22	.....	.....	.....	.....	.....
1875	4.9	—13.6	48	—30	0.82	— 0.25	1.61	0.38	.....	.....	.....	.....	.....
1876	23.5	+ 5.0	62	—16	1.49	+ 0.42	3.96	0.60	.....	.....	.....	.....	.....
1877	13.7	— 4.8	58	—31	1.09	+ 0.02	3.04	0.37	.....	.....	.....	.....	.....
1878	25.4	+ 6.9	55	—13	0.48	— 0.59	5.00	0.00	.....	.....	.....	.....	.....
1879	16.1	— 2.4	54	—30	0.48	— 0.59	1.48	0.00	.....	.....	.....	.....	.....
1880	32.0	+13.5	68	— 6	1.36	+ 0.29	4.52	0.20	.....	.....	.....	.....	.....
1881	9.6	— 8.9	48	—40	0.94	— 0.13	3.10	0.04	.....	.....	.....	.....	.....
1882	23.4	+ 4.9	60	—17	0.65	— 0.42	1.80	0.09	.....	.....	.....	.....	.....
1883	8.0	—10.5	46	—38	1.31	+ 0.24	2.85	0.35	.....	.....	.....	.....	.....
1884	13.3	— 5.2	52	—38	0.52	— 0.55	1.50	0.02	.....	.....	.....	.....	.....
1885	9.4	— 9.1	51	—42	1.28	+ 0.21	3.72	0.18	.....	.....	.....	.....	.....
1886	8.1	—10.4	52	—33	2.59	+ 1.52	4.85	0.68	.....	.....	.....	.....	.....
1887	8.8	— 9.7	55	—34	1.13	+ 0.06	2.92	0.04	.....	.....	.....	.....	.....
1888	5.4	—13.1	58	—43	1.30	+ 0.23	4.00	0.40	.....	.....	.....	.....	.....
1889	21.6	+ 3.1	62	—25	1.22	+ 0.15	2.30	0.50	.....	.....	.....	.....	.....
1890	18.0	— 0.5	64	—27	1.79	+ 0.72	3.46	0.35	.....	.....	.....	.....	.....
1891	26.0	+ 7.5	58	— 4	1.75	+ 0.68	3.99	0.61	.....	4	13	7	11
1892	15.3	— 3.2	76	—38	1.09	+ 0.02	3.13	0.10	6.9	5	16	9	6
1893	9.3	— 9.2	54	—34	0.74	— 0.33	3.20	0.13	6.9	6	11	9	11
1894	19.3	+ 0.8	69	—37	1.09	+ 0.02	2.24	0.31	6.0	5	14	9	8
1895	13.6	— 4.9	68	—31	0.85	— 0.22	2.65	0.09	8.7	4	15	7	9
1896	23.4	+ 4.9	68	—20	0.48	— 0.59	2.10	T.	2.8	3	10	10	11
1897	17.2	— 1.3	66	—30	2.01	+ 0.94	6.16	0.15	8.2	7	12	7	12
1898	23.4	+ 4.9	52	—11	1.60	+ 0.53	5.32	T.	12.6	5	15	6	10
1899	19.8	+ 1.3	68	—34	0.28	— 0.79	1.15	T.	1.5	3	15	10	6
1900	25.6	+ 7.1	66	—20	0.53	— 0.54	2.47	T.	2.3	3	16	7	8
1901	23.7	+ 5.2	60	—21	0.74	— 0.33	2.34	0.04	6.2	4	14	9	8
1902	22.4	+ 3.9	63	—31	0.88	— 0.19	2.83	0.19	9.4	4	17	8	6
1903	23.0	+ 4.5	60	—12	0.28	— 0.79	1.46	T.	2.0	4	13	7	11
1904	14.0	— 4.5	57	—32	1.18	+ 0.11	3.68	0.02	6.1	6	12	8	11
1905	11.2	— 7.3	56	—30	0.91	— 0.16	1.82	0.12	11.1	7	14	7	10
1906	24.6	+ 6.1	69	—19	1.52	+ 0.45	4.71	0.28	11.3	5	14	6	11
1907	18.8	+ 0.3	68	—22	1.52	+ 0.45	5.30	0.10	6.0	7	8	7	16
1908	24.9	+ 6.4	60	—18	0.44	— 0.63	1.50	0.06	4.8	2	17	8	6
1909	21.2	+ 2.7	72	—25	1.66	+ 0.59	3.74	0.41	7.8	6	9	6	16
1910	18.1	— 0.4	56	—35	1.57	+ 0.50	3.15	0.55	12.6	6	13	7	11
1911	20.2	+ 1.7	66	—35	0.97	— 0.10	3.73	0.11	7.3	5	9	8	14
1912	4.2	—14.3	49	—47	0.53	— 0.54	1.90	T.	5.5	5	14	7	10
1913	20.9	+ 2.4	62	—25	0.77	— 0.30	2.05	0.04	7.2	5	14	9	8
1914	27.8	+ 9.3	64	—10	0.88	— 0.19	2.34	0.27	5.1	5	11	8	12
1915	17.5	— 1.0	59	—32	1.63	+ 0.56	3.15	0.10	7.3	8	13	8	10
1916	17.8	— 0.7	63	—34	2.62	+ 1.55	6.07	0.85	7.2	10	12	6	13
1917	17.0	— 1.5	60	—28	0.83	— 0.24	2.07	0.17	7.2	4	17	8	6
1918	8.6	— 9.9	53	—35	1.02	— 0.05	2.79	0.26	11.2	7	13	8	10
1919	26.8	+ 8.3	64	—32	0.24	— 0.83	0.86	T.	2.8	2	20	5	6
1920	16.7	— 1.8	58	—26	0.42	— 0.65	1.05	T.	4.6	4	12	8	11
1921	28.4	+ 9.9	67	— 9	0.51	— 0.56	1.92	0.10	4.1	4	11	7	13
1922	19.8	+ 1.3	57	—29	0.89	— 0.18	2.30	0.32	5.3	4	17	6	8
1923	26.7	+ 8.2	58	—10	0.85	— 0.22	2.34	T.	6.5	6	10	7	14
1924	13.9	— 4.6	59	—36	0.89	— 0.18	2.47	0.06	5.5	5	17	7	7
1925	19.4	+ 0.9	55	—24	0.40	— 0.67	1.23	0.05	4.2	3	17	7	7
1926	22.7	+ 4.2	58	—22	1.09	+ 0.02	2.68	0.31	5.0	7	11	8	12
1927	21.7	+ 3.2	59	—27	0.29	— 0.78	1.10	T.	3.0	4	14	8	9
1928	25.2	+ 6.7	70	—20	0.17	— 0.90	1.04	T.	0.9	3	15	8	8
1929	10.2	— 8.3	47	—29	2.06	+ 0.99	4.10	0.40	17.5	9	11	6	14

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

TEMPERATURE

The mean temperature for the state, derived from the means of nine districts of nearly equal area, and based on the records of 103 stations, was 10.2°, or 8.3° lower than the normal. The departures were marked throughout the state, being greatest in the northeastern district and least in the southeastern district. Seven stations reported a deficiency of 10.0°, or more, the greatest being 10.6° at Decorah and Postville, and the least was 6.4° at Keosauqua and Oakland. The highest mean for the state was 17.6°, at Keokuk, and the lowest was 3.8° at Lake Park. The absolute range for the State was 76°, from 47° at Sioux City on the 10th, to 29° below zero at Decorah on the 15th. Only three times in January has the range been less. The maximum for the State, 47°, was the lowest, with one exception in the history of the State. The average number of days with the minimum temper-

Climatological Data for January, 1929

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		
Northwest District																				
Akron	Plymouth	1,153	2								0.48	— 0.11	0.10	4.8	11	3	15	13	n.	Orlan C. Moore
Alta	Buena Vista	1,513	37	7.1	— 8.9	39	10	—17	7	42	0.90	+ 0.14	0.27	9.5	10	11	7	13	n.	D. E. Hadden
Alton	Sioux	1,365	23	7.4	— 8.1	40	10†	—16	7	46	1.45	+ 0.69	0.30	15.0	11	5	15	11	nw	W. S. Slagle
Cherokee	Cherokee	1,196	8	7.2	— 8.0	40	8	—20	7	46	0.65	+ 0.03	0.20	7.4	11	9	6	16	n.	J. E. Wirth
Estherville	Emmet	1,298	33	4.2	— 8.9	38	8	—18	7	40	1.34	+ 0.76	0.40	15.5	10	10	17	4	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								0.65	+ 0.09	0.11	7.1	10	12	1	18	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	21	5.8	— 8.2	40	8†	—23	29	47	0.85	+ 0.20	0.24	8.5	10	14	7	10	nw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	3.8	— 9.5	42	8	—22	29	42	1.06	+ 0.44	0.51	18.8	9	7	6	18	nw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	8.6	— 8.5	42	10	—16	7†	44	1.11	+ 0.54	0.20	14.0	15	9	4	18	nw.	Henry Newell
Marathon	Buena Vista	1,390	2								1.08		0.26	10.6	12	8	4	19	nw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	7.2	— 8.8	38	8†	—20	7	43	1.06	+ 0.28	0.35	12.1	11	10	6	15	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	6.0	— 7.5	39	8†	—26	29	48	1.23	+ 0.54	0.35	21.5	10	16	3	12	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	5.2	— 9.4	41	9	—21	7	44	1.64	+ 0.94	0.64	20.2	8	10	8	13	sw.	J. W. Dow
Sheldon	O'Brien	1,418	17	6.4	— 8.2	41	8	—19	7	46	1.14	+ 0.42	0.37	11.4	13	10	6	15	nw.	Ross E. Forward
Sioux Center	Sioux	1,126	29	7.2	— 7.9	42	10	—19	7	46	1.00	+ 0.26	0.24	12.4	11	7	13	11	nw.	F. C. Aue
Spencer	Clay	1,319	14	6.5	— 8.2	40	8	—19	7	45	1.60	+ 0.90	0.64	20.0	8	10	6	15	nw.	E. W. Little
Storm Lake	Buena Vista	1,440	39	8.0	— 8.8	40	8	—16	7	44	0.83	+ 0.13	0.26	9.5	9	10	7	14	nw.	L. B. Florey
Washta	Cherokee	1,157	30	9.6	— 7.0	41	10	—16	7	44	0.53	— 0.08	0.32	6.5	4	10	7	14	nw.	H. L. Felter
West Bend	Palo Alto	1,197	35	7.2	— 7.8	40	8	—19	7	46	0.92	— 0.03	0.55	11.5	7	11	11	9	nw.	Jos. Dorweiler
Means and extremes				6.7	— 8.4	42	8†	—26	29	48	1.03	+ 0.35	0.64	12.4	10	10	8	13	nw.	
North Central District																				
Algona	Kossuth	1,224	55	7.2	— 8.2	38	8	—16	7	43	1.45	+ 0.63	0.60	18.0	8	16	6	9	nw.	W. E. Laird
Allison	Butler	1,060	14	6.0	— 9.3	35	8†	—23	15	41	2.03	+ 1.06	0.65	22.6	9	17	8	6	nw.	E. W. Detra
Belmond	Wright	1,181	18	5.5	— 9.2	37	8†	—24	15	45	1.96	+ 0.70	0.64	27.0	8	10	4	17	nw.	H. F. Luick
Britt	Hancock	1,236	41	6.6	— 7.6	38	8†	—17	7	40	1.53	+ 0.85	0.55	14.0	4	15	1	15	nw.	E. P. Healy
Charles City	Floyd	1,015	37	4.6	— 9.1	36	9	—22	15	37	2.68	+ 1.63	0.80	26.9	13	10	6	15	nw.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	5.1	— 9.2	38	8	—19	7†	45	2.15	+ 1.27	0.55	21.1	14	9	3	19	nw.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								2.07	+ 0.86	0.55	26.5	10					L. H. Davis
Humboldt	Humboldt	1,095	40	7.8	— 8.7	36	8	—17	7	44	1.75	+ 0.94	0.64	18.5	6	7	11	13	nw.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	5.0	— 9.2	38	8	—20	15†	40	1.38	+ 0.41	0.24	32.5	13	3	8	20	nw.	American Beet Sugar Co.
Northwood	Worth	1,222	32	4.0	— 8.7	33	8†	—19	13	41	2.55	+ 1.41	0.40	25.5	11	10	9	12	nw	Charles Dwelle
Osage	Mitchell	1,163	34	4.8	— 8.5	34	9	—19	13	39	2.22	+ 1.21	0.32	26.5	13	11	7	13	nw.	Dr. C. E. Juhl
Means and extremes				5.7	— 8.7	38	8†	—24	15	45	1.98	+ 1.00	0.80	23.5	10	11	6	14	nw.	
Northeast District																				
Decorah	Winneshiek	872	35	4.6	—10.6	35	9	—29	15	41	2.48	+ 1.24	0.70	27.0	8	17	2	12	nw.	M. D. Whitney
Dubuque	Dubuque	700	55	9.6	— 9.5	36	22	—16	13	36	3.13	+ 1.83	1.04	34.3	15	6	9	16	nw.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	6.6	— 8.8	37	22	—26	15	41	3.15	+ 1.90	0.95	29.9	13	15	5	11	nw.	R. Z. Latimer
Independence	Buchanan	956	64	8.8	— 8.1	38	9	—20	15	37	2.02	+ 0.85	0.47	14.7	11	11	3	17	nw.	Dr. Geo. Boody
Lansing	Allamakee	632	21																	Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	5.0	— 9.5	34	9‡	—23	15†	42	1.96	+ 0.98	0.95	19.0	7	13	4	14	nw.	D. W. Dawson
Oelwein	Fayette	1,036	5	7.4	— 9.0	36	9	—22	15	36	1.44	+ 0.28	0.48	18.0	6	12	9	10	nw.	John T. Ridler
Postville (near)	Clayton	1,192	29	4.6	—10.6	35	9	—22	15	40	2.10	+ 0.87	0.50	18.0	12	12	7	12	nw.	F. L. Williams
Waterloo	Black Hawk	854	45	7.4	—10.0	36	9	—22	15	38	2.63	+ 1.51	0.70	19.8	10	15	5	11		R. B. Slippy
Waverly	Bremer	936	32	5.8	—10.4	35	9	—25	15	42	3.81	+ 2.70	0.96	30.5	8	20	3	8	nw.	D. H. Murphy
Means and extremes				6.6	— 9.7	38	9	—29	15	42	2.52	+ 1.34	1.04	23.5	10	13	5	13	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	9.2	— 7.9	37	11	—15	7†	43	2.32	+ 1.49	0.85	19.0	12	7	10	14	n.	George Kibby
Carroll	Carroll	1,265	38	9.6	— 7.8	38	11	—16	7	41	1.05	+ 0.27	0.45	6.0	5	11	4	16	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	9.6	— 8.6	38	21	—15	7	39	0.88	+ 0.22	0.44	10.0	5	6	9	16	nw.	V. L. Byers
Guthrie Center	Guthrie	1,077	33																	Walter Bell
Harlan	Shelby	1,192	29	10.8	— 7.3	39	11	—15	15	41	0.97	+ 0.17	0.41	9.1	7	9	4	18	nw.	
Jefferson	Greene	1,052	29	10.2	— 7.9	39	11	—16	7	39	1.80	+ 0.94	0.60	16.0	8	11	9	11	ne.	W. I. Lyon
Little Sioux	Harrison	1,040	23	12.3	— 7.0	45	10	—10	25	44	0.52	— 0.23	0.16	4.5	10	8	9	14	n.	H. W. Kerr
Logan	Harrison	1,120	61	12.2	— 8.1	40	10†	—11	25	41	1.09	+ 0.09	0.41	13.5	8	5	17	9	nw.	Amy Ann Stern
Onawa	Monona	1,051	27	11.8	— 7.0	45	10	—12	25	44	0.40	— 0.59	0.16	5.0	7	7	13	11	nw.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32																	A. W. McIsaac
Sac City	Sac	1,269	52	8.4	— 8.8	38	8†	—15	7	39	1.32	+ 0.31	0.43	11.0	8	8	6	17	nw.	F. P. Kessler
Sioux City	Woodbury	1,135	39	9.3	— 8.5	47	10	—13	7	37	0.59	— 0.15	0.12	6.1	12	7	10	14	nw.	U. S. Weather Bureau
Means and extremes				10.3	— 7.9	47	10	—16	7	44	1.09	+ 0.24	0.95	11.1	8	8	9	14	nw.	
Central District																				
Ames	Story	926	51	10.6	— 7.9	41	9	—14	7†	40	1.81	+ 0.91	0.73	15.0	6	13	0	18	nw.	Iowa State College
Baxter	Jasper	998	28	10.4	— 9.0	37	9	—17	7	38	1.99	+ 1.09	0.67	19.0	8	6	13	12	nw.	Otto Sanderman
Boone (near)	Boone	894	23	10.4	— 7.5	39	11	—23	7	40	1.80	+ 0.96	0.53	13.5	11	9	10	12	n.	C. F. Henning
Des Moines	Polk	861	50	11.6	— 8.5	38	9	—10	7	37	2.70	+ 1.63	1.18	21.4	10	9	6	16	n.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	8.0	— 8.7	37	11	—19	7	36	1.69	+ 0.85	0.57	14.0	9	12	2	17	nw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	10.8	— 9.4	38	9	—19	7	36	2.63	+ 1.48	0.90	16.0	8	12	6	13	nw.	R. E. Bates
Grundy Center	Grundy	976	37	8.0	—10.5	38	10	—19	15	40	3.15	+ 2.18	0.60	28.0	10	11	10	10	nw	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	7.4	— 8.3	36	8	—21	15	41	2.73	+ 1.49	0.75	22.5	10	9	7	15	nw.	C. H. Gilbert
Marshalltown	Marshall	947	36	9.8	—10.2	37	9	—15	7†	35	2.30	+ 1.13	0.87	22.2	10	10	6	15	nw.	C. C. Pigman
Monroe	Jasper	922	16	11.6	— 9.1	38	9	—18	7	36	2.20	+ 1.10	0.54	25.2	6	12	3	16	nw.	J. A. Dibel
Perry	Dallas	975	27	10.3	— 8.7	38	11	—19	7	38	2.21	+ 1.19	0.70	19.7	12	9	10	12	nw.	Eugene N. Hastie
Toledo	Tama	847	34	9.0	—10.3	37	9	—21	15	37	2.91	+ 1.81	0.86	29.0	10	14	4	13	nw.	H. P. Giger
Van Meter	Dallas	872	9								2.20		0.85	22.0	9					Calvin K. Smith
Waukee	Dallas	1,032	25	11.0	— 7.8	37	9	—16	7	36						17	1	13	nw.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	7.2	— 9.7	39	8	—25	15	43	1.76	+ 0.70	0.58	27.0	9	12	7	12	nw.	Frank A. Bonebright
Means and extremes				9.7	— 9.0	41	9	—25	15	43	2.30	+ 1.26	1.18	21.0	9	11	6	14	nw.	

Climatological Data for January, 1929—Continued

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
East Central District																				
Belle Plaine	Benton	866	38	10 0	— 8.8	35	9	—19	7	36	3.17	+ 1.61	0.88	32.0	15	12	3	16	nw.	O. C. Burrows
Cedar Rapids	Linn	737	46	10.0	— 8 9	36	9†	—21	7	40	3.07	+ 1.67	1.00	27.0	9	11	0	20	nw.	J. T. Wurster
Clinton	Clinton	595	55	12.7	— 7.9	39	22	—18	15	36	3.28	+ 1.46	0.93	15.7	14	14	3	14	n.	Dr. A. P. Bryant
Davenport	Scott	580	57	13.7	— 8.1	41	22	—11	7	35	3.01	+ 1.59	1.04	15.6	13	9	7	15	nw.	U. S. Weather Bureau
Davenport No. 2	Scott	690	3	14.5	.....	40	22	—14	15	36	3.59	.....	0.91	18.4	13	19	1	11	nw.	Rex Shriver
Fairport	Muscatine	567	7	14.9	— 7.0	40	22†	—15	7	36	3.03	+ 1.40	0.99	16.9	11	11	1	19	nw.	Bureau of Fisheries
Iowa City	Johnson	733	68	12.0	— 8.0	37	22	—18	7†	38	2.57	+ 0.93	1.06	19.5	10	10	12	9	nw.	Prof. J. F. Reilly
Le Claire	Scott	576	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Margaret T. Disney
Maquoketa (near)	Jackson	692	23	9.6	— 9.0	37	22	—23	15	40	2.07	+ 0.72	0.55	17.2	11	17	3	11	nw.	John Strodthoff
Muscatine	Muscatine	546	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	William Molis
Olin	Jones	760	29	9.2	— 9.0	36	9†	—24	15	44	2.80	+ 1.37	0.88	24.0	11	15	6	10	nw.	Mrs. L. Stingley
Tipton (near)	Cedar	807	29	11.2	— 8.5	36	9†	—24	15	36	2.75	+ 1.30	1.10	23.7	12	9	8	14	ne.	John Kroeplen
Williamsburg	Iowa	770	12	10.4	— 8.6	38	22	—20	7	40	2.55	+ 1.15	0.93	18.2	8	15	5	11	nw.	Dr. F. C. Schadt
Means and extremes		.....	.....	11.7	— 8.1	41	22	—24	15	44	2.90	+ 1.36	1.10	20.7	12	13	4	14	nw.	
Southwest District																				
Atlantic	Cass	1,164	37	11.6	— 7.7	37	8	—12	7†	37	2.30	+ 1.46	1.10	14.0	12	6	4	21	ne.	T. H. Whitney
Bedford	Taylor	1,200	.....	.....	.....	.....	.....	.....	.....	.....	2.47	+ 1.53	0.80	14.8	7	8	3	20	nw.	Arthur L. Bishop
Clarinda	Page	1,009	38	14.0	— 8.4	42	12	—10	15†	42	0.96	0.00	0.48	12.0	6	8	12	11	nw.	Dr. H. C. Hawley
Corning	Adams	1,150	36	.....	.....	.....	.....	.....	.....	.....	2.72	+ 1.80	0.70	24.2	8	11	5	15	ne.	C. A. Smith
Cumberland (near)	Cass	1,225	29	.....	.....	.....	.....	.....	.....	.....	1.81	+ 1.04	0.79	14.0	5	9	7	15	nw.	Carl E. Pollock
Glenwood	Mills	1,100	30	14.4	— 7.5	42	8	—10	25	40	0.98	+ 0.27	0.40	7.9	7	11	5	15	nw.	George Mogridge
Lenox	Taylor	1,250	33	13.1	— 8.5	38	8	—11	7†	41	1.85	+ 1.18	0.60	15.8	8	12	7	12	nw.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	13.5	— 6.4	40	8	—12	15	40	1.41	+ 0.61	0.60	11.0	11	11	3	17	nw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3	.....	.....	.....	.....	.....	.....	.....	1.23	+ 0.42	0.64	12.0	3	4	16	11	nw.	B. R. Bridge
Riverton (near)	Fremont	920	2	.....	.....	.....	.....	.....	.....	.....	1.34	+ 0.54	0.73	11.0	9	10	0	21	n.	Geo. C. Rader
Thurman	Fremont	960	31	15.8	— 6.8	44	8	— 8	25	41	0.87	+ 0.19	0.65	6.3	4	10	1	20	n.	H. H. Askew
Omaha, Neb.		1,105	57	13.6	— 8.3	42	10	— 8	25	34	1.15	+ 0.45	0.51	9.3	11	9	9	13	nw.	U. S. Weather Bureau
Means and extremes		.....	.....	13.7	— 7.6	44	8	—12	7†	42	1.59	+ 0.79	1.10	12.7	8	9	6	16	nw.	
South Central District																				
Afton	Union	1,212	34	12 6	— 8.5	37	8	—14	7	38	2.22	+ 1.36	0.70	19.0	6	10	7	14	ne.	S. R. Brown
Albia	Monroe	949	30	13.6	— 7.3	38	9	—13	7	35	2.15	+ 0.96	0.70	13.3	11	8	5	18	ne.	O. E. McBride
Centerville	Appanoose	1,013	23	14.2	— 8.4	38	9†	—13	7	35	2.36	+ 1.11	0.91	17.5	13	10	7	14	nw.	Thomas Wood
Chariton (near)	Lucas	1,042	33	12.3	— 8.7	38	9	—16	7	37	1.20	+ 0.13	0.44	12.0	6	10	7	14	n.	C. C. Burr
Corydon (near)	Wayne	1,050	35	13.6	— 8.3	38	9	—14	7	35	2.43	+ 1.16	0.98	15.0	9	12	2	17	nw.	J. C. Davis
Creston	Union	1,291	23	11.8	— 8.3	39	8	—13	7†	41	1.65	+ 0.60	0.70	.....	9	10	10	11	n.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	11.7	— 7.5	37	8†	—17	7	37	2.89	+ 1.71	0.79	27.5	11	12	3	16	nw.	George Phillips
Indianola	Warren	972	37	12.0	— 7.7	37	9	—14	7	36	2.70	+ 1.55	1.20	27.5	7	7	10	14	nw.	Seth F. Shenton
Knoxville	Marion	929	33	12.3	— 9.1	38	9	—14	7	40	2.95	+ 1.72	0.80	29.5	7	12	5	14	nw.	W. J. Casey
Lacona	Warren	824	29	.....	.....	.....	.....	.....	.....	.....	3.79	+ 2.14	0.80	27.0	11	10	11	10	.....	J. B. Alter
Lamoni	Decatur	1,123	21	13.0	— 8.4	38	8	—13	7	41	2.30	+ 1.24	0.74	16.2	10	9	3	19	nw.	F. S. Parks
Mount Ayr	Ringgold	1,220	35	13.9	— 8.3	37	9†	—10	7†	37	2.91	+ 1.89	0.85	14.7	9	14	4	13	n.	E. O. Gleason
Tingley	Ringgold	1,275	3	12.1	— 9.0	37	8	—15	7	41	2.61	+ 1.71	0.83	18.0	7	11	10	10	nw.	James A. Verploegh
Winterset	Madison	1,118	37	12.4	— 8.3	37	8	—15	7	36	2.15	+ 1.23	0.80	19.5	8	10	7	14	nw.	H. S. Ely
Means and extremes		.....	.....	12.7	— 8.3	39	8	—17	7	41	2.45	+ 1.33	1.20	19.7	9	10	7	14	nw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	14.6	— 7.6	40	22	—14	7	38	2.07	+ 0.53	0.98	9.4	9	19	2	10	e.	B. R. Vale
Burlington	Des Moines	544	32	17.0	— 7.2	41	22	—10	7	35	4.10	+ 2.34	1.36	13.3	14	11	10	10	ne.	John T. Donnelly
Columbus Junction	Louisa	595	27	14.4	— 7.4	39	22	—15	7	37	2.61	+ 1.30	0.70	13.7	13	12	8	11	se.	Miss Musa Todd
Fairfield	Jefferson	780	44	13.6	— 8.0	39	22	—13	7	38	1.88	+ 0.36	0.60	12.2	9	14	5	12	n.	R. M. McKenzie
Keokuk	Lee	614	57	17.6	— 7.3	46	22	— 8	7	35	3.14	+ 1.58	1.09	9.4	12	11	5	15	nw.	U. S. Weather Bureau
Keosauqua	Van Buren	644	36	15.6	— 6.4	44	22	—13	7	35	1.97	+ 0.41	0.72	11.0	10	8	12	11	ne.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	15.6	— 6.9	41	22	—13	7	36	2.78	+ 1.24	1.11	13.0	11	11	5	15	nw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	12.8	— 7.9	39	9	—17	7	37	2.42	+ 1.39	0.69	19.9	12	9	6	16	nw.	Roy R. Robinson
Ottumwa	Wapello	649	33	15.4	— 7.2	40	9	—12	7	36	2.49	+ 0.99	0.98	12.9	12	13	5	13	nw.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	12.7	— 7.8	37	22	—16	7	35	2.63	+ 1.37	1.11	15.3	10	11	8	12	nw.	W. E. Utterback
Stockport (near)	Van Buren	747	26	14.2	— 7.2	41	22	—14	7	41	2.77	+ 1.39	1.33	12.5	9	13	4	14	n.	C. L. Beswick
Washington	Washington	757	46	13.8	— 7.2	38	22	—16	7	37	2.65	+ 1.17	0.97	15.5	7	10	7	14	ne.	D. D. Sherman
Wever	Lee	552	.....	16.8	.....	42	22	—12	7	35	3.54	.....	1.40	10.6	9	.....	.....	.....	.....	H. G. Liddle
Means and extremes		.....	.....	14.9	— 7.2	46	22	—17	7	41	2.70	+ 1.24	1.40	13.0	11	12	6	13	nw.	
State means and extremes		.....	.....	10.2	— 8.3	47	10	—29	15	48	2.06	+ 0.99	1.40	17.5	9	11	6	14	nw.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

ature zero or lower, was 18; minimum 32° or lower, 31; maximum 32°, or lower, 26; maximum zero, or lower, 1. The minimum was not above 32° at a single station during the entire month, and at three stations the temperature was above 32° on only 1 day.

PRECIPITATION

The average precipitation for the state, derived from the averages of nine districts of nearly equal area, and based on the records of 112 stations, was 2.06 inches or 0.99 inch more than the normal. Only three other Januarys since 1873 have had more precipitation. The excess was least in the western portion of the state, and there were several stations that were deficinet in precipitation; over the eastern and central portions the excess was an inch or more and quite uniform. The greatest amount reported from a single station was 4.10 inches at Burlington, and the least was 0.40 inch at Onawa. The greatest amount in 24 consecutive hours was 1.40 inches at Wever on the 22d. Days with 0.01 inch or more of precipitation, averaged 9. or 4 more than the normal, being greatest in the east-central district with 12, and least in the west-central and southwestern districts with 8. Only in 1916 has the average number of days with precipitation in January been greater.

Daily Precipitation for January, 1929

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	
Northwest District																															
Akron	Big Sioux			T.	.06	.03							T.	T.	T.			T.		.07			.10	.04	.03		.04	.02	.03	.02	.04		0.48
Alta	Raccoon			T.	.12	.18	T.			T.			T.		T.		T.			.03			.07	.02	.08		.03		.07	.03	.27		0.90
Alton	Floyd			T.	.10	.10				T.		T.	.05	T.	T.					.25			.20	.10	.10		.05	.10	.10	T.	.30		1.45
Cherokee	Little Sioux			T.	.02	.12	T.						.08		.04		T.	T.				T.	.02	.04	.03	T.	T.	.05	.03	.02	.20	T.	0.65
Estherville	Des Moines				.08	.06						T.			.10		.10			.10							.15	.05	.10	.20	.40		1.34
Hawarden	Big Sioux			T.	.11	T.				T.			T.	T.	T.					.11			.10	.05	.02		.03	.05	.05	.02	.11		0.65
Inwood (near)	Big Sioux			.01	.17	.01				T.			.02	T.	T.	T.	T.			.24			.06	T.	.10		.02		.03		.19		0.85
Lake Park (near)	Little Sioux				.12	.02						T.			.05		.05	T.		.10			.05	T.	.04		T.	T.	.09		.54		1.06
Le Mars	Floyd				.08	.08		T.					.01	.01	.01		.01	.01		.16			.16	.05	.20		.06	.15	.02	T.	.10		1.11
Marathon	Raccoon		T.	T.	.26	.02				.04	T.	T.		.04	T.		T.	T.	T.	.02			.11	.06	.10		.06	T.	.04	.11	.22		1.08
Pocahontas	Des Moines				T.	.35				.03		T.	T.		.04		.02			.02			.12	.03	.08	T.		.04	T.	.03	.30		1.06
Rock Rapids	Big Sioux				.08							.10								.20			.15	.05	.08		.02	.10	.10		.35		1.23
Sanborn	Floyd				.02		.05			T.			T.		.05			T.		.24			.32		.08				.24		.64		1.64
Sheldon	Floyd			T.	.11	.08				T.	.01	T.	T.	.01	.04		T.	T.	T.	.12			.09	.05	.08	T.	.03	.08	.07	T.	.37	T.	1.14
Sioux Center	Floyd				.08					.04	T.		.04	.02			T.	.02		.16			.12		.16			.04	.08		.24		1.00
Spencer	Little Sioux					.16									.08					.16			.04	.04	.32			.16			.61		1.60
Storm Lake	Raccoon					.24							T.		.01					.02			.07	.03	.07			.05	.08		.26		0.83
Washta	Little Sioux				T.	.08							T.											.05	T.			.08	T.		.32		0.53
West Bend	Des Moines					.08						T.						.05		.08			.08				.04	.04			.55		0.92
North Central District																															
Algona	Des Moines					.16						T.						.05		.08			.24	.24			.04	.04			.60		1.45
Allison	Cedar				T.	.26				.65		.16	T.		.08		T.	.04		T.			.36		.17				T.	T.	.25	.06	2.03
Belmond	Iowa			T.		.64	T.			.50		.09	.01		.07		T.	T.		T.			.15		.23				T.		.27		1.96
Britt	Iowa					.50				T.		T.			.22					T.			.26	T.			T.				.55		1.53
Charles City***	Cedar		T.	T.	.15	.45	T.			.80	.08		.05	.05	.15		.01	T.		T.			.21	T.	.40		T.		.01	.01	.31		2.68
Forest City	Cedar		T.		T.	.26				.12	.02	T.	.05		.30	T.	T.	.05	T.	.10			.25		.12	.13	.10	T.	T.	.05	.55	.05	2.15
Hampton	Cedar					.55				.34	.10			.14	.08			T.		T.			.07		.13				.03	.08	.55		2.07
Humboldt	Des Moines					.24				.27					.04		T.	T.		T.			.24	T.	T.	.32		T.	T.	T.	.64		1.75
Mason City	Cedar			T.	T.	.24	T.			.18	.02	.05	.02	.03	.13		T.	T.	T.	T.			.20	T.	.12	.10	.02		T.	.03	.24		1.38
Northwood	Cedar				T.	*	.60			.05	.05		T.		.40	T.	T.	T.		.05			.40		.40	.20	T.	T.	T.	.10	.30		2.55
Osage	Cedar			T.		.24				.30	.32	.08	.04		.24					.04			.24		.16	.24	.04			.04	.24		2.22
Northeast District																															
Decorah	Mississippi			.05		.47				.70	.04		T.		.12			T.	T.	T.			.37		.26	T.					.47		2.48
Dubuque***	Mississippi	T.	.03	T.	.27	.79	T.		T.	.21	.02	.02	.04	T.	.52		.01	T.	.36	T.			.24		.40	T.		T.		.01	.18	.03	3.13
Fayette	Mississippi		.02			.95				.40		.20	.10		.36			.02	.14	T.			.31		*	.23				.10	.32		3.15
Independence	Wapsipinicon					.47				.41					.18			.04	.09	T.			.27		.14	.12				.02	.14	.14	2.02
Lansing	Mississippi																															
New Hampton	Wapsipinicon					.95				.20					.05					.20			T.		.32					.08	.16		1.96
Oelwein	Wapsipinicon					.48				.32					.08					.16	T.		T.		.24						.16		1.44
Postville (near)	Mississippi				.05	*	.50			.30		.10	.05		.20					.20			.10		.20	.30					.10		2.10
Waterloo	Cedar					.60				.70				.15				T.	.10	.01			.25		.30	.20					.25	.07	2.63
Waverly	Cedar					.96				.48					.28					.20			.11		.41	.78					.59		3.81
West Central District																															
Audubon (near)	Nishnabotna				T.	.50				.85				.05	.03		.03		.15	.04			.15		.05	.10			.02		.35		2.32
Carroll	Raccoon				.05	.20				.45													.09								.26		1.05
Denison	Missouri			T.	T.	.13				.44							.06			T.			.09		T.	T.				T.	.16		0.88
Guthrie Center	Raccoon																															
Harlan	Nishnabotna				T.	.21				.41		T.	.05		T.		T.		.05	T.			T.		T.	T.		T.		.05	.10	.10	0.97
Jefferson	Raccoon			T.	T.	.60				.50		T.	T.		T.		.05		.10	T.			.05		.10		T.	.10		T.	.30		1.80
Little Sioux	Little Sioux				.05	.02				.16			.02				.10						.05					.01	.03	.03	.05		0.52
Logan	Missouri				T.	.25				.41			T.	.15									.10		.03			.02	T.	.02	.11		1.09
Onawa	Missouri				T.	.16				T.	T.	T.	T.		T.		.02			T.			T.		.08			.08	.02	.02	.02		0.40
Rockwell City	Raccoon																															
Sac City	Raccoon					.32				.43			T.		T.		.05			T.			.08	.04	.04				.04	T.	.32		1.32
Sioux City***	Missouri			T.	.12			T.		T.	T.		.02	T.	.02		.02	T.		.02			.09	.05	.07		.02	T.	.07	.01	.08		0.59
Central District																															
Ames	Skunk					.37				.73			T.		T.	T.	T.		.08				.15		.28					T.	.20		1.81
Baxter	Skunk				.08	.67				.48			T.		T.		T.		.12				.22		.20	.10					.12		1.99
Boone (near)	Des Moines				T.	.52				.53			T.		.03		.02	T.	.10	.02			.06	T.	.08	.22		.01	T.	T.	.21		1.80
Des Moines***	Des Moines			T.	.13	1.05				.50		T.	.06		T.		T.	T.	.18	.01			.15		.42			T.		.03	.17		2.70
Fort Dodge	Des Moines					.57				.42				.07			T.		.05				.02		.15	.07				.05	.29		1.69
Grinnell	Iowa				T.	.39				.71					.08				.15				.90		.17	.08					.15		2.63
Grundy Center	Cedar			T.		.60	T.			.50	T.				.30		T.	.10	.20	.10			.30		.40	.20				T.	.45		3.15
Iowa Falls	Iowa					.40				.75					.20		.05		.05	.03			.35		.30					.10	.50		2.73
Marshalltown	Iowa			T.	.01	.87	T.			.48		T.	T.		.08		T.	T.	.07	.01			.23		.22	.09				T.	.24		2.30
Monroe	Des Moines				T.	.53				.51	T.	T.	T.		T.		T.	T.	.54	T.			.14		.26					T.	.22		2.20
Perry	Raccoon		T.			.70				.29	.04			.05	.02		T.		.10	T.			.06		.30	.20		.05		T.	.30	.10	2.21
Toledo	Iowa			T.	T.	.86				.65		T.	.03		.12		T.	T.	.20				.22		.41	.08				T.	.28	.03	2.91
Van Meter	Raccoon					.85					.35			.05					.08	.16			.15		.08	.24					.24		2.20
Waukee	Raccoon																															
Webster City	Des Moines			T.	T.	.46				.58					.05			T.		.07			.05		.20	.05				.04	.26		1.76
East Central District																															
Belle Plaine	Iowa				.04	.88	.01			.80	T.	.04	.03		.06		.02	T.	.30	T.			.10		.45	.13				.04	.25	.02	3.17
Cedar Rapids	Cedar				.05	1.00	T.			.51					.14		T.	T.	.41				.38		.20	.02				T.	.36	T.	3.07
Clinton	Mississippi	.07			.10	.93	T.			.28	T.				.20		.07	.03	.36				.59		.24	.11				.01	.09	.20	3.28
Davenport***	Mississippi	.07			.13	.93	T.			.23	T.	T.	T.	.04	.09		.02	.02	.15				.79		.24	T.		T.		T.	.28	.02	3.01
Davenport No. 2	Mississippi	.14			.19	.82				.20	.02		T.		.13		T.	.12	.11	.02			.91		.35			T.			.20	.38	3.59
Fairport	Mississippi	.20				.99				.22			T.		.08				.26	.04			.69		.28	.12					.05	.10	3.03
Iowa City	Iowa				.03	1.03				.28	T.		T.		.07		T.		.29				.47		.12	.04		T.		T.	.21	.03	2.57
Le Claire	Mississippi																															
Maquoketa (near)	Maquoketa	T.		T.	.01	.55				.11					.08		.02	T.	.28				.43		.37					.01	.16	.05	2.07
Muscatine	Mississippi																															
Olin	Wapsipinicon					.64				.04		.04	.08		.16		.08		.32				.88		.16						.16	.24	2.80
Tipton (near)	Cedar				.08	1.10				.10	.08		T.		.36		T.		.09	.10			.25		.10	.24		T.		T.	.05	.20	2.75
Williamsburg	Iowa				.04	.93				.62					.04		.02		.25	T.			.37								.28		2.55

Daily Precipitation for January, 1929—Continued

Stations	Drainage Basin	Day of Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals
Southwest District																																	
Atlantic	Nishnabotna				.05	.35				1.10		T.	.10	.10	.05		.05		.10	.05			.15		.10			T.		T.	.10		2.30
Bedford	102				T.	.70				.80			T.	.03					.60				.14		.12						.08		2.47
Clarinda	Nodaway					.48				.04			.04						.16							.08					.16		0.96
Corning	Nodaway				.30	.70				.60			.60								.20		.16				.01		.15				2.72
Cumberland(near)	Nodaway				T.	.30				.79			T.	.44			T.		.13	T.			T.		T.			T.			.15		1.81
Glenwood	Missouri				T.	.40				.40			T.	.05			.02		.07	T.			T.					.02		T.	.02		0.98
Lenox	Missouri				.03	.60				.40			T.	.15					.40				.02		.05						.20		1.85
Oakland	Nishnabotna				.24	.08		T.		.60			.08	.08	.04		.04		.08	.04			.05		T.	.08			T.		T.	T.	1.41
Red Oak (near)	Nishnabotna				T.	.64				.43			T.	T.	T.		T.		.16	T.			T.		T.				T.	T.	T.		1.23
Riverton (near)	Nishnabotna				.06	.26		T.		.73			.03				.02		.14	T.			.03		.04			T.		.03			1.34
Thurman	Missouri				T.	.13				.65				T.			T.		.08				.01		T.			T.	T.	T.	T.		0.87
Omaha, Neb.***	Missouri			T.	.21	.30		T.		.37			.10		T.		.02		.06	.01			.01		.04		T.	.01	T.	.02	T.		1.15
South Central District																																	
Afton	Grand				T.	.70				.61				.06					.56						.21						.08		2.22
Albia	Des Moines				.04	.70	T.			.50	.01		.01	.03	T.		T.		.18				.38		.19	.05		T.			.06	T.	2.15
Centerville	Chariton	.04			.03	.91				.31	.03	.02	.01	.03				T.	.25				.44		.23	.02					.04		2.36
Chariton (near)	Chariton				T.	.44				.28				.08					T.			T.	.16		.16			T.	T.	T.	.08		1.20
Corydon (near)	Chariton				.16	.98				.50			.06				.03		.12				.23		.32			T.			.03	T.	2.43
Creston	Missouri				.02	.32				.70			.05	.10	T.		T.	T.					.14		.16	.08					.08		1.65
Earlham (near)	Des Moines				.04	.48				.79			T.	.24	.08		T.		.24	T.			.06		.16	.32		T.			.32	.16	2.89
Indianola	Des Moines				.10	1.20				.20			T.	.10					.40	T.			T.		.40			T.			.30	T.	2.70
Knoxville	Des Moines				T.	.80				.50				.10	T.		T.	T.	.40				T.		.50	.45		T.			.20		2.95
Lacona	Des Moines				.10	.80				.75			.10	.10					.40				.54		.40	.10					.40	.10	3.79
Lamoni	Grand				.02	.74				.62			.03	.10			T.		.26				.25		.14			.02		T.	.12		2.30
Mount Ayr	Grand				T.	.85	.05	T.		.77				.12				T.	.24		.01		.22		.32						.30		2.91
Tingley	Platte				T.	.83				.62				.07			T.	T.	.47	T.			.17		.32						.13		2.61
Winterset	Des Moines			T.	.05	.80				.30			T.	.16			T.	T.	.30				T.		.24						.20	.10	2.15
Southeast District																																	
Bonaparte (near)	Des Moines	.08			.02	.98				.08			T.	.09	T.	T.		T.	.15				.30		.32						.05	T.	2.07
Burlington	Mississippi	.30			.14	1.14	T.			.18			T.	.05	.05	T.	.01	.10	.24				1.30		.37	.02					11	.03	4.10
Columbus Jct	Iowa	.08			.30	.70	.10			.21			.04		.04			.02	.20				.61		.16	.05				T.	.10		2.61
Fairfield	Skunk	.20			.07	.60				.23			T.		T.		T.		.12				.50		.10	.01					.05		1.88
Keokuk***	Mississippi	.07			.37	.84				.12	T.	T.	.05		.03		T.	.11	.13			T.	.89		.42			T.		.02	.09	T.	3.14
Keosauqua	Des Moines	.25			.10	.72				.19			.02	.02			T.	T.	.05				.32	.05	.25							T.	1.97
Mt. Pleasant	Skunk	.14			.04	1.11				.18			.02	.03				T.	.20				.72		.26	.06					.02		2.78
Oskaloosa	Des Moines				.01	.65				.69	T.	.01	.02	T.	T.		T.	T.	.34	.02	.01		.35	T.	.25	T.		T.		T.	.06	.01	2.42
Ottumwa	Des Moines	.04			.01	.98				.30		T.	.02	.03			T.	T.	.37				.46		.18	.04					.04	.02	2.49
Sigourney (near)	Skunk				.02	1.11	T.			.33	T.	T.	.03	.04	T.		T.	T.	.11				.55		.24			T.		T.	.15	.05	2.63
Stockport (near)	Skunk	.05			.05	1.33				.17			T.	.05				T.	.08	T.			.71		.23						.10		2.77
Washington	Skunk				.15	.97				.25				T.	T.		T.		.52				.45		.15					T.	.16		2.65
Wever	Mississippi	.24			.10	.60				.20			T.		.15		T.	T.	.12				1.40		.64						.09		3.54

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.

T. Precipitation is less than .01 inch or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level) Mean	Highest	Date	Lowest	Date	Relative Humidity, % Mean 7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	‡‡Wind Total movement	Average hourly velocity	Maximum Miles	From	Date	Sunshine % possible	Departure from normal
Chas. City.	30.15	30.57	29	29.40	22	80	77	84	44	2	4,648	6.2	25	w.	22	47	— 2
Davenport	30.14	30.59	7	29.27	5	85	80	81	47	2	7,290	9.8	36	nw.	22	48	+ 1
Des Moines	30.15	30.62	31	29.46	22	88	74	80	47	1	5,236	7.0	25	nw.	11	47	— 7
Dubuque....	30.13	30.57	4	29.36	5	79	68	78	34	7	4,408	5.9	23	nw.	11	42	— 7
Keokuk.....	30.16	30.65	7	29.37	18	80	65	76	39	20	5,690	7.6	30	nw.	11	48	— 3
Sioux City.	30.18	30.63	31	29.45	17	87	78	80	53	10	8,534	11.5	51	nw.	22	42	—12
Omaha,Nb	30.16	30.62	31	29.47	17	84	72	72	38	1	6,297	8.5	35	nw.	11	34	—22
Means and extremes	30.15	30.65	7	29.27	5	83	73	79	34	7		8.1	51	nw.	22	44	— 7
Normals and records	30.14	¶31.09	25th 1905	§28.71	3d 1906	84		77	¶23	19 1928			¶58	nw.	6th 1903	51	

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

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

ERRATA

Report for December, 1928. Page 90; Dubuque total precipitation 1.10 inches, should be 1.09 inches; departure —0.34, should be —0.35. Page 92. Dubuque, precipitation on 4th, 0.02 inch, should be 0.01 inch; monthly total, 1.10 inch, should be 1.09 inch. Page 93. Keokuk mean sea level barometer 30.12 inches, should be 30.14 inches.

SNOWFALL

The average snowfall for the state was 17.5 inches, or 10.8 inches more than the normal. This is the greatest January snowfall of record since statewide snowfall records began in 1892, though the records that are available for some stations indicate that the state average was probably greater in 1886. Only twice since 1892 has there been a greater average in any month, and both times the occurrence was in March. The average was the greatest, 23.5 inches, in the north central and northeastern districts, and least, 11.1 inches, in the west central district. The greatest amount reported from any station was 34.3 inches at Dubuque, and the least was 4.5 inches at Little Sioux. A number of stations in the eastern portion of the state reported the ground snow covered the entire month, and after the 4th the snow cover was continuous over almost the entire state.

MISCELLANEOUS PHENOMENA

Aurora: 8th, 11th, 25th.
Fog: 2d, 9th, 16th, 17th, 18th, 19th.
Halos (lunar and solar): 1st, 2d, 4th, 5th, 6th, 7th, 10th, 11th, 15th, 18th, 19th, 20th, 21st, 22d, 23d, 25th, 26th, 30th, 31st.
Haze: 19th.
Sleet: 4th, 9th, 10th, 16th, 17th, 18th, 21st, 22d, 23d, 24th.
Thunderstorms: 10th, 22d, 28th.

RIVERS

Rather low stages prevailed on the Mississippi River at the beginning of the month but a marked rise set in at the end of the first week with rather high stages during the rest of the month, and the average stage was considerably above normal. The river was open most of the first week but with much floating ice and it froze rough. The thickness of ice ranged from 14 to 20 inches at the end of the month. The lowest stages on the Missouri also occurred during the first week and were rather high during the rest of the month with slight fluctuations. The interior rivers were frozen generally after the latter part of the first week. There were some unimportant fluctuations due to ice conditions.

Daily Maximum and Minimum Temperature for the Month of January, 1929

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	Maximum	15	25	25	24	22	15	5	38	35	29	37	21	7	7	7	15	23	25	13	20	27	26	5	5	0	6	6	9	5	10	10	16.7
	Minimum	— 2	3	14	0	2	— 7	—16	2	23	8	— 6	0	—14	— 1	—12	4	12	5	— 6	— 4	5	2	—15	— 6	—12	— 9	— 7	—12	— 6	— 2	—15	— 2.3
Alta	Maximum	12	19	20	20	20	14	5	38	36	39	37	27	1	8	14	15	20	25	8	22	38	24	0	— 2	2	9	5	7	3	14	1	16.2
	Minimum	— 1	7	10	7	— 3	— 8	—17	4	17	6	— 5	0	—12	— 7	— 9	5	11	4	— 3	— 2	6	— 5	—12	— 5	—14	— 7	— 5	— 6	— 3	— 1	—15	— 2.0
Alton	Maximum	11	29	23	23	21	15	3	37	33	40	40	30	7	7	14	15	22	24	9	22	30	23	7	— 2	— 2	5	4	4	0	13	0	16.4
	Minimum	— 1	9	12	4	0	— 7	—16	3	26	10	— 6	5	—11	— 5	—11	8	12	9	— 1	— 7	— 3	— 3	—12	— 5	—15	—12	— 8	— 6	— 8	— 0	—15	— 1.7
Belmond	Maximum	14	24	24	23	20	15	4	37	35	27	37	20	1	4	5	14	19	23	11	19	27	29	— 2	5	2	8	9	10	6	10	10	15.8
	Minimum	— 2	— 1	10	— 2	2	—10	—19	— 1	23	2	— 8	— 7	—18	— 7	—24	1	10	5	—13	— 5	2	— 5	—14	— 4	—11	—14	— 5	—15	— 3	0	—15	— 4.8
Charles City	Maximum	13	22	22	23	19	12	3	33	36	33	29	14	— 8	1	3	15	19	22	5	16	23	31	— 1	12	3	7	10	9	5	10	5	14.4
	Minimum	— 1	2	6	1	— 4	—11	—16	3	17	4	— 6	—10	—17	—16	—22	3	5	— 2	—13	— 4	3	— 6	—13	— 2	—11	—10	— 8	—15	— 3	2	—16	— 5.2
Decorah	Maximum	21	20	21	19	19	8	2	24	35	34	31	13	0	1	3	15	19	22	18	16	21	31	1	16	18	10	12	12	12	14	12	16.1
	Minimum	— 2	— 2	4	— 9	6	—10	—18	—15	10	5	—10	—13	—22	—21	—29	— 9	9	8	—16	— 7	1	— 1	—14	— 5	—10	—13	1	—20	2	— 8	—10	— 7.0
Dubuque	Maximum	25	22	27	27	34	9	0	26	36	26	29	20	— 4	4	6	22	26	22	16	15	27	36	6	25	25	15	13	13	14	15	12	19.0
	Minimum	8	5	11	3	4	— 6	—14	— 9	25	13	— 6	— 6	—16	— 9	—15	1	20	14	— 3	— 3	7	0	— 7	2	— 5	— 4	3	— 5	3	3	— 4	0.3
Forest City	Maximum	15	22	22	21	20	12	6	38	34	27	34	17	5	4	8	13	20	21	19	20	26	25	5	6	5	5	8	10	6	10	8	15.9
	Minimum	— 5	0	12	1	5	—11	—19	— 5	15	3	—11	— 4	—19	—10	—17	— 4	8	8	—11	— 9	— 1	— 2	—17	— 7	—13	—14	— 4	—14	—10	— 6	—16	— 5.7
Independence	Maximum	32	23	27	25	26	13	11	28	38	31	34	12	12	4	2	18	23	22	21	14	24	34	24	19	17	12	15	12	11	14	14	19.7
	Minimum	1	4	18	2	9	— 7	—17	— 9	16	11	— 1	— 5	—17	—13	—20	— 5	14	14	— 7	— 5	6	5	—12	3	— 5	—12	— 4	—10	— 5	1	—12	— 2.0
Inwood	Maximum	17	26	21	21	19	16	12	40	31	40	39	30	11	8	14	15	22	24	7	20	24	22	— 1	— 1	— 1	2	5	4	2	12	1	16.2
	Minimum	— 4	6	7	8	— 3	—10	—22	2	21	8	— 8	5	—13	—10	—12	9	11	2	— 5	— 4	— 6	— 6	—14	— 5	—21	—13	— 9	—11	—23	— 2	—20	— 4.6
Lake Park	Maximum	16	28	22	22	21	11	5	42	31	38	32	19	— 2	3	11	12	21	23	5	17	27	20	0	— 4	— 1	1	1	6	3	8	2	14.2
	Minimum	— 4	3	6	4	— 3	—11	—21	0	14	5	—10	— 4	—18	—13	—18	6	10	— 3	— 9	— 9	0	— 1	—15	—12	—16	—18	—10	—14	—22	— 5	—18	— 6.6
Mason City	Maximum	16	22	22	22	22	12	5	38	35	33	33	14	— 1	1	4	12	18	22	6	19	25	27	— 1	5	3	5	7	12	5	9	9	14.9
	Minimum	— 3	2	8	— 1	4	— 4	—16	— 2	16	4	— 7	— 5	—17	—11	—20	— 2	11	— 2	—13	— 6	4	— 1	—15	— 5	—11	—13	— 5	—20	— 6	— 2	—13	— 4.9
New Hampton	Maximum	20	21	24	22	20	10	2	30	34	33	32	13	0	0	4	12	18	23	13	17	24	34	0	13	12	6	11	10	8	10	10	15.7
	Minimum	— 2	— 1	10	— 2	6	—10	—17	—11	15	3	—10	—12	—20	—16	—23	— 7	12	7	—14	—10	0	— 2	—13	— 3	—10	—14	— 2	—13	— 2	0	—13	— 5.6
Northwood	Maximum	13	21	20	22	18	11	— 2	33	32	27	33	10	— 2	4	3	13	20	23	5	14	23	25	— 3	3	0	4	4	8	6	10	10	13.2
	Minimum	— 4	2	10	1	0	— 9	—17	— 8	16	4	— 8	— 5	—19	— 9	—15	— 4	13	4	—10	— 5	3	— 3	—16	— 5	—10	—13	— 7	—16	—13	— 5	—14	— 5.2
Pocahontas	Maximum	20	30	25	24	22	16	5	38	34	36	38	24	2	7	10	14	21	25	8	22	35	18	0	— 1	3	9	8	9	4	11	5	16.8
	Minimum	— 1	1	10	2	0	— 9	—20	2	20	5	— 5	2	—13	— 4	—13	5	12	8	— 5	— 3	3	0	—11	— 4	—13	— 9	— 5	— 9	— 4	0	—14	— 2.3
Postville	Maximum	24	19	19	16	20	8	0	29	35	33	29	15	0	— 2	5	12	18	19	10	14	25	32	0	16	10	10	9	8	6	10	17	15.0
	Minimum	0	0	4	— 7	8	—10	—19	—10	29	4	—11	—12	—20	—18	—22	— 7	12	— 4	—12	— 8	0	— 2	—14	— 4	— 9	—12	0	—14	— 4	— 4	—10	— 5.7
Rock Rapids	Maximum	16	27	27	22	22	12	3	39	35	39	39	27	8	5	13	15	23	23	7	19	21	19	1	— 2	— 3	4	5	5	2	11	1	15.6
	Minimum	— 2	7	7	2	— 2	— 8	—19	1	20	7	— 9	5	—14	— 5	—15	9	10	4	— 9	— 9	12	— 1	—14	— 6	—17	—10	— 7	— 5	—26	— 3	—18	— 3.7
Central Division																																	
Ames	Maximum	19	26	28	27	26	21	14	37	41	34	38	26	14	7	7	14	23	24	22	18	28	33	10	7	5	14	16	13	12	14	14	20.4
	Minimum	1	4	19	4	6	— 5	—14	3	23	8	— 2	0	—13	— 5	—14	3	9	20	—10	0	3	9	— 4	— 1	— 8	—14	8	— 7	5	7	— 8	0.9
Belle Plaine	Maximum	26	25	32	25	27	20	7	33	35	34	34	26	8	8	6	19	26	23	13	20	30	34	7	16	14	16	16	13	13	17	13	20.5
	Minimum	3	0	16	3	7	— 8	—19	— 3	21	9	— 2	— 4	—13	— 6	—18	0	18	13	— 9	— 6	3	7	— 9	0	— 7	—14	4	— 7	4	7	—10	— 0.6
Carroll	Maximum	25	29	27	27	22	20	15	35	35	30	38	30	10	8	10	11	23	26	21	20	29	27	2	2	4	11	11	13	9	15	13	19.3
	Minimum	0	5	16	8	2	— 5	—16	2	25	3	— 3	0	—10	— 4	—14	4	10	18	— 5	— 2	7	2	—10	— 4	—12	— 9	— 1	— 3	0	3	—13	— 0.2
Cedar Rapids	Maximum	29	25	31	26	32	18	5	28	36	34	33	24	7	6	9	20	26	24	19	18	29	36	8	23	19	14	16	19	16	15	15	21.3
	Minimum	5	0	18	2	10	— 9	—21	—12	21	9	— 7	—10	—13	— 9	—20	— 3	20	17	—11	— 7	— 3	2	— 9	2	— 6	—15	7	—10	8	9	— 8	— 1.4
Davenport	Maximum	29	22	33	33	36	19	2	34	39	28	33	25	5	9	6	22	30	29	21	18	29	41	8	31	19	19	19	17	17	18	15	22.8
	Minimum	10	5	14	8	7	— 1	—11	0	28	15	1	1	—11	— 4	—11	1	22	15	5	1	15	6	— 4	5	— 1	0	9	3	11	9	— 6	4.6
Des Moines	Maximum	20	26	32	27	25	24	4	36	38	34	38	30	4	12	12	16	26	28	12	20	30	35	6	11	8	18	16	15	14	20	7	20.8
	Minimum	4	7	16	10	3	— 3	—10	3	24	12	1	1	— 8	— 2	— 8	5	16	11	0	0	7	— 1	— 6	1	— 7	— 7	5	— 3	8	4	— 7	2.5
Ft. Dodge	Maximum	16	27	26	25	23	17	4	35	32	35	37	25	20	6	8	14	22	26	9	20	28	28	3	1	2	10	11	9	10	14	10	17.8
	Minimum	— 1	1	15	3	3	— 8	—19	2	21	5	1	— 2	—13	— 4	—16	2	13	9	— 9	— 4	3	2	— 9	3	—11	—13	— 4	—10	— 1	2	—13	— 1.9
Grinnell	Maximum	24	25	31	26	26	20	17	32	38	34	35	24	16	8	9	25	26	26	23	20	30	34	17	12	13	17	17	14	11	15	15	21.9
	Minimum	1	0	19	5	10	— 9	—19	— 4	23	7	— 1	— 3	—14	— 7	—14	— 1	15	18	— 5	— 7	3	12	—10	— 1	— 9	—15	6	— 8	5	5	—11	— 0.3
Guthrie Center	Maximum																																
	Minimum																																
Iowa City	Maximum	33	23	34	26	33	19	8	29	36	33	35	25	12	9	8	20	27	26	20	18	27	37	15	23	23	18	19	18	16	15	15	22.6
	Minimum	7	2	19	6	10	— 7	—18	— 8	25	11	— 3	— 6	—13	— 6	—18	0	20	20	— 5	— 6	4	15	— 7	2	— 5	—10	7	— 6	10	10	— 5	1.5
Iowa Falls	Maximum	20	24	24	22	22	15	6	36	35	33	35	20	5	4	5	13	20	24	16	21	28	32	4	8	5	10	11	9	10	10	10	17.3
	Minimum	— 1	0	18	1	6	— 8	—17	— 1	25	3	— 6	— 5	—17	— 8	—21	— 3	12	16	—13	— 6	3	4	—13	— 3	—10	—15	3	—11	2	2	—14	— 2.5
Little Sioux	Maximum	19	31	28	30	26	23	8	41	36	45	42	36	17	15	14	15	27	28	18	26	37	26	4	2	12	18	15	7	13	22	11	22.3
	Minimum	0	6	13	9	— 1	— 6	— 9	3	26	10	— 2	8	— 5	2	— 6	8	11	15	6	— 1	9	2	— 7	0	—10	0	— 3	— 3	0	6	— 9	2.3
Marshalltown	Maximum	22	28	26	25	23	19	7	33	37	33	33	21	8	5	5	18	23	24	18	19	28	33	7	9	7	13	13	12	10	15	13	18.9
	Minimum	2	4	18	6	7	— 6	—15	1	25	8	— 2	0	—14	— 4	—15	0	16	18	— 6	— 2	7	7	—10	— 1	— 9	— 9	5	— 9	5	5	—11	0.7
Olin	Maximum	33	22	32	25	33	15	13	24	36	33	32	25	9	7	7	20	28	27	21	20	29	36	28	23	22	13	18	17	18	16	14	22.5
	Minimum	11	0	18	0	15	— 9	—23	—20	17	8	— 3	—14	—15	—13	24	13	12	20	—15	—12	— 4	— 3	— 9	— 3	— 5	—19	—10	—10	5	4	— 9	— 4.0
Sioux City	Maximum	17	29	23	26	21	20	7	43	35	47	22	34	6	13	14	16	24	25	8	27	36	24	0	— 1	4	12	5	4	7	17	2	18.3
	Minimum	— 1	10	11	11	0	— 6	—13	7	11	10	— 3	6	— 7	— 1	— 4	10	13	5	3	5	9	— 8	—10	— 6	—13	— 5	— 5	— 3	— 3	— 4	—11	0.3
Southern Division																																	
Albia	Maximum	24	25	34	29	31	23	17	35	38	33	35	32	14	13	14	18	28	29	23	22	33	37	13	13	11	21	17	19	18	24	20	24.0
	Minimum	4	5	20	10	6	— 4	—13	1	26	13	2	— 3	—10	—10	—11	4	16	20	4	— 2	8	11	— 6	2	— 6	— 3	7	— 3	3	12	— 6	3.1
Atlantic	Maximum	18	29	30	30	25	25	12	37	36	30	36	32	15	13	11	13	27	28	21	21	26	31	4	5	6	24	19	17	15	19	16	21.6
	Minimum	2	5	17	10	5	— 3	—12	0	23	6	0	3	— 7	0	—12	5	12	20	— 1	— 2	2	2	— 7	— 2	—10	— 4	2	— 1	4	— 7	—10	— 1.7
Burlington	Maximum	32	21	34	31	35	21	21	34	39	35	34	31	18	14	12	23	31	33	26	23	29	41	30	31	31	22	22	21	21	24	22	27.2
	Minimum	11	3	20	9	14	— 2	—10	— 1	29	7	4	2	— 8	— 6	— 6	5	22	18	8	4	15	16	0	9	— 1	4	14	6	11	14	0	6.7
Columbus Jct.	Maximum	33	22	34	26	35	21	17	30	37	31	33	28	16	13	12	22	29	29	22	25	30	39	29	27	24	21	20	18	19	19	18	25.2
	Minimum	9	— 1	18	7	12	— 3	—15	— 7	27	13	0	— 3	—10	— 6	—10	2	21	21	1	— 3	8	14	— 4	5	— 3	— 5	8	— 1	10	11	— 3	3.6
Corning	Maximum																																
	Minimum																																
Corydon	Maximum	25	25	33	26	24	27	21	33	38	36	35	32	25	14	13	18	29	35	25	18	28	37	19	11	5	21	20	15	17	24	24	**24.3**
	Minimum	3	3	18	11	7	— 4	—14	— 2	28	12	3	— 3	— 8	— 2	—12	4	16	20	4	— 3	5	15	— 6	1	— 7	— 7	5	— 3	1	13	— 7	2.9
Creston	Maximum	22	28	32	28	24	26	15	39	36	32	34	33	18	11	11	15	26	26	22	20	32	33	5	7	10	23	18	15	16	17	19	22.4
	Minimum	2	2	16	11	6	— 7	—13	— 2	27	3	— 2	— 3	— 8	— 4	—13	5	13	21	0	— 5	2	1	— 7	— 1	—11	— 5	4	— 1	5	8	—10	1.1
Fairfield	Maximum	32	20	34	26	32	22	17	32	37	34	35	29	15	13	10	20	30	30	22	18	30	39	15	19	15	21	18	17	20	21	19	23.9
	Minimum	7	— 2	19	7	10	— 4	—13	— 6	28	14	— 1	— 1	—11	— 4	—11	4	20	20	— 1	0	7	14	— 4	4	— 4	— 7	7	— 1	3	12	— 3	3.3
Keokuk	Maximum	23	27	33	34	37	22	8	41	42	32	36	33	10	14	12	26	34	37	31	22	31	46	12	30	9	22	24	22	25	29	20	26.6
	Minimum	7	3	18	13	7	1	— 8	7	32	18	4	5	— 6	0	— 4	6	25	19	13	6	20	11	2	6	— 2	7	15	8	12	16	2	8.5
Knoxville	Maximum	23	26	35	25	23	25	16	36	38	32	37	30	15	10	11	16	26	25	23	22	31	36	14	11	7	19	19	15	19	19	18	22.6
	Minimum	3	4	17	8	9	— 6	—14	0	28	12	3	— 3	—10	— 5	—13	3	16	21	— 6	— 5	1	14	— 7	0	— 7	—11	7	— 5	6	9	— 7	2.0
Lamoni	Maximum	23	26	34	27	25	26	18	38	37	34	35	35	26	13	13	15	27	29	22	21	33	35	9	10	8	26	19	15	15	23	19	23.7
	Minimum	3	4	20	12	5	— 6	—13	— 3	31	5	2	— 2	— 8	— 3	—13	2	14	14	3	— 4	5	5	— 7	— 1	— 9	— 1	8	— 1	5	11	— 8	2.3
Sigourney	Maximum	31	20	27	27	25	19	19	28	36	33	35	29	11	12	11	18	27	29	22	19	30	37	24	19	15	20	19	16	17	20	17	23.0
	Minimum	6	4	19	7	11	— 7	—16	— 4	26	11	3	— 5	—12	— 6	—12	3	17	21	— 2	— 4	6	16	— 6	2	— 6	—11	6	— 4	7	11	— 7	2.4
Thurman	Maximum	21	31	34	30	28	31	26	44	38	33	41	38	34	19	15	17	29	31	28	24	35	31	9	5	14	28	25	15	14	25	23	26 3
	Minimum	5	5	16	15	4	— 5	— 3	3	32	10	4	6	1	3	— 5	7	14	21	5	— 2	3	9	— 4	2	— 8	5	5	0	4	14	— 5	5.2
Winterset	Maximum	20	26	32	26	23	23	18	37	40	33	36	32	15	10	14	15	28	25	23	22	33	34	8	8	10	23	20	16	15	20	18	22.7
	Minimum	2	7	18	9	5	— 5	—15	4	33	8	3	— 4	— 8	— 3	—12	8	8	18	— 2	— 2	8	5	— 5	— 2	—10	— 7	7	— 5	7	8	— 9	2.2
Omaha, Neb.	Maximum	20	32	29	29	25	28	7	41	38	42	32	37	11	16	14	16	28	28	14	24	34	29	4	3	12	27	17	11	14	23	12	22.5
	Minimum	4	13	18	17	4	0	— 5	7	16	14	2	11	— 2	2	— 4	8	15	14	6	6	14	— 3	— 5	— 3	— 8	6	0	0	1	0	— 6	4.6

HEAVY SNOWFALL OF JANUARY, 1929

By H. Merrill Wills

Weather Bureau Office, Dubuque, Iowa

A new record has been set at Dubuque for all months by the heavy snowfall of January. The total fall of 34.3 inches is without precedent in the history of the station. The only previous monthly fall which approached this record was 32 inches in December, 1887. The heaviest single fall in 24 hours was 11.0 inches on the 4th-5th. This is the largest single snowfall in the last 17 years. The accumulated average depth at the close of the month amounted to 20.1 inches, and this appears to have exceeded all previous records for the last 36 years, excepting one similar record of 20.5 inches in January, 1910. The snows of the last month have brought the winter's fall to date to 39.7 inches, which is more than a normal entire winter's fall. Practically the entire month's precipitation was from snow, amounting to 3.13 inches, which is the largest for January in 42 years.

The snow of the month were of unusual significance in the character of ground cover which resulted with its devastating effects upon street and highway transportation as well as damage to roofs and other property. Perhaps no snows have ever developed greater persistency in accumulating and hardening upon pavements, rendering the operation of vehicles difficult and dangerous at all times after the first heavy fall, on the 4th-5th. The conditions were decidedly aggravated along street car lines where the rails became deep channels or ruts in the heavy masses of frozen snow which covered the streets from 6 to 12 inches thick generally and as much as 18 inches thick in places. These conditions steadily grew worse and the city finally resorted to use of snow plows, tractors, scarifiers, graders, picks and trucks, from the middle of the month on into February, in an effort to remove the snow and ice. The situation was somewhat improved when the month closed but still very bad generally.

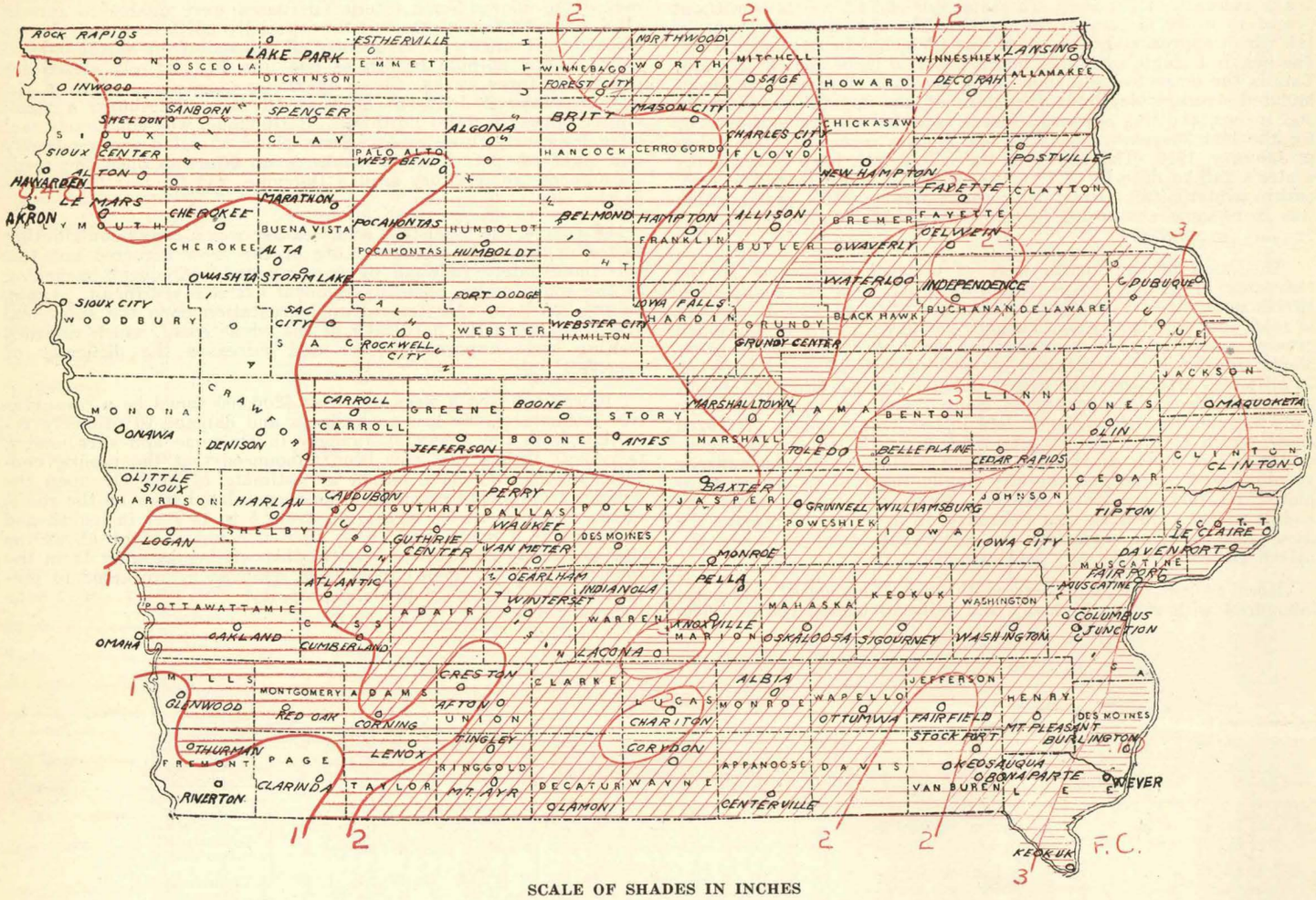
More or less drifting occurred through the month which also interfered with street, highway and railroad transportation. The first heavy snow, on the 5th, drifted some, causing general delays and blocking country roads for several days. Street car service was paralyzed for a time, some lines not being able to resume operation for a day or two. Light to moderate snows fell at frequent intervals through the rest of the month, accompanied by considerable drifting which would refill where snow plows had removed the snow. Some interurban buses were unable to run at all during the rest of the month, especially north and east, due to blockades. Trains were frequently off schedule from one to several hours, and a 36-mile branch of one line was entirely closed for practically three weeks. Crews operating snow plows north of the city encountered drifts as deep as 10 feet. Colesburg, a small village about 30 miles northwest of Dubuque, was completely isolated for nearly three weeks. Snow plows operated vigorously day and night for practically a month in an effort to open the roads throughout the territory around Dubuque, and to clear the streets in the city.

Of course, the persistent cold weather was a heavy contributing factor in that only slight melting of the snow occurred and this was immediately followed by freezing and consequent hardening of the snow, which made its removal extremely difficult. Again, on the 22d light rain formed an incrustation upon the snow and also encouraged the hardening of the whole cover, which retarded melting and evaporation later and increased the difficulty of removal.

It was believed a week ago that $200,000 would be a conservative estimate of the loss to business and damage to property resulting from the snows of January in Dubuque and surrounding territory. It has just now been announced that the roofing concerns of the city have placed an estimate of $100,000 upon the damage to property resulting from accumulated snow on the roofs, alone. Gigantic icicles measuring from 5 to 15 feet in length and as large as a man's body have been a common sight about the city and many can still be seen at this writing hanging from the eves, the most of them having been removed by workmen to prevent possible injury to life and property.

February 8, 1929.

TOTAL PRECIPITATION, JANUARY, 1929



SCALE OF SHADES IN INCHES

Less than 1.0	1.0 to 2.0	2.0 to 3.0	More than 3.0

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, FEBRUARY, 1929 No. 2

GENERAL SUMMARY

Severe winter weather prevailed during the greater portion of February. The general characteristics were similar to those of January, though the changes were not so pronounced and the number of days with the temperature above normal were greater. The temperature extremes were greater than in January, but the cold was less severe due to the absence of strong winds during the coldest weather. Storms of a blizzard type were mild compared to those of January, but the lack of thawing in January, with the heavy snow in February, resulted in serious interruption to all modes of travel.

At the close of January the State was entirely covered with a blanket of snow, at places amounting to more than two feet, and with a rather heavy crust. During the greater part of the month the snowfall was light, but it was very dry, and with a light wind it moved so freely that all cuts through drifts were filled after every storm, and it required a constant effort to keep travel on the main highways and railways open, but at times it was necessary to suspend all traffic temporarily. No part of the State was free from drifts, and in many localities where conditions were favorable, there were drifts more than 15 feet deep. Efforts were made to keep only the main highways open, and practically all the less traveled roads were closed during the severe storm of January 4th-5th and continued so throughout February, except in a small strip in the southeastern portion of the State. Even on the main highways it was necessary to detour around some drifts that could not be kept open. Branch lines of railroads were forced to suspend operation many times during the month, and it was necessary to bring in supplies to small towns by sled. Rural mail delivery was almost impossible; some places had no mail for as much as two weeks; and all deliveries on rural routes were curtailed. The lack of adequate mail facilities was reflected in the enormous increase in the use of long distance telephone service. The heaviest snow of the month occurred in the period from the 24th-26th and was sufficient to completely block all traffic for a time. It was necessary in one case to use three huge locomotives to move five cars and at a very slow rate. In the cities it was impossible to keep the streets clear; the snow on many streets became a solid mass of ice; and on many streets and highways there were only ruts through the snow where the automobiles traveled, and it was impossible to leave the ruts except at branch roads or intersections. In most cities all traffic was diverted to the cleared streets. Heavy hauling with chains did enormous damage to paving, and with the cost of snow removal added, the total cost of the heavy snows will amount to several million dollars. The accumulated snow caused many roofs to collapse and many more were damaged to such an extent that extensive replacement and repairs will be necessary.

While this winter does not rank as the coldest by a wide margin, the bad effects were intensified by the abnormally heavy snow, and this winter will be long remembered as unusually severe. The constant snow cover required that stock be kept on heavy feed at all times, and it was very difficult to haul hay to the stock sheds; birds that were not fed suffered further loss; and rabbits severely injured fruit trees and berry canes. No outside work, except that which was absolutely necessary, was attempted.

F. L. D.

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
1873	19.2	— 3.4	49	—25	1.17	— 0.04	2.52	0.30					
1874	21.2	— 1.4	59	—20	1.28	+ 0.07	2.88	0.16					
1875	6.4	—16.2	48	—31	1.72	+ 0.51	6.75	0.82					
1876	25.5	+ 2.9	68	—16	1.11	— 0.10	3.63	0.15					
1877	34.0	+11.4	63	— 5	0.21	— 1.00	0.65	0.00					
1878	34.4	+11.8	60	— 8	0.59	— 0.62	2.95	0.00					
1879	21.6	— 1.0	57	—20	0.68	— 0.53	1.90	0.10					
1880	27.4	+ 4.8	68	—12	0.64	— 0.57	2.15	0.02					
1881	17.0	— 5.6	57	—24	3.10	+ 1.89	6.35	0.97					
1882	33.5	+10.9	72	—12	0.91	— 0.30	1.85	0.10					
1883	17.7	— 4.9	62	—33	1.89	+ 0.68	6.13	0.06					
1884	18.3	— 4.3	56	—23	1.32	+ 0.11	3.50	0.30					
1885	12.5	—10.1	54	—32	0.82	— 0.39	2.50	0.10					
1886	21.2	— 1.4	56	—34	0.59	— 0.62	1.96	0.24					
1887	17.1	— 5.5	60	—25	2.14	+ 0.93	5.61	0.12					
1888	20.2	— 2.4	64	—34	1.01	— 0.20	3.10	0.15					
1889	17.8	— 4.8	62	—28	0.47	— 0.74	1.70	0.00					
1890	25.1	+ 2.5	68	—24	0.83	— 0.38	2.18	0.25					
1891	19.4	— 3.2	70	—31	1.16	— 0.05	2.41	0.55		3	13	7	8
1892	28.1	+ 5.5	68	—20	1.20	— 0.01	2.18	0.12	5.0	6	6	7	16
1893	16.0	— 6.6	60	—28	1.39	+ 0.18	2.91	0.06	8.1	6	10	8	10
1894	19.7	— 2.9	60	—19	0.89	— 0.32	2.41	T.	8.4	3	16	8	4
1895	16.4	— 6.2	73	—33	0.49	— 0.72	1.34	0.02	3.3	4	13	9	6
1896	27.4	+ 4.8	78	—13	0.71	— 0.50	2.40	0.04	5.4	4	12	9	8
1897	24.7	+ 2.1	61	—24	0.89	— 0.32	1.81	0.22	8.0	5	6	10	12
1898	24.2	+ 1.6	62	—18	1.20	— 0.01	3.65	0.10	7.8	5	10	9	9
1899	12.2	—10.4	75	—40	0.89	— 0.32	4.32	0.12	7.1	5	11	10	7
1900	14.8	— 7.8	60	—27	1.30	+ 0.09	4.57	0.18	9.9	6	10	8	10
1901	17.5	— 5.1	49	—21	1.01	— 0.20	3.00	0.12	9.7	4	15	7	6
1902	17.6	— 5.0	62	—21	0.73	— 0.48	2.39	0.02	2.6	4	13	8	7
1903	19.8	— 2.8	56	—21	1.18	— 0.03	3.25	0.30	7.9	4	13	7	8
1904	14.8	— 7.8	70	—26	0.41	— 0.80	1.99	T.	4.5	4	10	9	10
1905	12.8	— 9.8	69	—41	1.57	+ 0.36	2.97	0.44	15.5	7	11	6	8
1906	23.6	+ 1.0	66	—32	1.29	+ 0.08	2.91	0.20	6.1	5	14	7	7
1907	25.0	+ 2.4	65	—31	0.71	— 0.50	1.95	0.06	4.6	4	14	6	8
1908	24.3	+ 1.7	59	—16	1.69	+ 0.48	3.95	0.23	8.9	6	12	6	11
1909	26.2	+ 3.6	62	—26	1.51	+ 0.33	4.72	0.30	7.7	5	11	6	11
1910	17.8	— 4.8	58	—21	0.46	— 0.75	2.09	T.	4.0	3	14	8	6
1911	27.3	+ 4.7	71	—13	2.76	+ 1.55	5.46	0.50	7.0	6	12	6	10
1912	18.1	— 4.5	57	—30	1.21	0.00	3.25	0.04	11.2	5	10	9	10
1913	20.2	— 2.4	70	—24	0.82	— 0.39	2.39	0.07	7.3	4	14	7	7
1914	16.8	— 5.8	59	—29	0.87	— 0.34	1.99	0.32	9.2	6	10	9	9
1915	29.1	+ 6.5	62	— 8	2.93	+ 1.72	5.39	0.43	9.4	9	9	5	14
1916	19.0	— 3.6	62	—32	0.55	— 0.66	1.38	0.05	6.0	4	14	8	7
1917	15.2	— 7.4	68	—37	0.36	— 0.85	1.19	T.	3.5	3	14	8	6
1918	23.0	+ 0.4	70	—36	0.95	— 0.26	2.10	0.09	6.0	5	14	7	7
1919	24.9	+ 2.3	65	—16	2.42	+ 1.26	4.12	1.32	9.9	8	11	5	12
1920	24.0	+ 1.4	59	—22	0.56	— 0.65	1.75	0.04	4.1	5	9	6	14
1921	31.0	+ 8.4	76	— 5	0.77	— 0.14	2.00	T.	6.5	5	13	7	8
1922	23.7	+ 1.1	70	—20	1.59	+ 0.38	4.56	0.40	1.3	4	14	7	7
1923	20.1	— 2.5	61	—23	0.40	— 0.81	1.71	0.00	3.2	3	13	8	7
1924	25.8	+ 3.2	70	—15	1.27	+ 0.06	4.00	0.30	11.2	7	15	5	9
1925	28.4	+ 5.8	66	—16	0.82	— 0.39	3.69	T.	2.6	4	11	7	10
1926	31 2	+ 8.6	67	— 2	0.76	— 0.45	2.13	0.04	3.3	4	10	7	11
1927	30 6	+ 8.0	65	—17	1.15	— 0 06	3.60	0.13	4.4	5	13	6	9
1928	28.6	+ 6.0	65	—14	1.95	+ 0.74	3.97	0.62	4.4	7	15	5	9
1929	14.0	— 8.6	52	—35	1.31	+ 0.10	3 03	0 34	12.5	8	10	7	11

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

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area and based on the records of 103 stations, was 14.0°, or 8.6° below normal. The departures were pronounced and uniform in all districts, with the greatest departure in the central district. The highest mean was 21.4° at Keokuk, and the lowest was 7.4° at Lake Park. The absolute range for the State was 87°, ranging from 52° at Keokuk on the 23d, to —35° at Decorah on the 20th. The average number of days with the minimum temperature 32°, or lower, was 28, though the minimum temperature remained above 32° at a few stations in the southern portion of the State on the 24th and 25th; the average number of days with the minimum temperature zero, or lower was 12, ranging from 14 in the north-central and northeastern districts to 10 in all southern districts. The greatest number of days with the minimum zero, or lower, was 16 in three districts and th least was 7 at one station in the southeastern district. The average number of days with the maximum temperature 32°, or lower was 22, ranging from 26 in the north-central district to 18 in the southeastern district. At 27 stations there were days on which the maximum temperature did not go above zero.

Climatological Data for February, 1929

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		
Northwest District																				
Akron	Plymouth	1,153	2								0.58	— 0.30	0.19	6.7	10	13	9	6	n.	Orlan C. Moore
Alta	Buena Vista	1,513	37	11.7	— 8.0	43	23	—19	9	42	2.01	+ 0.99	0.56	20.5	9	9	8	11	n.	D. E. Hadden
Alton	Sioux	1,305	23	10.8	— 8.1	38	23	—24	9	41	1.35	+ 0.39	0.30	13.5	9	4	14	10	nw.	W. S. Slagle
Cherokee	Cherokee	1,196	8	11.0	— 8.5	42	23	—21	9	42	1.27	+ 0.28	0.42	17.5	10	12	6	10	s.	J. E. Wirth
Estherville	Emmet	1,298	33	9.6	— 8.3	36	28	—25	19	42	0.75	— 0.09	0.30	7.5	4	12	10	6	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								0.94	+ 0.15	0.20	11.6	10	12	1	15	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	8.6	— 9.2	37	23	—28	19	40	0.51	— 0.36	0.14	5.1	9	11	7	10	nw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	7.4	—10.4	33	23	—28	19	38	0.88	— 0.04	0.54	5.3	7	5	7	16	nw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	12.6	— 8.3	41	23	—22	9	45	2.01	+ 1.21	0.40	20.3	11	12	3	13	n.	Henry Newell
Marathon	Buena Vista	1,390	2								1.56		0.62	15.6	14	3	8	17	sw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	11.0	— 8.7	38	23	—22	9	45	1.25	+ 0.13	0.41	12.3	12	9	6	13	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	8.7	— 9.2	35	23	—34	19	39	1.08	+ 0.40	0.26	15.0	9	17	3	8	nw.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	9.0	— 9.5	38	23	—23	9†	40	0.76	— 0.24	0.16	9.5	7	7	11	10	ne.	J. W. Dow
Sheldon	O'Brien	1,418	17	9.8	— 8.7	39	23	—24	9	42	1.10	+ 0.12	0.28	11.0	10	8	9	11	nw.	Ross E. Forward
Sioux Center	Sioux	1,426	29	10.6	— 8.1	41	23	—22	9	41	0.96	— 0.01	0.26	11.9	9	7	8	13	se.	F. C. Aue
Spencer	Clay	1,319	14	10.3	— 8.2	41	23	—26	19	43	1.32	+ 0.41	0.32	16.5	8	11	5	12	nw.	E. W. Little
Storm Lake	Buena Vista	1,440	39	12.0	— 8.4	41	23	—19	9	41	1.54	+ 0.55	0.40	17.5	9	11	6	11	sw.	L. B. Florey
Washta	Cherokee	1,157	30	12.8	— 8.0	45	23	—29	9	45	0.89	— 0.05	0.20	9.5	6	13	3	12	n.	H. L. Felter
West Bend	Palo Alto	1,197	35	10.2	— 9.0	38	23	—24	9	43	0.92	— 0.06	0.40	11.5	8	10	6	12	nw.	Jos. Dorweiler
Means and extremes				10.4	— 8.6	45	23	—34	19	45	1.14	+ 0.22	0.62	12.5	9	10	7	11	nw.	
North Central District																				
Algona	Kossuth	1,224	55	11.2	— 7.6	38	26	—20	9	36	1.18	+ 0.09	0.76	18.5	3	12	8	8	nw.	W. E. Laird
Allison	Butler	1,060	14	9.6	— 9.7	35	23	—28	9†	43	1.53	+ 0.42	0.80	19.0	6	12	6	10	nw.	E. W. Detra
Belmond	Wright	1,181	18	9.0	— 9.3	38	23	—28	20	43	1.44	+ 0.33	0.85	21.0	8	5	5	18	nw.	H. F. Luick
Britt	Hancock	1,236	41	10.8	— 6.8	36	23†	—22	1†	50	1.56	+ 0.75	0.59	17.0	6	5	0	23	ne.	E. P. Healy
Charles City	Floyd	1,015	37	9.1	— 8.0	32	23	—28	20	43	1.73	+ 0.63	0.90	20.7	10	8	7	13	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	31	9.4	— 9.2	31	23	—22	20	41	1.55	+ 0.61	0.55	16.2	9	6	3	19	nw.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								1.99	+ 0.69	1.05	22.0	7					L. H. Davis
Humboldt	Humboldt	1,095	40	11.2	— 9.3	39	23	—22	9	37	1.51	+ 0.69	0.75	17.5	6	9	6	13	nw.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	8.6	— 9.5	30	16†	—30	20	43	1.99	+ 1.04	0.96	21.5	10	9	6	13	nw.	American Beet Sugar Co.
Northwood	Worth	1,222	32	9.9	— 6.4	32	27	—26	20	41	1.10	— 0.28	0.40	11.0	7	7	7	14	nw.	Charles Dwelle
Osage	Mitchell	1,163	34	9.9	— 6.9	30	5†	—21	20	31	1.68	+ 0.62	0.80	21.0	8	7	12	9	nw.	Dr. C. E. Juhl
Means and extremes				9.9	— 8.2	39	23	—30	20	50	1.57	+ 0.49	1.05	18.7	7	8	6	14	nw.	
Northeast District																				
Decorah	Winneshiek	872	35	10.3	— 7.5	38	27	—35	20	48	1.34	+ 0.29	0.58	13.0	4	12	5	11	nw.	M. D. Whitney
Dubuque	Dubuque	700	55	14.0	— 8.2	39	27	—24	20	40	1.00	— 0.38	0.68	8.0	9	8	2	18	nw.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	11.2	— 7.8	38	3	—33	20	48	1.32	+ 0.04	0.67	10.7	7	9	11	8	nw.	R. Z. Latimer
Independence	Buchanan	956	64	13.0	— 8.2	38	26	—26	20	40	1.00	— 0.05	0.46	6.4	7	11	1	16	nw.	Dr. Geo. Boody
Lansing	Allamakee	632	21																	Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	9.4	— 9.3	32	24	—27	20	41	1.12	+ 0.07	0.40	14.0	3	7	10	11	nw.	D. W. Dawson
Oelwein	Fayette	1,036	5	12.0	— 8.3	37	24	—24	20	37	0.96	— 0.22	0.32	12.0	4	4	16	8	nw.	John T. Ridler
Postville (near)	Clayton	1,192	29	9.5	— 8.8	33	27	—29	20	41	0.90	— 0.24	0.40	9.0	6	9	13	6	nw.	F. L. Williams
Waterloo	Black Hawk	851	45	12.2	— 8.7	38	27	—25	20	39	1.22	+ 0.04	0.72	10.3	8	11	3	14	se.	R. B. Slippy
Waverly	Bremer	936	32	10.1	— 9.9	37	24	—30	15	45	1.54	+ 0.33	0.47	17.1	9	12	8	8	nw.	D. H. Murphy
Means and extremes				11.3	— 8.5	39	27	—35	20	48	1.16	0.00	0.72	11.2	6	9	8	11	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	13.4	— 8.1	39	23†	—17	9	36	2.23	+ 1.20	0.70	23.3	13	10	8	10	se.	George Kibby
Carroll	Carroll	1,265	38	12.6	— 9.3	40	23	—19	9	34	1.49	+ 0.43	0.55	15.5	7	13	3	12	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	13.8	— 8.6	39	23	—19	9	35	0.88	— 0.06	0.24	14.5	6	6	11	11	nw.	V. L. Byers
Guthrie Center	Guthrie	1,077	33																	Walter Bell
Harlan	Shelby	1,192	29	14.8	— 8.1	40	23	—18	9	37	1.28	+ 0.15	0.45	12.8	10	10	4	14	se.	
Jefferson	Greene	1,052	29	13.6	— 8.9	40	23	—17	9	34	2.10	+ 1.07	1.00	21.0	11	11	4	13	nw.	W. I. Lyon
Little Sioux	Harrison	1,010	23	16.6	— 7.3	49	23	—19	9	46	1.69	+ 0.41	0.52	15.5	12	6	12	10	nw.	H. W. Kerr
Logan	Harrison	1,120	61	16.6	— 8.4	46	23	—19	9	40	1.12	— 0.07	0.32	15.0	7	5	17	6	s.	Amy Ann Stern
Onawa	Monona	1,051	27	15.6	— 7.6	47	23	—19	9	44	1.40	+ 0.12	0.48	17.5	6	11	5	12	se.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32																	A. W. McIsaac
Sac City	Sac	1,269	52	12.0	— 8.5	39	23	—18	9	38	1.92	+ 0.81	0.48	24.0	10	7	9	12	nw.	F. P. Kessler
Sioux City	Woodbury	1,135	39	13.5	— 7.5	43	23	—15	9	41	1.00	+ 0.18	0.36	9.8	12	6	10	12	nw.	U. S. Weather Bureau
Means and extremes				14.3	— 8.2	49	23	—19	9	46	1.51	+ 0.40	1.00	16.9	9	9	8	11	nw.	
Central District																				
Ames	Story	926	51	13.1	— 9.4	41	23	—19	20	37	1.97	+ 1.03	0.88	19.6	8	15	0	13	nw.	Iowa State College
Baxter	Jasper	898	28	13.9	— 9.0	41	27	—19	9	34	1.61	+ 0.59	0.81	14.7	8	7	11	10	nw.	Otto Sanderman
Boone (near)	Boone	894	23	12.4	—10.9	46	27	—25	9	47	1.49	+ 0.49	0.80	15.9	11	11	3	14	nw.	C. F. Henning
Des Moines	Polk	861	50	15.2	— 8.5	43	23	—13	9	30	2.06	+ 0.94	0.77	19.1	15	8	7	13	n.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	11.8	—10.5	39	23	—22	9	37	1.47	+ 0.62	0.57	16.0	9	9	6	13	nw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	13.4	— 9.8	41	23†	—19	9†	36	0.85	— 0.37	0.34	7.5	5	15	4	9	nw.	R. E. Bates
Grundy Center	Grundy	976	37	12.4	— 9.6	40	23	—20	9	34	1.34	+ 0.40	0.50	14.0	8	9	6	13	nw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	10.0	—11.0	38	23	—26	20	41	3.03	+ 1.40	1.20	27.8	10	11	3	14	nw.	C. H. Gilbert
Marshalltown	Marshall	947	36	13.8	— 9.8	42	23	—17	9	34	1.57	+ 0.36	0.77	15.4	12	9	4	15	nw.	C. C. Pigman
Monroe	Jasper	922	16	15.6	— 9.0	42	23†	—17	9	33	1.59	+ 0.39	0.69	13.0	5	8	7	13	nw.	J. A. Dibel
Perry	Dallas	975	27	12.8	—10.7	41	27	—20	9	40	1.92	+ 0.60	0.82	17.9	13	11	3	14	nw.	Eugene N. Hastie
Toledo	Tama	847	34	13.2	— 9.8	41	23	—26	20	45	1.43	+ 0.30	0.75	12.0	8	10	8	10	nw	H. P. Giger
Van Meter	Dallas	872	9								1.23		0.56	15.2	6					Calvin K. Smith
Waukee	Dallas	1,032	25	14.0	— 9.1	40	23	—18	9	30						10	9	9	w.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	10.0	—11.2	41	23†	—28	1†	45	1.17	+ 0.03	0.51	25.2	12	12	5	11	nw.	Frank A. Bonebright
Means and extremes				13.0	— 9.8	46	27	—28	1†	47	1.40	+ 0.26	1.20	16.7	9	10	6	12	nw.	

Climatological Data for February, 1929—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		
East Central District																				
Belle Plaine	Benton	866	38	14.5	— 8.4	42	27	—20	20	37	1.42	— 0.18	0.60	10.3	10	10	6	12	nw.	O. C. Burrows
Cedar Rapids	Linn	737	46	14.4	— 8.1	39	24†	—23	20	39	1.32	— 0.08	0.54	8.0	5	12	0	16	nw.	J. T. Wurster
Clinton	Clinton	595	55	16.4	— 8.2	42	24	—23	20	44	0.78	— 1.18	0.29	6.0	7	10	7	11	n.	Dr. A. P. Bryant
Davenport	Scott	580	57	18.1	— 6.8	43	23	—11	20	34	0.81	— 0.77	0.45	5.4	8	8	9	11	nw.	U. S. Weather Bureau
Davenport No. 2	Scott	690	3	18.8	.....	44	23†	—16	20	44	0.92	.....	0.25	6.5	6	16	4	8	sw.	Rex Shriver
Fairport	Muscatine	567	7	17.8	— 7.4	46	24	—20	20	47	0.65	— 1.10	0.19	3.5	5	10	2	16	nw.	Bureau of Fisheries
Iowa City	Johnson	733	68	15.4	— 8.8	42	23	—22	20	40	1.04	— 0.47	0.42	6.5	5	10	6	12	nw.	Prof. J. F. Reilly
Le Claire	Scott	576	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Margaret T. Disney
Maquoketa (near)	Jackson	592	23	12.4	— 9.4	40	24	—32	20	49	0.87	— 0.48	0.30	7.3	6	11	4	13	sw.	John Strodthoff
Muscatine	Muscatine	546	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	William Molis
Olin	Jones	760	29	13.4	— 8.7	42	24	—32	20	47	0.94	— 0.71	0.30	8.0	5	13	4	11	nw.	Mrs. L. Stingley
Tipton (near)	Cedar	807	29	14.0	— 9.8	39	24	—28	20	44	1.07	— 0.42	0.50	4.0	4	7	8	13	w.	John Kroeplen
Williamsburg	Iowa	770	12	13.8	— 9.0	40	16†	—26	20	42	0.92	— 0.38	0.38	5.6	5	16	7	5	nw.	Dr. F. C. Schadt
Means and extremes		.....	.....	15.4	— 8.1	46	24	—32	20	49	0.98	— 0.62	0.60	6.5	6	11	5	12	nw.	
Southwest District																				
Atlantic	Cass	1,164	37	15.7	— 8.2	42	23	—15	9	33	2.30	+ 1.16	0.50	23.5	14	8	8	12	nw.	T. H. Whitney
Bedford	Taylor	1,200	.....	.....	.....	.....	.....	.....	.....	.....	1.58	+ 0.22	0.54	11.9	10	11	6	11	nw.	Arthur L. Bishop
Clarinda	Page	1,009	38	18.3	— 9.5	45	16	—15	9†	40	0.68	— 0.46	0.24	8.5	5	10	8	10	se.	Dr. H. C. Hawley
Corning	Adams	1,150	36	.....	.....	.....	.....	.....	.....	.....	1.00	— 0.18	0.52	12.9	5	11	10	7	sw.	C. A. Smith
Cumberland (near)	Cass	1,225	29	.....	.....	.....	.....	.....	.....	.....	2.77	+ 1.68	0.78	18.0	8	8	7	13	nw.	Carl E. Pollock
Glenwood	Mills	1,100	30	18.2	— 8.3	46	23†	—16	9	40	1.46	+ 0.59	0.60	14.6	10	10	8	10	nw.	George Mogridge
Lenox	Taylor	1,250	33	16.8	— 8.7	42	27	—16	9	39	1.09	+ 0.10	0.45	9.9	10	11	10	7	nw.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	17.6	— 7.0	44	23	—15	9	37	1.39	+ 0.34	0.56	17.3	6	12	6	10	nw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3	.....	.....	.....	.....	.....	.....	.....	2.26	+ 1.13	1.43	18.0	6	6	11	11	nw.	B. R. Bridge
Riverton (near)	Fremont	920	2	.....	.....	.....	.....	.....	.....	.....	1.13	— 0.05	0.48	11.8	11	10	3	15	n.	Geo. C. Rader
Thurman	Fremont	960	31	18.6	— 9.3	47	23	—16	9	44	0.68	— 0.70	0.33	8.3	5	13	2	13	s.	H. H. Askew
Omaha, Neb		1,105	57	18.6	— 6.9	49	23	—11	9	38	2.20	+ 1.31	1.08	21.9	10	10	5	13	nw.	U. S. Weather Bureau
Means and extremes		.....	.....	17.7	— 8.1	49	23	—16	9	44	1.54	+ 0.42	1.43	14.9	9	10	7	11	nw.	
South Central District																				
Afton	Union	1,212	34	16.6	— 9.0	45	27	—16	9	31	2.81	+ 1.64	0.70	18.0	9	9	10	9	sw.	S. R. Brown
Albia	Monroe	949	30	17.6	— 7.8	43	27	—14	9	32	1.32	— 0.04	0.53	4.0	10	10	4	14	ne.	O. E. McBride
Centerville	Appanoose	1,013	23	17.4	— 9.7	43	24	—15	9†	35	0.71	— 0.79	0.30	3.1	7	11	7	10	sw.	Thomas Wood
Chariton (near)	Lucas	1,042	33	16.2	— 8.9	42	27	—16	9	35	0.34	— 0.79	0.22	2.0	2	11	8	9	nw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	16.4	— 9.8	42	17	—17	9	36	11.0	— 0.30	0.41	3.9	7	13	2	13	nw.	J. C. Davis
Creston	Union	1,291	23	15.4	— 9.3	40	16†	—18	9	37	1.40	+ 0.06	0.39	15.2	9	12	12	4	n.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	14.0	— 9.3	40	16	—20	9	37	1.80	+ 0.39	0.48	22.5	12	13	3	12	se.	George Phillips
Indianola	Warren	972	37	15.9	— 8.7	45	27	—17	9	33	1.45	+ 0.20	0.38	14.7	9	8	10	10	nw.	Seth F. Shenton
Knoxville	Marion	920	33	16.0	— 9.7	43	27	—16	9	34	2.06	+ 0.81	0.78	12.5	10	12	3	13	nw.	W. J. Casey
Lacona	Warren	824	29	.....	.....	.....	.....	.....	.....	.....	1.75	+ 0.07	0.40	15.5	12	11	10	7	.....	J. B. Alter
Lamoni	Decatur	1,123	21	16.2	—11.2	41	23†	—19	9	34	1.38	+ 0.14	0.52	5.9	13	13	1	14	nw.	F. S. Parks
Mount Ayr	Ringgold	1,220	35	16.5	— 9.9	42	23	—13	9	32	1.18	— 0.12	0.52	7.3	7	16	3	9	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	15.4	—10.7	41	27	—16	9	30	1.60	+ 0.42	0.53	4.7	9	12	7	9	sw.	James A. Verploegh
Winterset	Madison	1,118	37	15.8	— 9.0	41	23†	—16	9	30	2.50	+ 1.42	0.95	21.5	8	12	9	7	nw.	H. S. Ely
Means and extremes		.....	.....	16.1	— 9.5	45	27	—20	9	37	1.53	+ 0.23	0.95	10.3	9	12	6	10	nw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	17.5	— 9.3	43	23	—15	20	35	0.67	— 0.59	0.28	2.4	6	18	3	7	sw.	B. R. Vale
Burlington	Des Moines	544	32	20.4	— 8.3	46	23	— 7	9†	33	1.00	— 0.81	0.45	5.0	10	14	7	7	sw.	John T. Donnelly
Columbus Junction	Louisa	595	27	17.5	— 8.8	43	23	—19	20	40	0.82	— 0.58	0.26	5.4	8	12	6	10	nw.	Miss Musa Todd
Fairfield	Jefferson	780	44	16.4	— 9.1	43	23	—19	20	38	1.57	— 0.02	0.42	6.7	9	12	4	12	n.	R. M. McKenzie
Keokuk	Lee	614	57	21.4	— 6.9	52	23	— 6	9	39	0.97	— 0.58	0.61	5.8	11	7	7	14	e.	U. S. Weather Bureau
Keosauqua	Van Buren	639	36	18.0	— 9.3	45	24	—19	10	39	0.55	— 0.92	0.35	1.1	6	5	12	11	nw.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	19.0	— 7.5	45	17†	—11	20	36	0.64	— 0.80	0.28	4.5	6	12	7	9	nw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	16.4	— 8.3	42	23†	—16	9†	36	1.43	+ 0.28	0.58	7.8	8	9	6	13	nw.	Roy R. Robinson
Ottumwa	Wapello	649	33	18.2	— 8.5	45	23	—16	20	41	0.74	— 0.71	0.30	1.9	6	10	12	6	nw.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	16.3	— 8.4	40	16†	—21	20	39	1.19	— 0.21	0.36	5.6	9	12	5	11	nw.	W. E. Utterback
Stockport (near)	Van Buren	747	26	17.3	— 8.4	45	23	—18	10†	41	0.76	— 0.63	0.35	4.5	5	14	2	12	nw	C. L. Beswick
Washington	Washington	757	46	18.0	— 7.5	45	23	—15	20	38	1.46	+ 0.17	0.73	6.0	5	11	6	11	nw.	D. D. Sherman
Wever	Lee	552	.....	19.7	.....	46	17†	—16	10	44	1.17	.....	0.46	5.7	9	.....	.....	.....	.....	H. G. Liddle
Means and extremes		.....	.....	18.2	— 8.2	52	23	—21	20	44	0.97	— 0.46	0.73	4.8	7	11	7	10	nw.	
State means and extremes		.....	.....	14.0	— 8.6	52	23	—35	20	50	1.31	+ 0.10	1.43	12.5	8	10	7	11	nw.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

PRECIPITATION

The average precipitation for the State, derived from the averages of 9 districts of nearly equal area and from the records of 113 stations, was 1.31 inches, or 0.10 inch more than the normal. There was an excess in all districts except the three eastern, the northeastern being exactly normal. Over most of the State the precipitation was all in the form of snow. The greatest amount at a single station was 3.03 inches at Iowa Falls and the least was 0.34 inch at Chariton. The greatest amount occurring in 24 consecutive hours was 1.43 inches at Red Oak on the 26th.

MISCELLANEOUS PHENOMENA

Aurora: 21st, 26th, 27th, 28th.

Fog: 11th, 13th, 20th, 21st, 23d, 24th, 25th, 27th, 28th.

Halos (lunar and solar): 2d, 3d, 5th, 7th, 10th, 12th, 15th, 16th, 17th, 18th, 20th, 21st, 23d, 24th, 28th.

Haze: 27th.

Sleet: 24th, 25th, 26th.

Thunderstorms: 7th.

Daily Precipitation for February, 1929

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	
Northwest District																															
Akron	Big Sioux			.01	.03	.09	.12		T.		T.		.01		T.			.01	.01			T.				.06	.19		.05				0.58
Alta	Raccoon			.14	.12	T.	.22	T.					.08					.12	.03							.27	.47		.56				2.01
Alton	Floyd			.10	.10	.05	.30				T.		.10	T.				.20	T.							.10	.20		.20				1.35
Cherokee	Little Sioux			.10	.11	T.	.13	T.	T.		.02		.04	T.	T.			.06	.04			T.				.21	.14		.42				1.27
Estherville	Des Moines						.05											.30								.10	.30						0.75
Hawarden	Big Sioux			.05	.03	.13	.20	T.			T.		.16	T.	.01			.03	T.							.06	.11		.16				0.94
Inwood (near)	Big Sioux			.08	.02	.02	.14						.03		.03		T.	.06								.02			.11				0.51
Lake Park (near)	Little Sioux			.02	.03	.02	.09						T.				T.									.10	.54		.08				0.88
Le Mars	Floyd			.02	.15	.03	.40						.07	.04				.10	.15							.25	.40		.40				2.01
Marathon	Raccoon		.02	.08	T.	.08	.11	.03		T.	T.	T.	.09	T.	.02		.03	.11	.03			T.		T.	.12	.62	.03		.19				1.56
Pocahontas	Des Moines			.04	.10	T.	.05	T.	.03		.02		.03	T.	.01		T.	.10	.03			T.				.35	.44		.05				1.25
Rock Rapids	Big Sioux			.05	.09	.08	.20						.10		.03			.26								.02			.25				1.08
Sanborn	Floyd			T.	.08	.08	.16	T.					.08		T.			.16								.08			.12				0.76
Sheldon	Floyd		T.	.05	.04	.07	.17	T.	T.		T.	T.	.08	T.	.01		T.	.21	T.			T.				.08	.11		.28				1 10
Sioux Center	Floyd			.04	.01	.08	.18						.12		.01			.16								.04			.26				0.96
Spencer	Little Sioux			.04			.21	.16						.08				.24								.16	.32		.08				1.32
Storm Lake	Raccoon			.11	.11		.09				T.		.08	T.				.08	.03							.27	.37		.40				1.51
Washta	Little Sioux			T.	.15		.20						T.					T.	.04							.16	.15		.19				0.89
West Bend	Des Moines				.01		.04						.04		.04			.16								.16	.40		.04				0.92
North Central District																															
Algona	Des Moines						.18											.24								.76							1 18
Allison	Cedar				.06	T.	.04	.04	T.		T.		T.	T.	T.			.24	T.		T.	T.				.35	.80		T.				1.53
Belmond	Iowa			T.	.05	.04	.06	T.			T.		.01		.03		T.	.15								.22	.85						1.44
Britt	Iowa							.12	.13		T.		T.		.10			.36								.26	.59						1.56
Charles City***	Cedar	T.		T.	T.	T.	.06	.02	.01		.01		.01		.02		T.	.28			T.					.55	.65		.02				1.73
Forest City	Cedar			T.	.10	.05	.15	.15			.05		T.		.10		T.	.25								.15	.55		T.				1.55
Hampton	Cedar				.04	T.	.11						.07	T.				.18	T.							.26	1.05		.28				1.99
Humboldt	Des Moines	T.		.08	T.	.08	.04	T.	T.				T.		T.			.16	T.							.40	.75		T.				1.51
Mason City	Cedar	T.		T.	.02	T.	.04	.05	.02		.01		.02	T.	.03		T.	.42			T.				T.	.42	.96		T.				1.99
Northwood	Cedar			T.	T.		.05	.10	.05		T.		T.		.10		T.	.20							T.	.20	.40		T.				1.10
Osage	Cedar					.04	.08	.12							.08	.04		.32								.20	.80						1.68
Northeast District																															
Decorah	Mississippi				T.				.07		T.		T.		T.		T.	.41				T.				.28	.58						1.34
Dubuque***	Mississippi				T.		T.	.02	.04		T.	T.	T.	T.	.01	T.	.01	.03	.03	.02		T.			T.	.68	.16		T.				1.00
Fayette	Mississippi											*	.07		.10		T.	.41				.04				.25	.12						1.32
Independence	Wapsipinicon							.01	.06				T.		.11				.04			.03				.29	.46						1.00
Lansing	Mississippi																																
New Hampton	Wapsipinicon										T.							.32								.40	.40						1.12
Oelwein	Wapsipinicon								.08								T.	.32				T.				.32	.24						0.96
Postville (near)	Mississippi														.05			.25				.05				.40	.10		.05				0.90
Waterloo	Cedar				.01	T.			T.	.09	T.		.02		.01		T.	.07	T.				.02			.28	.72						1.22
Waverly	Cedar						T.	.06			.04							.16	.12	.04			.12	.06		.47	.47						1.54
West Central District																															
Audubon (near)	Nishnabotna		.10	.20	.10	.15	.15	.10				.01		.10					.05			.02			T.	.30	.70		.25				2.23
Carroll	Raccoon			.05			.15						.05						.10							.30	.55		.29				1.49
Denison	Missouri				.05		.12						T.						.15			T.				.18	.24		.14				0.88
Guthrie Center	Raccoon																																
Harlan	Nishnabotna		.07	.05	.08	T.	.10	.10	.05		T.	T.	T.	T.	T.				T.	T.		T.			.03	.25	.45		.10				1.28
Jefferson	Raccoon		T.	.10	.10	T.	.10	.15			.10		.10	.05				T.	.20			T.			T.	.40	.60		.20				2.10
Little Sioux	Little Sioux		.26		.21		.30				.01		.01	.01				.01	.15						.01	.52	.15		.05				1.69
Logan	Missouri		.12		.06		.25	.03			T.		T.						.04			T.				.30	.32		T.				1.12
Onawa	Missouri		T.	.04	.08		.24				T.							T.	T.	T.		T.				.48	.48		.08				1.40
Rockwell City	Raccoon																	.08	.08							.48	.64		.32				**
Sac City	Raccoon			.04	.16	T.	.16	.04			T.		.12					.04	.08							.40	.40		.48				1.92
Sioux City***	Missouri	T.	T.	.03	.02	.10	.14	T.			.01	T.	.01	T.	T.			.01	.08			T.			.08	.32	.12		.08				1.00
Central District																															
Ames	Skunk			T.	T.	.01	.09	T.	.13				.03	T.	T.				.09			T.				.53	.88		.21				1.97
Baxter	Skunk				.04	.04		.04	.08		T.		.04						.04	.08						.42	.81		.02				1.61
Boone (near)	Des Moines			.03	T.	T.	.02	.08			.01		.01		.01			T.	.07			.01				.33	.80		.12				1.49
Des Moines***	Des Moines		T.	.05	.01	.02	.05	.13			.01		.06	T.	.03			T.	.03	.08	.02				.50	.62	.25		.20				2.06
Fort Dodge	Des Moines				.14	.03	.07	T.					.10					.07	.03							.38	.57		.08				1.47
Grinnell	Iowa			T.		T.		T.	.08				.04						T.	.07						.32	.34		T.				0.85
Grundy Center	Cedar				.10	.10	T.	.10			.08		T.		T.			T.	.08	T.		.08				.50	.30		T.				1.34
Iowa Falls	Iowa				.15	.10			.10		.03				.10		T.	.15				.05				.85	1.20		.30				3.03
Marshalltown	Iowa			T.	.02	.01	T.	.08	.05		T.		.03		.02	T.		T.	.04	.02		.01				.49	.77		.03				1.57
Monroe	Des Moines	T.	T.	T.	T.	.04	T.	T.	.15		T.	T.	T.						T.	.09		T.			T.	.62	.69		T.				1.59
Perry	Raccoon			.05	T.	T.	.10	.15	.05		.04	T.	.05	.03	.01				.05			.04			T.	.40	.82		.13				1.92
Toledo	Iowa			T.	T.	.03		.03	.11		T.		.03		T.			T.	.03	.07		T.				.38	.75						1.43
Van Meter	Raccoon							.04	.04											.08		.01				.50	.56						1.23
Waukee	Raccoon																																
Webster City	Des Moines			.03	.10	.06	.03	.03	T.				.05		.02			.05	.02							.25	.51		.02				1.17
East Central District																															
Belle Plaine	Iowa			.01	T.	.02		.02	.15		T.		.05		.03				.05	.09						.40	.60						1.42
Cedar Rapids	Cedar							T.	.13				.05		T.				T.	.10						.50	.54						1.32
Clinton	Mississippi								.12				.03		.01				.02	.11						.20	.29						0.78
Davenport***	Mississippi				T.	T.		.07	.05		T.		.07	.01	T.			T.	.05	.06		T.			.04	.45		.01				0.81
Davenport No. 2	Mississippi							T.	.13				.10	.04						.24						.25	.16						0.92
Fairport	Mississippi								.12				.06							.10						.18	.19						0.65
Iowa City	Iowa				T.			T.	.10				.05		T.				T.	.09						.40	.40						1.04
Le Claire	Mississippi																																
Maquoketa (near)	Maquoketa								.10			T.	.10		.02				T.	.10						.30	.25						0.87
Muscatine	Mississippi																																
Olin	Wapsipinicon								.16				.04						T.	.16						.28	.30						0.94
Tipton (near)	Cedar								.16											.16						.50	.25						1.07
Williamsburg	Iowa				T.	.01		T.	.12											.08					T.	.33	.38						0.92

Daily Precipitation for February, 1929—Continued

Stations	Drainage Basin	Day of Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals
Southwest District																																	
Atlantic	Nishnabotna	.....	.20	.05	.05	.05	.10	T.	.10	.....	.05	.....	.05	.....	.....	.....	.....	.....	.10	.05	.....	T.	.....	.....	.22	.48	.50	.....	.30	.....	.....	.....	2.30
Bedford	102	.....	.05	T.	T.	.05	.04	.10	.08	.....	T.	.....	T.	T.	T.	.....	.....	.....	.....	.08	.....	T.	.....	.....	.17	.54	.35	.....	.12	.....	.....	.....	1.58
Clarinda	Nodaway	T.	.....	T.	.....	T.	.....	.12	.08	.....	T.	.....	.....	.....	.....	.....	.....	.....	.....	.08	.....	.....	.....	.....	.....	.24	.16	.....	.....	.....	.....	.....	0.68
Corning	Nodaway	.....	.....	.06	.....	.....	.08	.....	.....	.....	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	T.	.....	.....	T.	.18	.52	.....	.16	.....	.....	.....	1.00
Cumberland (near)	Nodaway	.....	.22	.....	T.	T.	.20	.15	.....	.....	T.	.....	T.	.....	.....	.....	.....	.....	T.	.20	.....	T.	.....	.....	.46	62	.78	.....	.14	.....	.....	.....	2.77
Glenwood	Missouri	.....	.05	.....	.....	.....	.05	.10	.10	.....	.....	.....	.....	.05	.....	.....	.....	.....	.01	.10	.....	T.	.....	.....	.10	.30	.60	.....	T.	.....	.....	.....	1.46
Lenox	Missouri	.....	.05	.....	.....	T.	.05	.05	.05	.....	.03	.....	.....	.....	.....	.....	.....	.....	T.	.05	.....	.....	.....	.....	.13	.45	.20	.....	.03	.....	.....	.....	1.09
Oakland	Nishnabotna	.....	.08	.....	T.	.....	.12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.04	.....	.....	.03	.....	.....	.56	.56	T.	.....	.....	.....	.....	.....	1.39
Red Oak (near)	Nishnabotna	.04	.08	.....	.....	.....	.04	.04	.....	.....	T.	.....	.....	T.	.....	.....	.....	.....	.....	.....	.....	T.	.....	.....	.....	.63	1.43	.....	T.	.....	.....	.....	2.26
Riverton (near)	Nishnabotna	.....	.07	.01	.04	T.	.05	.06	.03	.....	T.	.....	T.	.....	.....	.....	.....	.....	.....	.05	.....	T.	.....	.....	.01	.48	.28	.....	.05	.....	.....	.....	1.13
Thurman	Missouri	.....	.05	.....	.....	.....	T.	T.	.02	.....	T.	.....	.....	T.	.....	.....	.....	.....	T.	.06	.....	T.	.....	.....	T.	.22	.33	.....	T.	.....	.....	.....	0.68
Omaha, Neb.***	Missouri	.....	.15	T.	.....	T.	.18	.06	.....	.....	T.	.....	T.	T.	.....	.....	.....	T.	.02	.03	T.	.02	.....	.....	.50	1.03	.20	.....	.01	.....	.....	.....	2.20
South Central District																																	
Afton	Grand	.....	.04	.....	.....	.03	T.	.40	.50	.....	T.	.....	.....	.....	.....	.....	.....	.....	.....	.03	.....	.....	.....	.....	.26	.70	.65	.....	.20	.....	.....	.....	2.81
Albia	Des Moines	.....	.....	.02	T.	.02	.....	.01	.09	.....	T.	T.	.01	.....	.....	.....	.....	.....	T.	.06	.....	.....	.....	.....	.17	.53	.38	.....	.03	.....	.....	.....	1.32
Centerville	Chariton	.....	.....	.....	T.	.01	T.	.02	.04	.....	.....	T.	.04	.....	.....	.....	.....	.....	.....	.01	.....	.....	.....	.....	.....	.30	.26	.....	T.	.....	.....	.....	0.71
Chariton (near)	Chariton	.....	T.	T.	T.	T.	T.	T.	T.	T.	.....	T.	T.	.....	.....	.....	.....	.....	.....	T.	.....	.....	.....	.....	.12	.22	.....	.....	T.	.....	.....	.....	0.34
Corydon (near)	Chariton	.....	T.	.....	T.	.04	.....	.15	.....	.....	.02	.....	T.	.....	.....	.....	.....	.....	.....	.09	.....	.....	.....	.....	.29	.41	.....	.....	.10	.....	.....	.....	1.10
Creston	Missouri	.....	.07	.....	.....	.05	.06	.01	.....	.....	T.	.....	.....	T.	.....	.....	.....	.....	.05	.....	.....	.....	.....	.....	.34	.39	.38	.....	.05	.....	.....	.....	1.10
Earlham (near)	Des Moines	.....	.16	.08	.....	.04	.04	.04	.....	.....	T.	.....	.04	T.	.04	.....	.....	.....	T.	.16	.....	T.	.....	.....	.08	.48	.48	.....	.16	.....	.....	.....	1.80
Indianola	Des Moines	.....	.....	.38	.20	T.	T.	.05	T.	.....	.....	.....	.05	.....	.....	.....	.....	.....	.05	.05	.....	T.	T.	.....	.20	T.	.27	.....	.20	.....	.....	.....	1.45
Knoxville	Des Moines	.....	.....	.10	T.	.05	.03	T.	.10	.....	T.	.....	.05	.....	.....	.....	.....	.....	T.	.15	.....	.....	.....	.....	.05	.65	.78	.....	.10	.....	.....	.....	2.06
Lacona	Des Moines	.....	.....	.10	.....	.10	.....	.10	.10	.....	.....	.05	.05	.....	.....	.....	.....	.....	.05	.10	.....	.....	.....	.....	.30	.40	.10	.....	.30	.....	.....	.....	1.75
Lamoni	Grand	.....	.04	.01	.09	.01	.03	.02	.10	.....	.01	.....	.....	.....	.....	.....	.....	.....	T.	.05	.....	.....	.....	.....	.11	.52	.26	.....	.13	.....	.....	.....	1.38
Mount Ayr	Grand	.....	.....	.....	.12	T.	.....	.10	.17	.....	T.	.....	.....	.....	.....	.....	.....	.....	.....	.05	.....	.....	.....	.....	.....	.52	.10	.....	.12	.....	.....	.....	1.18
Tingley	Platte	.....	.07	.03	T.	T.	T.	T.	.07	.....	.03	.....	T.	.....	.....	.....	.....	.....	T.	.03	.....	T.	.....	.....	.30	.53	.48	.....	.06	.....	.....	.....	1.60
Winterset	Des Moines	.....	T.	.20	.....	T.	T.	.10	.....	.....	T.	.....	.10	T.	.....	.....	.....	.....	.....	.10	.....	T.	.....	.....	.10	.95	.75	.....	.20	.....	.....	.....	2.50
Southeast District																																	
Bonaparte (near)	Des Moines	.....	.....	T.	T.	T.	T.	T.	.17	.....	T.	.....	.03	.....	.....	.....	.....	.....	.....	.04	.....	.....	.....	.....	.03	.28	.12	.....	.....	.....	.....	.....	0.67
Burlington	Mississippi	.....	.....	.....	.....	.05	.03	.02	.16	.....	.....	.....	.06	.04	.....	.....	.....	.....	.....	.05	.....	.....	.....	.....	.02	.45	.12	.....	.....	.....	.....	.....	1.00
Columbus Jct	Iowa	.....	.....	.....	.....	.....	.01	.....	.12	.....	.....	.....	.11	.02	.01	.....	.....	.....	.....	.09	.....	.....	.....	.....	T.	.26	.20	.....	.....	.....	.....	.....	0.82
Fairfield	Skunk	.....	.....	.01	.....	.....	.10	.01	.20	.....	.....	.....	.15	.....	.....	.....	.....	.....	.....	.20	.....	.....	.....	.....	.23	.25	.42	.....	T.	.....	.....	.....	1.57
Keokuk***	Mississippi	T.	.....	T.	.08	.01	T.	.05	.07	.....	T.	.....	.04	.01	.....	.....	.....	.....	.01	.05	.....	.....	.....	.....	.01	.61	T.	.....	.03	.....	.....	.....	0.97
Keosauqua	Des Moines	.....	T.	T.	.02	.....	.....	.02	.02	.....	.....	.....	.04	.....	.....	.....	.....	.....	.....	T.	.....	.....	.....	.....	T.	.35	.10	.....	T.	.....	.....	.....	0.55
Mt. Pleasant	Skunk	.....	.....	.....	.....	.....	T.	T.	.12	.....	.....	.....	.07	.....	.....	.....	.....	.....	.....	.03	.....	.....	.....	.....	.01	.28	.13	.....	.....	.....	.....	.....	0.64
Oskaloosa	Des Moines	.....	.....	.03	T.	T.	T.	.02	.06	.....	T.	.....	.05	T.	.....	.....	.....	.....	T.	.06	.....	.....	.....	.....	.07	.58	.56	.....	T.	.....	.....	.....	1.43
Ottumwa	Des Moines	.....	.....	.04	T.	T.	T.	T.	.01	.....	.....	.....	.03	T.	.....	.....	.....	.....	T.	.11	.....	.....	.....	.....	T.	.30	.25	.....	T.	.....	.....	.....	0.74
Sigourney (near)	Skunk	.....	.....	.04	T.	.02	.....	.03	.24	.....	T.	T.	.10	.....	.....	.....	.....	.....	T.	.10	.....	T.	.....	.....	.04	.36	.26	.....	.....	.....	.....	.....	1.19
Stockport (near)	Skunk	.....	.....	.05	.....	T.	.....	T.	.15	.....	T.	.....	18	T.	.....	.....	.....	.....	.....	.03	.....	.....	.....	.....	T.	T.	.35	.....	.....	.....	.....	.....	0.76
Washington	Skunk	.....	.....	.....	T.	T.	T.	.15	.....	.....	T.	T.	T.	.....	.01	.....	.....	.....	.....	.18	.....	.....	.....	.....	T.	.73	.36	.....	.....	.....	.....	.....	1.46
Wever	Mississippi	.....	.....	.....	.05	.02	.02	T.	.16	.....	.....	.....	.24	.04	.....	.....	.....	.....	.....	.04	.....	.....	.....	.....	.....	.46	.14	.....	.....	.....	.....	.....	1.17

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.

T. Precipitation is less than .01 inch or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level) Mean	Highest	Date	Lowest	Date	Relative Humidity, % Mean 7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	‡‡Wind Total movement	Average hourly velocity	Maximum Miles	From	Date	Sunshine % possible	Departure from normal
Chas. City	30.16	30.62	1	29.38	24	94	76	86	64	5	3,508	5.2	19	se.	20	43	—10
Davenport	30.15	30.69	1	29.34	26	89	76	80	50	20	5,489	8.2	30	sw.	26	58	+ 6
Des Moines	30.16	30.65	1	29.46	25	94	76	82	57	14	3,974	5.9	19	sw.	22	53	— 4
Dubuque	30.15	30.66	2	29.33	26	86	64	75	27	22	3,306	4.9	19	nw.	18	41	— 9
Keokuk	30.17	30.72	1	29.40	25	79	57	69	29	9	4,299	6.4	24	sw.	26	58	+ 6
Sioux City	30.17	30.63	1	29.60	16	87	81	84	48	15	6,538	9.7	32	w.	16	46	—11
Omaha, Nb	30.16	30.61	1	29.58	25	83	70	74	45	22	5,136	7.6	26	nw.	17†	47	—11
Means and extremes	30.16	30.72	1	29.33	26	88	71	79	27	22	.....	6.8	32	w.	16	50	— 5
Normals and records	30.10	§31.07	21st 1918	*28.69	28th 1902	83	74	¶13	22d 1880		.....	.....	§56	nw.	4th 1917	55	.....

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

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

SNOWFALL

The average snowfall for the State was 12.5 inches, or 5.5 inches more than normal. This month ranks as the 2d greatest snowfall in the period of Statewide snowfall records beginning in 1892. In 1905 the State average was 3.0 inches greater. The north-central district reported the greatest average with 18.7 inches and the southeastern the least with 4.8 inches. There was considerable melting in the southern and extreme eastern portions but over more than half of the State there was no melting and all the snow that fell during both January and February was still on the ground at the end of the month, though there was considerable settling. The greatest snowfall reported was 27.8 inches at Iowa Falls and the least was 1.1 inches at Keosauqua.

RIVERS

All rivers were frozen the entire month. Moderate stages prevailed and there was very little fluctuation, the extreme range on the larger streams averaged about one foot. On the interior streams low stages prevailed and there were falling stages most of the month.

Daily Maximum and Minimum Temperature for the Month of January, 1929

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	Maximum	10	20	24	27	31	20	10	5	8	15	14	15	11	26	30	34	14	6	2	16	18	24	37	36	28	38	31	29				20.5
	Minimum	−16	5	14	18	20	9	4	−10	−20	−12	−11	3	−10	3	10	13	5	−15	−19	−14	4	−12	8	13	20	23	17	20				1.9
Alta	Maximum	13	23	24	30	30	16	4	3	8	15	22	22	18	29	33	35	9	1	6	22	23	31	43	26	24	52	38	29				21.8
	Minimum	−15	8	15	19	16	1	7	−13	−19	6	8	5	6	3	8	1	5	13	15	10	3	11	14	17	18	20	13	20				1.6
Alton	Maximum	12	24	24	29	27	15	7	1	3	11	17	19	15	27	30	35	7	0	0	26	22	29	38	32	26	30	34	28				20.3
	Minimum	−21	10	18	20	15	5	10	15	24	14	8	5	7	7	10	5	1	12	21	9	0	12	10	13	18	22	8	22				1.2
Belmond	Maximum	10	18	25	25	29	26	12	2	8	13	13	9	11	25	30	34	13	1	2	15	18	21	38	32	29	29	30	28				19.4
	Minimum	−24	6	12	18	19	11	3	10	23	19	16	6	18	3	7	3	11	17	20	28	1	17	0	14	23	22	13	20				1.5
Charles City	Maximum	7	18	25	25	30	30	12	4	7	10	10	15	14	23	28	31	12	0	2	15	21	16	32	30	31	28	27	27				18.8
	Minimum	−16	1	13	17	21	12	4	11	19	16	12	5	17	4	10	1	7	13	27	28	7	15	2	16	24	19	15	22				0.6
Decorah	Maximum	12	22	26	28	35	32	26	10	9	13	10	18	20	20	30	35	13	10	2	13	18	16	32	34	35	29	38	30				22.0
	Minimum	−21	6	0	12	20	19	9	2	21	23	17	10	18	5	7	12	8	14	17	35	5	17	6	19	23	24	9	23				1.4
Dubuque	Maximum	10	21	26	26	32	30	28	18	11	13	13	13	16	24	30	33	24	6	5	16	28	13	37	37	34	37	39	29				23.2
	Minimum	5	1	2	16	22	23	17	0	9	10	5	3	0	2	14	14	2	8	10	24	2	8	2	19	28	26	19	15				4.9
Forest City	Maximum	8	17	25	25	27	25	12	5	12	12	15	15	13	25	30	30	15	5	2	12	22	22	31	30	28	29	30	26				19.6
	Minimum	−17	1	8	15	18	10	4	11	21	12	13	3	13	1	5	12	7	17	19	22	0	19	2	16	20	21	12	19				0.8
Independence	Maximum	7	19	25	34	33	32	30	20	12	12	10	12	15	22	29	34	29	16	3	14	23	15	36	37	37	38	35	34				23.7
	Minimum	−15	1	7	19	20	20	12	3	17	18	12	5	7	1	7	7	5	13	9	26	9	11	2	15	27	27	12	18				2.2
Inwood	Maximum	10	23	23	27	29	16	3	0	3	12	18	18	12	16	30	34	7	1	2	25	23	28	37	27	28	29	35	29				19.4
	Minimum	−18	9	18	18	11	1	16	26	26	11	12	2	25	2	5	2	6	16	28	10	3	12	7	7	14	22	23	19				2.1
Lake Park	Maximum	9	21	22	26	25	15	2	2	6	9	16	15	10	23	26	31	4	4	2	19	21	21	33	22	24	31	31	26				17.3
	Minimum	−22	7	13	17	12	1	12	20	23	13	13	1	14	2	7	5	9	16	28	17	2	17	7	6	14	19	17	20				2.5
Mason City	Maximum	7	16	24	24	29	26	12	4	5	10	8	15	12	22	27	30	12	2	5	13	20	18	30	30	30	27	29	28				18.0
	Minimum	9	1	13	16	20	12	1	8	26	17	14	8	15	3	7	8	10	15	21	30	2	17	0	13	21	23	14	21				0.7
New Hampton	Maximum	7	16	22	25	30	31	20	10	5	10	8	13	13	21	26	25	12	7	0	14	21	12	31	32	30	28	29	28				18.8
	Minimum	−16	4	10	10	20	19	8	3	18	17	13	8	5	1	0	8	7	14	16	27	1	18	2	17	23	23	11	20				0.0
Northwood	Maximum	10	21	29	24	31	24	12	3	3	13	9	17	12	23	28	31	13	1	7	15	20	15	30	29	30	30	32	27				18.8
	Minimum	6	1	16	15	20	12	1	9	17	14	9	5	14	2	9	6	5	16	21	26	0	15	3	22	24	23	12	20				1.0
Pocahontas	Maximum	9	20	24	28	32	20	8	4	10	15	19	16	12	26	32	35	10	2	1	20	21	30	38	32	28	36	36	30				21 2
	Minimum	−17	9	16	20	20	7	4	10	22	12	14	2	15	1	7	8	6	15	17	16	0	15	8	15	23	20	12	20				0.8
Postville	Maximum	9	19	24	24	30	30	24	10	11	10	12	12	11	20	27	29	12	8	2	12	23	12	29	27	28	30	33	27				19.5
	Minimum	−17	5	1	10	19	18	8	2	17	17	13	7	6	2	7	6	7	15	14	29	4	17	5	22	23	20	12	18				0.5
Rock Rapids	Maximum	15	25	24	29	27	15	7	0	4	14	18	18	14	27	31	34	7	2	0	25	23	25	35	30	29	32	28	29				20.2
	Minimum	−24	9	16	20	9	3	15	24	28	22	12	0	22	0	7	6	3	14	34	14	0	14	5	4	15	20	12	21				2.8
Central Division																																	
Ames	Maximum	12	22	25	27	31	31	17	8	8	17	14	14	14	28	33	37	19	13	0	18	19	24	41	39	32	32	38	35				23.1
	Minimum	−15	7	18	20	20	16	0	3	18	13	7	2	10	8	12	13	3	10	9	19	6	7	4	21	27	24	6	10				3.1
Belle Plaine	Maximum	10	21	28	24	34	34	26	11	11	17	14	14	19	29	35	38	32	14	4	17	26	21	40	38	34	33	42	32				24.9
	Minimum	12	7	14	17	18	21	10	2	18	13	10	3	7	6	8	12	0	10	8	20	7	11	6	23	30	26	10	13				4.1
Carroll	Maximum	10	25	24	28	32	28	6	2	7	16	20	19	13	30	33	36	16	7	2	20	20	26	40	35	28	32	37	28				22.1
	Minimum	13	7	16	19	20	6	4	8	19	4	9	7	13	5	12	15	1	12	12	13	5	8	13	20	20	15	12	13				3.2
Cedar Rapids	Maximum	9	22	28	24	34	34	30	16	10	14	11	15	18	30	32	35	34	16	5	16	28	19	38	39	35	35	39	31				24.9
	Minimum	18	6	11	18	21	23	14	0	12	16	9	5	0	3	9	5	1	10	5	23	6	11	1	23	30	28	11	15				3.9
Davenport	Maximum	11	23	26	24	32	32	29	22	8	15	13	14	18	27	34	38	42	8	7	19	30	19	43	43	42	42	40	36				26.3
	Minimum	7	9	11	18	23	25	21	0	7	4	2	4	3	5	14	26	8	5	6	11	3	4	16	33	31	30	26	24				9.9
Des Moines	Maximum	10	24	25	28	33	32	12	8	11	20	17	16	15	29	33	40	24	5	4	18	23	23	43	37	34	35	37	30				23.8
	Minimum	8	9	19	21	22	12	3	4	13	8	4	5	1	14	13	11	0	8	8	12	3	4	16	26	29	22	16	15				6.6
Ft. Dodge	Maximum	10	20	25	28	30	27	10	4	9	15	16	16	16	26	33	36	12	2	1	18	20	25	39	33	29	33	37	27				21.2
	Minimum	16	8	17	19	21	9	3	9	22	11	13	3	15	4	12	10	5	13	12	13	10	12	7	18	23	22	11	16				2.4
Grinnell	Maximum	10	23	25	26	31	34	29	11	6	17	17	13	15	22	34	36	29	16	0	17	22	20	41	39	35	32	41	35				24.1
	Minimum	14	5	4	17	19	20	3	2	19	12	9	5	5	1	5	12	2	12	8	19	6	12	6	23	28	23	9	13				2.8
Guthrie Center	Maximum																																
	Minimum																																
Iowa City	Maximum	8	23	28	24	32	33	24	16	8	14	13	15	17	26	32	37	38	24	6	18	27	18	42	41	36	34	37	32				25.1
	Minimum	12	7	14	18	22	24	12	3	12	17	7	3	1	1	11	12	2	9	6	22	8	8	2	26	31	28	17	15				5.6
Iowa Falls	Maximum	11	18	24	25	29	30	11	4	5	15	7	12	16	25	29	34	17	9	2	15	13	20	38	35	30	28	33	26				19.8
	Minimum	16	5	11	18	19	15	0	8	25	18	13	6	18	4	9	12	8	14	14	26	4	15	3	17	24	23	9	19				0.1
Little Sioux	Maximum	18	29	27	31	33	30	8	9	10	20	26	24	21	34	39	41	21	6	11	28	26	43	49	38	27	37	43	33				27.2
	Minimum	9	15	20	21	25	7	9	10	19	3	10	11	10	3	11	18	5	7	12	2	7	3	20	24	22	22	7	25				6.0
Marshalltown	Maximum	9	21	25	26	30	31	19	6	8	15	12	14	15	28	32	36	22	9	1	19	22	21	42	37	32	32	38	31				22.5
	Minimum	12	6	15	19	20	19	3	1	17	8	8	0	5	6	13	16	1	11	9	15	6	8	8	23	28	25	14	13				5.0
Olin	Maximum	10	25	26	25	34	32	29	24	9	14	14	15	19	27	33	36	34	29	7	15	32	17	36	42	36	36	40	32				26.0
	Minimum	22	1	7	17	20	21	12	8	14	23	12	11	2	10	1	1	7	11	4	32	11	15	6	17	29	29	12	10				0.8
Sioux City	Maximum	16	26	26	29	29	15	0	0	9	15	19	19	22	30	35	38	11	1	8	30	23	36	43	28	26	32	37	30				22.6
	Minimum	8	16	20	22	15	1	11	14	15	3	2	0	6	8	13	6	7	9	11	3	0	5	20	20	18	22	17	22				4.4
Southern Division																																	
Albia	Maximum	12	25	25	31	32	33	28	10	10	20	17	17	20	32	35	39	40	16	8	21	29	21	42	40	34	35	43	38				26.9
	Minimum	9	10	18	20	22	23	5	1	14	8	4	4	4	8	13	18	8	7	6	10	9	4	17	28	31	26	19	23				8.4
Atlantic	Maximum	17	23	26	30	32	29	10	6	6	20	17	20	19	31	35	39	25	6	4	21	25	30	42	40	30	35	38	30				24.5
	Minimum	7	12	19	21	24	9	0	3	15	10	6	7	3	11	15	19	5	9	7	10	7	3	15	25	24	23	19	18				6.9
Burlington	Maximum	13	26	27	28	28	34	30	22	10	18	16	16	20	31	36	40	45	30	8	22	32	22	46	45	37	42	39	42				28.8
	Minimum	3	11	19	20	23	25	17	9	7	5	1	3	5	6	4	19	15	3	0	7	13	0	18	34	34	32	25	27				12.0
Columbus Jct.	Maximum	12	28	28	26	32	33	27	21	9	17	14	14	19	30	36	38	42	29	6	21	28	21	43	41	36	36	39	36				27.2
	Minimum	7	9	14	20	22	24	13	6	10	11	4	1	1	4	8	14	6	5	2	19	12	5	7	28	32	29	21	22				7.8
Corning	Maximum																																
	Minimum																																
Corydon	Maximum	15	24	25	30	31	32	30	12	8	18	20	17	19	27	32	40	42	14	8	19	28	21	40	40	36	34	40	39				26.5
	Minimum	10	9	18	21	22	21	5	1	17	12	8	0	7	5	9	15	6	8	7	16	1	6	16	27	32	26	18	20				6.3
Creston	Maximum	15	22	24	31	31	26	15	7	10	23	18	19	19	31	36	40	30	12	6	25	26	25	39	36	32	35	40	36				25.3
	Minimum	9	9	18	19	22	12	1	1	18	14	10	4	8	6	6	15	5	7	7	12	8	7	16	26	28	18	12	22				5.5
Fairfield	Maximum	11	24	27	29	32	33	29	15	5	15	15	13	14	28	35	38	40	23	6	19	26	18	43	42	34	34	39	38				25.9
	Minimum	7	10	18	20	23	24	12	1	12	14	3	8	3	8	7	8	8	6	6	19	10	3	13	28	32	29	21	22				7.0
Keokuk	Maximum	13	25	27	26	30	36	26	17	10	22	14	21	20	30	36	44	50	11	10	25	33	29	52	50	43	36	42	47				29.5
	Minimum	3	13	20	22	24	25	17	0	6	4	0	6	5	11	19	24	11	1	2	3	8	2	26	37	35	30	27	28				13.2
Knoxville	Maximum	10	23	25	29	31	33	23	9	8	19	17	15	20	31	34	39	37	15	5	19	26	22	41	38	33	35	43	35				25.5
	Minimum	14	8	19	20	21	22	4	1	16	11	5	0	2	5	11	15	2	8	5	15	10	7	14	25	32	26	15	18				6.5
Lamoni	Maximum	13	22	25	30	31	30	19	9	7	19	18	18	21	30	34	39	38	11	7	20	27	27	41	36	34	34	41	35				25.6
	Minimum	9	9	17	20	20	17	3	4	19	10	8	5	7	4	10	16	8	9	8	10	11	7	20	26	31	24	18	25				6.9
Sigourney	Maximum	9	26	27	30	34	35	30	14	8	16	16	15	18	30	35	40	39	22	5	18	25	20	40	39	34	35	40	35				26.2
	Minimum	9	8	16	20	21	24	10	1	15	11	5	3	2	0	10	14	3	8	5	21	10	8	3	26	31	28	19	17				6.4
Thurman	Maximum	18	26	26	32	34	32	10	8	12	22	22	25	21	37	38	44	32	16	11	27	31	42	47	41	32	37	42	39				28.7
	Minimum	6	16	21	23	26	10	0	4	16	10	8	12	3	7	13	22	15	4	6	3	15	2	16	29	25	24	6	21				8.5
Winterset	Maximum	13	24	25	32	32	27	15	8	12	18	20	19	20	31	34	40	30	10	5	18	23	24	41	37	32	34	41	33				24.9
	Minimum	10	12	17	22	20	15	1	3	16	6	7	7	6	8	14	20	5	10	7	10	10	6	19	24	28	18	15	12				6 6
Omaha, Neb.	Maximum	18	25	26	30	32	29	4	6	10	21	21	24	22	34	40	43	25	5	11	28	28	43	49	35	28	36	41	34				26.7
	Minimum	0	16	22	23	27	4	4	7	11	1	2	14	2	15	22	18	0	4	2	0	5	5	29	27	24	24	17	23				10.4

THE WINTER OF 1928-1929

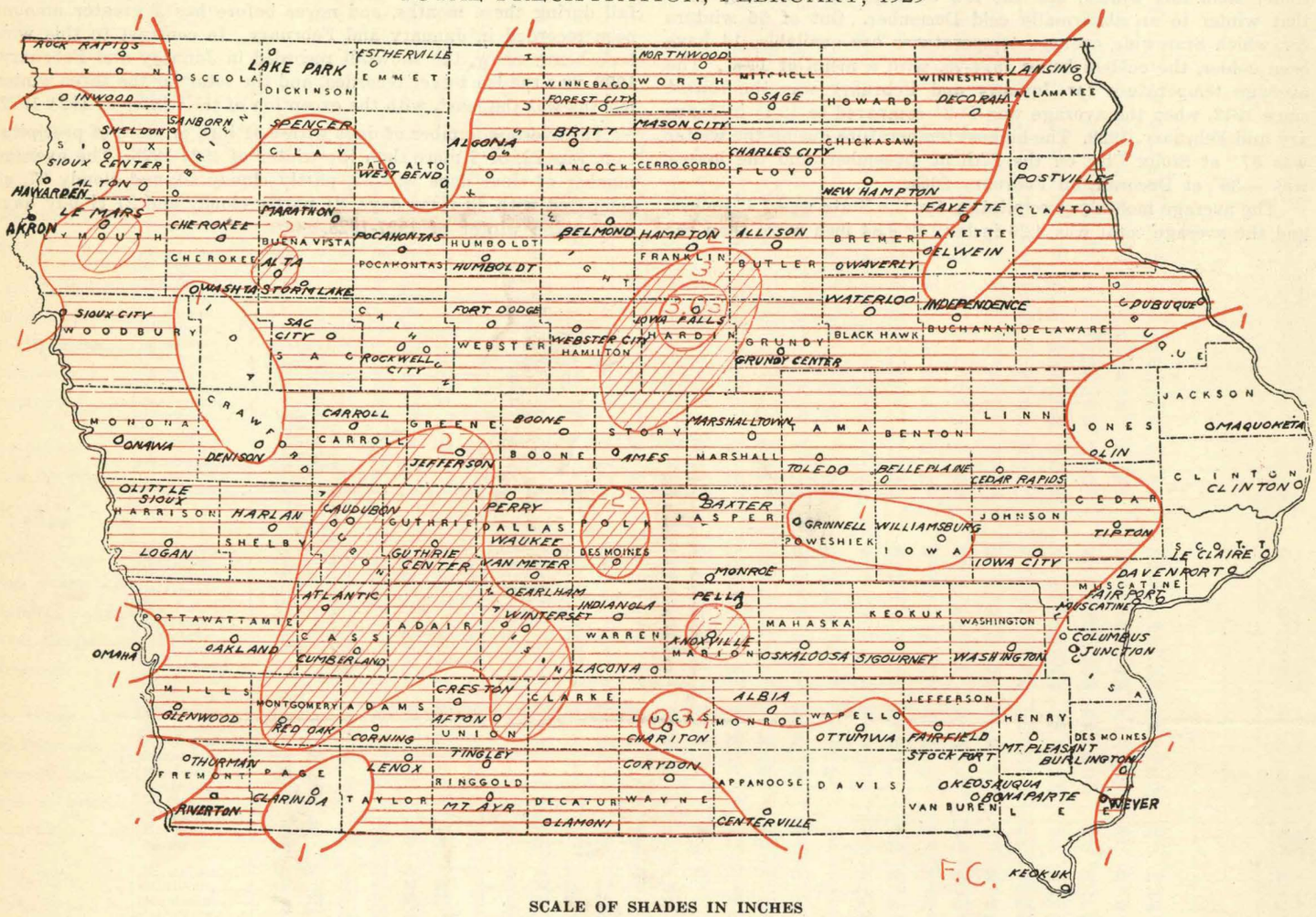
The mean temperature for the three winter months was 17.6° which is 4.1° lower than the normal for the State, and 6.6° lower than the mean of 1927-1928. The average for the three winter months is the lowest since the winter of 1917-1918, which was 2.2° colder than this winter, and the low average was due largely in that winter to an abnormally cold December. Out of 56 winters for which Statewide average temperatures are available, 14 have been colder, the coldest being 1874-75, with a mean of 11.8°. The average temperature for January and February was the lowest since 1912, when the average was 11.2° compared to 12.1° in January and February, 1929. The highest temperature during the winter was 57° at Sioux City on the 27th of December, and the lowest was —35° at Decorah, on February 20th.

The average monthly precipitation for the State was 1.42 inches, and the average total was 4.26 inches, or 0.84 inch more than the normal. January precipitation was nearly double the normal, February was slightly above, and December was about 25 per cent below normal.

The average snowfall for the winter was 32.3 inches, which is 11.6 inches more than the normal, and only once since Statewide records of snowfall began in 1892, has there been a greater snowfall during these months, and never before has a greater amount been recorded in January and February. In contrast to this winter's heavy snow, the snowfall recorded in January and February, 1928, was the least ever recorded, and the total for the three winter months was the least, with the exception of the winter of 1921-1922.

The average number of days with 0.01 inch or more of precipitation, was 22, or 7 more than the winter of 1927-1928. The average number of clear days was 33, partly cloudy 20, and cloudy 37, as compared with 43 clear days, 21 partly cloudy and 27 cloudy days during the winter of 1927-1928.

TOTAL PRECIPITATION, FEBRUARY, 1929



SCALE OF SHADES IN INCHES

Less than 1.0	1.0 to 2.0	2.0 to 3.0	More than 3.0

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, MARCH, 1929 No. 3

GENERAL SUMMARY

The severe winter conditions that prevailed during January and February broke early in March. The first six days of the month averaged slightly above normal and in portions of the State there was considerable thawing. A decided change to cooler occurred from the 7th to the 9th and thereafter until the 31st the temperature was above normal almost continuously. The last day of the month was cold, stormy and disagreeable. The mean temperature was about 0.2° warmer than last March and the average precipitation was exactly the same.

The outstanding feature of the month was the widespread floods that embraced practically the entire State. These floods began in the southern portion of the State during the last of the first week and at the end of the month places in the southeastern portion were still confronted with floods. The abnormally heavy snowfall of January and February had melted very little, except in the southern districts, and was still on the ground over the greater portion of the State. Before the principal floods occurred there were many serious situations produced by the formation of ice gorges that caused local floods for short intervals at many points in the southern portion of the State. Over most of the central and northern portions there was very little thawing until about the middle of the second week, though the snow had settled considerably. However, with the advent of mild weather a rapid thaw set in and by the middle of the third week there was very little snow left, except where drifted and in timber lands. The ground was frozen and could absorb very little water and this situation made conditions ideal for the production of floods and soon an unprecedented condition developed in many portions of the State. Never before, at any time, had there been as high stages on the Nishnabotna and Cedar rivers. The worst situation developed on the interior rivers, and practically all streams within the State overflowed at some part of their courses. The first serious flood developed on the Nishnabotna river, and the situation was the worst in Fremont county. At the same time the Boyer river was also at flood stage, and the situation on both streams was aggravated by the formation of huge ice gorges that destroyed bridges, damaged highways, caused washouts and carried away farm property. The Raccoon river at Van Meter had been frozen continuously until the 11th, but with the rapid thawing a gorge formed that caused a rise to above flood stage overnight, and continued above flood stage for eight days, with a crest stage of 18.5 feet, just a few tenths less than the record stage. The Des Moines river did not reach flood stage at Des Moines, but it rose to slightly above 16 feet, and there was much apprehension as to the safety of the levees in the lower portions of the city, and a constant watch was kept. Above Des Moines flood stages were reached at a few points as the result of gorges, but the timely use of dynamite prevented serious damage. Below Des Moines the flood situation was serious and much damage was sustained. At Tracy the river was above flood stage from the 12th to 23d and the crest exceeded the flood stage by 3.2 feet; at Ottumwa the crest was 4.5 feet above flood stage, and from the 14th until the 24th the stage was continuously at flood. Along the entire course of the stream thousands of acres were flooded, crops and small buildings washed away, and many people rendered temporarily homeless. The Cedar river experienced probably the worst condition. Floods were reported throughout its course, but the situation was the worst at Cedar Rapids and Waterloo. The crest stages were reported to have been the highest ever experienced at these points. The principal industrial plants were forced to suspend, business houses were flooded, and many homes abandoned. At many places power plants and water works were forced to suspend, and great inconvenience was experienced due to the lack of light and water. High water was also experienced in the Iowa, Maquoketa, Wapsipinicon and upper Iowa rivers, but by the manipulation of dams and use of dynamite at the proper times, the situation was kept well under control. The Mississippi did not reach flood stage above Muscatine, but the highest March stages of record were recorded. At Muscatine the flood stage was reached on the 19th, and at Keokuk on the 16th, and continued above flood stage throughout the rest

(Continued on page 21)

COMPARATIVE DATA FOR THE STATE—MARCH

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
1873	31.0	— 0.6	72	—18	1.42	— 0.35	3.70	0.33					
1874	31.7	— 2.9	68	— 4	1.43	— 0.34	2.80	0.17					
1875	26.9	— 7.7	80	—10	1.62	— 0.15	3.80	0.45					
1876	27.2	— 7.4	75	— 6	3.24	+ 1.47	5.78	1.16					
1877	27.3	— 7.3	72	—14	2.28	+ 0.51	6.54	0.20					
1878	45.6	+11.0	80	—20	3.36	+ 1.59	6.70	0.35					
1879	37.2	+ 2.6	80	— 3	1.18	— 0.59	4.50	0.20					
1880	33.6	— 1.0	80	—21	1.26	— 0.51	3.90	0.15					
1881	27.1	— 7.5	56	0	1.91	+ 0.14	4.50	0.75					
1882	36.3	+ 1.7	78	4	1.82	+ 0.05	4.52	0.50					
1883	30.6	— 4.0	72	—13	0.55	— 1.22	1.40	0.00					
1884	32.0	— 2.6	72	—16	2.57	+ 0.80	5.90	0.70					
1885	31.3	— 3.3	65	—16	0.24	— 1.53	1.25	0.00					
1886	30.6	— 4.0	74	— 9	1.72	— 0.05	4.47	0.40					
1887	33.5	— 1.1	76	— 8	0.93	— 0.84	3.50	0.00					
1888	26.4	— 8.2	78	—12	3.04	+ 1.27	6.20	0.29					
1889	39.7	+ 5.1	80	8	0.47	— 1.30	2.40	0.00					
1890	28.1	— 6.5	75	—24	1.49	— 0.28	3.67	0.32					
1891	26.8	— 7.8	66	—19	2.60	+ 0.83	4.58	1.33		10	6	8	17
1892	31.9	— 2.7	84	— 6	2.22	+ 0.45	4.58	0.57	3.9	6	11	8	12
1893	31.8	— 2.8	84	— 8	2.14	+ 0.37	4.40	0.64	4.0	8	9	11	11
1894	41.0	+ 6.4	84	— 5	2.03	+ 0.26	4.52	0.26	2.7	6	13	10	8
1895	34.4	— 0.2	94	—11	0.83	— 0.94	2.60	0.22	2.9	4	16	8	7
1896	30.9	— 3.7	81	—12	1.10	— 0.67	3.99	0.16	5.4	5	12	9	10
1897	32.0	— 2.6	72	—22	2.39	+ 0.62	6.16	0.29	5.5	8	9	8	14
1898	37.5	+ 2.9	72	— 2	1.94	+ 0.17	6.21	0.33	3.7	6	12	9	10
1899	23.0	—11.6	75	—16	1.62	— 0.15	5.90	0.37	8.0	6	7	12	12
1900	30.7	— 3.9	81	—13	2.06	+ 0.29	5.15	0.45	6.6	5	12	9	10
1901	34.2	— 0.4	76	— 8	2.64	+ 0.87	5.25	0.70	12.6	7	10	8	13
1902	39.1	+ 4.5	79	—12	1.45	— 0.32	4.33	0.13	1.3	7	9	11	11
1903	38.8	+ 4.2	82	6	1.38	— 0.39	3.90	0.15	3.9	7	11	7	13
1904	31.8	+ 0.2	78	3	2.18	+ 0.41	4.57	0.50	4.4	7	8	8	15
1905	41.5	+ 6.9	84	1	2.04	+ 0.27	3.70	0.89	4.1	7	8	8	15
1906	27.1	— 7.5	65	—11	2.34	+ 0.57	4.55	0.58	8.9	10	8	7	16
1907	40.6	+ 6.0	92	— 7	1.35	— 0.42	5.05	0.23	4.1	6	14	7	10
1908	37.9	+ 3.3	85	— 8	1.58	— 0.19	3.74	0.45	1.1	6	13	7	11
1909	32.5	— 2.1	71	—15	1.53	— 0.24	5.00	0.28	9.8	6	12	10	9
1910	48.9	+14.3	92	—10	0.17	— 1.60	1.37	0.00	T.	1	23	6	2
1911	39.4	+ 4.8	83	2	0.93	— 0.84	4.84	T.	1.9	5	16	9	6
1912	24.9	— 9.7	70	—19	2.01	+ 0.24	5.25	0.60	19.1	7	15	6	10
1913	31.9	— 2.7	78	—23	2.48	+ 0.71	5.88	0.74	5.3	9	11	10	10
1914	31.7	+ 0.1	78	— 5	1.69	— 0.08	3.84	0.28	1.8	7	12	8	11
1915	29.3	— 5.3	61	— 5	0.96	— 0.81	2.12	0.17	8.8	5	8	9	14
1916	35.2	+ 0.6	80	—18	1.57	— 0.20	5.80	0.23	2.9	6	11	9	11
1917	34.6	0.0	85	—12	1.84	+ 0.07	4.35	0.57	6.2	6	14	8	9
1918	42.9	+ 8.3	85	0	0.63	— 1.14	2.12	0.03	2.6	3	19	7	5
1919	37.5	+ 2.9	78	—11	2.33	+ 0.56	5.40	0.81	1.1	6	15	8	8
1920	38.0	+ 3.4	80	—21	3.02	+ 1.25	5.70	0.47	2.4	7	15	7	9
1921	42 8	+ 8.2	86	4	1.57	— 0.20	6.62	0.17	0.2	7	14	8	9
1922	38.3	+ 3.7	74	— 5	1.97	+ 0.20	3.73	0.76	3.4	7	12	6	13
1923	29.4	— 5.2	78	—22	2.87	+ 1.10	5.08	0.71	18.5	7	13	9	9
1924	31.9	— 2.7	72	— 3	2.65	+ 0.88	4.76	1.26	10.5	8	8	8	15
1925	40.1	+ 5.5	82	— 6	0.93	— 0.84	2.34	0.10	2.9	4	17	9	5
1926	32.1	— 2.5	78	— 4	1.06	— 0.71	2.62	0.20	8.1	6	12	9	10
1927	39.6	+ 5.0	75	0	1.92	+ 0.15	3.64	0.62	2.9	9	11	7	13
1928	38.9	+ 4.3	88	1	1.44	— 0.33	2.75	0.36	3.0	5	15	8	8
1929	39.1	+ 4.5	83	— 5	1.44	— 0.33	4 92	0.30	3.5	5	12	8	11

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

Climatological Data for March, 1929

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		
Northwest District																				
Akron	Plymouth	1,153	2								0.81	— 0.45	0.40	7.5	7	17	7	7	nw.	Orlan C. Moore
Alta	Buena Vista	1,513	37	36.8	+ 3.8	64	28	3	9	33	1.31	— 0.24	0.82	8.0	6	13	10	8	s.	D. E. Hadden
Alton	Sioux	1,305	23	36.9	+ 4.9	65	29	7	9	33	1.75	+ 0.65	0.80	11.5	7	5	17	9	w.	W. S. Slagle
Cherokee	Cherokee	1,196	8	36.6	+ 4.7	63	27†	1	9	34	0.82	— 0.46	0.58	8.5	4	12	9	10	s.	J. E. Wirth
Estherville	Emmet	1,298	33	34.4	+ 2.8	63	28	0	9	34	1.20	— 0.07	0.50	8.0	3	12	14	5	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								0.57	— 0.71	0.43	6.0	5	18	2	11	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	36.6	+ 3.9	67	29	5	9	37	0.40	— 0.80	0.27	3.0	3	13	9	9	sw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	33.8	+ 2.4	61	28	— 4	9	30	1.33	+ 0.04	0.75	3.4	6	10	10	11	sw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	38.6	+ 5.3	63	20†	8	9	36	1.54	+ 0.29	0.85	12.5	5	18	4	9	s.	Henry Newell
Marathon	Buena Vista	1,390	2								1.38		1.25	12.5	4	11	7	13	nw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	35.8	+ 3.5	62	27	1	9	33	1.26	— 0.11	0.82	8.7	4	13	5	13	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	36.1	+ 4.6	64	29	2	9	36	0.81	— 0.51	0.43	6.2	4	25	1	5	s.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	34.8	+ 3.2	62	28	— 1	9	35	1.12	— 0.28	0.64	8.5	4	11	12	8	ne.	J. W. Dow
Sheldon	O'Brien	1,418	17	35.8	+ 4.2	64	29	4	9	36	1.14	— 0.16	0.66	7.1	6	12	12	7	s.	Ross E. Forward
Sioux Center	Sioux	1,426	29	36.3	+ 4.8	62	17†	5	9	32	0.58	— 0.68	0.33	4.2	2	13	8	10	se.	F. C. Aue
Spencer	Clay	1,319	14	36.6	+ 4.2	64	28	2	9	36	1.09	— 0.23	0.40	7.8	6	6	15	10	sw.	E. W. Little
Storm Lake	Buena Vista	1,438	39	36.5	+ 3.9	61	27	4	9	31	1.59	+ 0.29	1.42	9.5	3	16	8	7	sw.	L. B. Florey
Washta	Cherokee	1,157	30	37.8	+ 4.5	65	28	6	9	39	1.26	+ 0.25	0.90	8.0	6	17	6	8	s.	H. L. Felter
West Bend	Palo Alto	1,197	35	35.6	+ 3.6	62	28	— 3	9	31	1.08	— 0.48	0.74	11.0	3	10	12	9	sw.	Jos. Dorweiler
Means and extremes				36.2	+ 4.0	67	29	— 4	9	39	1.11	— 0.19	1.42	8.0	5	13	9	9	s.	
North Central District																				
Algona	Kossuth	1,224	55	36.3	+ 4.8	63	23	0	9	36	0.32	— 1.10	0.13		3	17	2	12	se.	W. E. Laird
Allison	Butler	1,060	14	34.4	+ 2.3	64	26	3	7†	35	1.20	— 0.43	0.75	8.0	5	12	7	12	sw.	E. W. Detra
Belmond	Wright	1,181	18	35.2	+ 3.9	61	27	— 4	9	34	0.74	— 0.59	0.31	8.0	5	8	6	17	nw.	H. F. Luick
Britt	Hancock	1,236	41	35.8	+ 4.3	60	27†	— 1	9	31	0.91	— 0.34	0.89	6.0	2	4	14	13	sw.	E. P. Healy
Charles City	Floyd	1,015	37	34.2	+ 3.5	60	27	1	9	31	1.67	— 0.10	1.27	5.9	6	8	11	12	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	34.3	+ 2.5	63	27	— 3	9	36	0.43	— 1.00	0.37	3.9	3	7	9	15	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								0.68	— 1.07	0.35	6.0	4					L. H. Davis
Humboldt	Humboldt	1,095	40	36.6	+ 3.4	62	27†	0	9	34	1.00	— 0.44	0.70	4.5	2	10	6	15	nw.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	34.3	+ 3.4	61	28	— 5	9	33	1.02	— 0.35	0.68	7.5	5	8	12	11	nw.	American Beet Sugar Co.
Northwood	Worth	1,222	32	33.6	+ 4.4	60	27	— 2	9	30	1.88	+ 0.03	1.30	12.8	7	7	12	12	nw.	Charles Dwelle
Osage	Mitchell	1,163	34	33.8	+ 3.9	60	27	— 2	9	31	1.05	— 0.54	0.60	8.0	5	10	9	12	nw.	Dr. C. E. Juhl
Means and extremes				34.8	+ 3.6	64	26	— 5	9	36	0.99	— 0.54	1.30	7.1	4	9	9	13	nw.	
Northeast District																				
Decorah	Winneshiek	872	35	35.0	+ 3.7	61	18	0	9†	36	1.63	— 0.17	0.93	5.0	4	9	8	14	nw.	M. D. Whitney
Dubuque	Dubuque	700	55	38.6	+ 4.6	64	18	7	7	30	2.41	+ 0.38	1.17	2.7	9	8	7	16	s.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	35.8	+ 4.5	66	18	2	7	35	2.58	+ 0.47	1.20	6.5	5	12	10	9	sw.	R. Z. Latimer
Independence	Buchanan	956	64	36.4	+ 2.3	65	18†	3	9	33	1.74	+ 0.02	0.61	2.8	5	16	1	14	ne.	Dr. Geo. Boody
Lansing	Allamakee	632	21								1.47	— 0.57	0.56	4.0	7					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	34.2	+ 2.9	61	27	— 1	9	33	1.54	— 0.38	0.70	3.0	3	8	9	14	nw.	D. W. Dawson
Oelwein	Fayette	1,036	5	36.2	+ 3.2	65	18	3	7†	32	1.82	0.00	0.90	9.0	4	11	6	14	nw.	John T. Ridler
Postville (near)	Clayton	1,192	29	33.8	+ 3.2	62	18	0	7	31	1.56	— 0.36	0.64	6.0	5	11	8	12	sw.	F. L. Williams
Waterloo	Black Hawk	854	45	37.2	+ 2.8	66	18	0	9	38	1.92	+ 0.25	0.72	4.1	5	14	4	13	se.	R. B. Slippy
Waverly	Bremer	936	32	36.4	+ 3.5	65	18	0	9	36	1.85	+ 0.07	0.70	6.5	5	19	4	8	nw.	D. H. Murphy
Means and extremes				36.0	+ 3.5	66	18	— 1	9	38	1.85	— 0.03	1.20	5.0	5	12	6	13	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	38.6	+ 4.8	63	27	11	7	32	0.67	— 0.78	0.51	2.0	2	13	12	6	sw.	George Kibby
Carroll	Carroll	1,265	38	38.0	+ 2.0	64	27	4	9	33	0.55	— 1.14	0.55	0.5	1	23	1	7	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	38.4	+ 3.4	64	27	7	9	33	0.41	— 1.12	0.23	5.5	3	8	13	10	nw.	V. L. Byers
Guthrie Center	Guthrie	987	33																	
Harlan	Shelby	1,192	29	38.4	+ 3.1	65	27	9	9	35	0.70	— 0.63	0.50	1.5	2	15	8	8	nw.	Walter Bell
Jefferson	Greene	1,052	29	38.4	+ 2.6	65	27	6	9	37	1.15	— 0.31	0.80	1.0	3	13	7	11	sw.	W. I. Lyon
Little Sioux	Harrison	1,040	23	40.6	+ 4.5	67	20†	13	9	40	0.74	— 0.58	0.25	3.5	6	8	17	6	sw.	H. W. Kerr
Logan	Harrison	1,120	61	40.4	+ 3.2	67	27	11	9	38	1.10	— 0.56	0.55	6.0	4	10	16	5	nw.	Amy Ann Stern
Onawa	Monona	1,051	27	39.6	+ 4.3	68	29	12	9	37	1.20	— 0.42	0.96	14.0	2	15	7	9	sw.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32	37.8	+ 4.0	65	22	0	9	33	0.82	— 0.79	0.50	7.0	2	19	5	7	nw.	A. W. McIsaac
Sac City	Sac	1,269	52	37.1	+ 4.0	63	28	3	9	31	0.30	— 1.13	0.30	3.0	1	10	12	9	sw.	F. P. Kessler
Sioux City	Woodbury	1,135	39	39.6	+ 6.9	68	29	13	9	33	1.12	— 0.03	0.65	7.1	8	8	15	8	nw.	U. S. Weather Bureau
Means and extremes				38.8	+ 3.9	68	29	0	9	40	0.80	— 0.68	0.96	4.6	3	13	10	8	nw.	
Central District																				
Ames	Story	926	51	38.8	+ 3.8	66	22	5	9	35	1.02	— 0.40	0.35	2.5	6	19	0	12	nw.	Iowa State College
Baxter	Jasper	998	28																	F. A. Kanne
Boone (near)	Boone	894	23	38.0	+ 2.0	64	22	5	9	39	1.12	— 0.32	0.70	2.0	5	12	14	5	nw.	C. F. Henning
Des Moines	Polk	861	50	40.8	+ 4.9	73	24	10	9	38	1.11	— 0.67	0.48	0.7	5	6	10	15	sw.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	37.0	+ 2.7	62	27†	0	9	35	1.21	— 0.39	0.55	5.8	8	10	11	10	sw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	31	39.2	+ 3.9	72	24	5	9	40	1.70	— 0.13	0.50	1.5	6	16	7	8	se.	R. E. Bates
Grundy Center	Grundy	976	37	37.2	+ 2.5	67	18†	0	9	34	2.38	+ 0.58	1.20	6.0	4	16	6	9	w.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	35.3	+ 1.2	62	22†	— 3	9	36	1.70	— 0.17	1.10	7.0	4	14	6	11	nw.	C. H. Gilbert
Marshalltown	Marshall	947	36	38.8	+ 3.2	67	18	5	9	33	1.60	— 0.26	0.60	5.9	6	9	6	16	nw.	C. C. Pigman
Monroe	Jasper	922	16	41.2	+ 5.2	76	24	8	9	41	1.19	— 0.61	0.89	0.9	4	16	8	7	s.	J. A. Dibel
Perry	Dallas	975	27	38.4	+ 3.0	65	18	8	9	35	0.63	— 1.11	0.44	1.4	3	11	10	10	s.	Eugene N. Hastie
Toledo	Tama	847	34	38.8	+ 3.4	68	18†	4	9	37	2.25	+ 0.45	0.80	3.5	7	12	12	7	nw.	H. P. Giger
Van Meter	Dallas	872	9								1.20		0.70	3.0	3					Calvin K. Smith
Waukee	Dallas	1,032	25	39.3	+ 4.1	69	24	7	9	37	1.05	— 0.60	0.64		3	17	7	7	w.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	36.0	+ 2.0	63	27	0	9	39	0.88	— 0.62	0.50	9.0	4	12	12	7	nw.	Frank A. Bonebright
Means and extremes				38.4	+ 3.3	76	24	— 3	9	41	1.36	— 0.35	1.20	3.5	5	13	8	10	nw.	

Climatological Data for March, 1929—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		
East Central District																				
Belle Plaine	Benton	866	38	39.2	+ 4.3	68	24	7	9	36	1.85	— 0.43	0.75	1.0	5	11	10	10	nw.	O. C. Burrows
Cedar Rapids	Linn	737	46	40.0	+ 5.3	69	25	9	7†	36	1.34	— 0.96	0.63	1.0	8	12	1	18	sw.	J. T. Wurster
Clinton	Clinton	595	55	42.2	+ 6.4	68	22†	10	7	32	2.13	— 0.69	0.53	0.5	13	12	5	14	s.	Dr. A. P. Bryant
Davenport	Scott	580	57	43.4	+ 7.3	74	24	12	7	36	2.60	+ 0.29	1.12	0.5	12	8	9	14	sw.	U. S. Weather Bureau
Davenport No. 2	Scott	690	3	43.6		73	24	11	7	36	2.01		1.03	1.0	12	16	8	7	sw.	Rex Shriver
Fairport	Muscatine	567	7	43.5	+ 6.5	73	25	11	7	34	2.26	— 0.20	0.70	0	13	11	2	18	s.	Bureau of Fisheries
Iowa City	Johnson	733	68	41.8	+ 6.2	75	25	10	7	38	2.26	— 0.14	1.08	0.5	9	12	7	12	nw.	Prof. J. F. Reilly
Le Claire	Scott	576	28								2.18	— 0.18	0.62	T.	10					Margaret T. Disney
Maquoketa (near)	Jackson	692	23	39.7	+ 6.2	76	25	7	7	38	1.74	— 0.58	0.91	1.5	11	13	3	15	nw.	John Strodthoff
Muscatine	Muscatine	546	67								2.14	— 0.46	0.50	1.0	12					William Molis
Olin	Jones	760	29	39.4	+ 4.9	78	25	9	2†	42	1.73	— 0.53	1.02	1.0	4	14	5	12	se.	Mrs. L. Stingley
Tipton (near)	Cedar	807	29	40.8	+ 5.3	75	25	9	7	38	2.58	— 0.01	1.25	0	8	10	10	11	w.	John Kroeplen
Williamsburg	Iowa	770	12	40.6	+ 6.2	78	25	10	7†	42	1.21	— 0.90	0.68	0	5	16	6	9	nw.	Dr. F. C. Schadt
Means and extremes				41.3	+ 6.1	78	25	7	7†	42	2.00	— 0.40	1.25	0.6	9	12	6	13	nw.	
Southwest District																				
Atlantic	Cass	1,110	37	39.8	+ 3.8	67	27	9	9	35	0.87	— 0.72	0.63	1.5	6	7	12	12	sw.	T. H. Whitney
Bedford	Taylor	1,200									0.67	— 1.15	0.47	2.0	3	13	7	11	sw.	Arthur L. Bishop
Clarinda	Page	1,009	38	41.7	+ 3.6	79	24	12	9	44	1.56	— 0.16	0.69	10.5	4	12	12	7	nw.	Dr. H. C. Hawley
Corning	Adams	1,150	36	42.0	+ 6.1	72	24	10	9	47	1.12	— 0.78	0.90	2.2	2	12	12	7	sw.	C. A. Smith
Cumberland (near)	Cass	1,225	29								0.50	— 1.04	0.45	0	2	13	11	7	sw.	Carl E. Pollock
Glenwood	Mills	1,100	30	42.4	+ 4.5	68	20†	14	9	40	0.89	— 0.45	0.40	3.5	4	13	10	7	nw.	George Mogridge
Lenox	Taylor	1,250	33	40.8	+ 4.2	67	22†	9	9	37	0.87	— 0.67	0.64	0.3	3	17	5	9	nw.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	40.6	+ 4.4	68	20†	12	9	37	0.50	— 0.97	0.40	1.0	2	14	8	9	sw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3								0.87	— 0.73	0.49	2.0	3	7	18	6	s.	B. R. Bridge
Riverton (near)	Fremont	920	2								0.97	— 0.63	0.42	3.0	3	14	3	14	n.	Geo. C. Rader
Thurman	Fremont	960	31	42.9	+ 4.9	70	27	16	5†	39	0.59	— 0.89	0.25	2.5	3	12	7	12	s.	H. H. Askew
Omaha, Neb.		1,105	57	42.4	+ 5.4	68	27	14	9	32	0.54	— 0.83	0.26	1.5	4	11	11	9	nw.	U. S. Weather Bureau
Means and extremes				41.6	+ 4.6	79	24	9	9	47	0.83	— 0.75	0.90	2.5	3	12	10	9	sw.	
South Central District																				
Afton	Union	1,212	34	41.0	+ 4.5	77	24	9	9	43	0.98	— 0.91	0.80	0	2	12	12	7	sw.	S. R. Brown
Albia	Monroe	949	30	42.8	+ 6.6	81	24	11	9	46	1.44	— 0.52	1.20	T.	4	12	5	14	sw.	O. E. McBride
Centerville	Appanoose	1,013	23	44.2	+ 6.3	82	24	12	9	45	1.73	— 0.20	1.44	T.	7	15	5	11	sw.	Thomas Wood
Chariton (near)	Lucas	1,012	33	41.6	+ 5.6	79	24	10	9	44	0.95	— 0.79	0.95	T.	1	12	11	8	sw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	42.2	+ 5.6	80	24	11	9	44	1.80	— 0.21	1.71	T.	5	9	6	16	nw.	J. C. Davis
Creston	Union	1,291	23	39.8	+ 4.2	77	24	8	9	43	0.49	— 0.97	0.47	0	2	6	20	5	s.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	38.8	+ 3.8	70	24	7	9	39	0.81	— 0.90	0.56	0.5	3	16	6	9	sw.	George Phillips
Indianola	Warren	972	37	41.0	+ 4.7	77	24	9	9	39	1.14	— 0.49	0.82	0	3	9	12	10	sw.	Seth F. Shenton
Knoxville	Marion	920	33	42.3	+ 5.7	79	24	10	9	45	1.00	— 0.80	0.90	0	2	12	5	14	sw.	W. J. Casey
Lacona	Warren	824	29								1.58	— 0.72	1.05	0	7	11	12	8		J. B. Alter
Lamoni	Decatur	1,123	21	41.4	+ 4.5	81	24	10	9	46	1.34	— 0.53	1.11	0	3	16	9	6	nw.	F. S. Parks
Mount Ayr	Ringgold	1,220	35	41.6	+ 4.6	79	24	11	9	44	1.60	— 0.30	1.60	T.	1	19	8	4	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	41.0	+ 4.7	78	24	10	9	44	0.84	— 0.96	0.84	0	1	11	12	8	sw.	James A. Verploegh
Winterset	Madison	1,118	37	40.8	+ 4.6	73	24	9	9	41	0.70	— 1.05	0.50	0.5	6	19	6	6	sw.	H. S. Ely
Means and extremes				41.4	+ 5.0	82	24	7	9	46	1.17	— 0.65	1.71	0.1	3	13	9	9	sw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	43.4	+ 6.0	80	24	13	9	42	2.21	— 0.04	1.24	T.	7	15	5	11	w.	B. R. Vale
Burlington	Des Moines	514	32	44.8	+ 5.9	80	24	15	7†	39	4.32	+ 1.81	2.42	0.5	7	15	7	9	sw.	John T. Donnelly
Columbus Junction	Louisa	595	27	43.2	+ 6.2	78	24	12	7	39	2.43	+ 0.39	1.56	0.8	10	12	11	8	nw.	Miss Musa Todd
Fairfield	Jefferson	780	44	43.0	+ 6.3	81	24	8	7	45	2.32	— 0.01	1.14	0.5	8	12	6	13	nw.	R. M. McKenzie
Keokuk	Lee	614	57	46.0	+ 7.1	81	24	16	9	38	4.78	+ 2.40	2.04	T.	9	7	7	17	s.	U. S. Weather Bureau
Keosauqua	Van Buren	639	36	43.8	+ 5.9	83	24	14	9	45	2.11	— 0.16	1.40	0	3	10	12	9	e.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	44.4	+ 6.8	78	24	14	9	39	2.41	+ 0.21	1.30	0	7	9	14	8	sw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	42.2	+ 6.4	81	24	10	9	46	1.65	— 0.26	1.09	1.2	7	10	12	9	s	Roy R. Robinson
Ottumwa	Wapello	649	33	44.0	+ 5.2	82	24	11	7	43	2.49	+ 0.52	1.67	0.5	5	11	10	10	nw.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	42.4	+ 6.3	79	24	11	9	42	2.66	+ 0.65	1.70	0.6	8	13	8	10	nw.	W. E. Utterback
Stockport (near)	Van Buren	747	26	42.9	+ 6.5	81	24	13	9	43	2.75	+ 0.58	1.17	T.	8	16	3	12	s.	C. L. Beswick
Washington	Washington	757	46	43.6	+ 7.1	78	24	10	7	41	2.58	+ 0.39	2.07	0.5	7	10	11	10	sw.	D. D. Sherman
Wever	Lee	552		44.7		80	24	15	9	40	4.92		2.40	0.6	9	8	10	13	nw.	H. G. Liddle
Means and extremes				43.7	+ 6.4	83	24	8	7	46	2.89	+ 0.70	2.42	0.4	7	11	9	11	nw.	
State means and extremes				39.1	+ 4.5	83	24	— 5	9	47	1.44	— 0.33	2.42	3.5	5	12	8	11	nw.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area and based on the records of 104 stations was 39.1° or 4.5° higher than the normal. The greatest excess occurred in the southeastern district, where the daily excess was 6.4°; in the east central district the excess was 6.1°; in the east central district the excess was 6.1°. In both these districts there was very little snow cover at the beginning of the month. The least departure was 3.3° in the central district. The greatest excess at any station was 7.3° at Davenport and the least departure was 1.2° at Iowa Falls and in this vicinity the snow remaining on the ground at the end of February was exceptionally heavy. The highest mean was 46.0° at Keokuk and the lowest was 33.6° at Northwood. The extreme range for the State was 88°, from 83° at Keosauqua on the 24th, to —5° at Mason City on the 9th. The average number of days on which the maximum temperature did not go above 32° was 2.5, ranging from 4 days in the northwestern district to 1 day in the southwestern and southeastern districts; at 12 stations the temperature was above 32° every day in the month. The average number of days with the minimum temperature 32°, or lower, was 19 ranging from 24 in the northwestern district to 13 in the southeastern district; zero occurred at 22 stations and at five of these places on two days.

Daily Precipitation for March, 1929

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	
Northwest District																																	
Akron	Big Sioux	.03			.16								.04								.05		.05		T.						.08	.40	0.81
Alta	Raccoon		.03		T.								.03								.02		.05		T.						.36	.82	1.31
Alton	Floyd	.20	T.		.05								.32	.04							T.		.24	T.	T.						.10	.80	1.75
Cherokee	Little Sioux	.04	T.	T.	.04								T.	T.		T.					T.		.16		T.						T.	.58	0.82
Estherville	Des Moines																						.40								.30	.50	1.20
Hawarden	Big Sioux	T.			T.								.06								T.		.07		.01						.10	.33	0.57
Inwood (near)	Big Sioux												.10	T.											T.						.03	.27	0.40
Lake Park (near)	Little Sioux				.02								.10	.02									.42								.02	.75	1.33
Le Mars	Floyd	.05			.33																		.16	T.							.15	.85	1.54
Marathon	Raccoon		T.				T.					T.	.02	T.						T.		.11									.78	.47	1.38
Pocahontas	Des Moines	.30	T.																				.12		T.						.02	.82	1.26
Rock Rapids	Big Sioux	.03											.09										.26	T.	T.							.43	0.81
Sanborn	Floyd																						.42	T.	.02						.04	.64	1.12
Sheldon	Floyd	.01	T.		T.		T.						.07	T.						T.			.35	T.	.01						.04	.66	1.14
Sioux Center	Floyd												.25																			.33	0.58
Spencer	Little Sioux	.25											.06	.02									.35		.01							.40	1.09
Storm Lake	Raccoon	.13			T.																		.04								1.42	1.59
Washta	Little Sioux	.10			.13								.04								.03		.06		T.						T.	.90	1.26
West Bend	Des Moines	.16											T.							T.			.18		T.							.74	1.08
North Central District																																	
Algona	Des Moines															.09							.13									.10	0.32
Allison	Cedar	.20		T.			T.						.05	.06									.14									.75	1.20
Belmond	Iowa	.25											.05	.04									.09								T.	.31	0.74
Britt	Iowa		T.				T.																.02									.89	0.91
Charles City***	Cedar	.03	.04	.01			T.						.20			T.				T.			.12								T.	1.27	1.67
Forest City	Cedar		.02	T.			T.						T.										.04									.37	0.43
Hampton	Cedar											.02										.05									.35	.26	0.68
Humboldt	Des Moines	.30	T.														T.				T.		T.		T.						T.	.70	1.00
Mason City	Cedar		T.				T.			T.			.08	.09		.01				T.	T.		.16		T.							.68	1.02
Northwood	Cedar		.03			T.	.05						.10	.15	.05	T.							.20									1.30	1.88
Osage	Cedar		.04										.10	.15									.16									.60	1.05
Northeast District																																	
Decorah	Mississippi		T.				T.						.05	.40									.25									.93	1.63
Dubuque***	Mississippi	.18	T.	T.			T.					.04	.03	.39	T.		.02		.11	T.		.03	.44	T.						T.		1.17	2.41
Fayette	Mississippi	.25					T.						.12	.37						T.			1.20									.64	2.58
Independence	Wapsipinicon	.26											.31	.30									.61	T.								.26	1.74
Lansing	Mississippi													.35	.07			.05		.02			T.	.56		.01						.41	1.47
New Hampton	Wapsipinicon												.70										.24									.60	1.54
Oelwein	Wapsipinicon	.40											.20										.90									.82	1.82
Postville (near)	Mississippi	.20											.15							T.			.64			.12						.45	1.56
Waterloo	Cedar	.21											.33	.06									.72	T.								.60	1.92
Waverly	Cedar	.70											.16							.36			*			.03						.60	1.85
West Central District																																	
Audubon (near)	Nishnabotna	.16											T.																			.51	0.67
Carroll	Raccoon																															.55	0.55
Denison	Missouri	.03			.15																		T.	T.								.23	0.41
Guthrie Center	Raccoon																																
Harlan	Nishnabotna				.20								T.			T.							T.	T.							T.	.50	0.70
Jefferson	Raccoon	.10											T.			T.					T.		.25	T.							T.	.80	1.15
Little Sioux	Little Sioux	.10			.25								.12										.01		.01							.25	0.74
Logan	Missouri	.10			.55								.05																			.40	1.10
Onawa	Missouri				.96								T.																		T.	.24	1.20
Rockwell City	Raccoon	.32											T.										T.									.50	0.82
Sac City	Raccoon		T.		T.								T.																			.30	0.30
Sioux City***	Missouri	.02	T.	T.	.10		T.						.12	T.		T.				.01	.01		.04	T.	T.						.35	.47	1.12
Central District																																	
Ames	Skunk	.15											.11								.06		.32	.03								.35	1.02
Baxter	Skunk																																
Boone (near)	Des Moines	.10													.09						.09		.14									.70	1.12
Des Moines***	Des Moines	T.											.22			T.				T.			.37	.01							.08	.43	1.11
Fort Dodge	Des Moines	.40											.01			.02					.12	.04	.05		.02							.55	1.21
Grinnell	Iowa	.12											.25								.12	.50		.28								.43	1.70
Grundy Center	Cedar	.32											.50										.30	T.								1.20	2.38
Iowa Falls	Iowa	.20											.12	T.									.28									1.10	1.70
Marshalltown	Iowa	.33											.06	.02		T.			T.	T.	.11		.48	T.								.60	1.60
Monroe	Des Moines	.03				T.							.18			T.			T.	T.			.09	T.						T.		.89	1.19
Perry	Raccoon	.10											T.	T.		T.				T.			.09	T.	T.						T.	.44	0.63
Toledo	Iowa	.25											.32	.08					.05	T.	.15		.80	T.								.60	2.25
Van Meter	Raccoon	.15																					.35									.70	1.20
Waukee	Raccoon	T.																					.40	.01	T.							.64	1.05
Webster City	Des Moines	.19	T.				T.						T.								.06		.13									.59	0.88
East Central District																																	
Belle Plaine	Iowa	.09										T.	.53						T.	T.	.18		.30	T.								.75	1.85
Cedar Rapids	Cedar	.12										.05	.20	.26		.01			T.	.02			.05									.63	1.34
Clinton	Mississippi	.05	.05									.14	.04	.47		.11	.06	.10				.08	.45	.05		.05						.48	2.13
Davenport***	Mississippi	.01	T.	T.							T.	.09	.14	.24		.29	T.			.02	.03	.50	.12	.01		.04				T.	T.	1.08	2.60
Davenport No. 2	Mississippi	.11	T.	.02								.06	.09	.03		.09	.19			T.	.01	T.	.21	.09		.05				T.		1.03	2.01
Fairport	Mississippi	.03										.20	.15	.35		.07	.15			.01	.17		.25	.05		.10				.03		.70	2.26
Iowa City	Iowa	.02	T.	T.								.02	.24	.46		.12	T.			T.	.19		.05	T.		.08				T.		1.08	2.26
Le Claire	Mississippi	.10	T.	T.								T.	.02	.39	.04		.62	T.			.03	T.	.41	.12		.03					T.	.42	2.18
Maquoketa (near)	Maquoketa	.07		.03								.21	.06	.35		.02		.03		.02			.03	.01								.91	1.74
Muscatine	Mississippi	.10		.22								.03	.20	.47	T.	.03	.05				.17		.16	.06		.15						.50	2.14
Olin	Wapsipinicon	.08											.21		.42								T.									1.02	1.73
Tipton (near)	Cedar	.10		.10								.18	.05	.37									.45			.08						1.25	2.58
Williamsburg	Iowa	.02											.31			.12							.05									.68	1.21

Daily Precipitation for March, 1929—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	
Southwest District																																	
Atlantic	Nishnabotna	.10			.03								.05								T.		.03	.03						T.	.63	0.87
Bedford	102				.17								.03	T.					T.					T.							.47	0 67
Clarinda	Nodaway				.20								.64												.03						.69	1.56
Corning	Nodaway												.22																		.90	1.12
Cumberland(near)	Nodaway				.05								T.			T.							T.	T.						T.	.45	0.50
Glenwood	Missouri	.05			.30								.14																		.40	0.89
Lenox	Missouri	.03											.20			T.				T.			T.	T.							.64	0.87
Oakland	Nishnabotna				.10																										.40	0.50
Red Oak (near)	Nishnabotna				.24								.14																		.49	0.87
Riverton (near)	Nishnabotna	T.			.30								.25																		.42	0.97
Thurman	Missouri	T.			.25								.13																		.21	0.59
Omaha, Neb.***	Missouri	T.	T.		.13								.13										T	T.				T.		.09	.19	0.54
South Central District																																	
Afton	Grand															T.							.18								.80	0.98
Albia	Des Moines	T.	T.									T.	.07			.09				.08						T.				T.	1.20	1.44
Centerville	Chariton	.02										.01	.15	.01		.05										T.				.02	1.44	1.73
Chariton (near)	Chariton	T.	T.										T.		T.	T.				T.				T.						T.	.95	0.95
Corydon (near)	Chariton	T.											.06			.01				.01										.01	1.71	1.80
Creston	Missouri												T.			T.			.02												.47	0.49
Earlham (near)	Des Moines	.04											T.	T.		T.			T.				.21	T.							.56	0.81
Indianola	Des Moines												.08						T.	T.			.21	T.							.82	1.14
Knoxville	Des Moines												.10							T.		T.		T.	T.					T.	.90	1.00
Lacona	Des Moines												.40	.05		.01				.05			.01							.01	1.05	1.58
Lamoni	Grand												.15			.08														T.	1.11	1.31
Mount Ayr	Grand																														1.60	1.60
Tingley	Platte												T.			T.							T.		T.					T.	.84	0.84
Winterset	Des Moines	.04											.01				.02			.01		.12		T.							.50	0.70
Southeast District																																	
Bonaparte (near)	Des Moines	T.										.06	.45	.07		.33								.03		.03				T.	1.24	2.21
Burlington	Mississippi	.02										.32	.39	.38		.72	T.				T.					.07				T.	2.42	4.32
Columbus Jct	Iowa	.02	.01									.01	.23	.30		.09				T.			.04	.09		.08				T.	1.56	2.43
Fairfield	Skunk	.05	.03									.04	.62	.08		.22				T.						.14					1.14	2.32
Keokuk***	Mississippi	T.										.57	.57	.23	.01	.94				T.				.06		.34				.02	2.04	4.78
Keosauqua	Des Moines	T.										T.	.70	T.		T.								T.		.01					1.40	2.11
Mt. Pleasant	Skunk											.10	.44			.42								.13	.01	.01				T.	1.30	2.41
Oskaloosa	Des Moines	.09										.07	.23	.05		.08				.01			T.	T.	T.					T.	1.09	1.65
Ottumwa	Des Moines	.09	T.									.02	.55			.16				T.				T.						T.	1.67	2.49
Sigourney (near)	Skunk	.06	.01									T.	.62	.06		.07				.06	T.		.08			T.				T.	1.70	2.66
Stockport (near)	Skunk	T.										.16	.68	.12		.34	T.							.18		.05				.05	1.17	2.75
Washington	Skunk	.03	T.									.03	.15	.12		.15				T.	T.		.03							T.	2.07	2.58
Wever	Mississippi	.03	T.									.35	.51	.30		.51	.42					T.		.08		.32				T.	2.40	4.92

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.

T. Precipitation is less than .01 inch or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level)					Relative Humidity, %					‡‡Wind					Sunshine	
						Mean							Maximum				
	Mean	Highest	Date	Lowest	Date	7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	Total movement	Average hourly velocity	Miles	From	Date	% possible	Departure from normal
Chas. City	29.91	30.69	9	29.17	6	87	69	74	36	28	5,330	7.2	28	nw.	6	47	—10
Davenport	29.91	30.63	9	29.20	6	82	68	68	31	27	8,679	11.8	50	nw.	6	61	+ 6
Des Moines	29.90	30.66	9	29.26	6	83	61	64	29	27	5,429	7.3	28	sw.	18	56	0
Dubuque	29.90	30.67	9	29.18	6	78	63	64	30	30	5,013	6.7	32	nw.	6	43	—10
Keokuk	29.93	30.66	9	29.31	6	78	54	60	29	7	5,788	7.8	34	w.	6	60	+ 2
Sioux City	29.90	30.67	9	29.23	22	79	61	61	18	26	9,165	12.3	51	nw.	6	58	0
Omaha,Nb	29.90	30.65	9	29.25	22	74	54	52	9	27	5,864	7.9	34	nw.	6	56	— 2
Means and extremes	29.91	30.69	9	29.17	6	80	61	63	9	27		8.7	51	nw.	6	54	— 3
Normals and records	30.04	§30.82	29th 1921	*28.79	29th 1924	80		67	* 5	18th 1918			§53	w.		57	

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

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

GENERAL SUMMARY

(*Continued from page 17*)

of the month. Along the Mississippi River from Muscatine to Lee counties the levees remained intact, but it required constant effort, and there was some damage from seepage. The flood situation greatly interfered with train schedules, closed highway traffic at many places for extended periods, caused many industrial plants to suspend, and during the high water reduced the "head" at the Keokuk power plant to such an extent that less than 50 per cent of the normal power was produced.

On the 30th a storm set in that developed on the 31st into one of the most destructive ice and sleet storms. The northern portion of the State was generally affected, but the area of the greatest damage was in a stretch between Waterloo and Dubuque. Telephone poles were broken in great numbers, wires were weighted down with ice, and places were cut off from outside communication for several days; many places were without light or power.

The rapid thawing left the roads of the state in very bad condition. For a time the main highways were impassable, and as the snow and ice left the streets and paved roads great damage was disclosed. Where possible, preparation was made for seeding, but very little had been accomplished at the end of the month.

F. L. D.

Daily Maximum and Minimum Temperature for the Month of March, 1929

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	Maximum	32	37	37	37	38	40	21	37	25	37	43	42	47	49	44	50	57	60	51	56	57	53	63	41	48	59	61	62	60	50	33	46.0
	Minimum	16	17	21	25	20	20	3	12	0	13	30	38	39	30	34	27	31	36	35	20	37	33	32	36	32	30	35	32	37	29	25	26.6
Alta	Maximum	34	42	34	35	41	40	26	37	21	41	46	44	59	51	41	51	62	60	49	61	59	57	49	40	49	61	60	64	60	48	31	46.9
	Minimum	16	14	26	15	18	17	6	16	3	19	35	36	40	29	33	29	30	36	32	29	37	33	32	32	29	28	32	33	37	28	25	26.6
Alton	Maximum	30	42	35	33	40	40	26	37	24	47	51	49	55	48	43	49	59	56	47	59	54	53	45	37	45	58	60	61	65	56	30	46.3
	Minimum	19	17	28	21	20	21	10	23	7	20	37	32	42	28	34	30	28	33	33	28	35	34	32	32	30	27	30	28	35	30	27	27.5
Belmond	Maximum	28	36	37	35	37	40	21	35	30	37	42	43	45	50	40	19	56	59	49	56	52	60	45	46	46	59	61	60	59	46	33	44.9
	Minimum	11	12	27	24	14	17	2	10	— 4	10	31	38	37	31	30	28	29	38	34	30	35	33	31	32	32	32	33	29	35	29	24	25.4
Charles City	Maximum	28	36	36	34	33	40	20	36	19	35	39	42	45	48	40	46	54	59	44	52	50	53	43	47	45	58	60	58	57	44	31	43.0
	Minimum	12	12	28	19	8	11	3	11	1	8	31	39	35	31	30	28	28	38	31	30	35	34	33	34	30	27	36	30	35	31	24	25.3
Decorah	Maximum	32	36	36	38	35	40	22	36	26	34	42	45	49	49	42	43	54	61	50	57	45	51	48	50	45	57	59	60	59	50	39	44.8
	Minimum	15	10	29	28	7	15	1	15	0	0	32	40	40	33	28	28	26	34	33	21	32	31	28	34	33	23	35	29	44	32	24	25.2
Dubuque	Maximum	31	38	38	35	38	46	23	42	21	37	45	52	53	60	42	46	52	64	52	51	51	56	51	55	49	58	64	57	56	51	41	46.9
	Minimum	23	17	29	24	19	16	7	19	11	13	37	42	44	37	34	32	33	40	34	31	38	36	38	35	37	31	41	38	39	39	27	30.4
Forest City	Maximum	32	35	35	33	36	41	22	37	24	36	39	41	42	51	46	52	59	61	50	54	52	50	47	41	48	61	63	60	59	50	34	44.9
	Minimum	12	10	25	22	13	17	0	15	— 3	8	24	35	35	29	31	25	29	29	31	27	34	32	28	32	30	25	29	30	32	25	24	23.7
Independence	Maximum	29	38	38	34	36	43	25	37	25	35	38	41	38	55	53	44	55	65	65	54	54	54	60	51	54	59	62	60	58	52	44	47.1
	Minimum	17	24	29	21	11	22	4	16	3	7	25	25	27	33	21	30	29	32	34	30	21	35	34	31	33	37	35	37	34	31	29	25.7
Inwood	Maximum	28	41	36	34	45	38	27	34	22	47	52	48	55	51	44	51	61	56	49	61	53	51	41	36	47	61	63	64	67	51	31	46.6
	Minimum	16	14	26	24	29	19	7	20	5	19	34	40	41	29	33	27	26	31	30	26	32	32	31	30	25	27	33	27	35	26	26	26.5
Lake Park	Maximum	28	36	36	33	37	38	20	34	19	38	42	40	49	46	39	42	57	57	46	56	50	43	42	34	45	58	59	61	58	54	32	42.9
	Minimum	15	9	25	16	15	17	0	15	— 4	15	30	37	38	28	32	28	30	32	32	28	32	31	29	31	28	28	33	31	35	26	26	21.8
Mason City	Maximum	27	37	37	34	35	39	22	34	20	37	39	42	42	50	49	47	55	57	46	52	52	51	47	44	45	57	60	61	52	46	34	43.5
	Minimum	10	12	27	26	12	16	2	17	— 5	12	30	37	37	32	26	26	28	38	33	29	32	33	31	32	32	26	32	28	36	29	23	25.1
New Hampton	Maximum	30	35	36	35	32	47	28	35	20	34	38	42	44	48	40	44	52	50	48	52	51	51	48	48	47	58	61	57	56	50	35	43.6
	Minimum	16	8	27	26	6	15	0	16	— 1	5	30	36	38	33	31	27	28	35	29	27	34	33	33	33	33	25	31	30	33	30	24	24.9
Northwood	Maximum	31	35	35	36	34	40	20	35	18	36	38	38	43	45	40	46	52	56	45	50	49	50	40	40	45	55	60	57	57	45	35	42.1
	Minimum	13	8	28	26	13	15	1	10	— 2	6	24	33	35	33	31	27	31	36	33	30	33	32	32	34	32	30	34	31	33	28	28	25.1
Pocahontas	Maximum	31	38	34	34	38	40	24	31	32	38	42	41	51	51	43	52	60	60	49	58	55	57	48	41	48	60	62	60	60	49	32	45.8
	Minimum	15	9	28	16	19	20	5	19	1	17	28	32	38	23	33	29	31	36	32	31	36	33	33	34	32	27	32	29	33	28	25	25.9
Postville	Maximum	30	35	35	36	35	40	22	37	20	32	39	42	47	53	37	42	52	62	46	49	47	44	44	45	43	56	60	56	55	48	36	42.7
	Minimum	17	11	28	17	9	14	0	12	1	3	31	37	37	31	30	28	27	37	30	25	36	32	31	32	32	25	35	29	34	36	21	24.8
Rock Rapids	Maximum	30	40	38	38	40	40	25	34	24	45	50	48	55	50	43	50	59	55	49	60	56	49	45	35	45	59	60	62	64	58	33	46.4
	Minimum	17	12	25	25	18	18	5	20	2	17	35	38	40	29	33	28	26	31	31	26	31	32	32	30	30	26	31	26	34	26	26	25.8
Central Division																																	
Ames	Maximum	29	40	38	33	38	41	26	38	34	39	43	45	54	54	52	50	59	61	57	61	58	66	62	61	54	61	62	60	55	50	38	49.0
	Minimum	11	10	28	26	17	24	9	21	5	17	32	39	41	32	33	31	34	39	35	28	38	37	35	33	34	26	38	34	36	33	30	28.6
Belle Plaine	Maximum	31	40	38	35	39	46	25	42	29	39	44	49	59	63	45	49	60	58	54	59	55	67	59	68	51	62	56	61	54	51	42	49.4
	Minimum	25	15	30	26	14	22	8	20	7	16	34	39	45	34	32	31	29	37	33	31	40	37	35	33	35	26	36	31	37	34	31	29.1
Carroll	Maximum	32	40	37	35	39	44	25	38	30	41	47	49	56	52	46	52	60	60	52	60	57	58	54	47	46	61	64	61	58	50	47	48.3
	Minimum	18	16	27	18	17	23	8	20	4	20	36	38	41	30	32	29	30	38	32	29	36	36	31	31	32	28	35	31	35	30	26	27.6
Cedar Rapids	Maximum	30	38	38	36	39	45	26	44	28	38	43	50	62	63	49	48	58	66	55	66	52	68	58	61	69	61	65	60	56	52	47	50.7
	Minimum	24	11	30	26	14	20	9	18	9	15	32	42	47	32	39	31	28	35	38	30	39	39	36	36	25	35	34	32	36	33	29	29.4
Davenport	Maximum	34	41	42	38	42	56	28	47	26	42	51	59	63	65	47	47	54	63	54	57	62	70	59	74	64	60	66	58	55	55	46	52.5
	Minimum	26	24	32	28	25	20	12	21	16	19	38	46	52	44	38	33	33	41	39	36	42	40	44	38	40	35	44	38	41	43	33	31.2
Des Moines	Maximum	30	40	37	35	39	51	27	43	23	42	51	54	61	56	44	52	60	66	55	62	57	66	51	73	51	62	65	60	54	50	36	50.1
	Minimum	19	19	32	27	19	20	13	17	10	23	38	44	46	37	36	32	35	41	39	33	41	39	37	35	36	32	39	39	40	35	26	31.6
Ft. Dodge	Maximum	30	40	39	33	39	41	23	38	23	39	44	45	51	53	42	52	60	59	52	59	54	61	53	42	47	61	62	62	59	49	33	46.6
	Minimum	18	15	29	23	18	20	4	21	0	19	23	39	39	30	33	27	29	37	34	30	37	35	35	33	33	26	36	31	37	30	25	27.3
Grinnell	Maximum	27	40	39	34	36	41	46	40	34	39	45	48	60	60	52	47	59	67	59	60	56	68	61	72	66	61	63	62	54	49	43	51.2
	Minimum	20	13	29	25	12	23	7	18	5	14	32	39	43	32	32	28	28	36	31	30	37	36	32	32	34	25	25	31	35	32	30	27.3
Guthrie Center	Maximum																																
	Minimum																																
Iowa City	Maximum	30	41	41	37	40	50	26	46	32	40	44	51	63	65	45	47	57	65	56	59	52	70	64	73	75	61	67	60	56	54	49	52.1
	Minimum	26	18	31	28	19	23	10	20	11	18	34	41	48	35	40	32	30	37	36	33	43	40	40	38	37	28	38	35	39	38	33	31.6
Iowa Falls	Maximum	29	39	36	34	36	40	23	35	22	36	41	41	46	49	44	47	55	60	47	55	52	62	53	56	46	59	62	61	57	46	38	45.4
	Minimum	14	8	25	24	9	19	2	14	— 3	11	32	37	37	31	31	28	30	37	31	30	35	33	33	32	33	27	26	31	33	20	29	25.2
Little Sioux	Maximum	35	49	40	35	45	49	32	43	32	51	55	53	59	53	44	55	63	63	56	67	63	63	51	46	51	65	67	62	65	61	35	51.9
	Minimum	20	23	29	25	16	29	17	29	13	23	38	47	40	27	29	27	27	37	30	27	39	41	30	34	29	27	31	27	40	34	27	29.4
Marshalltown	Maximum	29	40	37	34	37	46	23	40	26	40	47	46	56	57	47	47	58	67	53	58	54	65	56	66	53	60	63	62	53	48	40	48.6
	Minimum	20	16	29	25	15	22	7	20	5	16	33	40	42	31	32	29	31	39	35	31	39	36	34	33	35	30	38	34	39	34	29	29.0
Olin	Maximum	33	38	39	38	39	48	23	44	32	36	40	49	60	63	45	47	56	62	54	54	51	66	56	60	78	61	67	60	57	55	47	50.3
	Minimum	24	9	32	16	11	20	9	18	10	16	32	39	45	31	37	31	27	34	34	30	40	39	35	36	36	26	32	33	36	38	31	28.6
Sioux City	Maximum	33	46	36	33	50	47	31	41	25	52	56	51	56	48	41	52	62	58	52	65	57	58	43	39	49	61	63	62	68	45	32	48.8
	Minimum	20	21	29	25	22	22	15	21	13	23	38	48	38	33	35	30	34	40	34	32	41	37	33	33	29	32	40	31	40	30	28	30.5
Southern Division																																	
Albia	Maximum	33	41	39	37	43	53	32	47	34	43	54	54	64	63	49	50	62	65	56	63	62	72	61	81	73	63	67	63	49	54	48	54.0
	Minimum	22	20	30	27	20	26	13	25	11	21	37	43	46	36	37	30	30	39	37	30	43	38	38	35	36	30	37	35	40	39	33	31.7
Atlantic	Maximum	31	42	38	35	40	47	29	41	31	43	48	51	57	53	43	53	62	66	55	64	60	64	54	60	49	60	67	62	55	49	40	50.0
	Minimum	19	21	30	18	19	27	13	25	9	22	37	42	41	31	32	30	32	38	34	29	39	39	32	34	33	27	37	27	35	35	29	29.5
Burlington	Maximum	36	45	45	36	45	60	34	51	28	41	46	56	63	65	54	47	57	54	57	53	72	76	66	80	70	62	67	62	53	54	50	54.4
	Minimum	29	24	33	29	24	30	15	25	15	20	35	44	51	41	39	34	34	37	42	35	45	40	48	41	40	35	42	42	42	42	39	35.2
Columbus Jct	Maximum	32	43	43	36	44	55	31	53	36	40	43	50	63	65	57	47	58	64	55	62	65	73	67	78	70	61	66	59	55	53	51	54.0
	Minimum	26	20	32	28	21	27	12	22	13	17	36	42	48	36	38	32	30	37	39	32	43	40	43	39	37	28	39	38	39	41	34	32.5
Corning	Maximum	40	43	43	38	44	50	34	46	36	44	50	53	58	60	45	55	72	68	64	65	61	68	65	72	58	64	68	61	53	51	47	54.1
	Minimum	20	21	29	20	13	29	13	21	10	24	36	44	43	44	30	29	25	36	33	29	40	40	34	34	24	31	41	40	34	30	30	34.4
Corydon	Maximum	33	39	39	35	38	49	30	44	35	41	50	52	60	59	53	49	58	64	57	62	62	70	61	80	76	62	65	61	53	52	49	52.8
	Minimum	22	18	31	22	19	28	14	24	11	22	36	42	45	35	37	31	31	38	38	30	42	40	39	36	37	29	37	35	38	41	33	31.6
Creston	Maximum	30	36	38	33	38	48	28	46	39	39	48	51	57	55	40	51	62	66	56	63	60	67	53	77	60	61	67	60	54	59	35	50.9
	Minimum	17	18	28	18	13	26	11	11	8	23	36	42	42	29	34	29	29	35	32	30	40	39	34	34	34	28	35	35	36	35	30	28.7
Fairfield	Maximum	33	42	41	35	44	56	29	49	33	41	46	53	62	65	47	48	58	65	55	63	67	74	61	81	70	61	66	61	52	58	48	53.7
	Minimum	25	20	32	28	21	27	8	25	12	20	36	45	47	39	39	31	31	37	39	30	44	38	41	36	37	26	39	35	35	41	34	32.2
Keokuk	Maximum	34	50	47	35	47	62	33	49	30	44	51	58	65	66	52	47	57	63	56	64	71	76	65	81	72	60	65	60	53	58	59	55.8
	Minimum	28	28	31	29	25	27	18	25	16	22	36	44	51	45	40	35	35	43	41	38	45	40	45	43	42	37	46	43	41	44	34	36.1
Knoxville	Maximum	30	39	38	34	39	48	30	44	35	43	52	53	63	62	54	50	61	67	60	63	58	71	62	79	72	62	67	61	54	52	45	53.2
	Minimum	23	17	32	26	16	27	13	25	10	19	37	42	47	38	36	32	33	40	36	31	40	40	37	34	36	28	38	34	37	37	32	31.4
Lamoni	Maximum	31	40	38	35	39	48	32	44	30	42	50	53	61	58	43	50	61	65	56	74	60	70	55	81	71	61	64	58	50	51	46	52.2
	Minimum	18	18	27	22	17	26	13	25	10	23	36	45	44	32	36	29	30	36	37	29	40	40	37	35	35	29	36	35	40	37	30	30.5
Sigourney	Maximum	32	39	39	36	42	52	29	48	33	42	49	52	61	63	54	49	59	65	56	62	57	73	63	79	71	63	66	61	52	53	49	53.2
	Minimum	26	17	31	28	20	28	12	23	11	19	36	36	46	36	39	31	30	38	37	31	41	39	39	37	37	29	36	36	38	37	33	31.5
Thurman	Maximum	36	45	38	36	46	50	36	46	40	50	54	57	60	59	49	55	64	68	59	68	67	64	59	62	50	64	70	64	59	57	46	54.1
	Minimum	21	24	25	25	16	36	21	30	16	26	39	48	44	29	29	29	27	38	36	29	42	43	36	35	35	26	34	29	43	39	33	31.7
Winterset	Maximum	30	38	41	38	38	46	28	40	32	41	49	53	62	61	51	53	62	66	57	63	59	67	58	73	52	62	67	61	55	49	42	51.4
	Minimum	19	21	18	20	16	25	12	25	9	20	37	44	45	33	32	30	31	40	35	29	40	44	34	32	34	32	40	33	38	36	30	30.1
Omaha, Neb.	Maximum	34	47	40	32	48	52	33	46	27	52	57	55	60	51	41	53	63	61	56	68	64	60	51	47	47	63	68	59	64	52	35	51.2
	Minimum	22	28	30	27	26	28	20	25	14	27	41	49	44	34	34	33	36	42	36	36	42	43	34	35	33	35	43	38	45	32	28	33.5

PRECIPITATION

The average precipitation for the State, derived from the averages of nine districts of nearly equal area, and based on the records of 117 stations, was 1.44 inches, or 0.33 inch less than the normal. The southeastern district had the greatest average 2.89 inches and this was the only district that reported an excess; the west-central district had the least average, 0.80 inch; all stations in the west-central, southwestern and south-central districts were deficient. The greatest amount reported from a single station was 4.92 inches at Wever and the least was 0.30 inch at Sac City. The greatest amount falling in 24 consecutive hours was 2.42 inches at Burlington on the 31st. The average number of rainy days was greatest in the southeastern district with 7, and least in the west-central, southwestern and south-central districts, with 3. At Carroll, Chariton, Mt. Ayr, Sac City and Tingley measurable precipitation occurred on but a single day while at Clinton and Fairport the number was 13.

SNOWFALL

The average snowfall for the State was 3.5 inches, or 1.9 inches less than the normal. The greatest amount at a single station was 12.8 inches at Northwood. Thirteen stations reported no snowfall and nine only a trace. Most of the snowfall occurred during the storm of the 30th-31st, but locally heavy amounts occurred on the 1st, 4th and 12th. The greatest snowfall occurring during a single storm was 12.0 inches at Onawa on the 5th and Northwood on the 31st. The snow was mostly moist and did not drift badly. After thawing weather set in the snow disappeared rapidly but there were some drifts in timber that continued throughout the month.

MISCELLANEOUS PHENOMENA

Aurora: 15th, 16th, 17th, 28th.

Fog: 2d, 3d, 5th, 11th, 12th, 13th, 14th, 15th, 22d, 23d, 24th, 26th, 28th.

Hail: 19th, 21st, 22d, 25th, 31st.

Halos (lunar and solar): 7th, 14th, 18th, 19th, 20th, 27th.

Haze: 10th, 27th, 28th, 30th.

Rainbow: 2d.

Sleet: 11th, 22d, 30th, 31st.

Thunderstorms: 11th, 12th, 13th, 18th, 21st, 22d, 23d, 24th, 25th, 30th, 31st.

Birds (migration of): Boone, blackbirds 13th. Earlham, robins 11th, blackbirds and bluebirds 12th. Marathon, robins 13th. Postville, robins 12th, meadow larks 13th, blackbirds 14th. Oskaloosa, robins and bluebirds 8th, meadow larks, 9th, blackbirds 20th.

RIVERS

High stages prevailed on all rivers at times during the month and the average stages were considerably above normal. There was much fluctuation on the Missouri River but the extremes were not as pronounced as on the other streams. Ice conditions produced the most pronounced changes. On the Mississippi River nearly stationary stages prevailed during most of the 1st week and except for slight fluctuations there was a gradual rise till the end of the month, when the highest stages occurred. Flood conditions developed along the southeast border; at Keokuk the river was above flood stage during the last two weeks. The ice at Dubuque began breaking on the 14th but there was no general movement till the 15th and floating ice was present until the 19th. The average stage at Dubuque was 11.3 feet. This being the highest average stage ever experienced in March for a period of 60 years. The highest previous March stage was 9.0 feet in 1927. Navigation at Dubuque opened on the 20th. Flood stages were reached on nearly all interior streams at many points on their courses. The breaking of the ice in connection with the rapid melting of snow produced many gorges which carried away many railroad and highway bridges. Some of the streams were the highest ever known.

ERRATA

Report for January, 1929. Page 2 and 3. Omit dagger from date of lowest temperature at New Hampton and date of highest temperature at Fairport. Page 2. Greatest 24-hour precipitation at Northwood should be 0.60 inch. Sanborn, date of highest temperature should be 8th. Storm Lake, mean temperature should be 8.2° and the departure should be —8.6°. Page 3, Winterset; date of highest temperature should be 40° on 9th.

MARCH WINDSTORMS AND TORNADOES

On March 24, about 10:00 P. M., a well defined tornado, with rotary winds and pendent, funnel-shaped cloud, moved from south to north, a distance of about three miles, in the north-central portion of Linn Township, Cedar County, where it damaged the buildings on five farms. The damage was estimated at $2,800.

On the same date, and at the same hour, a shifting windstorm, probably not of tornadic character, swept over Linn and Franklin townships, in Linn County, where it damaged farm buildings to the amount of about $2,000. During the night of the same date a windstorm in Oxford Township, Jones County, caused damage amounting to about $500.

On March 31, at 3:15 P. M., large hail fell at Keokuk, Iowa, causing about $2,000 damage, mostly to greenhouses.

ICE STORM OF MARCH 31-APRIL 1, 1929

By H. Merrill Wills

(Weather Bureau Office, Dubuque, Iowa)

With the approach of an increasing storm from the southwest which passed northeastward one hundred and fifty miles south of the station, the barometer at Dubuque started falling about 10 P. M. of March 30th and continued to fall steadily until 11 P. M. of the 31st, Easter Sunday. The temperature all day Sunday remained within a few degrees of freezing. The wind continued steadily from the northeast with velocity ranging from 13 to 18 miles an hour, the fastest single mile being at the rate of 20 miles an hour.

Moist snow and rain began falling about 1 A. M. Sunday and continued, with small accretions of sleet at times, until 6:20 A. M. From 6:50 A. M. until near midnight rain fell almost incessantly, mixed with light amounts of sleet at intervals. Following this, there was a light fall of snow until 7:15 A. M. Monday.

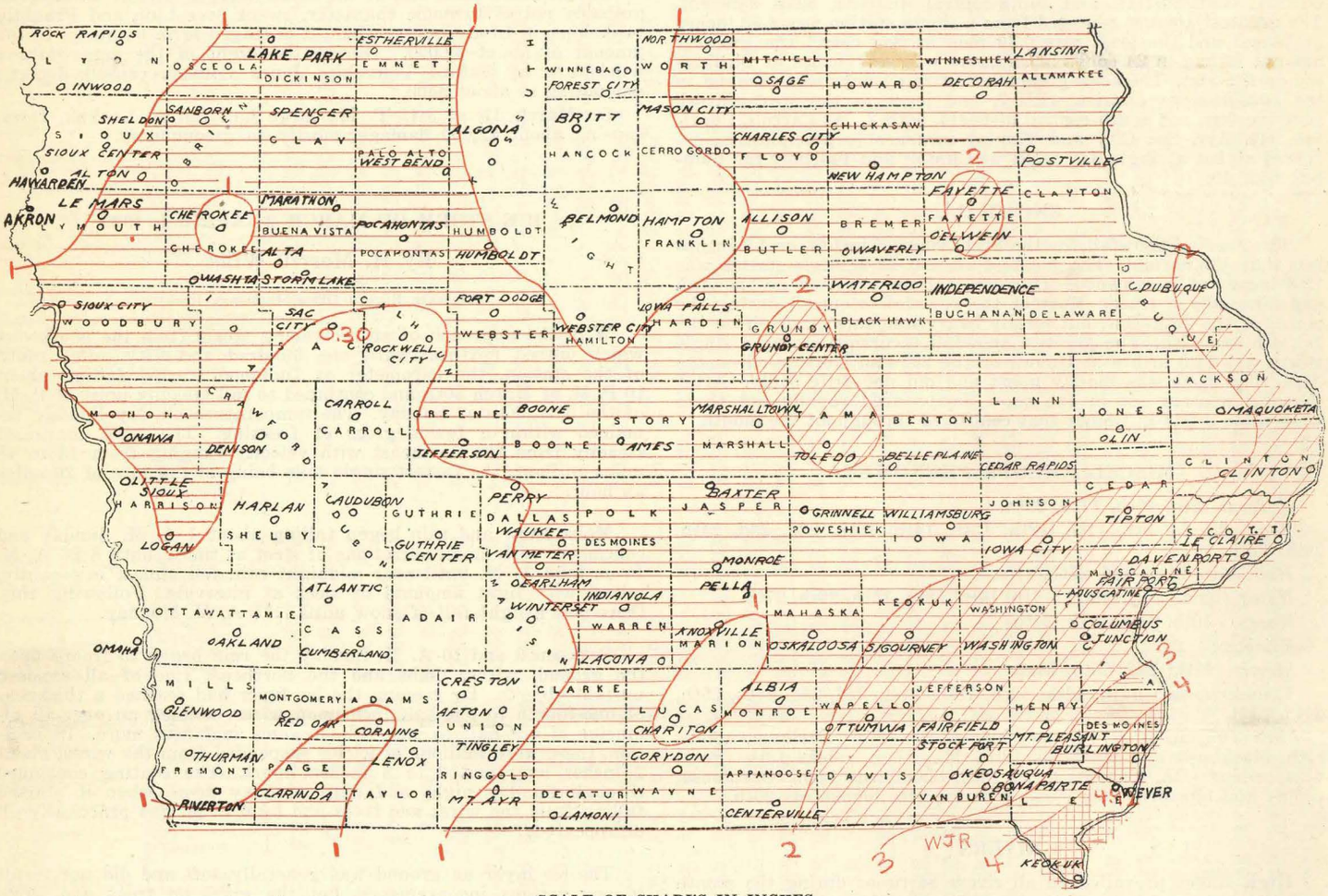
Between 9 and 10 A. M. Sunday the rain began to freeze upon the ground, wires, limbs and the northeast side of all exposed upright objects. By evening the ice layer had reached a thickness of one-fourth to one-half inch upon wires, making an over-all diameter of one-half to one inch, in some instances more. In addition, there were millions of icicles suspended from the wires, about 2 inches long and 2 to 3 inches apart. The coating continued through Sunday night and until Monday noon, when it started falling from the wires and trees and by 6 P. M. had practically all disappeared.

The ice layer on ground was generally soft and did not result in any serious inconvenience, but the glaze on trees and wires caused widespread and severe damage to wire systems. Large branches of trees and in many instances large trees fell across the wires crushing them to the ground. Even where this did not occur the heavy weight of the ice, whipped by the wind, was sufficient to break down hundreds of poles, and destroyed communication in all directions.

The first trouble with wires began about 11 A. M. Sunday and developed rapidly thereafter. The city was completely isolated, so far as wire communication is concerned, from Sunday evening until about 10 A. M. Monday, when the first connection was made with Minneapolis by telegraph. All telephone toll lines were out for several days and the supply of electricity was cut off from several neighboring towns from one to two days. Local papers were without leased wire facilities for three or four days. Train dispatching equipment was crippled, causing delays in train service.

Telephone services suffered most heavily of any. In Dubuque County alone 500 telephones were put out of commission and 300 poles went down. In the three contiguous counties of Dubuque, Jo Daviess (Illinois) and Grant(Wisconsin), approximately 1,000 telephone, telegraph and electric supply poles were lost. It is considered one of the most devastating ice storms of record in this locality. While the damage to trees probably did not exceed a few thousand dollars in the territory mentioned, the total loss sustained by all properties including telephone, telegraph, and electric supply lines, has been estimated at $100,000. In addition, there was considerable loss to business due to the interruption in communication.

TOTAL PRECIPITATION, MARCH, 1929



SCALE OF SHADES IN INCHES

Less than 1.0	1.0 to 2.0	2.0 to 3.0	3 to 4	More than 4.0

Is Feb on shelf?

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, APRIL, 1929 No. 4

GENERAL SUMMARY

The average temperature for April was more than two degrees above normal, due to an abnormally warm period 2d-8th, and the excess was quite uniform in all districts. During the rest of the month the temperature averaged below normal, with numerous fluctuations though no marked departures, and the general conditions were disagreeable. The chief feature relative to temperature conditions was the abnormally warm weather on the 4th. On this day July weather prevailed over almost the entire State, and a number of places reported the highest temperatures ever experienced at this time of the month. The high temperature at the beginning of the month advanced vegetation rapidly, and at some places in the southern portion of the State fruit buds opened prematurely but as no severe freezing weather occurred subsequently it is likely that no material damage resulted from frost. During the cool portion of the month most fruit buds remained dormant and at the end of the month apples were in bloom at only a few localities in the southern portion of the State. All tree fruit carried an enormous quantity of bloom. Cool, rainy weather prevailed during the blooming season of cherries, peaches and plums, and pollination was very likely imperfect. Due to unfavorable conditions, it is probable that there will be no unusual amount of fruit set. Bees suffered severely from winter killing and their absence even on warm days was marked. Vegetation, except grasses, made very little progress after the termination of the warm period.

There was a decided excess in precipitation, which amounted to nearly 60 per cent. The period October, 1928, to April, 1929, inclusive, was wetter than any similar period heretofore experienced in the history of the state, dating back 55 years. The total for the period was 17.81 inches, which exceeded the previous high total in 1918-1919 by 0.99 inch. The saturated condition of the soil permitted a large run-off and all streams were much higher than normal. Flood conditions were experienced on the Mississippi river from Muscatine southward most of the month, and along the southern border of the state the entire month. Small streams in the eastern portion of the state submerged a large amount of bottom land, and in sections it will be impossible to plant the usual crops. Industrial plants along the Mississippi river were seriously handicapped by seepage, which required much pumping to avoid shutting down and prevent damage. The wet weather seriously interfered with farming operations in general. Much of the time it was impossible to work in the fields, and a large acreage that was intended for oats could not be seeded, and seeding in many instances was much delayed. The preparation of corn land was much delayed. Some corn had been planted on high ground at the end of the month, but almost without exception low lands were unfit to work the greater portion of the month. Even with favorable weather during the rest of the planting season, it is likely that it will be necessary to plant considerable early maturing corn and a larger amount of soybeans and catch crops than usual. Where conditions permitted, farm work was pushed as much as possible.

Travel on dirt roads was impossible most of the month, and on many of the main graveled highways travel was possible only by resorting to extensive planking.

Hail occurred on a large number of days but there were only a few localities where the damage was of consequence, consisting mainly of broken glass in greenhouse. Tornadoes occurred on four days, causing considerable damage to farm buildings in scattered localities.

F. L. D.

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
1873	43.2	— 5.7	83	24	3.13	+ 0.17	5.65	1.24					
1874	41.9	— 7.0	76	16	1.90	— 1.06	3.15	0.65					
1875	43.0	— 5.9	77	10	2.20	— 0.76	4.00	0.89					
1876	48.1	— 0.7	78	21	3.06	+ 0.10	6.80	0.85					
1877	47.5	— 1.4	91	14	3.33	+ 0.37	8.61	1.10					
1878	52.4	+ 3.5	82	26	3.14	+ 0.18	5.87	1.32					
1879	50.3	+ 1.4	88	12	1.13	— 1.83	3.70	0.00					
1880	47.9	— 1.0	92	15	2.08	— 0.88	5.65	0.35					
1881	42.5	— 6.4	84	10	2.26	— 0.70	5.40	0.45					
1882	48.8	— 0.1	91	20	3.73	+ 0.77	8.08	1.60					
1883	49.9	+ 1.0	90	24	2.25	— 0.71	5.00	0.58					
1884	46.8	— 2.1	86	18	2.54	— 0.42	5.40	0.83					
1885	47.5	— 1.4	80	16	2.94	— 0.02	7.82	0.73					
1886	50.3	+ 1.4	88	4	2.70	— 0.26	6.90	0.70					
1887	51.1	+ 2.2	94	9	1.38	— 1.58	2.65	0.10					
1888	48.8	— 0.1	90	20	2.65	— 0.31	7.80	0.40					
1889	50.3	+ 1.4	86	10	2.35	— 0.61	6.03	0.25					
1890	51.2	+ 2.3	88	2	1.73	— 0.23	5.15	0.25					
1891	50.6	+ 1.7	93	13	2.15	— 0.81	5.06	0.59		8	14	7	9
1892	45.4	— 3.5	88	14	4.75	+ 1.79	8.38	2.43	5.7	9	8	9	13
1893	45.5	— 3.4	96	15	4.21	+ 1.25	8.51	1.24	6.0	10	8	9	13
1894	51.7	+ 2.8	93	12	3.07	+ 0.11	6.91	0.55	0.2	9	11	11	8
1895	54.2	+ 5.3	98	8	2.62	— 0.34	5.88	0.28	2.1	5	14	8	8
1896	54.5	+ 5.6	94	10	5.02	+ 2.06	9.67	2.35	4.5	11	11	10	9
1897	47.9	— 1.0	89	19	5.35	+ 2.39	9.86	2.22	T.	11	9	9	12
1898	48.1	— 0.8	91	14	2.56	— 0.40	4.82	0.27	T.	8	13	9	8
1899	48.9	0.0	89	1	2.40	— 0.56	5.76	0.56	2.0	7	12	11	7
1900	52.2	+ 3.3	89	19	2.67	— 0.29	6.62	0.43	0.9	6	12	9	9
1901	49.9	+ 1.0	92	15	1.79	— 1.17	3.47	0.66	2.0	5	14	8	8
1902	48.2	— 0.7	96	9	1.71	— 1.25	4.15	0.40	T.	5	14	11	5
1903	49.8	+ 0.9	86	17	2.98	+ 0.02	6.00	0.74	0.8	9	11	9	10
1904	44.1	— 4.8	86	13	3.63	+ 0.67	8.97	1.52	1.4	7	15	6	9
1905	47.5	— 1.4	90	10	3.03	+ 0.07	5.49	0.63	1.2	8	12	8	10
1906	52.5	+ 3.6	94	22	2.42	— 0.54	5.55	0.53	0.6	8	14	9	7
1907	41.5	— 7.4	80	10	1.32	— 1.61	3.22	0.24	2.7	6	12	8	10
1908	50.5	+ 1.6	91	8	2.24	— 0.72	4.59	0.67	0.3	8	14	8	8
1909	43.8	— 5.1	86	14	4.58	+ 1.62	9.43	0.83	3.1	12	9	9	12
1910	52.5	+ 3.6	99	15	1.48	— 1.48	4.86	0.10	3.0	7	14	7	9
1911	46.7	— 2.2	86	3	3.09	+ 0.13	6.04	1.33	3.6	9	11	8	11
1912	49.9	+ 1.0	84	20	2.66	— 0.30	5.66	0.78	1.1	8	13	8	9
1913	50.2	+ 1.3	88	16	3.28	+ 0.32	7.43	1.12	2.7	9	15	5	10
1914	48.6	— 0.3	88	11	2.52	— 0.44	5.03	0.37	0.3	8	10	8	12
1915	57.2	+ 8.3	95	18	1.41	— 1.55	4.02	0.05	T.	7	15	10	5
1916	47.1	— 1.8	90	11	2.62	— 0.34	5.92	1.13	1.1	10	10	9	11
1917	45.5	— 3.4	88	17	4.55	+ 1.59	7.84	2.05	3.8	11	9	7	14
1918	44.8	— 4.1	79	12	2.32	— 0.64	4.20	1.01	3.5	9	12	8	10
1919	48.4	— 0.5	81	20	4.78	+ 1.82	9.00	1.94	0.7	14	8	8	14
1920	42.4	— 6.5	78	22	4.59	+ 1.63	7.13	1.93	2.0	12	8	9	13
1921	52.4	+ 3.5	88	14	3.34	+ 0.38	6.69	0.99	3.6	10	13	7	10
1922	49.9	+ 1.0	87	21	3.06	+ 0.10	6.70	1.04	1.0	9	11	9	10
1923	48.4	— 0.5	85	11	2.09	— 0.87	4.26	0.47	0.8	8	15	7	8
1924	50.5	+ 1.6	90	— 8	1.38	— 1.58	4.53	0.38	1.4	7	16	8	6
1925	56.5	+ 7.6	95	21	2.20	— 0.76	5.34	0.71	T.	8	14	9	7
1926	46.1	— 2.8	95	9	0.91	— 2.05	2.29	0.06	1.5	4	16	7	7
1927	49.2	+ 0.3	91	15	4.84	+ 1.88	9.06	2.09	2.6	14	9	7	14
1928	44.3	— 4.6	88	6	2.24	— 0.72	4.37	0.22	4.9	8	12	9	9
1929	51.2	+ 2.3	93	9	4.62	+ 1.66	7.97	1.81	1.1	11	12	8	10

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

Climatological Data for April, 1929

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	
Northwest District																				
Akron	Plymouth	1,153	2								3.25	+ 0.62	1.36	T.	7	14	11	5	ne.	Orlan C. Moore
Alta	Buena Vista	1,513	37	49.8	+ 2.7	88	4	16	1	40	3.52	+ 0.43	1.28	1.0	10	13	9	8	s.	D. E. Hadden
Alton	Sioux	1,305	23	49.1	+ 2.1	82	4	12	1	42	1.87	— 0.62	0.65	1.0	6	8	12	10	nw.	W. S. Slagle
Cherokee	Cherokee	1,196	8	49.6	+ 3.2	86	4	14	1	41	2.14	— 0.85	0.84	0.5	8	16	8	6	s.	J. E. Wirth
Estherville	Emmet	1,298	33	48.8	+ 3.9	86	4	20	1†	41	3.35	+ 0.72	1.05	15.0	8	10	15	5	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								4.08	+ 1.31	1.38	2.5	8	11	7	12	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	48.4	+ 1.7	87	4	9	1	44	2.37	— 0.16	0.82	5.8	9	16	6	8	nw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	47.0	+ 1.4	85	4	17	2	42	2.66	+ 0.28	0.92	3.0	8	8	12	10	sw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	50.1	+ 2.3	86	4	16	1	46	2.44	— 0.38	1.35	0	7	19	2	9	s.	Henry Newell
Marathon	Buena Vista	1,390	2								4.61		1.84	0.6	9	11	10	9	nw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	48.6	+ 1.5	87	4	18	1	38	4.89	+ 2.17	1.50	3.5	9	10	12	8	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	47.8	+ 1.5	84	4	10	1	45	4.70	+ 1.90	1.76	10.0	9	17	8	5	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	47.6	+ 1.1	86	4	12	1	43	2.81	— 0.16	0.68	12.0	6	12	9	9	sw.	J. W. Dow
Sheldon	O'Brien	1,418	17	48.5	+ 1.5	86	4	10	1	42	2.70	— 0.25	1.22	3.7	9	14	10	6	s.	Ross E. Forward
Sioux Center	Sioux	1,426	29	48.0	+ 1.5	89	4	13	1	41	1.81	— 1.01	0.68	4.7	8	10	12	8	s.	F. C. Aue
Spencer	Clay	1,319	14	49.7	+ 2.7	89	4	13	1	44	3.20	+ 0.30	1.00	6.0	9	11	8	11	sw.	E. W. Little
Storm Lake	Buena Vista	1,438	39	50.0	+ 2.6	86	4	17	1	35	3.02	+ 0.09	1.20	T.	7	16	8	6	e.	L. B. Florey
Washta	Cherokee	1,157	30	49.9	+ 2.4	88	4	17	1	50	2.24	— 0.38	0.72	1.0	7	15	10	5	s.	H. L. Felter
West Bend	Palo Alto	1,197	35	49.0	+ 1.6	85	4	15	1	37	4.24	+ 1.37	1.55	4.0	8	13	10	7	s.	Jos. Dorweiler
Means and extremes				48.9	+ 2.1	89	4	9	1	46	3.16	+ 0.39	1.84	3.9	8	13	9	8	s.	
North Central District																				
Algona	Kossuth	1,224	55	50.2	+ 2.6	83	4	18	1	40	4.15	+ 1.53	1.20	T.	6	16	6	8	ne.	W. E. Laird
Allison‡‡	Butler	1,060	14	48.7	+ 1.4	84	4	19	2	35	3.18	+ 0.60	0.65	3.0	10	15	5	10	n.	E. W. Detra
Belmond	Wright	1,181	18	49.0	+ 2.3	83	4	19	1	42	5.10	+ 1.84	1.44	1.0	12	6	10	14	nw.	H. F. Luick
Britt	Hancock	1,236	41	48.6	+ 2.4	82	4	20	1†	35	4.59	+ 2.02	2.05	2.0	11	9	6	15	sw.	E. P. Healy
Charles City	Floyd	1,015	37	48.8	+ 2.4	82	4	19	2	36	4.89	+ 2.37	1.53	3.8	11	11	11	8	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	47.5	+ 1.2	83	4	17	2	41	5.03	+ 2.55	1.96	3.8	13	9	7	14	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								5.29	+ 2.10	2.70		7					L. H. Davis
Humboldt	Humboldt	1,095	40	49.8	+ 1.7	86	4	19	1	42	4.43	+ 1.75	1.28	1.5	12	13	5	12	s.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	47.9	+ 1.4	81	4	17	2	38	5.38	+ 2.83	1.61	3.8	12	7	19	4	se.	American Beet Sugar Co.
Northwood	Worth	1,222	32	47.4	+ 2.3	81	4	20	1†	35	5.61	+ 2.87	1.55	9.0	8	9	13	8	nw.	Charles Dwelle
Osage	Mitchell	1,163	34	47.8	+ 1.9	81	4	18	2	37	3.38	+ 0.92	1.18	4.0	9	6	12	12	s.	Dr. C. E. Juhl
Means and extremes				48.6	+ 2.0	86	4	17	2	42	4.78	+ 2.08	2.70	2.9	10	10	10	10	se.	
Northeast District																				
Decorah	Winneshiek	872	35	48.8	+ 1.5	82	4†	22	1	36	4.38	+ 1.83	1.44	1.0	13	10	9	11	se.	M. D. Whitney
Dubuque	Dubuque	700	55	51.0	+ 2.4	83	4	24	1	33	3.47	+ 0.62	0.80	0.2	13	7	8	15	s.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	50.0	+ 3.1	84	4	20	1	39	5.36	+ 2.26	1.49	2.0	10	14	8	8	sw.	R. Z. Latimer
Independence	Buchanan	956	64	51.0	+ 2.3	89	4	21	1	41	3.79	+ 1.28	0.86	1.0	13	13	0	17	ne.	Dr. Geo. Boody
Lansing	Allamakee	632	21								4.08	+ 1.52	1.43	5.0	12					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	48.3	+ 1.3	81	4	18	2	37	3.95	+ 1.35	0.98	T.	8	9	10	11	ne.	D. W. Dawson
Oelwein	Fayette	1,036	5	49.6	+ 2.0	82	4	20	1	32	5.99	+ 3.21	1.25	3.0	11	11	6	13	ne.	John T. Ridler
Postville (near)	Clayton	1,192	29	47.2	+ 0.9	80	4	19	1	32	2.87	— 0.14	1.08	1.0	11	10	12	8	ne.	F. L. Williams
Waterloo	Black Hawk	854	45	50.8	+ 2.0	81	3†	21	1	36	3.53	+ 1.00	1.22	1.0	10	13	8	9	se.	R. B. Slippy
Waverly	Bremer	936	32	50.0	+ 2.4	84	4	20	2	38	2.97	— 0.03	0.70	1.0	11	19	6	5	se.	D. H. Murphy
Means and extremes				49.6	+ 2.0	89	4	18	2	41	4.04	+ 1.29	1.49	1.5	11	12	7	11	ne.	
West Central District																				
Audubon (near)	Audubon	1,297	33	50.9	+ 3.3	88	4	24	1	39	4.55	+ 1.43	1.14	0	10	14	7	9	ne.	George Kibby
Carroll	Carroll	1,265	38	50.4	+ 1.9	87	4	20	1	40	3.42	+ 0.47	0.95	0.5	13	19	2	9	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	31	50.4	+ 1.2	88	4	22	1	41	2.27	— 0.56	0.52	1.0	12	10	9	11	se.	V. L. Byers
Guthrie Center	Guthrie	987	33	51.2	+ 1.8	89	4	24	1	43	4.56	+ 1.43	1.27	0	9	14	8	8	e.	Floyd H. Bainter
Harlan	Shelby	1,192	29	51.0	+ 2.0	90	4	21	1	44	4.17	+ 1.29	0.83	0	12	12	6	12	se.	Walter Bell
Jefferson	Greene	1,052	29	51.2	+ 2.7	88	4	22	1	43	3.02	+ 0.17	1.34	T.	9	9	8	13	sw.	W. I. Lyon
Little Sioux	Harrison	1,040	23	52.4	+ 1.9	93	4	20	1	45	2.80	+ 0.13	0.83	0.8	13	8	11	11	sw.	H. W. Kerr
Logan	Harrison	1,120	61	51.2	+ 0.4	92	4	22	1	46	5.48	+ 2.69	1.56	0.5	13	6	18	6	se.	Amy Ann Stern
Onawa	Monona	1,051	27	51.9	+ 1.8	90	4	18	1	45	1.87	— 0.80	0.65	1.0	7	14	4	12	nw.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32																	A. W. McIsaac
Sac City	Sac	1,269	52	49.0	+ 1.2	87	4	20	1	44	2.63	— 0.31	1.11	0	6	9	14	7	s.	F. P. Kessler
Sioux City	Woodbury	1,135	39	51.5	+ 3.7	90	4	20	1	37	2.99	+ 0.29	1.43	1.5	9	6	12	12	s.	U. S. Weather Bureau
Means and extremes				51.0	+ 2.0	93	4	18	1	46	3.43	+ 0.55	1.56	0.5	10	11	9	10	se.	
Central District																				
Ames	Story	926	51	52.2	+ 3.4	89	4	24	1	39	3.79	+ 0.81	0.92	1.0	11	21	0	9	se.	Iowa State College
Baxter‡‡	Jasper	998	28								3.62	+ 0.56	0.86	0.5	11	1	21	8	ne.	F. A. Kanne
Boone (near)	Boone	894	23	51.4	+ 2.4	89	4	23	1	44	3.26	+ 0.38	0.98	1.0	11	10	7	13	s.	C. F. Henning
Des Moines	Polk	861	50	53.0	+ 2.9	89	4	26	1	37	4.38	+ 1.47	1.06	0.4	11	6	11	13	sw.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	50.0	+ 2.4	86	4	23	2	41	3.49	+ 0.75	1.16	2.0	15	12	9	9	ne.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	51.1	+ 1.7	87	4	22	1	39	5.45	+ 1.74	0.98	T.	11	17	5	8	sw.	R. E. Bates
Grundy Center	Grundy	976	37	50.5	+ 1.4	86	4	20	1	37	4.91	+ 1.68	1.20	1.0	12	11	10	9	nw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	50.0	+ 2.2	85	4	21	1	39	5.82	+ 2.70	1.87	1.0	9	13	5	12	e.	C. H. Gilbert
Marshalltown	Marshall	947	36	51.8	+ 2.2	86	4	22	1	37	4.27	+ 1.43	1.24	1.0	13	8	11	11	s.	C. C. Pigman
Monroe	Jasper	922	16	53.0	+ 2.9	87	4	23	1	34	4.82	+ 1.57	1.28	T.	14	14	4	12	s.	J. A. Dibel
Perry	Dallas	975	27	51.5	+ 2.4	89	4	24	1	43	3.24	+ 0.25	0.65	0	11	8	13	9	se.	Eugene N. Hastie
Toledo	Tama	847	34	51.4	+ 1.8	87	4	22	1	39	4.43	+ 1.37	0.85	T.	13	13	9	8	ne.	H. P. Giger
Van Meter	Dallas	872	9								4.99		0.90	T.	11					Calvin K. Smith
Waukee	Dallas	1,032	25	52.2	+ 2.8	89	4	24	1	41	5.67	+ 1.87	1.31	0	14	17	6	7	e.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	49.6	+ 1.1	86	4	19	2	46	2.81	+ 0.02	0.90	1.5	10	16	6	8	se.	Frank A. Bonebright
Means and extremes				51.4	+ 2.3	89	4	19	2	46	4.38	+ 1.28	1.87	0.6	12	13	7	10	se.	

Climatological Data for April, 1929—Continued

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
East Central District																				
Belle Plaine	Benton	866	38	52.3	+ 2.9	89	4	23	1	37	3.40	— 0.01	0.83	1.0	13	7	10	13	se.	O. C. Burrows
Cedar Rapids	Linn	737	46	51.2	+ 2.0	86	4	20	1	36	4.32	+ 1.07	1.10	0	11	5	6	19	se.	J. T. Wurster
Clinton	Clinton	595	55	52.4	+ 2.6	85	6	25	1	36	5.50	+ 2.46	1.28	0.2	11	12	7	11	s.	Dr. A. P. Bryant
Davenport	Scott	580	57	53.0	+ 3.1	83	4	26	1	27	5.49	+ 2.80	2.43	T.	14	7	9	14	ne.	U. S. Weather Bureau
Davenport No. 2	Scott	690	3	53.2	.....	86	4	25	1	34	6.07	.....	1.72	0.2	13	14	9	7	sw.	Rex Shriver
Fairport	Muscatine	567	7	54.2	+ 3.5	88	7	25	1	35	6.45	+ 3.47	1.32	0	10	11	4	15	sw.	Bureau of Fisheries
Iowa City	Johnson	733	68	52.4	+ 2.5	85	4	25	1	34	4.73	+ 1.55	1.72	0.5	11	9	10	11	se.	Prof. J. F. Reilly
Le Claire	Scott	576	28	.....	.....	.....	.....	.....	.....	.....	5.30	+ 2.42	2.03	T.	10	.....	.....	.....	.....	Margaret T. Disney
Maquoketa (near)	Jackson	692	23	50.4	+ 3.1	84	4	23	1	38	4.33	+ 1.51	0.97	0	11	12	7	11	ne.	John Strodthoff
Muscatine	Muscatine	546	67	.....	.....	.....	.....	.....	.....	.....	7.97	+ 4.69	2.47	0	12	.....	.....	.....	.....	William Molis
Olin	Jones	760	29	51.5	+ 2.3	84	4	24	1	44	4.90	+ 2.09	1.20	0	8	17	2	11	sw.	Mrs. L. Stingley
Tipton (near)	Cedar	807	29	51.6	+ 1.6	86	5	24	1	32	4.88	+ 1.64	1.15	0	10	4	13	13	e.	John Kroeplen
Williamsburg	Iowa	770	12	52.2	+ 3.2	86	4	25	1	38	3.82	+ 0.47	1.20	0	10	14	7	9	se.	Dr. F. C. Schadt
Means and extremes	.....	.....	.....	52.2	+ 2.8	89	4	20	1	44	5.17	+ 2.09	2.47	0.1	11	10	8	12	se.	
Southwest District																				
Atlantic	Cass	1,110	37	51.8	+ 2.0	91	4	25	1†	47	4.81	+ 1.67	1.48	T.	14	15	5	10	sw.	T. H. Whitney
Bedford	Taylor	1,200	.....	.....	.....	.....	.....	.....	.....	.....	6.43	+ 3.57	1.30	T.	14	13	7	10	e.	Arthur L. Bishop
Clarinda	Page	1,009	38	53.6	+ 2.5	91	4	27	12	43	7.05	+ 4.14	1.15	0	16	14	10	6	ne.	Dr. H. C. Hawley
Corning	Adams	1,150	36	53.5	+ 4.2	90	4	25	1†	45	5.52	+ 2.39	1.72	0	13	13	5	12	se.	C. A. Smith
Cumberland (near)	Cass	1,225	29	.....	.....	.....	.....	.....	.....	.....	4.87	+ 2.13	1.07	0	12	14	2	14	se.	Carl E. Pollock
Glenwood	Mills	1,100	30	53.8	+ 2.5	92	4	26	1	44	4.11	+ 1.25	0.98	T.	13	11	9	10	nw.	George Mogridge
Lenox	Taylor	1,250	33	53.2	+ 3.0	90	4	25	1	42	6.87	+ 3.63	1.59	0	12	16	7	7	s.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	52.5	+ 2.4	92	4	24	2	48	4.11	+ 1.25	0.88	0	12	15	4	11	nw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3	.....	.....	.....	.....	.....	.....	.....	5.81	+ 2.75	2.14	0	10	10	10	10	e.	B. R. Bridge
Riverton (near)	Fremont	920	2	.....	.....	.....	.....	.....	.....	.....	5.76	+ 2.78	2.27	0	10	12	1	17	ne.	Geo. C. Rader
Thurman	Fremont	960	31	54.6	+ 2.6	92	4	28	1†	46	5.18	+ 2.03	1.30	0	14	13	5	12	s.	H. H. Askew
Omaha, Neb.	.....	1,105	57	51.2	+ 3.0	94	4	27	1	41	3.98	+ 1.47	0.86	0.2	14	10	9	11	ne.	U. S. Weather Bureau
Means and extremes	.....	.....	.....	53.4	+ 2.8	94	4	24	2	48	5.38	+ 2.42	2.27	T.	13	13	6	11	ne.	
South Central District																				
Afton	Union	1,212	34	52.6	+ 2.4	88	4	25	1	41	4.99	+ 1.49	0.92	0	15	10	8	12	sw.	S. R. Brown
Albia	Monroe	949	30	53.1	+ 2.4	86	4	25	1	40	4.90	+ 1.82	1.50	T.	13	13	4	13	sw.	O. E. McBride
Centerville	Appanoose	1,013	23	53.3	+ 1.3	85	4	27	1	38	6.81	+ 3.31	1.75	T.	14	13	6	11	sw.	Thomas Wood
Chariton (near)	Lucas	1,042	33	52.4	+ 2.9	86	4	25	1	39	4.08	+ 0.78	0.84	T.	9	11	9	10	sw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	53.0	+ 2.5	81	6	26	1	38	5.80	+ 2.39	1.75	0.2	13	14	3	13	se.	J. C. Davis
Creston	Union	1,291	23	52.2	+ 2.7	89	4	25	1	42	4.80	+ 1.37	0.96	T.	12	8	13	9	s.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	51.5	+ 2.8	87	4	23	1	36	5.14	+ 1.79	1.39	0	15	15	3	12	e.	George Phillips
Indianola	Warren	972	37	53.2	+ 2.7	89	4	25	1	42	5.56	+ 2.40	1.90	T.	12	14	2	14	se.	Seth F. Shenton
Knoxville	Marion	920	33	53.0	+ 2.4	87	4	26	1	39	3.78	+ 0.38	0.89	T.	10	11	9	10	ne.	W. J. Casey
Lacona	Warren	824	29	.....	.....	.....	.....	.....	.....	.....	4.60	+ 1.53	1.62	0	11	11	11	8	.....	J. B. Alter
Lamoni	Decatur	1,123	21	52.6	+ 2.1	86	4	26	1	40	4.40	+ 0.98	0.91	0	12	12	7	11	e.	F. S. Parks
Melrose	Monroe	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.99	.....	1.52	0	11	9	13	8	se.	J. M. Carr
Mount Ayr	Ringgold	1,220	35	53.0	+ 2.8	86	4	26	1	39	4.04	+ 0.68	0.96	0	11	16	5	9	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	52.6	+ 2.9	87	4	26	1	38	4.34	+ 0.96	0.78	0	17	12	8	10	ne.	James A. Verploegh
Winterset	Madison	1,118	37	52.0	+ 1.7	89	4	25	1	49	5.69	+ 2.11	1.63	T.	12	14	5	11	sw.	H. S. Ely
Means and extremes	.....	.....	.....	52.7	+ 2.5	89	4	23	1	49	4.92	+ 1.58	1.90	T.	13	12	7	11	sw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	52.4	+ 1.6	84	4	27	1	33	6.08	+ 2.88	2.13	T.	10	14	4	12	sw.	B. R. Vale
Burlington	Des Moines	541	32	54.2	+ 2.1	86	4	28	1	32	7.38	+ 4.28	2.51	0	11	11	7	12	ne.	John T. Donnelly
Columbus Junction	Louisa	595	27	52.8	+ 1.6	86	4	26	1	32	7.30	+ 4.32	2.63	0.1	14	12	10	8	se.	Miss Musa Todd
Fairfield	Jefferson	780	44	52.6	+ 2.5	86	4	27	1	35	7.06	+ 3.40	2.76	0	14	9	9	12	sw.	R. M. McKenzie
Keokuk	Lee	614	57	54.4	+ 2.1	85	4	29	1	31	4.60	+ 1.61	1.73	0	15	6	9	15	s.	U. S. Weather Bureau
Keokuk No. 2	Lee	651	.....	54.6	.....	85	4	29	1	33	5.68	.....	1.84	0	15	.....	.....	.....	.....	J. N. D. Dickinson
Keosauqua	Van Buren	639	36	53.0	+ 1.9	85	4	27	1	35	7.13	+ 3.74	3.01	0	10	7	9	14	e.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	53.3	+ 1.8	86	4	27	1	35	7.35	+ 4.38	2.55	0	13	7	11	12	sw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	52.8	+ 2.7	87	4	26	1	37	4.44	+ 1.59	1.31	0.3	14	10	10	10	se.	Roy R. Robinson
Ottumwa	Wapello	649	33	53.4	+ 1.2	85	4	28	1	36	6.17	+ 3.26	1.58	0	14	14	8	8	se.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	52.8	+ 2.8	87	4	26	1	36	4.27	+ 0.99	1.25	T.	13	11	5	14	ne.	W. E. Utterback
Stockport (near)	Van Buren	747	26	52.6	+ 2.8	86	4	28	1	35	7.76	+ 4.64	2.66	0	18	12	5	13	s.	C. L. Beswick
Washington	Washington	757	46	53.2	+ 2.5	87	4	25	1	38	6.09	+ 3.34	1.54	T.	12	7	12	11	e.	D. D. Sherman
Wever	Lee	552	.....	53.3	.....	85	4	28	1	37	6.95	.....	2.19	0	12	6	11	13	e.	H. G. Liddle
Means and extremes	.....	.....	.....	53.2	+ 2.2	87	4	25	1	38	6.30	+ 3.20	3.01	T.	13	10	8	12	se.	
State means and extremes	.....	.....	.....	51.2	+ 2.3	94	4	9	1	49	4.62	+ 1.66	3.01	1.1	11	12	8	10	se.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

TEMPERATURE

The mean temperature for the state, derived from the means of nine districts of nearly equal area, and based on the records of 104 stations, was 51.2°, or 2.3° higher than the normal. The greatest excess occurred in the east-central and southwestern districts and the least in the north-central, northeastern and west-central districts. The greatest excess at any staion was 4.2° at Corning and the least was 0.4° at Logan. The highest mean was 54.6° at Keokuk, No. 2 and Thurman, and the lowest was 47.0° at Lake Park. The monthly range for the state was 84°, the highest temperature being 93° at Little Sioux on the 4th and the lowest was 9° at Inwood on the 1st. With but a single exception the highest and lowest temperatures occurred during the 1st week. The average number of days with the minimum 32° or lower was 6, ranging from 8 in the northwestern and north-central districts to 3 in the southeastern district. Temperatures of 90°, or higher occurred at 13 stations, 5 in the west-central district and all in the southwestern. No temperature records were broken for the month but a number of stations in the western portion of the state reported the highest on the 4th for that early in the season.

Daily Precipitation for April, 1929

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	
Northwest District																															
Akron	Big Sioux	.03					T.			1.36	.10						.01			.03					.60	1.12						3.25
Alta	Raccoon	.10				T.				.32	.44	T.					.15			.14					.65	1.28	.02	.10	.32			3.52
Alton	Floyd					.06		T.		.54	.03						.06		T.					T.	.65	.53		T.				1.87
Cherokee	Little Sioux	.02				T.				.55	.09						.10			.01	T.			T.	.84	.51		.02		T.		2.14
Estherville	Des Moines	.20					.10			.25	1.05						.20	.30							.95	.30	T.				T.	3.35
Hawarden	Big Sioux	.12				.35		.23		1.38	.05						.01		T.	T.				T.	.86	1.08						4.08
Inwood (near)	Big Sioux	.04				T.	.07	.06		.26	.44						.15			.02					.82	.51						2.37
Lake Park (near)	Little Sioux					.04				.47	.30						.36								.92	.29		.01		.27		2.66
Le Mars	Floyd	.15				.04				.10	.11									.05				T.	.64	1.35						2.44
Marathon	Raccoon					T.	.02			.54	.41	.02				T.				T.				.72	1.81	.03	.02	1.04		T.		4.64
Pocahontas	Des Moines	.05				.50	.07				.98	.22					.12			T.					1.50	.95		.50				4.89
Rock Rapids	Big Sioux	.07				.07					1.76	.13					.35			.03					1.30	.93					.06	4.70
Sanborn	Floyd	.64				.10					.32						.53								.68	.57						2.84
Sheldon	Floyd	.06				.08					1.22	.05					.10			.02				T.	.78	.31		.08				2.70
Sioux Center	Floyd	.15				.05					.32	.15			.10										.68	.32		.04				1.81
Spencer	Little Sioux	.56				.01					.50	.08					.15			.05					1.00	.75		.10				3.20
Storm Lake	Raccoon					.02					.77							.03		.05					1.20	.62		.33				3.02
Washta	Little Sioux	.08				T.					.72	.12								.08				T.	.52	.62		.10				2.24
West Bend	Des Moines					.31	.02				1.10						.08	T.		.06					1.55	.77		.32				4.24
North Central District																															
Algona	Des Moines					.20					.50	.60												1.20	.75	.90						4.15
Allison	Cedar	.17					.05	.37			.30	.47					.05	.32		T.					.50	.65		.30				3.18
Belmond	Iowa	T.			.08	.07	.02	.35			.70	.41					.08			.06					1.35	1.44		.45	.09			5.10
Britt	Iowa					.16	.05				.50	.40					.06	.05		.02					2.05	1.04		.21	.05			4.59
Charles City***	Cedar	.14				.10	1.04			T.	.43	.36					.37	.24		.02				T.	1.17	.59		.43			T.	4.89
Forest City	Cedar	.06				.02	.74	.05			.02	.91	.18				.04	.05		T.					.70	1.96	.13		.17			5.03
Hampton	Cedar					.11	.43				1.49						.08			.05					2.70		.45			T.		5.29
Humboldt	Des Moines	1.28			T.	.07	T.	.12		T.	.65	.07					.07	T.						.72	.43	.19	.08	.63	.12				4.43
Mason City	Cedar	.36	.06		T.	.09	T.	.19		T.	.58	.66					.07	.02		.02				T.	1.64	1.47		.22		T.	T.		5.38
Northwood	Cedar	.20			T.	.60	.10				1.20	.80													1.55	1.13		.03					5.61
Osage	Cedar	.24	.08			.04		.44			T.	.35					.08								.62	1.18		.35				3.38
Northeast District																															
Decorah	Mississippi	.30	.01				.01	1.44				.24	.10				.06	.07			T.				.07	1.35	.12		.58		.03		4.38
Dubuque***	Mississippi	.16				.12	.68				.10	.27					.07			.42	.08			.01	.46	.48		.46		T.	.16	3.47
Fayette	Mississippi	.20				.05	.48					.95					.31			.30				T.	.36	1.49		.23			.99	5.36
Independence	Wapsipinicon	.16				.18		.86			.06	.65					.07	.31		.31	.07				.41	.57		.07	.07			3.79
Lansing	Mississippi	.52	.02		.06			.80				.25	.10					.20				T.			.08	1.43	.21		.33	.08		4.08
New Hampton	Wapsipinicon							.95			.10	.55					.15			.08					.52	.98		.62				3.95
Oelwein	Wapsipinicon	.24					.45	.80				.90					.30			.40	.30				.60	.90		.30			.89	5.99
Postville (near)	Mississippi		.10			.03	.05	.22			.15	.39					.05			T.					.47	1.08		.31		T.	.02	2.87
Waterloo	Cedar	.10				T.	T.	1.22				.65	.05				T.	.15		T.	.19				.30	.54	.15		.18			3.53
Waverly	Cedar	.30	.02		T.	.08	.05				.44	.54						.30		.01					.41	.70		.12				2.97
West Central District																															
Audubon (near)	Nishnabotna					.16	.16			.06	1.14				.02					1.05	.65				.93	.10		.28				4.55
Carroll	Raccoon	.05				.05	.03	.16			.37	.95								.20	.06				.47	.60	.12	.08	.28			3.42
Denison	Missouri	.05				.10	.06	.08		.10	.52						.04			.42				.10	.37	.17		.26				2.27
Guthrie Center	Raccoon						.35				1.27	.08								.63	.80			.11	.70	.26		.36				4.56
Harlan	Nishnabotna					.34	.05	.02		.05	.70	T.			.14		T.			.82	.83			.20	.50	.19		.33				4.17
Jefferson	Raccoon	T.				.05	.29	.06		T.	1.34	.05					T.			.39	T.			T.	.54	.16		.14				3.02
Little Sioux	Little Sioux	.09				.10	.07			.02	.49	.02			.02				T.	.83	.08			.18	.33	.40		.17				2.80
Logan	Missouri	.02				.02	.19				.58	.01			.01					1.17	1.02			.18	.42	1.56		.28	.02			5.48
Onawa	Missouri	.08				T.				T.	.61	T.								.10				.12	.20	.65		.11				1.87
Rockwell City	Raccoon																														
Sac City	Raccoon					.05	.05			T.	.55														.55	1.11		.32				2.63
Sioux City***	Missouri					.04				.19	1.05	T.				T.			.01	.02				.27	1.30	.10		.01		T.	T.	2.99
Central District																															
Ames	Skunk	.10					.48	.36			.92	.32						.02		.38	.03				.67	.14		.37				3.79
Baxter	Skunk	.05				.11	.54				.12	.39								.86	.21			.05	.40	.56		.33				3.62
Boone (near)	Des Moines	.09					T.	.35			.20	.98						T.		.34	.12	.02			.51	.12	.20		.33			3.26
Des Moines***	Des Moines	.02				.19	.23			T.	.76	T.					T.		T.	1.06	.72			.05	.73	.31		.30	.01			4.38
Fort Dodge	Des Moines		.16		.02	.01	.08	.10			.15	1.16					.05	.02		.06	.03				.65		.76	.16	.08			3.49
Grinnell	Iowa	.12					T.	.80		.40	.10	.54					.30			.98	.12			T.	.96	.60		.53		T.		5.45
Grundy Center	Cedar	.08				.15	.90	1.20			.25	.40					.08			.25	T.				.50	.78		.20	.12	T.		4.91
Iowa Falls	Iowa	.10				T.		.92			T.	1.34	.04					.31		T.	T.				.45	1.87	.28		.51			5.82
Marshalltown	Iowa	.07	T.			.03	.02	1.24			.03	.52						T.		.08	.33	.04			.48	1.04	.15		.24		T.		4.27
Monroe	Des Moines	.03				T.		.12		.03	.16	.68					.04			1.28	.48	.04		.13	.87	.35		.33	.28		T.		4.82
Perry	Raccoon				T.	T.	.51	.07		.04	.65	.03					T.			.64	.35			.03	.42	.11		.39				3.24
Toledo	Iowa	.10			T.	.25	.55	.15			.15	.57					.10	T.		.60	.15			T.	.85	.46		.40		T.	.10	4.43
Van Meter	Raccoon	T.					.10	.88			.12	.55								.45	.90	.57			.82	.12	.20		.28				4.99
Waukee	Raccoon	.05	.01			.06	1.31			.08	.75	.28								.95	.81			.06	.78	.16		36	.01			5.67
Webster City	Des Moines	.05					T.	.12			.68	.15					.05			.03					.90	.48		.30	.05	T.			2.81
East Central District																															
Belle Plaine	Iowa	.16				.01	T.	T.		T.	.24	.36					.02			.76	.08			.01	.83	.31		.44	.05		.10		3.40
Cedar Rapids	Cedar	.12					T.					.44	.41					.18		.18	1.10	.04			.08	1.08	.09		.60				4.32
Clinton	Mississippi	.25			.05	.02		.57		T.	.08	.33								1.28	.86				.60	1.03			.43				5.50
Davenport***	Mississippi	.04		T.	T.	T.		.35		.02	.15	.16					.01	.01		2.01	.62			T.	1.25	.03		.55	.01		.28		5.49
Davenport No. 2	Mississippi	.23						.36	.02	.01	.14	.29	.02				T.	.03		1.72	1.12				.82	.69			.62	T.			6.07
Fairport	Mississippi	.64						.24			.13	.59								1.32	1.09	.10			.95	.57			.82				6.45
Iowa City	Iowa	.06					T.		T.	T.	T.	.28	.35					T.	.01	.24	1.72	.10			.09	1.46	.14		.28				4.73
Le Claire	Mississippi	.55			T.		T.		.51		T.	.28	.02							.02	2.03	.17			T.	1.25	.06		.41				5.30
Maquoketa (near)	Maquoketa	.17			.03			.08			.14	.46					.14			.97	.82				.71	.51			.30				4.33
Muscatine	Mississippi	1.17				T.	T.		.36		.06	.50	.20							.35	2.47	.30		.05	T.	1.58	.10		.83				7.97
Olin	Wapsipinicon	1.20						T.			T.	.50					.13	T.		1.00	.45				.97	.30		T.	.35		T.		4.90
Tipton (near)	Cedar	.34					.06				.07	.58					.06			1.15	1.12				.86	.28			.36				4.88
Williamsburg	Iowa										.12	.21					.01			1.20	.29			.02	1.04	.34		.55	.04				3.82

Daily Precipitation for April, 1929—Continued

Stations	Drainage Basin	Day of Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals
Southwest District																																	
Atlantic	Nishnabotna	.05				.01		.23		T.	.26	1.48	T.			.34	T.			.24	.19	.53	T.		.54	.29	.09	.02	.54	T.			4.81
Bedford	102	.03			T.			1.30		.19	.90	T.			.72	.27				1.02	.38	.46		.15	.32	.49		.15	.05				6.43
Clarinda‖‖	Nodaway					.08		.88		.08	.68	.46			.15	.56				1.15	.42	.62	.04		.86	.47	.16	.04	.40				7.05
Corning	Nodaway					.02	1.72			.13	1.14	.03			.56	.02				.66	.13	.19		.22		.42		.28					5.52
Cumberland(near)	Nodaway	T.				T.	.35	.17		.06	1.07	T.			.36	.11	T.			.64	.69			.23	.47	.28		.44					4.87
Glenwood	Missouri	T.				.18	.04			.02	.90				.98					.50	.50	.14		.32	.08	.16		.30	.02				4.14
Lenox	Missouri					T.	.76			.15	1.09	T.			.38					1.32	.17	.66		.20	.32	.23		1.28	.31				6.87
Oakland	Nishnabotna					.33	.10				.73	.02			.40	.01				.50	.88			.30	.27	.26		.28					4.11
Red Oak (near)	Nishnabotna						1.43			.04	2.14				.49				T.	.27	.28	.28		.26		.28	.24	.10					5.81
Riverton (near)	Nishnabotna						.13			T.	1.16				2.27				.05	.48	.45			.30	.75	.14		.03					5.76
Thurman	Missouri					.02	.40			.01	.88				1.30	.08	.02			.35	.05	.80		.30	.42	.47		.08					5.18
Omaha, Neb.***	Missouri	T.				.51	.02			.27	.45	T.			.28	.02	.02		.25	.29	.83	T.		.33	.13	.17		.41					3.98
South Central District																																	
Afton	Grand	.04				.02		.92		.11	.60	.07			.13	.03				.89	.32	.29		.24	.43	.15		.75					4.99
Albia‖‖	Des Moines	T.			T.	T.				.32	.11	.05				T.		.01		.24	1.50	.50	.05		.61	.61	.10		.78		.02		4.90
Centerville	Chariton	.01			T.			T.		.32	.22	.05			.17		T.	.02		1.75	.93	.96		.06	.95	.63			.63		.11		6.81
Chariton (near)	Chariton	T.						T.		.30	.23	.44			T.		T.			.84	.22	.44		.18	.69	T.			.74		T.		4.08
Corydon (near)	Chariton	.06								.47	.26	.25			T.		.01			1.75	.49	.80		.13	.85	.06		.60			.04		5.80
Creston‖‖	Missouri	T.				.26	.87			.14	.96	.04			.30					.74	.30		T.	.38	.21	.10		.50					4.80
Earlham (near)	Des Moines	.50				.06	.15	.41		.04	.38	.10			.13	T.	T.			1.39	.71	.01		.24	.78	.11		.13					5.14
Indianola	Des Moines	.03				.15		.48		.05	.49	.03								1.90	.75			.26	.80	.13		.49					5.56
Knoxville	Des Moines	T.								.09	.08	.55					T.			.83	.55	.17		.22	.89	.08		.32					3.78
Lacona	Des Moines	.05								.05	.28	.32						.02		.88	.64			.62	1.00	.22		.52					4.60
Lamoni‖‖	Grand									.35	.34	.22			.16	.10		T.		.38	.66	.70	.09		.91	.29			.20		T.		4.40
Melrose	Des Moines									.45	.22	.11								1.52	.49	.72		.15	1.00	.21			1.00		.12		5.99
Mount Ayr	Grand									.25	.63	.05			.12					.68	.26	.96		.10	.51	.21			.27				4.04
Tingley	Platte	.03				.19		.10		.11	.51	.05			.13	.04	T.			.78	.10	.76		.15	.35	.08		.40	.49		.04		4.34
Winterset	Des Moines	T.				.35	T.	.55		.02	.64	.04			.18					1.63	.70			.22	.82	.21		.33					5.69
Southeast District																																	
Bonaparte (near)	Des Moines	T.				T.		.65	T.	T.	.06	.07		T.	T.		.03	T.		2.13	.54	.18		T.	.90	.40			1.12		T.		6.08
Burlington‖‖	Mississippi	T.			T.	T.			.35	.01	T.	.26	T.	T.						1.15	2.51	.12	.05		.05	2.04	T.	.83			.01		7.38
Columbus Jct.	Iowa	.15						.24	T.	.01	.11	.35					.02	.04		2.63	1.01	.06		.07	1.21	.66			.74		T.		7.30
Fairfield	Skunk							.11	T.	.05	.11	.26					.08	.08		2.76	.85				1.50	.18		.13	.74	.01	.20		7.06
Keokuk***	Mississippi					T.		.22	.01	.01	.04	.01			.29		.15			1.14	.43	.18		T.	1.72	.01		.27	.10		.02		4.60
Keokuk No. 2	Mississippi	.17						.17	.10	.07	.07	.03			.28			.14		.98	.54	.74			1.84	.14			.40		.01		5.68
Keosauqua	Des Moines							.40	.02		T.	.01	T.				.01			3.01	.56	.30		T.	2.00	.02			.80		T.		7.13
Mt. Pleasant	Skunk	.01						.38			.22	.11				T.	T.	.17		2.35	.88	.11		.08	1.38	.62			.80		.01		7.35
Oskaloosa	Des Moines	.11		T.			T.	T.		.11	.08	.06				T.	.06	.02		1.16	.68	.13		.20	1.31	.13		.32	.07				4.44
Ottumwa	Des Moines	.01			T.					.17	.08	.05				T.	.07	.02		1.58	.80	.30		.39	1.16	.42			.94		.18		6.17
Sigourney (near)	Skunk	.04								.20	.06	.09					.06			1.25	.57	.13		.24	.92	.33		T.	.36		.02		4.27
Stockport (near)	Skunk	.02				.02		.61	T.	.04	.09	.17			.03		.07	.08		2.66	.47	.25		.06	1.73	.32		.07	1.01		.03		7.76
Washington	Skunk	.09						.05		T.	.04	.38					.02	.03		1.45	1.54	.15		T.	1 02	.65			67		T.		6.09
Wever	Mississippi	.03				T.		.39		.04	.11	.06			.02					2.19	.61	.50		T.	1.50	.76			.74		T.		6.95

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.

T. Precipitation is less than .01 inch or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level) Mean	Highest	Date	Lowest	Date	Relative Humidity, % Mean 7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	‡‡Wind Total movement	Average hourly velocity	Maximum Miles	From	Date	Sunshine % possible	Departure from normal
Chas. City	29.89	30.30	22	29.35	25	79	59	65	27	22	4,845	6.7	27	sw.	5	57	— 1
Davenport	29.88	30.29	22	29.26	25	79	62	64	37	2	8,933	12.4	41	w.	27	66	+ 9
Des Moines	29.86	30.31	22	29.28	25	79	56	58	27	22	5,872	8.2	32	sw.	5	53	— 6
Dubuque	29.88	30.29	22	29.29	25	72	54	60	26	22	4,718	6.6	24	n.	25	51	— 3
Keokuk	29.90	30.31	2	29.27	25	73	54	58	24	2	6,110	8.5	31	nw.	1	50	— 7
Sioux City	29.87	30.27	22	29.17	5	81	56	50	14	5	8,413	11.7	49	sw.	5	59	+ 3
Omaha, Nb	29.86	30.28	22	29.34	21	76	50	52	19	16	5,698	7.9	34	n.	25	55	— 4
Means and extremes	29.88	30.31	2†	29.17	5	77	56	58	14	5		8.9	49	sw.	5	56	— 1
Normals and records	29.98	§30.78	9th 1918	*28.90	20th 1898	76		57	¶10	25† 1902			¶60	n.	25th †1902	57	

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

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

PRECIPITATION

The average precipitation for the state, derived from the averages of nine districts of nearly equal area and based on the records of 117 stations was 4.62 inches, or 1.66 inches greater than the normal. The southeastern district reported the greatest average, 6.30 inches, and the northwestern the least, 3.16 inches. There was an excess in all districts though deficiencies occurred at a number of stations in four districts, the only area of consequence being in the northwestern district. The greatest amount reported from any station was 7.97 inches at Muscatine and the least was 1.81 inches at Sioux Center. The greatest amount falling in 24 consecutive hours was 3.01 inches at Keosauqua on the 19th. The average number of days with 0.01 inch or more of precipitation was 11, ranging from 8 in the northwestern district to 13 in the three southern districts. For individual stations the range was from 6 days at Algona, Alton and Sac City to 18 at Stockport. The rainfall for the month was notably heavy, there being but five times heretofore when a greater amount occurred in April.

SNOWFALL

The average snowfall for the state was 1.1 inches, or 0.8 inch less than the normal. The greatest amount reported from any station was 15.0 inches at Estherville; more than half of the total number of stations reported no snowfall, or only a trace. The snowfall was moist and a great deal melted as it fell. The heaviest snow was confined to the extreme northern portion of the state.

Daily Maximum and Minimum Temperature for the Month of April, 1929

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	Maximum	38	53	75	83	77	76	67	60	57	55	50	47	60	59	60	63	52	63	62	59	63	64	66	66	54	66	65	55	68	75	.....	61.9
	Minimum	18	21	35	50	63	49	45	30	34	31	32	30	29	37	40	38	34	37	47	43	36	36	38	48	40	41	47	39	38	53	.....	38.6
Alta	Maximum	40	61	78	88	77	69	65	64	58	44	35	52	64	60	62	65	51	67	54	55	64	66	59	54	51	66	66	55	78	70	.....	61.4
	Minimum	16	23	40	52	62	46	39	29	30	32	31	27	29	35	37	37	36	37	46	43	38	37	42	45	41	37	47	38	38	53	.....	38.1
Alton	Maximum	37	59	75	82	78	71	66	61	57	50	35	46	60	59	61	63	49	63	58	55	56	65	60	57	55	64	68	55	80	73	.....	60.6
	Minimum	12	22	33	41	59	49	37	28	30	33	30	27	27	37	38	33	39	35	49	45	33	40	40	46	42	40	48	40	39	56	.....	37.6
Belmond	Maximum	36	58	78	83	77	71	66	60	55	48	39	47	60	56	58	62	56	62	55	56	61	65	59	54	53	65	58	54	67	75	.....	59.8
	Minimum	19	20	36	55	66	52	42	28	33	32	32	31	27	36	35	38	31	34	45	43	38	31	41	46	41	40	49	40	32	52	.....	38.2
Charles City	Maximum	35	53	76	82	76	71	71	58	57	43	40	46	58	56	57	58	54	57	49	57	61	63	60	54	53	64	53	52	60	75	.....	58.3
	Minimum	22	19	40	55	66	56	38	32	38	34	32	32	29	38	37	40	36	37	41	44	40	37	40	47	42	42	47	37	33	49	.....	39.4
Decorah	Maximum	41	49	75	82	82	77	75	60	58	49	40	46	57	59	60	58	55	60	50	54	63	67	64	56	54	65	53	54	53	76	.....	59.7
	Minimum	22	27	39	61	66	59	43	30	33	33	33	31	28	33	31	36	36	31	43	43	39	32	35	43	42	40	40	41	28	40	.....	38.0
Dubuque	Maximum	41	55	76	83	80	82	79	56	51	49	44	47	57	57	56	55	52	56	47	51	60	63	61	57	57	66	65	56	58	75	.....	59.7
	Minimum	24	33	48	63	65	60	46	40	37	35	35	35	33	38	38	36	42	38	43	41	41	41	44	48	46	41	49	44	37	48	.....	42.3
Forest City	Maximum	37	47	76	83	78	72	65	60	54	50	35	46	59	57	58	61	59	59	53	55	59	63	59	53	52	65	59	53	60	75	.....	58.7
	Minimum	19	17	35	47	61	48	43	28	32	30	31	29	26	34	36	35	32	35	43	41	35	35	36	44	40	38	45	35	32	48	.....	36.3
Independence	Maximum	38	59	79	89	85	79	88	61	56	51	43	45	57	58	61	59	56	59	58	55	61	59	62	58	58	65	65	56	61	76	.....	61.9
	Minimum	21	27	38	59	64	61	51	34	39	34	37	34	39	36	38	36	39	36	34	41	37	34	39	45	44	37	47	43	32	46	.....	40.1
Inwood	Maximum	39	55	76	87	78	65	62	64	67	45	44	48	63	56	62	63	47	61	62	55	61	61	61	51	57	66	69	57	84	68	.....	61.2
	Minimum	9	19	36	44	54	39	34	26	28	32	28	19	24	37	40	33	35	34	46	44	37	34	40	46	42	38	48	35	40	51	.....	35.7
Lake Park	Maximum	38	48	74	85	77	67	69	61	54	46	33	40	58	55	58	61	47	59	54	53	57	66	62	54	53	64	65	58	76	68	.....	58.7
	Minimum	19	17	35	43	48	40	35	27	27	29	29	24	27	36	39	33	36	36	46	37	36	37	38	45	40	39	39	37	36	52	.....	35.4
Mason City	Maximum	37	49	75	81	75	70	67	58	57	50	37	45	58	57	57	60	57	57	51	56	60	62	59	54	53	63	55	52	61	74	.....	58.2
	Minimum	21	17	37	52	63	51	41	28	33	31	32	31	28	36	35	40	31	36	45	43	36	31	37	46	42	41	47	40	31	47	.....	37.6
New Hampton	Maximum	35	48	75	81	76	73	72	58	56	48	40	45	57	57	58	58	54	55	50	58	59	64	59	53	54	64	57	52	59	74	.....	58.3
	Minimum	20	18	38	55	63	55	44	29	31	33	32	30	28	34	34	38	35	35	44	45	47	37	36	46	42	39	45	40	29	47	.....	38.3
Northwood	Maximum	37	44	70	81	75	67	66	57	53	47	36	43	56	57	57	62	55	60	54	57	60	62	61	55	53	63	56	51	60	74	.....	57.6
	Minimum	20	20	35	49	54	51	41	30	32	30	31	30	29	33	37	38	33	37	44	43	36	31	36	45	39	40	47	42	33	47	.....	37.1
Pocahontas	Maximum	37	58	65	87	77	70	60	60	58	47	37	50	61	59	60	65	49	65	56	56	61	64	60	54	54	65	61	51	74	73	.....	59.9
	Minimum	18	21	35	50	60	46	42	28	32	32	32	29	26	37	37	35	34	35	47	43	37	32	39	47	39	39	43	39	36	52	.....	37.4
Postville	Maximum	41	50	74	80	76	73	72	55	54	45	39	45	53	54	54	56	49	55	48	54	59	62	60	51	52	65	58	52	50	76	.....	57.1
	Minimum	19	24	42	61	65	56	42	35	32	32	32	31	28	32	32	37	36	30	36	30	36	34	35	45	40	38	45	38	29	41	.....	37.2
Rock Rapids	Maximum	38	53	75	84	78	67	68	62	57	48	38	43	57	58	60	61	50	63	60	55	61	64	63	55	56	65	70	58	80	71	.....	60.6
	Minimum	10	20	30	39	51	39	35	25	27	31	29	22	24	38	40	36	38	35	35	44	35	34	38	45	41	36	48	36	37	51	.....	35.1
Central Division																																	
Ames	Maximum	44	66	80	89	80	79	70	58	56	48	45	53	60	60	59	63	60	64	61	53	59	63	60	59	58	65	62	55	71	77	.....	62.6
	Minimum	24	27	46	56	67	60	53	34	40	36	35	32	29	40	38	40	38	37	48	44	41	34	41	48	44	42	49	43	35	52	.....	41.8
Belle Plaine	Maximum	46	64	81	89	82	81	79	57	56	53	49	51	61	60	59	66	63	65	55	52	58	65	61	58	57	68	66	58	66	78	.....	63.7
	Minimum	23	27	45	60	66	64	51	34	40	41	36	31	26	38	34	36	37	37	46	42	40	32	41	47	45	38	46	42	31	51	.....	40.9
Carroll	Maximum	42	67	79	87	81	73	67	60	55	43	40	55	60	57	60	66	59	67	61	53	62	62	57	59	55	67	60	56	75	73	.....	61.9
	Minimum	20	27	48	55	61	50	43	30	32	32	32	29	29	38	36	39	35	35	46	42	40	32	41	47	45	41	47	38	46	42	.....	39.0
Cedar Rapids	Maximum	45	61	80	86	83	84	78	56	55	49	45	53	60	59	58	60	60	61	53	52	59	65	61	59	56	68	65	58	64	77	.....	62.3
	Minimum	20	30	44	63	68	65	51	32	39	37	36	33	26	35	35	31	39	35	44	41	41	29	36	47	46	38	44	41	29	49	.....	40.2
Davenport	Maximum	45	60	77	83	81	82	78	55	53	50	48	54	60	57	55	59	58	60	51	48	59	64	62	59	59	67	70	60	63	74	.....	61.7
	Minimum	26	34	51	62	70	67	51	42	40	38	38	36	35	40	35	37	44	40	13	42	43	41	48	50	44	43	52	44	39	51	.....	44.2
Des Moines	Maximum	47	68	80	89	77	79	71	58	54	47	47	56	59	58	59	63	61	66	53	52	58	63	56	62	56	65	57	57	72	77	.....	62.2
	Minimum	26	31	52	62	67	61	44	38	44	36	37	34	33	43	40	44	42	40	47	44	43	37	45	47	45	44	49	45	38	56	.....	43.8
Ft. Dodge	Maximum	39	64	80	86	77	72	66	60	56	49	41	51	61	57	60	63	54	65	59	55	61	64	60	53	55	65	58	55	72	74	.....	61.1
	Minimum	26	23	41	55	65	52	46	29	33	34	33	30	27	37	28	40	32	35	47	43	37	32	40	46	42	41	48	39	35	53	.....	39.0
Grinnell	Maximum	45	65	80	87	81	83	75	57	54	46	46	53	61	61	58	65	60	65	59	50	57	64	58	58	58	66	62	56	67	77	.....	62.5
	Minimum	22	26	42	53	65	60	49	33	42	35	35	30	26	38	33	39	37	36	44	40	39	32	40	45	42	38	45	41	31	53	.....	39.7
Guthrie Center	Maximum	46	69	81	89	79	79	68	59	53	45	45	57	60	57	60	60	60	68	62	50	59	64	56	60	60	66	63	58	73	75	.....	62.7
	Minimum	24	26	50	51	65	50	49	31	38	36	35	30	28	39	35	36	34	32	48	44	40	31	39	47	42	39	49	42	34	49	.....	39.8
Iowa City	Maximum	45	62	79	85	81	83	78	56	54	50	47	54	60	59	59	61	60	63	55	50	60	66	61	57	57	66	70	59	64	76	.....	62.6
	Minimum	25	31	47	63	69	66	52	37	46	38	38	33	28	40	36	32	39	39	45	42	42	32	40	48	47	39	46	46	32	51	.....	42.3
Iowa Falls	Maximum	40	60	80	85	79	74	69	60	55	47	42	49	60	55	56	63	57	62	54	55	59	67	60	57	56	65	56	53	68	78	.....	60.7
	Minimum	21	22	41	54	58	57	50	31	36	33	34	32	29	36	35	40	35	36	46	43	39	35	38	47	42	40	47	40	32	51	.....	39.3
Little Sioux	Maximum	51	72	81	93	81	75	68	64	57	46	39	59	64	58	64	70	59	67	60	55	64	64	55	62	57	67	62	61	81	73	.....	64.3
	Minimum	20	27	51	55	62	49	39	30	36	37	33	26	27	46	36	35	34	40	49	45	39	34	43	50	44	35	50	41	45	55	.....	40.4
Marshalltown	Maximum	42	65	80	86	79	80	71	57	55	48	45	52	60	60	58	62	60	65	57	53	58	64	59	58	57	66	60	55	68	78	.....	61.9
	Minimum	22	28	48	60	67	59	50	34	42	36	36	31	30	40	36	42	38	38	46	42	39	34	42	47	43	41	49	43	35	53	.....	41.7
Olin	Maximum	45	57	77	84	81	83	81	79	56	51	45	52	60	60	60	60	60	62	50	51	60	66	60	57	56	66	69	58	60	76	.....	62.7
	Minimum	24	31	42	60	67	64	50	35	46	36	37	34	27	36	35	30	39	34	42	41	40	30	38	43	46	37	44	45	30	45	.....	40.3
Sioux City	Maximum	44	68	78	90	80	69	69	62	56	42	37	52	60	59	59	65	51	60	58	56	61	61	54	61	57	67	70	59	81	68	.....	61.8
	Minimum	20	29	47	53	63	47	37	34	33	32	32	30	30	43	44	37	39	39	49	45	42	41	46	48	44	44	51	43	45	49	.....	41.2
Southern Division																																	
Albia	Maximum	50	69	80	86	81	80	76	59	51	48	48	59	64	52	62	65	64	67	59	48	59	65	59	60	57	67	70	60	69	77	.....	63.7
	Minimum	25	29	49	61	67	65	53	35	41	37	37	33	31	44	32	40	37	39	46	42	40	35	45	46	45	38	48	42	38	55	.....	42.5
Atlantic	Maximum	48	72	79	91	78	71	72	61	53	44	43	58	62	53	59	68	63	67	58	50	59	63	58	61	61	65	64	61	74	75	.....	63.0
	Minimum	25	25	45	59	63	58	45	30	36	37	36	29	29	42	36	37	35	35	48	43	41	31	42	49	43	38	48	42	39	51	.....	40.6
Burlington	Maximum	48	66	78	86	83	84	78	56	56	50	49	62	60	55	55	63	62	65	55	50	55	65	61	58	57	68	71	69	69	73	.....	63.6
	Minimum	28	34	49	60	66	65	56	43	45	39	40	37	38	45	37	38	42	40	44	44	43	41	45	49	47	41	49	49	38	55	.....	44.9
Columbus Jct.	Maximum	46	63	80	86	82	83	78	55	57	49	48	56	60	58	57	62	62	63	58	48	57	63	60	57	60	66	71	64	65	75	.....	63.0
	Minimum	26	31	49	60	68	65	54	39	45	38	39	33	30	40	34	34	40	38	44	41	41	35	43	47	46	40	48	47	33	52	.....	42.7
Corning	Maximum	48	70	80	90	81	81	71	60	59	50	50	62	61	58	60	69	64	66	62	54	59	62	60	64	63	65	62	63	76	80	.....	65.0
	Minimum	25	25	50	60	67	58	50	35	41	39	35	29	33	42	40	36	35	39	48	44	42	30	43	50	44	35	47	40	39	59	.....	42.0
Corydon	Maximum	48	66	80	79	80	81	77	59	53	48	48	58	61	56	58	64	62	67	56	50	50	64	62	61	58	65	70	62	70	76	.....	63.0
	Minimum	26	28	48	60	67	64	57	36	42	38	37	31	33	45	34	39	37	38	48	43	41	37	44	47	45	39	47	47	36	56	.....	43.0
Creston	Maximum	47	69	79	89	76	80	69	57	51	46	46	57	58	51	58	66	62	64	55	59	56	57	58	61	56	65	64	59	72	77	.....	62.1
	Minimum	25	27	44	58	65	60	50	35	41	38	35	28	51	41	38	38	38	38	46	43	41	38	36	47	43	38	45	44	37	57	.....	42.2
Fairfield	Maximum	45	65	80	86	83	83	80	55	50	48	49	57	60	53	58	63	61	65	55	50	57	64	59	58	57	67	72	59	66	75	.....	62.7
	Minimum	27	30	47	63	69	65	52	37	45	38	38	34	29	42	32	32	37	38	44	40	41	35	42	48	46	40	48	46	32	54	.....	42.4
Keokuk	Maximum	48	68	79	85	82	83	76	54	51	52	51	60	60	52	56	60	61	64	54	53	56	62	64	60	55	67	71	62	68	71	.....	62.8
	Minimum	29	37	54	62	68	68	51	44	44	42	40	36	40	44	39	40	44	41	45	44	44	41	45	50	46	42	52	46	40	61	.....	46.0
Knoxville	Maximum	49	68	80	87	81	83	76	56	53	47	47	58	60	54	59	67	64	66	58	48	58	64	58	61	56	66	67	59	69	77	.....	63.2
	Minimum	26	29	51	62	68	64	53	36	42	36	38	34	28	41	32	41	36	38	47	43	42	33	43	43	45	41	49	47	36	58	.....	42.7
Lamoni	Maximum	46	68	80	86	78	78	75	59	49	48	47	60	60	51	57	64	62	66	60	51	56	61	61	61	58	65	68	61	72	76	.....	62.8
	Minimum	26	28	45	61	67	62	49	35	40	39	35	28	35	42	35	38	37	38	48	42	40	37	44	47	44	38	47	45	39	58	.....	42.3
Sigourney	Maximum	46	66	80	87	81	82	78	57	52	46	48	57	62	59	61	65	63	65	56	48	58	64	57	58	57	67	70	59	67	75	.....	63.0
	Minimum	26	30	46	61	69	70	53	37	42	38	38	35	29	42	33	36	39	39	45	42	42	34	42	47	46	40	48	45	34	53	.....	42.7
Thurman	Maximum	57	74	84	92	85	78	71	61	60	49	44	62	62	57	59	68	65	65	60	56	61	61	63	69	62	67	66	64	80	78	.....	66.0
	Minimum	28	28	49	62	67	54	44	35	42	44	36	28	37	44	39	40	37	42	50	45	43	35	44	55	46	35	50	41	43	57	.....	43.3
Winterset	Maximum	48	68	80	89	80	79	71	58	55	45	46	59	61	55	59	65	64	67	63	49	57	63	58	61	60	65	61	59	71	78	.....	63.1
	Minimum	25	28	50	40	55	62	54	34	40	37	36	30	30	40	34	38	37	31	46	43	41	33	43	46	43	39	50	44	39	58	.....	41.0
Omaha, Neb.	Maximum	54	73	83	91	82	73	71	62	49	44	40	60	62	52	61	68	60	66	55	52	59	62	59	66	57	67	64	61	82	72	.....	63.7
	Minimum	27	32	54	62	62	59	41	38	40	37	35	34	37	45	42	45	39	43	47	45	44	43	46	53	44	44	50	48	49	53	.....	44.6

IOWA STORMS, APRIL, 1929

Date	County	Township	Nature of Storm	Time	Storm Moved From	Width of Path Miles	Length of Path Miles	Area of Sq. Miles	Size of Hailstones Inches	Damage	Persons Killed	Persons Injured
5	Hancock	Ellington	Tornado	6:30 p. m.	SW to NE	.....	.....	.....	.....	$10,000	.....	4
5	Lyon	Elgin	Tornado	3:00 p. m.	SW to NE	.....	.....	.....	¼ to 1	21,000	1	.....
6	Jones	Hale and Oxford	Wind and Hail	7:00 p. m.	SW to NE	.....	.....	.....	½ to 1	3,000	.....	.....
6	Benton	Taylor	Hail	4:00 p. m.	SW to NE	.....	.....	.....	2½	800	.....	.....
6	Union	Jones	Tornado	7:00 p. m.	SW to NE	.....	.....	.....	.....	4,000	.....	.....
6	Dubuque	Dubuque	Hail	4:30 p. m.	W to E	½	.....	.....	2	2,000	.....	.....
6	Warren	Squaw and Liberty	Tornado	7:30 p. m.	SW to NE	100 ft.	4	.....	.....	3,400	.....	8
6	Jasper and Marshall	Poweshiek, Independence, Malaka, Mariposa and Jefferson	Tornado	7:30 p. m.	SW to NE	.....	25	.....	.....	25,000	.....	1
27	Louisa	Concord, Grand View	Tornado	7:00 p. m.	SW to NE	⅛	.....	.....	.....	2,100	.....	.....
30	Keokuk	Warren, Sigourney, Van Buren, Plank, English River and Liberty	Wind	6:00 a. m.	SW to NE	.....	.....	.....	.....	2,000	.....	.....
30	Mahaska	S. E. part of County	Wind	6:00 a. m.	S to N	.....	.....	.....	.....	10,000	.....	1
30	Winneshiek	Orleans and Bluffton	Tornado	5:00 p. m.		.....	.....	.....	.....	4,000	.....	.....
30	Linn	College and Putnam	Wind	7:30 a. m.	SW to NE	.....	.....	.....	.....	3,000	.....	.....

RIVERS

High stages prevailed on all streams but flood stages were not experienced except on the Mississippi from Muscatine to Keokuk and on the Des Moines from Ottumwa to the Mississippi. At Muscatine the river was at flood state 21 days during the month and at Keokuk during the entire month, making a period of more than six weeks that the river was continuously above flood stage since flood stage was passed about the middle of March. At the end of the month nearly all streams were falling and on several streams the lowest stages for the month were recorded on the last day.

MISCELLANEOUS PHENOMENA

Fog: 4th, 14th, 16th, 17th, 18th, 19th, 20th.

Hail: 5th, 6th, 7th, 10th, 16th, 17th, 20th, 23d, 24th, 25th, 27th, 28th, 30th.

Halos (lunar and solar): 1st, 3d, 13th, 14th, 18th, 21st, 22d, 27th

Haze: 4th, 5th, 15th.

Rainbow: 24th, 29th.

Sleet: 1st, 9th, 10th.

Thunderstorms: 1st, 4th, 5th, 6th, 7th, 10th, 11th, 16th, 19th, 20th, 23d, 24th, 25th, 27th, 28th, 29th, 30th.

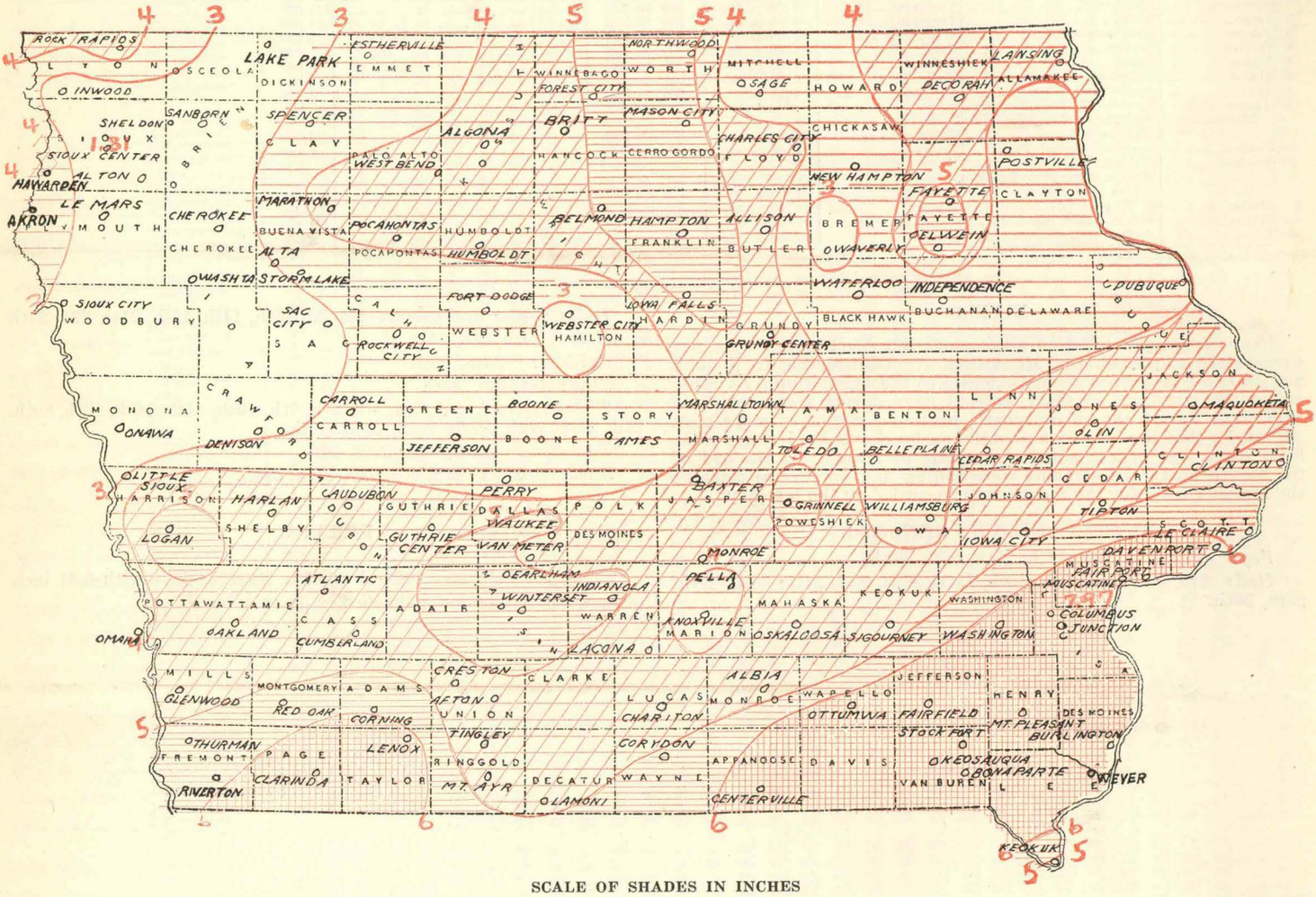
Tornadoes: 5th, 6th, 27th, 30th.

Winds (high): 5th, 6th, 7th, 24th, 30th.

ERRATA

Report for February 1929. Page 10. Baxter; days with 0.01 inch or more precipitation published 8. should be 10.

TOTAL PRECIPITATION, APRIL, 1929



SCALE OF SHADES IN INCHES

Less than 3.0	3.0 to 4.0	4.0 to 5.0	5.0 to 6.0	More than 6.0

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU

CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, MAY, 1929 No. 5

GENERAL SUMMARY

The chief characteristic of the weather during May, 1929, was the persistent cool weather that prevailed until the middle of the fourth week. The first and third weeks were the coldest; the second week was below normal, though there were several days that averaged slightly above normal. The temperature for the first three weeks averaged about six degrees below normal but the last week was warm and brought the average daily deficiency for the State to 2.4°. There was a decided change to cooler on the 15th-16th, the drop in temperature amounting to 40°, or more, during a 12-hour period at a number of stations. Frost occurred frequently during the first two weeks over most of the State, and as late as the 21st over most of the northern portion, but owing to the backward stage of vegetation there was not a great deal of damage. The principal damage occurred to strawberries, grape buds and tender plants that were set out and not sufficiently hardened. As the frosts continued the vegetation developed frost resisting properties and some of the most severe freezes did practically no damage. The first strawberry blooms were practically all killed but there was a large amount of bloom later and a large quantity of fruit set. Tree fruit fell off badly and many plum and cherry trees that carried great quantities of bloom were found to be entirely fruitless.

The average precipitation was slightly more than half of the normal for the month, and only a few stations reported a slight excess. The first general precipitation period occurred on the 10th-11th and rather heavy falls occurred at a large number of stations and some local damage resulted. During the rest of the month showers occurred at frequent intervals but no general rains of consequence occurred until the 28th-29th. A large number of places reported damaging rains but the greatest damage occurred over an area from Woodbury to Lyon counties, which consisted of bridges being washed away, washouts on railways and highways, bottomlands overflowed, and some farm animals drowned. Traffic on motor busses was temporarily suspended and railway traffic was held up as much as 24 hours. There was some damage from wind, hail and tornadoes.

Farm operations were much behind at the beginning of the month but favorable conditions as to moisture permitted work to be pushed, and at the close of the month conditions compared favorably with the average season. However, a large amount of overflowed land was still too wet at the end of the month to work and cannot be planted to the usual crops. The weather was too cool for the growth of corn and some fields showed yellow; winter wheat, meadows and pastures were generally in good condition and made good growth. Sunshine was normal, and with a good wind movement conditions were favorable for the cultivation of all crops, and weeds were well under control.

F. L. [illegible]

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
1873	56.5	— 3.6	86	38	5.99	+ 1.41	9.10	3.42	.....	.....	.....	.....	.....
1874	61.1	+ 4.0	94	41	1.88	— 2.70	4.49	0.50	.....	.....	.....	.....	.....
1875	60.5	+ 0.4	91	26	2.91	— 1.64	6.70	1.63	.....	.....	.....	.....	.....
1876	61.1	+ 1.0	90	32	2.84	— 1.74	7.38	1.09	.....	.....	.....	.....	.....
1877	60.3	+ 0.2	92	29	4.30	— 0.28	11.00	1.60	.....	.....	.....	.....	.....
1878	55.7	— 4.4	88	32	5.01	+ 0.43	11.95	2.14	.....	.....	.....	.....	.....
1879	62.9	+ 2.8	93	26	4.38	— 0.20	8.70	1.40	.....	.....	.....	.....	.....
1880	66.3	+ 6.2	96	37	4.06	— 0.52	8.45	1.47	.....	.....	.....	.....	.....
1881	66.7	+ 6.6	95	35	3.73	— 0.85	9.30	0.40	.....	.....	.....	.....	.....
1882	54.3	— 5.8	83	24	5.42	+ 0.84	12.55	1.50	.....	.....	.....	.....	.....
1883	54.6	— 5.5	90	31	6.25	+ 1.67	11.68	1.30	.....	.....	.....	.....	.....
1884	59.6	— 0.5	88	33	3.15	— 1.43	6.36	1.00	.....	.....	.....	.....	.....
1885	57.4	— 2.7	86	27	3.44	— 1.14	9.33	1.05	.....	.....	.....	.....	.....
1886	62.5	+ 2.4	96	30	3.38	— 1.20	7.63	1.30	.....	.....	.....	.....	.....
1887	64.6	+ 4.5	96	34	1.55	— 3.03	5.84	0	.....	.....	.....	.....	.....
1888	53.8	— 6.3	88	22	6.58	+ 2.00	10.85	2.00	.....	.....	.....	.....	.....
1889	59.2	— 0.9	92	22	4.06	— 0.52	8.54	1.40	.....	.....	.....	.....	.....
1890	56.5	— 3.6	96	26	3.64	— 0.94	6.44	1.60	.....	.....	.....	.....	.....
1891	58.3	— 1.8	94	21	3.18	— 1.40	7.10	1.46	.....	8	14	9	8
1892	54.0	— 6.1	88	29	8.77	+ 4.19	12.64	4.87	T.	16	5	9	17
1893	56.6	— 3.5	96	26	3.45	— 1.13	5.82	1.65	0	9	13	9	9
1894	61.1	+ 1.0	96	22	1.87	— 2.71	4.77	0.33	0	6	17	10	4
1895	61.7	+ 1.6	104	24	3.19	— 1.39	5.79	0.84	0	9	11	12	8
1896	65.5	+ 5.4	100	34	6.69	+ 2.11	11.79	3.40	0	12	11	12	8
1897	58.5	— 1.6	96	20	1.92	— 2.66	3.59	0.21	0	5	16	10	5
1898	59.6	— 0.5	92	26	4.67	+ 0.09	7.82	2.22	0	12	9	10	12
1899	60.2	+ 0.1	90	27	6.23	+ 1.65	11.47	3.09	0	13	9	12	10
1900	63.2	+ 3.1	98	22	3.31	— 1.27	6.98	0.96	0	8	14	10	7
1901	60.7	+ 0.6	95	28	2.35	— 2.23	4.57	0.72	0	7	16	9	6
1902	63.8	+ 3.7	97	25	5.39	+ 0.81	18.04	0.87	0	13	10	12	9
1903	61.6	+ 1.5	91	24	8.55	+ 3.97	15.45	2.88	0	16	9	12	10
1904	59.6	— 0.5	93	27	3.78	— 0.80	8.15	1.50	0	8	13	10	8
1905	58.3	— 1.8	88	28	5.95	+ 1.37	10.83	2.57	0	14	12	11	8
1906	60.8	+ 0.7	95	21	3.54	— 1.04	10.72	0.89	0	11	13	10	8
1907	53.5	— 6.6	96	14	3.48	— 1.10	7.68	0.71	1.0	10	11	10	10
1908	59.4	— 0.7	93	13	8.34	+ 3.76	14.33	1.33	0	15	9	11	11
1909	57.9	— 2.2	97	18	4.34	— 0.24	7.85	1.86	0.1	9	12	12	7
1910	55.4	— 4.7	89	18	3.41	— 1.17	6.91	1.29	T.	10	15	7	9
1911	61.9	+ 4.8	98	23	3.76	— 0.82	8.73	0.42	0.7	9	16	9	6
1912	62.7	+ 2.6	97	29	3.33	— 1.25	6.41	0.72	0	10	14	11	6
1913	59.4	— 0.7	102	30	6.24	+ 1.66	10.25	3.14	0	13	11	8	12
1914	62.2	+ 2.1	98	25	3.31	— 1.27	6.90	0.30	T.	10	14	11	6
1915	56.1	— 4.0	99	25	7.34	+ 2.76	13.21	3.82	T.	14	9	9	13
1916	59.9	— 0.2	94	27	4.93	+ 0.35	10.44	2.14	T.	12	13	10	8
1917	55.1	— 5.0	95	18	3.87	— 0.71	7.33	1.69	0.6	10	15	8	8
1918	64.9	+ 4.8	98	25	6.87	+ 2.29	11.98	2.72	T.	13	13	11	7
1919	58.2	— 1.9	93	30	3.11	— 1.47	7.14	0.73	0	9	13	11	7
1920	59.4	— 0.7	89	29	3.26	— 1.32	5.73	0.62	0	8	14	9	8
1921	63.3	+ 3.2	99	25	4.23	— 0.35	9.41	1.32	0	10	14	10	7
1922	63.4	+ 3.3	91	34	3.53	— 1.05	8.36	0.47	0	12	13	10	8
1923	59.6	— 0.5	90	20	2.84	— 1.74	6.55	1.07	T.	10	14	10	7
1924	54.1	— 6.0	94	26	1.71	— 2.87	3.28	0.78	0.1	9	13	9	9
1925	57.8	— 2.3	102	20	1.16	— 3.42	2.62	0.30	T.	6	19	8	4
1926	64.5	+ 4.4	97	25	2.76	— 1.82	6.83	0.52	0	9	15	11	5
1927	58.4	— 1.7	91	30	4.69	+ 0.11	9.07	0.86	T.	11	10	10	11
1928	62.6	+ 2.5	93	26	2.47	— 2.11	6.19	0.61	0	8	17	8	6
1929	57.7	— 2.4	91	24	2.47	— 2.11	5.79	0.82	T.	8	11	12	8

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

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area, and based on the records of 103 stations, was 57.7°, or 2.4° lower than the normal. There was a deficiency at all stations with considerable range for individual stations. The deficiency was least in the northwestern district and greatest in the northeastern district. The highest monthly mean was 61.1° at Burlington and the lowest was 52.3° at Postville. The absolute range for the State was 67°, ranging from 91° at Davenport No. 2 on the 28th and 29th and at Mt. Pleasant on the 31st, to 24° at Inwood on the 2d and 16th, Sanborn on the 5th and Webster City on the 7th. Temperatures of 90°, or higher occurred in but three districts and at but nine stations. The average number of stations with the minimum temperature 32°, or lower was 4, ranging from 7 in the north-central and northeastern districts to 1 in the southeastern district; the greatest number at any station was 9 at two stations and at nine stations the temperature did not reach 32°.

Climatological Data for May, 1929

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District																				
Akron	Plymouth	1,153	2								2.75	— 1.00	2.02	0	7	18	9	4	s.	Orlan C. Moore
Alta	Buena Vista	1,513	37	57.0	— 1.6	87	30	27	5	37	1.75	— 3.16	1.10	0	5	11	15	5	s.	D. E. Hadden
Alton	Sioux	1,305	23	57.1	— 1.5	85	30	25	5	39	1.37	— 3.45	0.62	0	5	6	21	4	se.	W. S. Slagle
Cherokee	Cherokee	1,196	8	56.6	— 1.4	85	28†	26	2	37	1.30	— 3.37	0.60	0	7	17	12	2	s.	J. E. Wirth
Estherville	Emmet	1,298	33	56.2	— 0.8	88	28	29	3†	37	2.58	— 1.89	0.90	0	7	20	10	1	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								4.67	+ 0.92	4.03	0	7	9	14	8	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	56.1	— 1.6	84	30	24	2†	40	3.42	— 0.78	1.66	0	6	16	8	7	se.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	54.6	— 2.9	81	27†	26	16	39	2.72	— 1.31	1.18	0	9	16	6	9	se.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	57.4	— 1.6	85	30†	27	2†	37	1.15	— 3.38	1.02	0	4	19	8	4	s.	Henry Newell
Marathon	Buena Vista	1,390	2								1.00		0.68	0	4	19	5	7	nw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	57.2	— 1.6	85	30	27	5	35	1.62	— 2.81	0.95	0	9	12	14	5	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	55.9	— 2.1	84	25	26	2†	39	4.48	+ 0.93	3.32	T.	8	23	4	4	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	55.1	— 3.0	84	30	24	5	40	3.49	— 1.30	1.92	0	8	9	15	7	se.	J. W. Dow
Sheldon	O'Brien	1,418	17	56.2	— 2.0	84	25	26	4†	37	2.48	— 2.27	1.74	0	7	15	10	6	s.	Ross E. Forward
Sioux Center	Sioux	1,426	29	56.0	— 2.2	84	30	27	2†	39	2.62	— 2.09	2.02	0	3	12	15	4	se.	F. C. Aue
Spencer§	Clay	1,319	14	56.9	— 1.6	85	28†	27	7†	40	2.05	— 2.15	0.60	0	7	10	14	7	se.	E. W. Little
Storm Lake‡‡	Buena Vista	1,438	39	57.3	— 1.8	86	30	29	2†	36	2.03	— 2.46	0.93	0	5	12	13	6	se.	L. B. Florey
Washta	Cherokee	1,157	30	56.8	— 1.5	86	28	26	7	42	1.26	— 3.36	0.40	0	6	14	13	4	s.	H. L. Felter
West Bend	Palo Alto	1,197	35	56.5	— 2.8	85	31	27	5	40	3.98	— 0.21	1.95	0	7	14	13	4	se.	Jos. Dorweiler
Means and extremes				56.4	— 1.9	88	28	24	2†	42	2.48	— 1.90	4.03	T.	6	14	12	5	se.	
North Central District																				
Algona	Kossuth	1,224	55	57.9	— 1.3	86	31	28	3	38	4.05	— 0.23	1.35	0	7	25	0	6	se.	W. E. Laird
Allison‡‡	Butler	1,060	14																	E. W. Detra
Belmond	Wright	1,181	18	55.6	— 3.0	86	28	26	3†	39	3.56	— 1.65	0.98	T.	9	11	7	13	nw.	H. F. Luick
Britt	Hancock	1,236	41	55.9	— 2.1	86	31	27	3	36	3.72	— 1.18	1.55	0	7	17	4	10	sw.	E. P. Healy
Charles City	Floyd	1,015	37	54.8	— 3.0	87	28	30	3	33	3.24	— 1.09	1.71	0	11	13	9	9	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	54.8	— 3.3	85	28	25	3	35	5.04	+ 0.40	2.24	0	9	12	12	7	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								3.61	— 1.39	1.62	0	7					L. H. Davis
Humboldt	Humboldt	1,095	40	57.0	— 3.0	88	23	28	7	41	2.91	— 1.41	1.22	0	7	16	10	5	nw.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	54.0	— 4.0	84	28	26	7	35	3.53	— 1.16	0.98	0	9	9	17	5	nw.	American Beet Sugar Co.
Northwood	Worth	1,222	32	54.8	— 2.5	86	28	28	3	36	3.89	— 1.20	0.99	0	7	15	10	6	sw.	Charles Dwelle
Osage	Mitchell	1,163	34	54.6	— 3.2	82	28†	29	3†	33	3.77	— 0.91	1.45	0	8	13	10	8	nw.	Dr. C. E. Juhl
Means and extremes				55.5	— 2.9	88	23	25	3	41	3.73	— 0.96	2.24	T.	8	14	9	8	nw.	
Northeast District																				
Decorah	Winneshiek	872	35	54.6	— 3.8	87	28	26	7	41	3.38	— 1.28	1.18	0	10	15	9	7	nw.	M. D. Whitney
Dubuque	Dubuque	700	55	56.8	— 3.5	87	29	33	3	40	1.39	— 2.83	0.65	T.	8	8	8	15	nw.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	56.2	— 1.8	88	31	27	4†	40	1.24	— 3.62	0.84	0	5	16	9	6	sw.	R. Z. Latimer
Independence	Buchanan	956	64	57.3	— 2.3	88	28	31	3†	32	2.93	— 1.34	1.41	0	7	14	7	10	sw.	Dr. Geo. Boody
Lansing	Allamakee	632	21								2.49	— 2.51	0.57	0	12					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	54.3	— 4.0	83	28	27	4	34	3.64	— 1.19	1.20	0	9	9	12	10	nw.	D. W. Dawson
Oelwein	Fayette	1,036	5	55.6	— 3.1	86	28†	29	4†	34	2.60	— 1.82	1.30	0	7	6	15	10	s.	John T. Ridler
Postville (near)	Clayton	1,192	29	52.3	— 5.1	84	28†	27	3	36	2.10	— 2.96	0.69	0	9	15	12	4	sw.	F. L. Williams
Waterloo	Black Hawk	851	45	57.4	— 2.8	90	31	28	4†	38	2.13	— 1.96	1.05	0	9	18	6	7	nw.	R. B. Slippy
Waverly	Bremer	936	32																	D. H. Murphy
Means and extremes				55.6	— 3.3	90	31	26	7	41	2.47	— 2.11	1.41	T.	8	13	10	8	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	57.9	— 1.4	85	28	29	2	40	1.76	— 2.62	0.66	0	9	6	24	1	se.	George Kibby
Carroll	Carroll	1,265	38	57.2	— 2.7	86	28	28	2†	34	3.34	— 1.22	2.80	0	5	18	10	3	se.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	57.6	— 2.5	89	23†	28	2†	34	2.27	— 2.01	1.22	0	7	5	19	7	s.	V. L. Byers
Guthrie Center	Guthrie	987	33	58.1	— 1.4	85	28	28	5	38	2.03	— 2.67	0.93	0	4	10	17	4	n.	Floyd H. Bainter
Harlan	Shelby	1,192	29	57.3	— 2.8	85	29	29	2	31	2.84	— 1.72	1.72	0	9	7	12	12	se.	Walter Bell
Jefferson	Greene	1,052	29	57.4	— 2.4	85	28	28	5	34	2.84	— 1.71	1.62	0	6	10	12	9	sw.	W. I. Lyon
Little Sioux	Harrison	1,040	23	59.4	— 1.7	87	28†	29	2	35	2.19	— 2.25	0.85	0	10	8	19	4	s.	H. W. Kerr
Logan	Harrison	1,120	61	58.6	— 2.7	86	30	29	2	33	2.61	— 1.63	1.22	0	9	4	26	1	s.	Amy Ann Stern
Onawa	Monona	1,051	27	58.4	— 2.5	88	28	28	2†	37	1.97	— 2.86	0.70	0	6	12	11	8	se.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32																	A. W. McIsaac
Sac City	Sac	1,269	52	56.8	— 1.9	88	30	30	2†	37	1.45	— 2.71	0.60	0	5	11	12	8	s.	F. P. Kessler
Sioux City	Woodbury	1,135	39	58.6	— 1.8	88	30	29	2	34	1.73	— 2.32	0.93	0	7	7	16	8	s.	U. S. Weather Bureau
Means and extremes				57.9	— 2.1	89	23†	28	2†	40	2.28	— 2.19	2.80	0	7	9	16	6	s.	
Central District																				
Ames	Story	926	51	58.3	— 2.5	86	28	31	7	37	2.31	— 2.20	1.03	0	8	17	8	6	s.	Iowa State College
Baxter‡‡	Jasper	998	28	58.2	— 2.3	87	30	30	4†	37	2.57	— 2.79	0.98	0	7	11	19	1	se.	F. A. Kanne
Boone (near)	Boone	894	23	57.7	— 2.2	86	28†	27	5	41	2.32	— 2.71	1.09	0	8	7	17	7	nw.	C. F. Henning
Des Moines	Polk	861	50	59.2	— 2.1	87	28	33	5	31	2.18	— 2.38	1.14	0	11	4	11	16	n.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	57.0	— 2.2	87	28	29	5†	38	2.51	— 2.07	1.48	0	9	14	7	10	se.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	57.8	— 3.0	87	28	26	5	36	2.61	— 2.36	0.90	0	7	14	13	4	se.	R. E. Bates
Grundy Center	Grundy	976	37	56.8	— 3.8	88	30	28	3	37	2.17	— 2.77	1.15	0	6	16	9	6	nw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	56.5	— 2.3	87	28	28	7	38	4.77	+ 0.16	2.50	0	12	11	14	6	w.	C. H. Gilbert
Marshalltown	Marshall	947	36	58.4	— 2.5	88	28†	32	4†	37	2.11	— 2.38	0.83	0	8	11	12	8	se.	C. C. Pigman
Monroe	Jasper	922	16	58.9	— 1.2	86	28	30	5	34	1.61	— 3.34	0.51	0	9	10	5	16	sw.	J. A. Dibel
Perry	Dallas	975	27	58.2	— 2.6	87	28	28	5	38	1.36	— 3.48	0.62	0	4	7	15	9	se.	Eugene N. Hastie
Toledo	Tama	847	34	57.6	— 3.3	88	28	28	4†	39	1.55	— 3.14	0.75	0	8	9	13	9	sw.	H. P. Giger
Van Meter	Dallas	872	9								1.78		1.00	0	6					Calvin K. Smith
Waukee	Dallas	1,032	25	58.2	— 2.5	86	30	28	5	31	1.48	— 3.19	0.97	0	9	23	8	0	se.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	56.6	— 3.1	88	28	24	7	45	4.02	— 0.25	2.39	0	7	15	13	3	se.	Frank A. Bonebright
Means and extremes				57.8	— 2.6	88	28†	24	7	45	2.36	— 2.39	2.50	0	8	12	12	7	se.	

Climatological Data for May, 1929—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	
East Central District																				
Belle Plaine	Benton	866	38	58.0	— 2.4	90	28	27	5	39	1.33	— 3.48	0.51	0	7	9	13	9	nw.	O. C. Burrows
Cedar Rapids	Linn	737	46	57.8	— 2.9	88	28†	29	4†	40	1.32	— 3.38	0.64	0	9	11	2	18	se.	J. T. Wurster
Clinton	Clinton	595	55	58.8	— 2.3	90	29	36	4	40	2.53	— 2.07	1.00	T.	9	14	3	14	s.	Dr. A. P. Bryant
Davenport	Scott	580	57	59.6	— 1.7	89	28	34	3	42	1.23	— 2.71	0.51	0	8	7	11	13	nw.	U. S. Weather Bureau
Davenport No. 2	Scott	690	3	59.9		91	28†	31	3†	38	1.67		0.52	0	11	15	11	5	sw.	Rex Shriver
Fairport	Muscatine	567	7	58.7	— 3.2	88	28	31	4	33	1.50	— 2.68	0.55	0	13	11	4	16	s.	Bureau of Fisheries
Iowa City	Johnson	733	68	58.8	— 1.5	89	28	30	5	37	1.94	— 2.59	0.63	0	13	7	13	11	se.	Prof. J. F. Reilly
Le Claire	Scott	576	28								2.13	— 2.28	0.87	0	10					Margaret T. Disney
Maquoketa (near)	Jackson	692	23	56.2	— 2.8	88	28†	28	4†	40	1.30	— 3.20	0.63	0	7	16	4	11	nw.	John Strodthoff
Muscatine	Muscatine	546	67								1.30	— 3.12	0.48	0	8					William Molis
Olin	Jones	760	29	58.0	— 2.3	88	28	28	4	42	2.77	— 1.92	1.10	0	6	11	15	5	sw.	Mrs. L. Stingley
Tipton (near)	Cedar	807	29	58.0	— 2.8	90	28†	29	4	38	1.93	— 2.96	0.63	0	6	7	14	10	s.	John Kroeplen
Williamsburg	Iowa	770	12	58.0	— 1.8	90	28	28	5	40	1.50	— 3.10	0.48	0	5	16	10	5	se.	Dr. F. C. Schadt
Means and extremes				58.3	— 2.3	91	28†	27	5	42	1.73	— 2.79	1.10	T.	9	11	10	10	s.	
Southwest District																				
Atlantic	Cass	1,110	37	57.8	— 2.9	85	28	29	2	33	1.96	— 2.27	0.70	0	10	5	23	3	ne.	Roy L. Fancolly
Bedford	Taylor	1,200									3.18	— 1.41	1.54	0	9	3	17	11	se.	Arthur L. Bishop
Clarinda	Page	1,009	38	59.2	— 3.7	88	28	31	2	33	3.99	— 0.96	1.05	0	12	11	18	2	s.	Dr. H. C. Hawley
Corning	Adams	1,150	36	58.5	— 2.0	86	28	31	2†	37	3.84	— 1.20	2.30	0	7	14	6	11	s.	J. A. Wilson
Cumberland (near)	Cass	1,225	29								1.90	— 2.28	1.03	0	9	5	20	6	s.	Carl E. Pollock
Glenwood	Mills	1,100	30	59.8	— 1.5	86	28†	30	2	32	2.31	— 2.30	0.80	0	8	8	17	6	se.	George Mogridge
Lenox	Taylor	1,250	33	59.4	— 2.5	88	28†	28	2	43	2.64	— 2.04	1.28	0	8	15	10	6	se.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	58.7	— 2.5	85	28	30	2	33	3.04	— 1.27	1.15	0	9	12	7	12	se.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3								3.66	— 1.09	2.50	0	7	8	18	5	e.	B. R. Bridge
Riverton (near)	Fremont	920	2								5.79	+ 0.99	2.33	0	10	5	6	20	s.	Geo. C. Rader
Thurman	Fremont	960	31	60.2	— 2.5	87	28	31	2	29	3.73	— 1.22	1.86	0	7	10	8	13	s.	H. H. Askew
Omaha, Neb		1,105	57	60.8	— 1.6	86	28	33	2	26	2.02	— 1.75	0.55	0	11	6	14	11	se.	U. S. Weather Bureau
Means and extremes				59.3	— 2.4	88	28†	28	2	43	3.17	— 1.40	2.50	0	9	8	14	9	se.	
South Central District																				
Afton	Union	1,212	34	59.1	— 2.3	87	28	32	2†	32	2.40	— 2.37	1.07	0	11	5	19	7	sw.	S. R. Brown
Albia	Monroe	949	30	59.4	— 1.9	89	28	32	5	33	1.62	— 3.37	0.32	0	10	4	8	19	ne.	O. E. McBride
Centerville	Appanoose	1,013	23	59.8	— 1.6	87	28	32	5	33	1.89	— 2.70	0.88	0	13	10	10	11	se.	Thomas Wood
Chariton (near)	Lucas	1,042	33	58.6	— 1.5	86	28	32	3†	34	0.82	— 3.70	0.23	0	4	3	23	5	sw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	59.2	— 2.1	86	28	33	3†	31	1.32	— 3.35	0.40	0	9	5	11	15	se.	J. C. Davis
Creston	Union	1,291	23	58.2	— 2.5	85	28	31	2	32	2.47	— 2.07	1.28	0	12	6	20	5	s.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	57.1	— 3.1	83	29	28	5	34	2.65	— 1.79	1.56	0	6	12	8	11	se.	George Phillips
Indianola	Warren	972	37	58.8	— 2.7	86	28	30	5	34	2.19	— 2.26	0.80	0	11	6	16	9	se.	Seth F. Shenton
Knoxville	Marion	920	33	58.3	— 3.2	84	29	30	5	33	1.38	— 2.87	0.38	0	7	9	13	9	se.	W. J. Casey
Lacona	Warren	824	29								1.68	— 3.15	0.52	0	10	9	13	9		J. B. Alter
Lamoni	Decatur	1,123	21	58.5	— 2.7	85	28	32	2†	32	1.34	— 3.61	0.33	0	9	9	15	7	se.	F. S. Parks
Melrose	Monroe	871									2.16		0.52	0	8	14	4	13	nw.	J. M. Carr
Mount Ayr	Ringgold	1,220	35	58.4	— 2.9	85	28	32	2†	29	1.61	— 3.86	0.76	0	9	19	3	9	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	58.6	— 1.8	85	28	32	2	29	1.86	— 3.11	0.76	0	10	4	19	8	ne.	James A. Verploegh
Winterset	Madison	1,118	37	58.7	— 2.9	86	30	30	3	32	2.92	— 1.60	1.54	0	11	12	14	5	sw.	H. S. Ely
Means and extremes				58.7	— 2.4	89	28	28	5	34	1.89	— 2.80	1.56	0	9	8	13	10	se.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	58.6	— 2.7	85	28	33	3†	34	2.06	— 2.57	0.84	0	10	10	12	9	se.	B. R. Vale
Burlington	Des Moines	544	32	61.1	— 1.8	90	28	35	5	39	2.81	— 1.72	1.41	0	12	9	13	9	sw.	John T. Donnelly
Columbus Junction	Louisa	595	27	58.7	— 3.5	86	28†	32	5	36	1.37	— 2.94	0.38	0	10	14	15	2	se.	Miss Musa Todd
Fairfield	Jefferson	780	44	59.2	— 1.9	90	28	31	5	38	1.59	— 3.85	0.25	0	11	10	9	12	w.	R. M. McKenzie
Keokuk	Lee	614	57	60.4	— 3.4	87	28	37	16	42	2.97	— 0.96	0.84	0	15	3	12	16	s.	U. S. Weather Bureau
Keokuk No. 2	Lee	651		60.4		89	28†	34	5	33	3.93		1.15	0	15					J. N. D. Dickinson
Keosauqua	Van Buren	639	36	59.0	— 2.3	88	28	31	5	41	1.88	— 3.00	0.66	0	8	4	23	4	nw.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	60.2	— 2.3	91	31	34	5	33	1.42	— 3.20	0.66	0	9	7	20	4	se.	J. H. Jericho
Oskaloosa	Mahaska	835	52	58.8	— 2.4	89	28	30	5	35	1.14	— 3.11	0.39	0	8	5	13	13	ne.	Roy R. Robinson
Ottumwa	Wapello	649	33	60.4	— 2.6	89	28	32	6	33	2.00	— 2.65	0.63	0	10	14	12	5	se.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	59.6	— 1.2	88	28	32	5	38	2.05	— 2.22	0.67	0	7	10	10	11	se.	W. E. Utterback
Stockport (near)	Van Buren	747	26	58.4	— 2.1	89	28	31	5	37	1.77	— 2.89	0.38	0	15	12	12	7	s.	C. L. Beswick
Washington	Washington	757	46	59.6	— 1.9	88	28	30	5	36	1.65	— 2.51	0.60	0	8	11	8	12	sw.	D. D. Sherman
Wever	Lee	552		60.3		90	28†	30	5	34	2.49		0.93	0	14	8	17	6	e.	H. G. Liddle
Means and extremes				59.6	— 2.2	91	31	30	5	42	2.08	— 2.45	1.41	0	11	9	14	8	se.	
State means and extremes				57.7	— 2.4	91	28†	24	2†	45	2.47	— 2.11	4.03	T.	8	11	12	8	se.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

Daily Precipitation for May, 1929

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	
Northwest District																															
Akron	Big Sioux						.20			.02	.38	.02								.04								2.02	.07			2.75
Alta	Raccoon						.08				T.	1.10	.05								.30								.22			1.75
Alton	Floyd						.02			T.	.30									.20							T.	T.	.62	.23			1.37
Cherokee	Little Sioux		T.				.09			T.	.60	.24				T.				.03	.22					T.	T.	T.	.10	.02			1.30
Estherville	Des Moines											.55									.90			.15			.10		.03	.80	.05		2.58
Hawarden	Big Sioux						.09			.01	.42	.01								.11									3.88	.15			4.67
Inwood (near)	Big Sioux						T.				.06	.38									.21								1.66	1.10	.01		3.42
Lake Park (near)	Little Sioux	.06									.35	03								.33	.01			.17			.02		1.18	.57			2.72
Le Mars	Floyd											.03						T.		.05							T.	T.	1.02	.05			1.15
Marathon	Raccoon									.02	.68					T.				.02						T.			.28		T.		1.00
Pocahontas	Des Moines										.30	.65				.05				.03	.10						.04	.11	.03	.31			1.62
Rock Rapids	Big Sioux			.04							.54	.65								.40	.05						.04		3.32	.04			4.48
Sanborn	Floyd										.43	.05								.08	.47			.09			.03		.42	1.92			3.49
Sheldon	Floyd	T.					T.				.23	.04				T.		T.		.31	.15					T.	.01	T.	1.32	.42		T.	2.48
Sioux Center	Floyd										.42									.18									2.02				2.62
Spencer	Little Sioux	.12									.35	.25								T.	.40						.13		.50	.30			2.05
Storm Lake	Raccoon						.05				.75	.93									.22								.08				2.03
Washta	Little Sioux		T.				.11			T.	.28	.40								.11									.20	.16			1.26
West Bend	Des Moines										1.24	.71								T.	.37			.03			.58	T.	.60	.45			3.98
North Central District																															
Algona	Des Moines										.55	1.35									.55						.65		.30	.55		.10	4.05
Allison	Cedar																																
Belmond	Iowa										.45	.98			.42	.05		.06		T.	.39						.83	.10		.28			3.56
Britt	Iowa										.43	1.55			T.						.87							.07	.04	.23		.53	3.72
Charles City***	Cedar									.01	.45	1.26			.30	.03		.10	T.		.03		T.	.33			.09	.07		.57			3.24
Forest City	Cedar											2.24	T.		.05		.07			T.	.44			1.01				.63	.03	.12	.42		5.04
Hampton	Cedar										1.62	T.		.21				.08		.58							.37	.15		.60			3.61
Humboldt	Des Moines										.19	1.22					.07		T.		.12						.69	T.	.30	.32			2.91
Mason City	Cedar								T.		.54	.98			.20	.04			T.	T.	.22			.35			.56	.31		.33		T.	3.53
Northwood	Cedar								T.		.40	.99				.25								.70			.74	.27	T.	.54			3.89
Osage	Cedar										.72	.73			.20	.35		T.						.46			.11	.36		.84			3.77
Northeast District																															
Decorah	Mississippi	.03										1.18			.40	.03	.02		.10					.32			.17	.12	1.01			3.38
Dubuque***	Mississippi						T.		T.		.22	.27		.02	.15	T.	T.	.01					T.	.65			.01	T.		.06			1.39
Fayette	Mississippi										.39	.45			.17	T.								.08		.15		T.					1.24
Independence	Wapsipinicon	.54									.22	1.41			.14	T.							T.	.36			.19	.07					2.93
Lansing	Mississippi	.25										.57	.02		.43	.16	.03		.05					.36	.02			.03	.55		.02		2.49
New Hampton	Wapsipinicon										.54	1.20			.37	.06		.16						.32			.55	.15		.29			3.64
Oelwein	Wapsipinicon										.40	.90			.10			.20						.20			.10	.70					2.60
Postville (near)	Mississippi										.33	.36			.68	.03		.26					.18	.19			.02	.05	T.				2.10
Waterloo	Cedar	.28										1.05	.15		.18	.02			.15					.10				.17	T.		.03		2.13
Waverly	Cedar																																
West Central District																															
Audubon (near)	Nishnabotna						.06					.66		.15	.17					.03			T.			T.		.12	.25	.30	.02		1.76
Carroll	Raccoon						T.	T.				2.80			.20						.04									.18	.12		3.34
Denison	Missouri						.13				.64	1.22			.05					.07			T.				T.	.12	.04				2.27
Guthrie Center	Raccoon											.75		.05													.30			.93			2.03
Harlan	Nishnabotna					T.	.14				.88	.84		.22	.20	T.				.20			T.	T.		T.			.10	.21		.05	2.84
Jefferson	Raccoon						T.				.82	.80		.08	.10	T.				T.							.35	T.		.69			2.84
Little Sioux	Little Sioux				.01	.01	.18				.65	.85								.12						.01			.09	.24		.03	2.19
Logan	Missouri						.16				.40	1.22			T.					.36			.06	T.		T.	.04		.31	.03		.03	2.61
Onawa	Missouri						.27				.50	.70								T.						T.	.10		.10	.30			1.97
Rockwell City	Raccoon																																
Sac City	Raccoon										.53	.60								T.	.12					.10			.10			1.45
Sioux City***	Missouri					.01	.10			T.	.54	.06			T.					.08									.93	.01		T.	1.73
Central District																															
Ames	Skunk										.30	1.03			.33						.10		.02				.32	.07		.14			2.31
Baxter	Skunk										.10	.73			.33						.18						.98	.05		.20			2.57
Boone (near)	Des Moines							T.				1.06	.03		.24		T.				T.		.02				.02	.23		.04	.68		2.32
Des Moines***	Des Moines						T.		T.		.12	1.02		.13	.02	T.				T.	.04		T.	.18		.08	.37	.15	T.	.05		.02	2.18
Fort Dodge	Des Moines											1.48	.04		.09		.02				.12							.24	.01	.16	.35		2.51
Grinnell	Iowa										.90	.39			.39						T.			.10			.40	.13		.30			2.61
Grundy Center	Cedar										.30	1.15			.20	T.					.20						.12	.20			T.		2.17
Iowa Falls	Iowa											2.45	.05		.68	.07			.03		.24			.03			.10	.58	.05	.09	.40		4.77
Marshalltown	Iowa							T.	T.	T.		.83	.18		.30	.01					.19		T.					35	.02		.23		2.11
Monroe	Des Moines						T.				.13	.51		T.	.20						.08	T.		.33	.04		.21	.04		.07		T.	1.61
Perry	Raccoon	T.	T.				T.				T.	.62		.04	.18	T.				T.			T.	T.			T.	T.	T.	.52			1.36
Toledo	Iowa										.30	.45			.20						.10		T.	.15			.10	T.	.10	.15			1.55
Van Meter	Raccoon											1.00			.05						.08			T.				.20	.10		.35		1.78
Waukee	Raccoon										.02	.95		.05	.07						T.		T.	.10			.16	.04		.08	.01	T.	1.48
Webster City	Des Moines										.47	1.92			.30	T.		T.		T.	.20		T.				.65	.03		.45	T.		4.02
East Central District																															
Belle Plaine	Iowa						T.		T.	T.	.12	.51		T.	.21	T.		T.			.01		T.	.35			.11	.02		T.		T.	1.33
Cedar Rapids	Cedar	.20								T.		.42	.22		.08	T.								.07	.08			.06	.14		.05		1.32
Clinton	Mississippi	.40								.02		.36			.15	.15		T.			.20			1.00				.16		.09			2.53
Davenport***	Mississippi						T.		T.		T.	.28	T.	.19	.11	.06		.02			T.		T.	.51		T.	.01	T.		.05	T.	T.	1.23
Davenport No. 2	Mississippi	.52										.32		T.	.33	.03	.05	.04	.01		T.			.25	.04		.02			.06		T.	1.67
Fairport	Mississippi	.05										.37			.55	.04	.02	.02						.18	.14	.05		.02		.02	.02	.02	1.50
Iowa City	Iowa	.63						.01				.03	.34		.12	.09	.02		.01		.02			.07	.32			.04	T.		.24		1.94
Le Claire	Mississippi	.32						T.		T.		.02	.28		.26	.02	.13		T.						.87			.01	.10	.12			2.13
Maquoketa (near)	Maquoketa	.10								.02	.05	.26			.22									.63						.02			1.30
Muscatine	Mississippi	.10											.32		.48	.05	.04		.03						.20						.08	T.	1.30
Olin	Wapsipinicon	.33					T.		T.	.07					.10			1.00						1.10			T.	T.		.17		T.	2.77
Tipton (near)	Cedar	.36										.30			.34									.20	.10					.63			1.93
Williamsburg	Iowa										T.	.41			.48									.44				.09		.08			1.50

Daily Precipitation for May, 1929—Continued

Stations	Drainage Basin	Day of Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals
Southwest District																																	
Atlantic‖‖	Nishnabotna						.10	.01				.70	.08		.17						.05	T.		.09	T.		.05			.53	.18		1.96
Bedford	102					T.	.23				.11	1.43		.21	T.						T.				.20	.08		.05	.50		.37	3.18
Clarinda‖‖	Nodaway						.17	.09				1.05	.63		.59						.06			.01	.68		.06	.07		.08	.47		3.99
Corning	Nodaway						.17				.11	2.30		.35						.03				.18					.70			3 84
Cumberland(near)	Nodaway						.08				T.	1.03		T.	.17	T.				.06			T.	.10		T.	.08	T.	.07	.28	T.	.03	1.90
Glenwood	Missouri						.20					.80		.36	.15					.28							.08			.10		.34	2.31
Lenox	Missouri						.16				T.	1.28		.25	.10					T.				.17			.10		T.	.28		.30	2.64
Oakland	Nishnabotna						.19					.79		.31	.11					.37				.06			T.		.60	.55		.06	3.04
Red Oak (near)	Nishnabotna					T.	.24					2.50		.28						.10				.24						.10		.20	3.66
Riverton (near)	Nishnabotna					T.	.21				T.	2.33		.42	.13					.49			T.	.09		.09			.05	.64		1.31	5.79
Thurman	Missouri					T.	.21				T.	1.86		.25	.20					.29				T.	.29							.63	3.73
Omaha, Neb.***	Missouri				T.	.06	.14				.15	.43		.03		T.				.30	T.		T.	.33		.32	T.		.13	.02		.11	2.02
South Central District																																	
Afton	Grand					T.	.14				.02	1.07		.18	.19									.18		.02	.20	.10		.08		.22	2.10
Albia‖‖	Des Moines	.06					T.	T.				.32	.12		.31						T.	T.		.07	.25		.22	.02	.04		T.	.21	1.62
Centerville	Chariton					T.	.04				T.	.63	.25	.30	.08				.01		.01		T.	.02			.18	.02		.12	.21	.02	1.89
Chariton (near)	Chariton										T.	.22		T.	.23								T.	.15			.22	T.	T.	T.		T.	0.82
Corydon (near)	Chariton						.08				.01	.23		*	.40									.23		.01	.21	.09				.06	1.32
Creston‖‖	Missouri						.15				.05	1.28		.10	.35	.01	T.							.15			.11	.03	T.	.05	.18	.01	2.47
Earlham (near)	Des Moines										T.	1.56		T.	.13	T.							T.	.60			.24	T.	.11		T.	.01	2.65
Indianola	Des Moines						T.				.08	.72		.06	.24						.05		.02	.22			.36	.16		.20		.08	2.19
Knoxville	Des Moines						T.				.10	.38		T.	.27						.08		T.	.30	T.		.18	.07		T.		T.	1.38
Lacona	Des Moines					.01					.05	.50		.06	.34									.12			.52	.05		.01		.02	1.68
Lamoni‖‖	Grand						.15	.02				.20	.16		.32									T.	.02		.12	.33			T.	.02	1.34
Melrose	Des Moines						.05					.26		.16	.25									.26		.52	.14	.52					2.16
Mount Ayr	Grand					.18					.03	.76		.15	.15									.06			.07	.04		.17			1.61
Tingley	Platte					T.	.12				.14	.76		.19	.10	T.								.12		T.	.14	.07		.12		.10	1.86
Winterset	Des Moines						T.				.06	1.54		.05	.10						T.		.03	.20		.05	.70	.02		.05		.12	2.92
Southeast District																																	
Bonaparte (near)	Des Moines						T.					.84	.03	T.	.31	.15		.07			T.			.24			.23	.02	T.	T.	.06	.11	2.06
Burlington‖ ‖	Mississippi	01.					.01	.03					.61		1.41	.09	.04		.14						.24			T.	.03	T.	.13	.07	2.81
Columbus Jct.	Iowa											.32		T.	.38	T.		.05						.16	.13		.03	.01		.13	.14	.02	1.37
Fairfield	Skunk						.05					.25		.18	.15			.06			.01			.20			.18			.09	.22	.20	1.59
Keokuk***	Mississippi	.05	T.				.14					.31	T.	.79	.05	.21		.05	.45		.05			.05			.02	.04		.21	.54	.01	2.97
Keokuk No. 2	Mississippi		.10				.16					.32	.01	.01	.98	.17			.42		.03			.08			.02	.10		.35	1.15	.03	3.93
Keosauqua	Des Moines						T.					.66	.03	.18	.24	.08		.15			T.			.04			T.	T.		.50	T.	T.	1.88
Mt. Pleasant	Skunk											.38			.66	.01		.01			.02			.14			.14	.02		T.	.04		1.42
Oskaloosa	Des Moines						T.		T.		T.	.23		.06	.33	T.					.05		T.	.31	.06		.07	.03	T.				1.14
Ottumwa	Des Moines						.04				T.	.03		.31	.06			T.			.03			.21			.22		T.	.29	.03	.18	2.00
Sigourney (near)	Skunk										T.	.67		.06	.29			T.						.23	.07		.40	T.	T.	.33			2.05
Stockport (near)	Skunk						.09					.38		.07	.21	.02		.14	.03		.06			.21	.01		.21	.02		.21	.02	.06	1.77
Washington	Skunk						T.					.60		T.	.03	T.		.02						.38	.18		.22	T.		.15	.07		1.65
Wever	Mississippi	.03	.01				.06					.44	.02	.01	.93	T.		T.	.48		.01			.20	.10			.07		.08	.05		2.49

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.

T. Precipitation is less than .01 inch or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level) Mean	Highest	Date	Lowest	Date	Relative Humidity, % Mean 7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	‡‡Wind Total movement	Average hourly velocity	Maximum Miles	From	Date	Sunshine % possible	Departure from normal
Chas. City	30.05	30.49	9	29.55	1	74	51	53	19	9	4,562	6.1	20	n.	1	61	— 1
Davenport	30.05	30.47	9	29.49	1	77	62	62	27	22	6,892	9.3	33	nw.	15	68	+ 6
Des Moines	30.03	30.50	9	29.53	1	78	50	51	27	4	5,055	6.8	20	sw.	22†	58	— 4
Dubuque	30.05	30.49	9	29.51	1	72	48	51	21	21	4,308	5.8	23	ne.	2	66	+ 8
Keokuk	30.06	30.47	9	29.55	1	73	56	59	29	5†	4,643	6.2	25	sw.	11	50	—16
Sioux City	30.03	30.49	9	29.60	26	76	49	47	27	6	8,030	10.8	37	nw	15	71	+13
Omaha,Nb	30.02	30.44	9	29.63	26	73	50	52	21	2	5,306	7.1	30	n.	1†	59	— 3
Means and extremes	30.04	30.50	9	29.49	1	75	52	53	19	9		7.4	37	nw.	15	62	0
Normals and records	29.95	*30.58	4th 1910	§29.02	‖17 1875	77		59	§10	3d 1889			¶67	nw.	'1st 1894	62	

*Dubuque §Omaha ‖Also Sioux City 9th, 1927 ¶Sioux City ‡Local mean time †And other dates.

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

PRECIPITATION

The average precipitation for the State, derived from the averages of nine divisions of nearly equal area and based on the records of 117 stations, was 2.47 inches or 2.11 inches less than the normal. The average was exactly the same as last May. The deficiency was general throughout the State and only five stations reported an excess, all being less than one inch. Very little precipitation occurred during the first week, but during the rest of the month showers occurred at frequent intervals though, as a rule, they were light. The heaviest rains over most of the State occurred on the 10th-11th, and over the northwestern portion on the 28th-29th. The greatest amount reported from a single station was 5.79 inches at Riverton, and the least was 0.82 inches at Chariton. The greatest amount occurring in 24 consecutive hours was 4.03 inches at Hawarden on the 28th-29th.

RIVERS

There was a continuous fall on the Mississippi River throughout the entire month. The mean for the month was slightly above normal, but stages were below normal at the end of the month; a general falling tendency prevailed on the principal interior streams but there were some fluctuations after the middle of the month. On the Missouri River falling stages prevailed during the greater portion of the month, though there were numerous slight fluctuations throughout the month. A rise occurred during the last week with the highest stages for the month on the last day.

Daily Maximum and Minimum Temperature for the Month of May, 1929

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	Maximum	63	56	56	55	60	63	67	68	65	62	65	76	76	74	75	65	70	73	59	63	69	77	76	74	81	79	81	85	80	84	86	70.4
	Minimum	39	30	28	30	30	41	45	47	33	49	48	45	46	55	37	30	46	47	33	42	39	50	59	43	54	59	65	68	57	53	59	45.4
Alta	Maximum	55	55	55	54	59	59	66	59	64	54	64	76	75	79	66	65	74	63	60	61	73	77	76	79	84	80	81	85	81	87	83	69.3
	Minimum	36	28	34	31	27	39	33	41	31	47	50	46	46	51	38	28	47	41	35	41	39	52	56	44	53	61	63	69	64	54	60	44.8
Alton	Maximum	60	56	55	53	59	60	65	58	60	55	64	73	72	80	78	63	75	70	61	57	70	80	73	78	82	82	84	80	81	85	83	69.4
	Minimum	40	27	36	29	25	42	28	45	29	50	50	40	46	47	39	28	49	56	36	40	36	54	57	42	55	61	65	63	65	50	58	44.8
Belmond	Maximum	56	53	53	53	59	60	65	56	64	57	64	73	72	71	66	59	68	65	57	60	68	74	75	71	80	76	78	86	80	82	85	67.3
	Minimum	39	31	26	27	28	40	26	41	28	48	52	44	41	54	36	30	45	47	29	42	35	49	60	44	53	58	65	67	65	55	57	43.9
Charles City	Maximum	54	51	50	50	57	59	62	55	62	59	63	72	72	67	66	58	65	56	55	61	69	73	72	68	75	74	78	87	83	83	84	65.8
	Minimum	39	35	30	31	31	38	30	37	31	48	50	44	46	53	33	31	44	37	31	41	37	48	48	44	51	56	65	66	68	58	58	43.8
Decorah	Maximum	63	50	50	51	56	58	60	56	65	61	63	77	72	67	68	59	65	61	57	63	73	70	72	73	75	74	77	87	84	85	84	67.1
	Minimum	40	38	28	27	31	32	26	41	27	46	50	39	44	51	37	31	44	44	27	36	32	44	53	39	45	53	61	61	69	58	54	42.2
Dubuque	Maximum	57	52	50	52	56	58	60	58	63	61	66	73	70	63	79	58	66	59	56	61	70	69	73	68	72	76	78	86	87	85	86	66.7
	Minimum	45	40	33	34	35	42	37	45	36	49	51	49	48	54	39	35	44	40	35	39	40	46	52	49	47	55	67	68	69	68	62	46.9
Forest City	Maximum	60	53	53	52	59	60	64	56	62	59	64	72	69	70	68	58	68	65	52	60	66	76	72	68	76	73	77	85	78	83	81	66.4
	Minimum	35	29	25	26	26	38	29	40	34	45	48	45	41	53	53	27	43	44	29	39	39	45	55	43	50	55	62	65	66	53	56	43.2
Independence	Maximum	72	51	51	52	57	59	62	62	61	69	62	71	70	67	73	57	71	67	56	60	68	71	74	71	76	75	87	88	85	84	83	67.8
	Minimum	40	36	31	31	31	42	32	43	34	46	51	46	62	54	42	32	48	51	32	41	42	46	56	45	54	56	66	66	70	63	61	46.8
Inwood	Maximum	51	57	56	56	60	61	65	59	59	55	64	74	75	83	72	64	78	67	67	59	72	83	76	77	83	82	80	80	80	84	81	69.7
	Minimum	37	24	35	27	25	41	25	41	26	48	45	41	45	44	37	24	48	42	37	34	35	54	54	41	54	60	65	60	62	48	55	42.5
Lake Park	Maximum	55	51	53	51	54	60	64	57	63	54	64	72	74	79	69	63	74	67	49	60	67	79	69	72	80	78	81	81	77	79	79	66.9
	Minimum	37	28	27	27	27	39	32	41	30	48	48	41	44	46	36	26	43	41	33	37	37	40	55	41	52	59	64	60	61	50	57	42.3
Mason City	Maximum	55	51	51	51	56	58	61	54	62	57	63	71	70	68	66	57	67	65	53	60	66	73	70	67	75	74	77	84	79	81	83	65.3
	Minimum	38	32	28	29	28	37	26	38	27	47	50	41	40	53	35	30	44	45	27	41	33	48	58	39	42	55	65	67	66	56	55	42.6
New Hampton	Maximum	66	51	50	50	56	58	60	58	62	58	61	73	69	65	69	56	64	61	54	61	60	70	73	74	73	73	75	83	79	81	81	65.4
	Minimum	38	36	28	27	28	39	28	43	28	45	52	42	44	52	37	30	43	46	30	41	36	46	57	44	48	53	63	60	63	57	56	43.2
Northwood	Maximum	55	51	50	50	55	57	62	55	63	59	64	71	71	70	63	58	67	65	55	60	68	75	70	70	75	75	79	86	80	81	78	65.7
	Minimum	38	32	28	30	30	38	32	43	33	47	50	47	43	53	38	29	42	45	30	41	40	46	58	45	49	49	63	67	65	55	64	43.9
Pocahontas	Maximum	58	56	55	55	60	59	68	58	65	56	64	75	75	76	70	63	73	65	57	60	69	78	76	74	81	79	82	84	81	85	83	69.0
	Minimum	39	30	34	29	27	42	39	43	30	48	52	46	42	52	38	29	48	47	31	43	36	50	58	63	51	60	64	69	65	51	56	45.5
Postville	Maximum	49	48	48	48	55	56	58	50	60	55	60	69	67	68	58	55	60	56	53	54	67	67	70	65	70	73	75	84	79	80	84	62.6
	Minimum	39	32	27	28	30	36	30	38	30	44	47	45	38	42	35	30	44	31	30	35	31	47	53	42	41	52	63	65	70	60	60	42.0
Rock Rapids	Maximum	58	56	55	52	60	62	63	58	55	61	65	74	75	80	74	64	77	65	59	60	71	81	73	78	84	82	81	80	79	83	83	69.3
	Minimum	37	26	34	26	27	42	26	42	48	48	45	40	44	42	37	27	46	42	35	35	33	43	52	39	53	59	64	61	62	49	55	42.5
Central Division																																	
Ames	Maximum	70	54	56	57	58	60	68	63	63	60	65	73	70	74	70	62	73	69	61	61	70	73	81	73	80	77	76	86	83	84	80	69.4
	Minimum	41	33	36	33	32	41	31	49	33	50	55	16	48	55	42	33	44	51	34	44	38	49	62	44	50	63	66	68	68	60	62	47.2
Belle Plaine	Maximum	63	55	56	58	59	61	68	65	65	63	64	72	72	71	77	61	73	63	61	63	73	72	78	72	79	79	78	90	88	87	82	69.9
	Minimum	40	37	33	28	27	42	30	43	32	47	57	46	48	56	41	34	43	50	31	47	34	42	59	44	53	63	67	67	70	61	61	46.2
Carroll	Maximum	64	56	58	57	60	59	67	65	61	61	64	75	72	74	71	61	71	67	60	60	67	73	83	76	79	78	79	86	80	83	79	69.2
	Minimum	39	28	31	33	28	38	33	46	33	46	51	46	46	54	39	31	48	48	33	41	36	53	58	45	51	59	63	66	66	54	58	45.2
Cedar Rapids	Maximum	64	53	55	57	60	60	67	66	64	64	65	74	70	68	78	61	70	64	59	64	72	73	77	69	78	79	77	88	88	88	83	69.5
	Minimum	43	40	31	29	29	41	29	47	32	48	57	46	51	54	41	34	43	49	33	41	32	38	57	47	50	57	67	67	71	65	60	46.1
Davenport	Maximum	60	51	53	57	58	58	65	68	64	68	71	73	71	66	82	59	68	61	55	60	71	71	73	68	77	80	79	89	88	87	82	69.0
	Minimum	44	41	34	35	37	46	41	48	44	50	58	57	55	55	40	37	45	43	37	41	43	51	60	50	51	60	70	69	72	72	69	50.2
Des Moines	Maximum	56	55	57	59	58	58	67	65	63	67	66	72	70	74	72	61	71	64	61	62	69	72	78	72	79	79	77	87	82	86	76	68.9
	Minimum	41	35	36	36	33	46	40	47	41	51	55	50	53	56	41	36	46	46	37	46	41	52	60	54	55	64	67	70	68	65	60	49.5
Ft. Dodge	Maximum	62	55	55	55	59	58	67	60	65	59	64	74	73	74	69	61	69	65	60	59	70	75	80	74	82	77	81	87	80	85	83	68.9
	Minimum	39	31	34	30	29	42	29	45	30	50	53	44	43	55	34	29	47	48	30	43	34	51	59	41	52	61	65	68	66	55	58	45.0
Grinnell	Maximum	69	54	54	55	55	57	67	65	65	63	78	71	71	72	75	60	72	67	60	61	69	72	78	72	79	78	75	87	85	86	78	69.4
	Minimum	39	35	34	28	26	41	31	40	35	46	52	45	49	53	41	31	42	51	30	41	39	44	58	45	51	60	65	64	68	62	62	46.1
Guthrie Center	Maximum	68	56	57	58	60	58	66	62	64	65	69	73	70	76	78	63	73	66	63	60	71	69	82	75	80	80	79	85	82	83	83	70.1
	Minimum	41	31	31	34	28	42	32	46	33	50	54	44	40	55	43	31	48	52	35	42	33	52	61	44	53	61	66	70	66	55	56	46.1
Iowa City	Maximum	64	51	54	57	58	58	66	68	65	66	67	73	70	68	79	61	69	64	60	64	72	72	75	71	78	81	77	89	86	86	81	69.5
	Minimum	44	41	33	31	30	44	33	48	37	48	58	53	51	55	42	35	44	52	33	41	35	42	59	48	53	61	68	67	72	67	65	48.1
Iowa Falls	Maximum	60	51	54	54	58	59	66	59	64	60	62	73	69	70	69	60	71	69	58	59	69	75	77	69	77	75	79	87	82	86	86	68.1
	Minimum	39	33	29	30	30	42	28	45	32	42	53	46	46	55	36	31	45	43	31	42	37	48	58	43	53	58	66	67	67	57	61	44.9
Little Sioux	Maximum	57	60	57	61	59	58	66	66	65	65	67	79	74	80	70	64	72	66	67	62	70	72	85	81	82	81	79	87	82	87	80	71.0
	Minimum	42	29	37	40	30	42	35	48	38	52	54	45	49	51	44	31	51	49	41	40	38	56	59	51	60	62	66	66	67	52	60	47.9
Marshalltown	Maximum	66	54	55	56	59	59	67	64	65	61	65	74	71	71	71	62	71	68	61	61	73	76	82	74	80	79	78	88	84	88	84	69.9
	Minimum	41	35	34	32	32	45	35	48	35	48	54	48	48	54	41	33	45	52	32	42	39	49	45	45	55	61	66	66	69	62	64	46.9
Olin	Maximum	66	54	54	57	61	62	67	67	64	64	70	75	74	68	78	61	70	64	62	64	74	72	73	69	76	78	87	88	87	87	85	70.3
	Minimum	44	39	31	28	30	40	29	45	35	46	55	49	50	54	42	34	38	49	33	38	32	38	58	43	48	57	66	65	70	66	61	45.6
Sioux City	Maximum	54	60	57	55	57	59	63	59	59	59	66	77	73	82	69	62	75	64	64	61	69	76	80	78	81	80	79	80	83	88	82	69.4
	Minimum	35	29	38	38	32	42	33	46	35	51	52	46	54	48	41	35	52	49	42	41	45	56	57	47	60	63	67	65	66	56	63	47.9
Southern Division																																	
Albia	Maximum	69	55	58	61	59	59	69	67	66	66	67	73	65	71	78	63	70	66	63	63	71	70	77	76	81	77	74	89	84	85	79	70.0
	Minimum	43	36	33	36	32	44	36	49	39	49	57	54	51	54	45	33	43	52	35	45	39	49	57	54	53	63	65	66	68	67	64	48.7
Atlantic	Maximum	63	59	60	60	58	59	65	65	66	64	65	72	71	74	68	61	71	65	64	62	70	68	79	77	80	81	80	85	80	84	78	69.5
	Minimum	42	29	32	38	32	41	33	45	33	52	54	44	43	55	40	30	46	51	33	41	34	52	58	47	52	61	65	67	66	55	60	46.2
Burlington	Maximum	65	53	58	60	59	57	70	70	69	71	74	67	65	71	84	64	70	65	61	61	73	73	75	77	84	85	76	90	89	83	83	71.0
	Minimum	47	43	37	39	35	45	40	52	47	48	60	56	54	55	45	36	45	53	41	42	44	49	59	57	53	64	68	66	71	69	67	51.2
Columbus Jct.	Maximum	66	53	54	58	58	57	66	67	68	68	69	70	67	68	81	59	68	63	57	60	69	71	73	70	77	79	77	86	86	82	78	68.5
	Minimum	45	42	35	35	32	44	35	47	48	40	60	54	51	55	45	35	42	53	35	41	36	44	58	52	52	61	68	66	71	69	65	48.9
Corning	Maximum	69	54	58	60	59	59	67	66	66	67	69	71	71	77	75	62	75	71	65	63	72	71	82	77	79	81	80	86	81	85	73	70.7
	Minimum	42	31	34	40	34	42	31	41	37	57	51	41	45	50	44	31	45	55	37	42	35	41	59	53	55	61	55	68	65	50	62	46.3
Corydon	Maximum	59	55	56	59	60	56	67	68	68	67	67	70	65	71	79	61	70	69	62	61	69	68	76	73	78	77	75	86	82	82	79	68.9
	Minimum	43	35	33	39	33	44	37	51	40	50	58	53	50	55	48	34	44	56	35	46	39	47	59	54	55	63	66	67	68	68	66	49.5
Creston	Maximum	63	55	57	69	57	56	65	60	63	66	63	69	64	73	73	63	72	65	62	61	68	69	78	75	77	78	78	85	80	83	73	68.4
	Minimum	41	31	32	37	38	42	34	49	36	49	54	49	51	54	43	32	43	54	36	43	42	46	59	53	54	61	65	67	66	61	63	47.9
Fairfield	Maximum	68	54	53	58	57	57	67	71	67	69	70	72	66	70	82	62	70	65	60	62	71	73	75	74	80	80	75	90	87	83	82	70.0
	Minimum	43	40	33	34	31	45	35	48	39	49	58	54	50	55	44	34	43	51	34	41	36	41	58	53	52	63	68	67	69	67	65	48.4
Keokuk	Maximum	62	55	56	57	60	55	67	67	66	70	76	65	61	73	84	59	74	64	56	61	70	72	76	73	78	81	75	87	86	85	83	69.5
	Minimum	43	44	37	42	37	46	42	52	47	50	59	56	54	56	42	37	45	46	43	44	44	49	59	58	54	65	68	67	71	69	68	51.4
Knoxville	Maximum	71	55	58	55	60	57	67	68	63	66	65	70	67	74	76	61	70	68	58	61	69	70	77	75	75	76	75	83	84	79	75	68.6
	Minimum	43	36	34	35	30	36	34	48	36	49	49	49	48	55	47	34	43	54	35	45	37	48	60	54	54	64	66	68	69	65	64	48.0
Lamoni	Maximum	61	54	57	60	57	56	64	64	66	66	66	68	61	73	78	62	73	69	65	62	68	73	78	76	79	77	77	85	82	82	79	69.0
	Minimum	42	32	32	38	33	42	35	50	39	51	56	52	48	54	46	33	43	48	35	44	40	47	58	53	55	61	63	66	65	65	63	48.0
Sigourney	Maximum	69	54	57	59	60	60	69	69	77	65	67	72	68	71	78	62	69	64	62	63	72	71	77	75	81	79	75	88	85	85	80	70.4
	Minimum	43	39	35	35	32	44	35	47	39	49	57	54	50	55	45	35	42	55	34	42	38	45	59	53	52	62	68	66	69	67	65	48.7
Thurman	Maximum	71	60	60	58	57	57	63	68	66	66	66	70	69	76	76	62	76	73	68	63	69	75	83	78	79	81	79	87	83	85	79	71.1
	Minimum	43	31	38	42	34	43	35	49	37	54	56	49	47	51	47	35	48	56	41	42	42	54	59	55	58	61	65	71	67	57	65	49.4
Winterset	Maximum	64	55	58	60	60	59	68	61	65	66	66	70	68	74	73	62	72	67	64	60	70	73	80	75	81	79	78	85	81	86	76	69.5
	Minimum	42	32	30	37	33	44	36	47	35	50	55	48	46	55	47	32	46	51	33	46	38	50	60	54	52	62	66	67	66	61	63	47.9
Omaha, Neb.	Maximum	57	59	59	58	56	55	64	70	65	66	66	73	72	78	69	62	76	66	67	61	69	74	84	80	81	80	79	86	83	86	73	70.1
	Minimum	40	33	40	43	43	42	43	49	44	54	55	52	51	55	43	38	51	54	44	43	45	58	62	57	62	62	66	69	69	62	66	51.5

IOWA STORMS, MAY, 1929

Date	County	Township	Nature of Storm	Time	Storm Moved From	Width of Path Miles	Length of Path Miles	Area of Sq. Miles	Size of Hailstones Inches	Damage	Persons Killed	Persons Injured
28	Lyon	Midland	Tornado	5:00 p. m.	SW to NE	.....	.....	.....	.....	$2,700	.....	.....
28	Plymouth	America	Wind	5:00 p. m.	.....	.....	.....	.....	.....	1,000	.....	.....
28	Osceola	W. Holman, E. Holman, Wilson	Wind	.....	.....	.....	.....	.....	.....	2,000	.....	.....
28	Clay	Lone Tree, Waterford, Meadow, Lake	Wind	5:00 p. m.	S to N	.....	5	.....	.....	1,300	.....	.....
28	Palo Alto	Lost Island	Wind	p. m.	.....	.....	.....	.....	.....	200	.....	.....

MISCELLANEOUS PHENOMENA

Fog: 14th, 21st.

Frost: 1st, 2d, 3d, 4th, 5th, 7th, 9th, 12th, 15th, 16th, 19th, 21st.

Hail: 11th, 15th, 19th, 23d, 28th, 29th.

Halos (lunar and solar): 4th, 8th, 9th, 12th, 13th, 16th, 17th, 18th, 21st, 30th, 31st.

Haze: 23d.

Rainbow: 12th, 28th, 29th.

Sleet: 20th.

Thunderstorms: 4th, 10th, 11th, 13th, 14th, 15th, 17th, 19th, 20th, 23d, 25th, 26th, 28th, 29th.

Tornado: 28th.

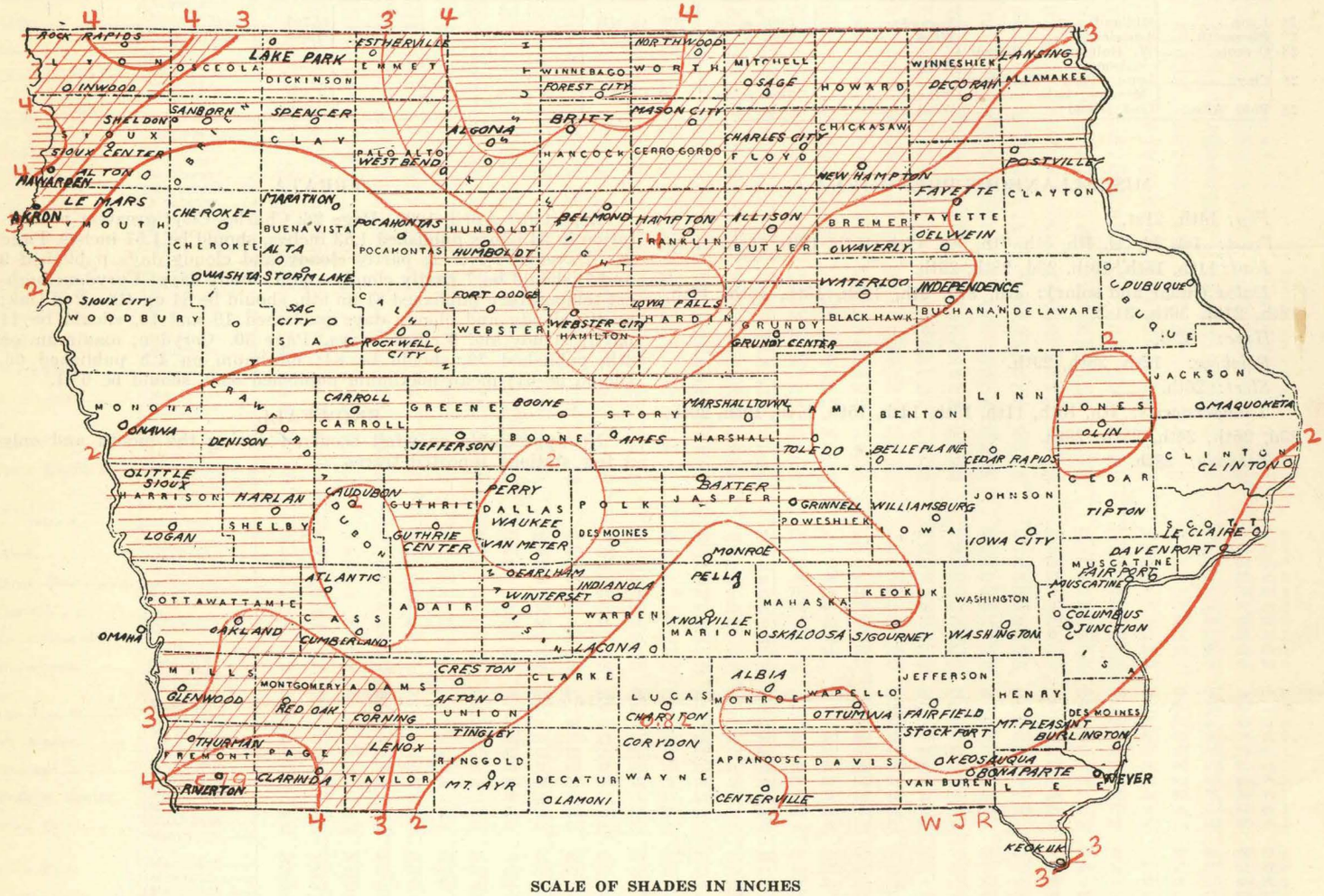
ERRATA

Report for April, 1929. Page 26. Charles City; greatest precipitation in 24 hours published 1.53 inches, should be 1.57 inches. Page 27. Davenport No. 2; partly cloudy and cloudy days published 9 and 7, should be 7 partly cloudy and 9 cloudy days. Corydon; highest temperature published 81 on 6th, should be 84 on 4th. Red Oak; partly cloudy and cloudy days published 10 and 10, should be 11 partly cloudy and 9 cloudy days. Page 30. Corydon; maximum on 4th, published 79, should be 84; minimum on 4th published 60, should be 61; mean maximum published 63.0, should be 63.1.

SNOWFALL

No appreciable snowfall occurred during the month and only a few stations reported traces.

TOTAL PRECIPITATION, MAY, 1929



SCALE OF SHADES IN INCHES

Less than 2	2 to 3	3 to 4	More than 4

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Meteorologist

VOL. XL · DES MOINES, IOWA, JUNE, 1929 · No. 6

GENERAL SUMMARY

June, 1929, averaged below normal, it being the fourth month of the current year that has been deficient in temperature, though the deficiency was less than any other month. Most of the deficiency was due to a rather protracted cool period extending from the 1st to the 8th. Cool weather also prevailed on the 12th and 13th and during most of the fourth week; the principal warm period extended from the 15th to 19th, though the warmest day occurred generally on the 10th, 29th or 30th. There was no unseasonably warm weather during the entire month and on the warmest days the humidity was generally low and for the entire month it was considerably below normal.

The average precipitation was slightly in excess of two-thirds of the normal, and in a large portion of the State the amounts were less than one half of the normal. There was an excess along the border in the western, southern and eastern portions of the State. The principal excess occurred in Woodbury County and a small surrounding area; the other areas extended in a narrow strip from Page County eastward and along the Mississippi River northward to Dubuque County, except portions of Louisa and Muscatine counties. The rainfall was very unevenly distributed and there was a wide range in the amounts and time of occurrence, the number of days with appreciable rainfall ranging from four to eighteen. A large per cent of the rainfall occurred in the form of heavy downpours and drouthy conditions developed in a large portion of the central and north-central districts. As a rule, the downpours were accompanied by other damaging conditions consisting of wind, hail, lightning and floods over limited areas, and one tornado was reported. Storms of a damaging nature occurred on eleven days in some parts of the State, and on the 11th, 16th, 27th and 30th the damage was severe. The storm of the 11th affected most of the northern half of the State and a small area in the southeastern district. The damage resulted from hail, wind and floods in small streams. The extreme northwestern portion of the State was the hardest hit by this storm and the crop damage in Sioux and Lyon counties amounted to about $1,000,000. The next storm of consequence occurred on the 16th and the area of greatest damage occurred from Monona to Sioux counties. In addition to severe hail and wind, this storm was accompanied by excessive downpours and severe damage from floods over much of the area. Many business houses had flooded basements and also dwellings were inundated, and after the water receded there was left a heavy deposit of mud. The hail in this storm was unusually severe. The stones were large and broke many windows, beat roofs to pieces, stripped houses of spouting, and ruined automobile tops. The damage in Monona and Woodbury counties amounted to more than $750,000. On the 27th, wind and hail caused damage in a strip running from Carroll to Story Counties, and a large area in the northeastern portion of the State, the greatest damage being in Clayton and Dubuque Counties. On the last day of the month storms were active in the west-central and east-central portions of the State. In the west the greatest damage came from hail, and in the east strong gusts of wind blew down poles and trees and damaged small buildings.

The condition of the principal crops was satisfactory even in the portions of the State where the rainfall was light, as there seemed to be an abundance of subsoil moisture. Corn was very uneven in size, ranging at the close of the month from too tall to cultivate to two inches. It was most backward in some south-central and southwest counties, where continued wet soil delayed planting, but the average condition was good and cultivation had progressed satisfactorily; pastures were good and rank in some portions of the State; hay promised well though there was some damage from rain; in portions of the State the strawberry crop was cut short by dry weather; potato and truck crops were promising.

F. L. D.

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
1873	74.5	+ 5.2	96	56	4.68	+ 0.18	8.40	1.20					
1874	71.4	+ 2.1	98	47	5.83	+ 1.33	8.55	2.60					
1875	67.5	— 1.8	92	45	7.81	+ 3.31	10.80	1.63					
1876	67.6	— 1.7	92	41	4.09	— 0.41	10.34	0.25					
1877	66.9	— 2.4	92	40	6.80	+ 2.30	13.12	3.21					
1878	66.7	— 2.6	94	44	6.34	+ 1.84	11.60	2.78					
1879	69.4	+ 0.1	92	40	5.12	+ 0.62	10.60	1.47					
1880	71.0	+ 1.7	96	42	4.40	— 0.10	11.12	1.03					
1881	70.4	+ 1.1	100	40	7.37	+ 2.87	17.37	2.75					
1882	68.1	— 1.2	98	33	7.48	+ 2.98	15.41	2.93					
1883	67.6	— 1.7	96	38	6.69	+ 2.19	14.20	1.30					
1884	70.2	+ 0.9	95	36	3.65	— 0.85	8.80	0.70					
1885	67.9	— 1.4	89	42	5.08	+ 0.58	11.04	1.31					
1886	69.3	0.0	98	34	1.73	— 2.77	3.42	0.10					
1887	72.1	+ 2.8	103	40	2.93	— 1.57	7.92	0.96					
1888	69.4	+ 0.1	102	34	2.93	— 1.57	6.01	0.96					
1889	66.7	— 2.6	98	33	4.75	+ 0.25	9.87	1.69					
1890	72.2	+ 2.9	106	39	6.67	+ 2.17	16.53	1.57		11	12	10	8
1891	69.1	— 0.2	99	37	5.39	+ 0.89	19.88	1.68		11	8	10	12
1892	69.2	— 0.1	102	42	5.19	+ 0.69	14.16	0.67		10	12	11	7
1893	71.2	+ 1.9	100	40	3.91	— 0.59	7.56	1.36		8	15	11	4
1894	73.2	+ 3.9	104	34	2.67	— 1.83	6.20	0.57		7	16	10	4
1895	69.7	+ 0.4	102	34	4.32	— 0.18	9.26	0.98		10	11	11	8
1896	69.1	— 0.2	100	40	3.11	— 1.39	7.89	0.81		9	12	13	5
1897	69.1	— 0.2	103	29	3.81	— 0.69	9.38	1.03		10	10	12	8
1898	71.4	+ 2.1	99	42	4.72	+ 0.22	12.48	1.90		9	13	10	7
1899	70.7	+ 1.4	100	42	5.04	+ 0.54	11.99	1.10		10	12	13	5
1900	69.7	+ 0.4	102	38	3.98	— 0.52	12.35	0.67		5	17	10	3
1901	72.3	+ 3.0	106	30	3.71	— 0.79	7.84	1.05		9	15	11	4
1902	65.2	— 4.1	97	32	7.16	+ 2.66	16.04	1.46		14	8	11	11
1903	64.6	— 4.7	96	30	2.86	— 1.64	6.04	0.75		10	13	10	7
1904	67.1	— 2.2	94	35	3.45	— 1.05	8.35	0.44		7	13	10	7
1905	69.9	+ 0.6	100	36	5.53	+ 1.03	14.89	1.80		10	12	11	7
1906	67.9	— 1.4	99	37	3.92	— 0.58	8.27	1.48		8	15	10	5
1907	66.5	— 2.8	98	36	5.35	+ 0.85	9.33	2.07		11	14	9	7
1908	67.1	— 2.2	94	35	5.66	+ 1.16	11.88	1.77		13	12	10	8
1909	69.1	— 0.2	96	40	6.41	+ 1.91	13.30	2.80		13	12	10	8
1910	69.5	+ 0.2	105	33	1.99	— 2.51	5.51	0.05		7	18	7	5
1911	75.7	+ 6.4	108	36	1.82	— 2.68	6.28	0.06		5	20	8	2
1912	66.2	— 3.1	101	34	2.74	— 1.76	5.71	0.78		7	15	9	6
1913	71.5	+ 2.2	102	33	3.31	— 1.19	8.95	0.74		7	19	8	3
1914	72.2	+ 2.9	101	40	5.57	+ 1.07	13.24	1.17		13	12	14	4
1915	65.1	— 4.2	91	31	4.16	— 0.34	9.99	1.72		11	12	12	6
1916	64.5	— 4.8	96	38	3.71	— 0.79	7.96	1.41		10	13	11	6
1917	66.0	— 3.3	100	32	6.65	+ 2.15	13.82	3.04		12	13	10	7
1918	70.8	+ 1.5	104	38	5.29	+ 0.79	10.19	1.55		11	16	10	4
1919	71.9	+ 2.6	98	41	6.13	+ 1.63	12.25	1.82		13	12	12	6
1920	70.7	+ 1.4	99	40	3.56	— 0.94	8.48	1.25		9	16	10	4
1921	74.7	+ 5.4	100	40	3.76	— 0.74	8.85	0.56		9	16	10	4
1922	72.2	+ 2.9	104	38	1.82	— 2.68	7.19	0.28		6	19	8	3
1923	70.9	+ 1.6	100	40	4.93	+ 0.43	7.69	2.43		12	14	10	6
1924	66.8	— 2.5	96	35	8.10	+ 3.60	14.92	4.00		14	11	14	5
1925	70.4	+ 1.1	98	38	6.64	+ 2.14	13.30	2.99		12	15	9	6
1926	66.2	— 3.1	105	32	4.52	+ 0.02	12.09	1.05		8	16	9	5
1927	66.4	— 2.9	101	35	2.42	— 2.08	7.05	0.55		9	16	7	7
1928	64.5	— 4.8	88	31	5.38	+ 0.88	10.31	2.31		12	10	10	10
1929	67.6	— 1.7	99	38	3.08	— 1.42	8.47	0.82		9	14	9	7

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

Climatological Data for June, 1929

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		
Northwest District																				
Akron	Plymouth	1,153	2								3.50	— 0.79	1.13	0	12	17	8	5	se.	Orlan C. Moore
Alta	Buena Vista	1,513	37	66.8	— 1.0	94	29	42	3†	38	3.13	— 2.03	1.06	0	10	17	6	7	s.	D. E. Hadden
Alton	Sioux	1,305	23	66.6	— 1.8	94	29	40	13	38	3.85	— 0.11	1.61	0	12	5	16	9	e.	W. S. Slagle
Cherokee	Cherokee	1,196	8	65.2	— 2.3	91	29	40	3	37	3.65	— 0.79	0.76	0	11	12	11	7	s.	J. E. Wirth
Estherville	Emmet	1,298	33	66.4	— 0.5	94	17	42	13	40	1.18	— 2.86	0.55	0	7	19	10	1	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								3.42	— 1.01	1.06	0	11	7	5	18	se.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	65.8	— 1.9	95	29	43	13	39	3.03	— 2.28	1.80	0	11	19	8	3	s.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	64.2	— 3.1	88	17	41	13	34	1.89	— 2.01	0.76	0	8	13	6	11	nw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	67.4	— 1.2	94	29	42	13	37	3.51	— 0.87	1.89	0	14	17	4	9	s.	Henry Newell
Marathon	Buena Vista	1,390	2								3.38		0.97	0	8	11	10	9	sw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	66.5	— 1.8	91	10†	38	3	41	2.63	— 2.01	1.14	0	10	20	3	7	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	65.2	— 2.7	92	29	40	13	40	2.42	— 2.20	0.57	0	11	19	7	4	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	64.3	— 3.4	88	29	38	3	35	4.29	— 0.44	1.40	0	14	6	12	12	sw.	J. W. Dow
Sheldon	O'Brien	1,418	17	65.4	— 2.1	92	29	40	13	39	4.01	— 0.39	1.46	0	13	16	7	7	nw.	Ross E. Forward
Sioux Center	Sioux	1,461	29	65.6	— 1.9	90	29†	42	3†	34	2.90	— 1.16	1.10	0	5	12	14	4	se.	F. C. Aue
Spencer§	Clay	1,319	14	67.2	— 1.3	93	29	40	13	38	2.19	— 2.01	0.53	0	12	7	15	8	sw.	E. W. Little
Storm Lake‡‡	Buena Vista	1,438	39	67.0	— 1.5	91	29	41	3	39	2.96	— 2.04	1.04	0	12	12	9	9	se.	L. B. Florey
Washta	Cherokee	1,157	30	65.0	— 3.1	91	29	38	13	38	6.34	+ 1.76	2.05	0	14	16	8	6	s.	H. L. Felter
West Bend	Palo Alto	1,197	35	66.4	— 2.0	89	10†	42	3†	34	1.99	— 2.30	0.87	0	10	17	7	6	nw.	Jos. Dorweiler
Means and extremes				65.9	— 2.0	95	29	38	3†	41	3.19	— 1.29	2.05	0	11	14	9	7	s.	
North Central District																				
Algona	Kossuth	1,224	55	68.3	— 0.3	92	10	44	3	34	2.62	— 1.89	0.84	0	6	23	3	4	se.	W. E. Laird
Allison‡‡	Butler	1,060	14																	E. W. Detra
Belmond	Wright	1,181	18	65.7	— 2.8	91	9†	39	3	45	1.85	— 2.91	0.72	0	8	13	5	12	nw	H. F. Luick
Britt	Hancock	1,236	41	65.5	— 1.9	94	10	42	3	36	1.53	— 3.00	0.56	0	6	15	4	11	sw	E. P. Healy
Charles City	Floyd	1,015	37	65.6	— 0.9	89	10	41	3	36	1.19	— 3.14	0.46	0	8	11	12	7	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	65.3	— 2.5	91	10	41	3	37	1.81	— 2.74	0.83	0	7	7	11	12	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								2.01	— 2.93	0.94	0	4					L. H. Davis
Humboldt	Humboldt	1,095	40	66.6	— 2.7	91	17	42	8	39	2.41	— 1.97	1.02	0	5	10	14	6	s.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	61.8	— 2.8	89	10	39	3	38	1.15	— 3.69	0.58	0	9	8	14	8	sw.	American Beet Sugar Co.
Northwood	Worth	1,222	32																	Charles Dwelle
Osage	Mitchell	1,163	34	65.4	— 1.8	90	10	39	3	38	1.23	— 3.52	0.40	0	9	7	14	9	sw.	Dr. C. E. Juhl
Means and extremes				65.9	— 1.9	94	10	39	3	45	1.82	— 2.80	1.02	0	7	12	10	8	sw.	
Northeast District																				
Decorah	Winneshiek	872	35	61.8	— 3.2	89	10	39	3†	38	1.61	— 2.88	0.40	0	9	14	12	4	nw.	M. D. Whitney
Dubuque	Dubuque	700	55	66.4	— 3.0	87	30	43	3	27	4.69	+ 0.38	2.23	0	8	8	11	11	s.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	66.6	— 0.7	90	10†	38	3	40	1.78	— 3.06	0.57	0	7	16	8	6	nw.	R. Z. Latimer
Independence	Buchanan	956	61	66.9	— 1.4	89	17	39	3	36	2.38	— 2.24	1.04	0	7	17	3	10	se.	Dr. Geo. Boody
Lansing	Allamakee	632	21								3.26	— 1.22	0.69	0	11					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31								1.26	— 3.31	0.40	0	6	2	23	5	nw.	D. W. Dawson
Oelwein	Fayette	1,036	5	66.4	— 1.4	90	17	39	3	36	2.02	— 2.44	0.50	0	7	6	13	11	s.	John T. Ridler
Postville (near)	Clayton	1,192	29	62.8	— 2.9	84	10†	38	3	31	2.35	— 2.31	0.77	0	7	14	13	3	sw.	F. L. Williams
Waterloo	Black Hawk	854	45	67.4	— 2.0	92	10	40	3	39	1.00	— 3.13	0.53	0	5	15	8	7	se.	R. B. Slippy
Waverly	Bremer	936	32	67.2	— 1.0	90	10†	41	3	38	1.85	— 2.42	0.63	0	9	26	3	1	n.	D. H. Murphy
Means and extremes				66.1	— 1.9	92	10	38	3	40	2.22	— 2.27	2.23	0	8	13	11	6	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	67.4	— 0.9	94	30	41	3	33	3.99	— 0.03	1.06	0	11	16	9	5	s.	George Kibby
Carroll	Carroll	1,265	38	66.8	— 1.6	90	30	41	3	33	3.62	— 1.16	0.80	0	10	21	4	5	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	67.8	— 1.3	95	30	43	3†	33	3.55	— 0.54	1.08	0	12	14	10	6	nw.	V. L. Byers
Guthrie Center	Guthrie	987	33	68.6	— 0.4	99	30	41	4	37	2.96	— 1.50	1.20	0	6	16	10	4	e.	Floyd H. Bainter
Harlan	Shelby	1,192	29	67.4	— 1.7	94	30	43	3	36	3.18	— 1.45	1.26	0	12	9	14	7	s.	Walter Bell
Jefferson	Greene	1,052	29	67.2	— 2.0	89	17†	42	3†	33	2.07	— 2.13	0.78	0	7	11	7	12	sw.	W. I. Lyon
Little Sioux	Harrison	1,040	23	69.0	— 1.1	97	30	44	3†	34	3.96	— 0.30	0.84	0	15	11	13	6	s.	H. W. Kerr
Logan	Harrison	1,120	61	68.3	— 1.5	96	30	43	3	35	3.12	— 2.06	0.72	0	11	6	22	2	sw.	Amy Ann Stern
Onawa	Monona	1,051	27	67.8	— 2.2	95	30	41	13	37	5.63	+ 0.95	1.28	0	12	14	3	13	se.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32																	A. W. McIsaac
Sac City	Sac	1,269	52																	F. P. Kessler
Sioux City	Woodbury	1,135	39	67.6	— 1.9	96	29	40	3	33	8.47	+ 4.48	2.20	0	18	7	12	11	s.	U. S. Weather Bureau
Means and extremes				67.8	— 1.5	99	30	41	3†	37	4.06	— 0.42	2.20	0	11	13	10	7	s.	
Central District																				
Ames	Story	926	51	68.4	— 1.5	91	17†	42	3	37	2.66	— 1.71	1.01	0	6	21	3	6	s.	Iowa State College
Baxter‡‡	Jasper	998	28	68.0	— 1.6	91	17	39	3	35	2.10	— 2.49	1.05	0	8	12	16	2	ne.	F. A. Kanne
Boone (near)	Boone	894	23	66.7	— 2.3	92	30	39	4	39	1.56	— 2.97	0.63	0	9	10	15	5	s.	C. F. Henning
Des Moines	Polk	861	50	69.0	— 1.6	94	30	43	3	33	2.42	— 2.34	0.88	0	10	9	12	9	s.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	66.8	— 2.2	90	10	43	3†	36	2.15	— 2.27	0.81	0	6	14	7	9	sw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	67.3	— 2.3	91	19†	39	3	40	1.89	— 2.66	0.74	0	5	16	10	4	sw.	R. E. Bates
Grundy Center	Grundy	976	37	67.4	— 2.3	90	17	41	3	38	1.69	— 3.39	0.90	0	6	16	8	6	w.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	66.7	— 1.2	91	10†	42	3	39	1.81	— 3.65	0.74	0	4	11	11	8	s.	C. H. Gilbert
Marshalltown	Marshall	947	36	68.4	— 1.9	92	17	42	3	36	1.49	— 3.08	0.78	0	8	10	11	9	sw.	C. C. Pigman
Monroe	Jasper	922	16	68.4	— 1.4	92	30	40	3	36	1.59	— 2.91	0.78	0	5	18	2	10	s.	J. A. Dibel
Perry	Dallas	975	27	67.6	— 2.9	92	30	40	3	39	1.84	— 2.58	0.63	0	7	13	12	5	sw.	Eugene N. Hastie
Toledo	Tama	847	34	67.0	— 2.9	91	16†	39	3	40	0.82	— 3.70	0.30	0	7	15	9	6	ne.	H. P. Giger
Van Meter	Dallas	872	9								2.88		0.90		7					Calvin K. Smith
Waukee	Dallas	1,032	25	68.4	— 1.1	95	30	40	3	36	1.99	— 2.10	0.57	0	7	19	9	2	s.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	66.6	— 2.6	91	10†	40	4†	43	1.57	— 2.68	0.50	0	9	13	11	6	nw.	Frank A. Bonebright
Means and extremes				67.6	— 2.0	95	30	39	3†	43	1.90	— 2.68	1.05	0	7	14	10	6	s.	

Climatological Data for June, 1929—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		
East Central District																				
Belle Plaine	Benton	856	38	67.8	— 1.4	91	29	40	3†	42	1.56	— 2.79	1.01	0	9	14	10	6	sw.	O. C. Burrows
Cedar Rapids	Linn	737	46	66.9	— 2.2	90	30	39	4	42	1.32	— 3.03	0.94	0	6	9	6	15	sw.	J. T. Wurster
Clinton	Clinton	595	55	68.0	— 2.4	90	18	41	3	34	4.38	— 0.01	2.78	0	9	14	5	11	s.	Dr. A. P. Bryant
Davenport	Scott	580	57	69.0	— 1.5	89	19	12	3	28	4.30	+ 0.19	2.20	0	11	8	11	11	ne.	U. S. Weather Bureau
Davenport No. 2	Scott	690	3	68.9		91	18	41	3	37	4.38		2.06	0	12	16	6	8	sw.	Rex Shriver
Fairport	Muscatine	567	7	68.4	— 2.0	89	30	39	3	30	3.26	— 1.01	1.06	0	10	11	8	11	s.	Bureau of Fisheries
Iowa City	Johnson	733	68	68.0	— 1.1	90	30	41	3	35	3.14	— 1.35	1.43	0	8	14	8	8	nw.	Prof. J. F. Reilly
Le Claire	Scott	576	28								4.50	+ 0.34	3.54	0	9					Margaret T. Disney
Maquoketa (near)	Jackson	692	23																	John Strodthoff
Muscatine	Muscatine	516	67								2.74		1.05	0	8					William Molis
Olin	Jones	760	29	66.8	— 2.7	94	30	38	3	40	3.23	— 0.95	1.25	0	7	17	6	7	sw.	Mrs. L. Stingley
Tip on (near)	Cedar	806	29	67.8	— 2.9	94	18	39	3	37	4.58	+ 0.48	1.90	0	7	6	21	3	s.	John Kroeplen
Williamsburg	Iowa	770	12	67.4	— 1.0	91	17	38	3	41	3.14	— 1.36	1.61	0	7	20	7	3	sw.	Dr. F. C. Schadt
Means and extremes				67.9	— 1.6	94	18†	38	3	42	3.38	— 0.96	3.54	0	8	13	9	8	sw.	
Southwest District																				
Atlantic	Cass	1,110	37	68.2	— 1.2	97	30	41	4	41	2.65	— 2.41	1.22	0	13	11	16	3	nw.	Roy L. Fancolly
Bedford	Taylor	1,200									4.31	+ 0.22	1.50	0	10	20	3	7	s.	Arthur L. Bishop
Clarinda	Page	1,009	38	69.8	— 1.6	95	30	44	4	35	5.46	+ 0.75	1.47	0	14	19	6	5	s.	Dr. H. C. Hawley
Corning	Adams	1,150	36	69.2	— 0.3	96	30	41	4	38	2.36	— 1.77	0.65	0	10	18	8	4	sw.	J. A. Wilson
Cumberland (near)	Cass	1,225	29								2.75	— 1.57	0.69	0	11	17	8	5	s.	Carl E. Pollock
Glenwood	Mills	1,100	30	69.8	— 0.6	96	30	44	4	34	4.00	— 0.87	1.14	0	9	13	13	4	sw.	George Mogridge
Lenox	Taylor	1,250	33	69.6	— 1.2	97	30	43	4	36	4.42	+ 0.25	1.70	0	10	19	7	4	se.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	68.1	— 2.1	95	30	44	3†	35	3.38	— 1.42	1.46	0	8	17	4	9	sw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3								5.00	+ 0.35	1.18	0	10	12	12	6	s.	B. R. Bridge
Riverton (near)	Fremont	920	2								4.85	— 0.01	2.30	0	8	17	4	9	s.	Geo. C. Rader
Thurman	Fremont	960	31	70.7	— 1.4	96	30	46	4	35	3.59	— 1.61	1.16	0	10	18	6	6	s.	H. H. Askew
Omaha, Neb.		1,105	57	70.6	— 1.0	97	30	47	3	30	2.94	+ 1.62	0.80	0	14	11	11	8	s.	U. S. Weather Bureau
Means and extremes				69.5	— 1.2	97	30	41	4	41	3.81	— 0.81	2.30	0	11	16	8	6	s.	
South Central District																				
Afton	Union	1,212	34	69.1	— 0.3	97	30	42	3	33	3.48	— 1.45	1.55	0	12	18	7	5	sw.	S. R. Brown
Albia	Monroe	949	30	68.8	— 1.6	95	30	40	3	32	3.21	— 1.11	1.43	0	10	7	7	16	ne.	O. E. McBride
Centerville	Appanoose	1,013	23	70.0	— 0.5	94	30	42	4	33	4.94	+ 0.54	3.35	0	9	17	7	6	sw.	Thomas Wood
Chariton (near)	Lucas	1,042	33	68 6	— 0.2	95	30	41	3	34	2.61	— 1.77	1.92	0	4	13	14	3	sw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	68.4	— 1.8	94	30	42	3	30	2.90	— 1.74	2.99	0	8	14	8	8	nw.	J. C. Davis
Creston	Union	1,291	23	67.8	— 0.9	93	30	41	3	32	3.84	— 1.11	1.49	0	15	13	12	5	s.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	66.8	— 1.7	94	30	39	4	40	2.55	— 1.88	0.89	0	6	22	4	4	sw.	George Phillips
Indianola	Warren	972	37	69.0	— 1.0	97	30	40	3	38	2.28	— 2.16	0.95	0	9	14	11	5	s.	Seth F. Shenton
Knoxville	Marion	920	33	68.6	— 1.9	95	30	41	3	36	1.52	— 2.58	0.54	0	5	18	6	6	se.	W. J. Casey
Lacona	Warren	824	29								2.86	— 1.71	1.02	0	10	10	16	4		J. B. Alter
Lamoni	Decatur	1,123	21	68.4	— 1.2	94	30	41	3	31	5.60	+ 0.75	2.87	0	10	15	12	3	sw.	F. S. Parks
Melrose	Monroe	871									3.25		1.52	0	5	20	5	5	sw.	J. M. Carr
Mount Ayr	Ringgold	1,220	35	68.1	— 1.9	92	11†	42	3	31	4.40	— 0.34	2.39	0	9	22	3	5	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	69.0	— 0.8	94	30	42	3	31	4.01	— 0.66	2.05	0	11	17	10	3	se.	James A. Verploegh
Winterset	Madison	1,118	37	68.8	— 1.6	95	30	40	3	35	3.02	— 1.85	0.98	0	7	22	4	4	sw.	H. S. Ely
Means and extremes				68.6	— 1.2	97	30	39	4	40	3.36	— 1.19	3.35	0	9	16	8	6	sw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	67.8	— 2.3	93	31	40	3	29	5.37	+ 1.01	3.46	0	9	20	4	6	s.	B. R. Vale
Burlington	Des Moines	544	32	70.4	— 1.3	95	30	42	3	30	5.24	+ 0.95	1.68	0	13	17	7	6	sw.	John T. Donnelly
Columbus Junction	Louisa	595	27	67.2	— 3.5	89	30	41	3	32	4.14	— 0.16	1.42	0	13	13	13	4	sw.	Miss Musa Todd
Fairfield	Jefferson	780	44	68.4	— 1.4	94	30	38	3	36	2.43	— 2.40	1.58	0	5	11	9	10	nw.	R. M. McKenzie
Keokuk	Lee	614	57	70.0	— 2.5	94	30	43	3	28	3.91	— 0.22	1.43	0	11	9	7	14	s.	U. S. Weather Bureau
Keokuk No. 2	Lee	651		70.5		97	30	42	3	29	5.18		1.42	0	13					J. N. D. Dickinson
Keosauqua	Van Buren	639	36	68.4	— 1.8	97	30	40	4	34	5.73	+ 1.26	4.61	0	5	12	14	4	nw.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	69.2	— 2.4	95	30	39	3	30	3.18	— 1.85	1.39	0	11	12	13	5	sw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	68.2	— 1.4	94	30	41	3	35	2.76	— 1.22	1.06	0	8	13	9	8	sw.	Roy R. Robinson
Ottumwa	Wapello	649	33	68.8	— 2.9	96	30	43	3	36	2.96	— 1.05	1.67	0	8	15	9	6	sw.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	68.4	— 1.3	95	30	40	3	37	2.08	— 2.18	0.57	0	7	17	3	10	nw.	W. E. Utterback
Stockport (near)	Van Buren	747	26	68.4	— 1.3	96	30	40	3	39	3.39	— 1.10	1.82	0	9	18	5	7	s.	C. L. Beswick
Washington	Washington	757	46	68.5	— 1.7	91	30	39	3	31	4.22	+ 0.31	1.46	0	10	14	8	8	sw.	D. D. Sherman
Wever	Lee	552		69.4		97	30	40	3	33	5.34		2.50	0	8	9	7	14	s.	H. G. Liddle
Means and extremes				68.8	— 1.8	97	30	38	3	39	4.00	— 0.34	4.61	0	9	14	8	8	sw.	
State means and extremes				67.6	— 1.7	99	30	38	3	45	3.08	— 1.42	4.61	0	9	14	9	7	s.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area, and based on the records of 101 stations, was 67.6°, or 1.7° lower than the normal. All stations reported a deficiency and the range of the deficiency in the several districts was less than usual. The highest monthly mean was 70.7° at Thurman, and the lowest was 62.8° at Postville. The absolute range for the State was 61°, from 99° at Guthrie Center on the 30th, to 38° at Fairfield, Fayette, Olin, Pocahontas, Postville, Sanborn and Williamsburg on the 3d, and Washta on the 13th. The average number of days with the temperature 90° or higher, was 2. The number ranging from 7 at three stations to none at 15. The southwestern district had the greatest number, 5, and the north-central and northeastern 1.

Daily Precipitation for June, 1929

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	
Northwest District																																	
Akron	Big Sioux	.08	.27		.10		.13	.45					.46		.13	.05	T.	.20	1.13		T.		T.		.15		.35						3.50
Alta	Raccoon		.55					.48				.18	.10				.40	.10	.17				.02		.07			1.06				3.13
Alton	Floyd		.10		T.		.09	.37				.22	.43		.03	.15	.24		1.61		.06		.02	T.	T.		.53	T.			T.		3.85
Cherokee	Little Sioux	T.	.38		T.		T.	.76				.20	.22			.06	.41	.20	.67		T.		.02	T.	.05	T.	.68				T.		3.65
Estherville	Des Moines	.05						.10				.25	.55						.30				T.	.05			.18						1.48
Hawarden	Big Sioux	.04	.06				.41	.37				.26	.21				.47		1.06		.02			T.	.10		.42				T.		3.42
Inwood (near)	Big Sioux		.11					.24				.75	1.05					.01	.42		.24				.02	.01		.14	.04				3.03
Lake Park (near)	Little Sioux		T.				.16	.02				.35	.15						.76		.09			T.	T		.10	T.			.26		1.89
Le Mars	Floyd	.15	.19	T.	.05		.28	.32				.06	.21			.02	.21	T.	1.89	.03			.03	T.	.06			.01					3.51
Marathon	Raccoon	.39					.26	T.				.40				.97	.14	.14					T.				.84	T.			.24		3.38
Pocahontas	Des Moines		.26				.03	.43				.27	.02				.42	.03	T.	T.			T		.03		1.09	.05					2.63
Rock Rapids	Big Sioux						.42					.27	.45		.05		.05	.15	.57		.21						.10	.07			.08		2.42
Sanborn	Floyd		.28		.02		.09	.25				.30	1.00			.17	.15		1.40		.09				.09		.22	.05			.18		4.29
Sheldon	Floyd		.08		T.		.08	.29				.25	1.21			.02	.21		1.31		.10	T.		T.	.09		.23	.05			.09		4.01
Sioux Center	Floyd						.70					.42	.38					1.10									.30						2.90
Spencer	Little Sioux		.20		T.		.03	.07				.23	.30				.33	.01	.48						.03		.35	.06			.10		2.19
Storm Lake	Raccoon		.50		02		.07	.22				.20	.02				.59	.04	.10		.09				.07		1.04						2.96
Washta	Little Sioux		.77	.02	T.			1.40				.02	.06		.10	.02	2.05		.67		.05		.08		.10		.97	.03					6.34
West Bend	Des Moines		.07					.09				.31	.02				.20		.09						.61		.52	.35			.30		1.99
North Central District																																	
Algona	Des Moines											.65					.26								.06		.84	.30			.51		2.62
Allison	Cedar																						T.		.09		.62	.10			.30		1.85
Belmond	Iowa							.29				.38	.04				.03										.23	.33			.24		1.53
Britt	Iowa											.40					.15		.18														
Charles City***	Cedar						T.	.02				.30	.06				T.		T.				T.		.46	.03	.42	.14			.06		1.49
Forest City	Cedar							.08				.60	.04						.04						.04	T.		.83	.18				1.81
Hampton	Cedar						.17					.26											T.				.64				.94		2.01
Humboldt	Des Moines							.41				.92	T.				.06		T.				T.				.90	.12			T.		2.41
Mason City	Cedar							.04				.30	.03	.04			T.		.02			T.	T.		.07		.27	.58			.10		1.45
Northwood	Cedar																																
Osage	Cedar							T.				.30	.06	.02			T.		.08				T.		.04	.02	29	.40			.02		1.23
Northeast District																																	
Decorah	Mississippi							.08				.01	.40	.20							.02				.29	.06		.27	.31				1.64
Dubuque***	Mississippi	T.			T.			T.				.57	.63	1.60			T.		.31						.02	T.	.25	1.05			.26		4.69
Fayette	Mississippi											.32		.01					.06		T.				.57		.49	.26			.06		1.78
Independence	Wapsipinicon	T.										.47	.11	.08											T.		.07	.16	1.04		.45		2.38
Lansing	Mississippi											.37	.58	.69	.01		.05			.50					.32	.05	.12	.16	.41				3.26
New Hampton	Wapsipinicon											.40		.05											.25		.12	.40			.04		1.26
Oelwein	Wapsipinicon											.50								.30					.20	.20	.10	.32			.40		2.02
Postville (near)	Mississippi											.77		.39					.30						.25	T.	.10	.52			.02		2.35
Waterloo	Cedar								T.				.53	.01	T.					.01						T.	T.	.15	.30				1.00
Waverly	Cedar							.12				.40		.06					.02				.02		.12	T.	.25	.22			.63		1.85
West Central District																																	
Audubon (near)	Nishnabotna	.22	.18	.08	T.	.03	.56	1.06								.32		.07					.05				.78	.64					3.99
Carroll	Raccoon	.02	.80					.46	.26				.03			.05	.53						T.				.18	.76	.53				3.62
Denison	Missouri	.09	.64	.10			.24	.25					.16			.20	.56		.03		.03						1.08	.17					3.55
Guthrie Center	Raccoon	.34	.50				.32	1.20											.25									.35					2.96
Harlan	Nishnabotna	.27	.57	T.	.09	T.	.08	1.18							.04	.02	.13		T.		.05		.05				.53	.17					3.18
Jefferson	Raccoon	.05	.18				.30	.48					T.			T.		T.	.11		T.		T.				.60	.05					2.07
Little Sioux	Little Sioux	.48	.84	.09	.05	.01	.04	.61					.01		.10		.46		.03		.01		.73				.37	.13					3.96
Logan	Missouri	.15	.48	.72	T.	.05		.26					T.		.10	.02	T.				.18		.72				.19	.25					3.12
Onawa	Missouri	.13	1.00		.10		.20	.80					T.				1.28		.38		.10		.43		.12		.95	.14					5.63
Rockwell City	Raccoon																.30										1.00						**
Sac City	Raccoon		.59				.58	.32															.01				1.92						**
Sioux City***	Missouri	.05	.49	.05	T.		1.11	.14				.35	T.	.10		.25	2.20	1.00	.46	.04		T.	.01	.09	.01	.05	1.23				.84		8.47
Central District																																	
Ames	Skunk	.13	.36					1.01											.02								.22	.92					2.66
Baxter	Skunk	.34	.40					.05					.10						.05						.03		.08	1.05					2.10
Boone (near)	Des Moines	.12	.32	T.				.63	.06				.02				T.		T.	T.					.04		.02	.30	.05				1.56
Des Moines***	Des Moines	.61	.51		T.		.01	.38				.02	.05			T.			T.			T.		T.		.06	.30	.02			.43		2.42
Fort Dodge	Des Moines		.15					.81					.27				.03		.12									.77					2.15
Grinnell	Iowa	.39	.24					.40																			.12	.74					1.89
Grundy Center	Cedar	T.						.04				.14	.36	T.												T.	.13	.12			.90		1.69
Iowa Falls	Iowa	T.						.14	.60				.43															.64					1.81
Marshalltown	Iowa	.02	.18	.01		T.		T.	.19				.78				T.			T.			T	T.	.12		T.	.12	.07				1.49
Monroe	Des Moines	.44	.78					.18				T.	T.	T.		.13			.06				T.	T.			T.	T.			T.		1.59
Perry	Raccoon	.23	.26				.04	.59				T.				T.		T.	.02				T				.43	.27			T.		1.84
Toledo	Iowa		.10					.25				.20	.10			T.				.05					T.		.10	.02			T.		0 82
Van Meter	Raccoon	.15	.85					.53	.15				.30									T.				.13	.50	.40					2.88
Waukee	Raccoon	.45	.57					.31					T.						T.								.36	.12			.05		1.99
Webster City	Des Moines		.05					.32				.30	.03			T.	.03		T.						.06		.20	.13			.15		1.57
East Central District																																	
Belle Plaine	Iowa	.10	.15					.05				.08	.93			.01			.02								T.	.10			.12		1.56
Cedar Rapids	Cedar	.04	.19						.10				.94	.02			T.											.03					1.32
Clinton	Mississippi	.12						.06				1.6*	1.16	.10	.01		T.			.80							T.		.10		.41		4.38
Davenport***	Mississippi	.13	.06					.14				1.4*	.73	.14		T.			.15	.19					T.		.01	.12			1.16		4.30
Davenport No. 2	Mississippi	.18	.06					.18	.01			.92	2.06	.21	.02	T.				.32							.02	.17			.23		4.38
Fairport	Mississippi	.37	.08					.33				.24	1.02	.04						1.06								.09	.02		.01		3.26
Iowa City	Iowa	.06	.38	.02				.16					1.43	.89						.14							T.	.06	T.				3.14
Le Claire	Mississippi	T.	.15						.15				3.54		.19		.01			.31					T.	.01		.11	.03				4.50
Maquoketa (near)	Maquoketa							.15						.27								.78											**
Muscatine	Mississippi	.08	.40	T.				.37	.07				1.05									.57						.17	.03				2.74
Olin	Wapsipinicon	.14					.08					.59	.83	.17					.17							T.	T.	T.			1.25		3.23
Tipton (near)	Cedar	.30						.08				.85	.80	.20						1.90											.45		4.58
Williamsburg	Iowa	.27						.72				.33	1.61			.01											.10				.10		3.14

Daily Precipitation for June, 1929—Continued

Stations	Drainage Basin	Day of Month																														To-tals
		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	
Southwest District																																	
Atlantic‖‖	Nishnabotna	.15	.11	.32	T.	.08		1.22	.02						.04	.07			.02		.09		.05	T.			.07	.41					2.65
Bedford	102	1.50	.60	.18			.12	.15					.05		T.				.37		.10		.94					.30					4.31
Clarinda‖‖	Nodaway	1.47	.08	.84				.46	.10				.35	.04	.04				.61		.13		.83	.35	.03			.13					5.46
Corning	Nodaway		.20	.35	.05		.08	.65					.02						.30		.07		.47					.17					2.36
Cumberland(near)	Nodaway	.17	.30	.16	T.	.04	.66	.69					T.		T.	T.			.07		.03		.14				.18	.31					2.75
Glenwood	Missouri	.68	.74		.12		.74	.40							.12						.28		.76		T.			.16					4.00
Lenox	Missouri	1.70	.50	.45	T.	.03	T.	.42					.15						.15		.10		.67					.25					4.42
Oakland	Nishnabotna	.39	.63	.15			.41	1.05															.43				.15	.17					3.38
Red Oak (near)	Nishnabotna	.60	.24	.60	.14		.10	.57											.04	1.14			1.14					.43					5.00
Riverton (near)	Nishnabotna		.61				.77					T.			.05				.02	.65			2.30		.43		.02						4.85
Thurman	Missouri	.17	.60	.03			.56	.08	.04												.67		1.16	T.	.23			.05					3.59
Omaha, Neb.***	Missouri	.42	.66		.11		.59	.04					T.	.03	.07		.09		T.	.14		.36	T.	.21		.01	.16				.02		2.94
South Central District																																	
Afton	Grand	1.55	.23	.26	.02	.02	.01	.27					.61			.08		.02			.02							.39					3.48
Albia‖‖	Des Moines	.97	1.43	.13		.04		.34					.12	T.			T.			.01			T.		.02		.04	.11					3.21
Centerville	Chariton	3.35	.39			.01		.78	T.							.03			T.	.04	.15		.07				T.	.12					4.94
Chariton (near)	Chariton	1.92	.30			T.	T.	T.					.15			T.					T.		T.					.24					2.61
Corydon (near)	Chariton	2.09	.33					.09								.01					.07		.09		.06		.16						2.90
Creston‖‖	Missouri	1.49	.10	.35	T.	.09		.36	.04	T.			.39	T.	T.		.23	T.	.06	.03	.04		.16	.05			.02	.43	T.				3.84
Earlham (near)	Des Moines	.89	.44	T.		.18	T.	.44							T.	T.							T.				.28	.32					2.55
Indianola	Des Moines	.95	.59					.13					.02	T.		.02			.06				T.		T.		.37	.12			.02		2.28
Knoxville	Des Moines	.53	.51					T.					.23			T.			T.		T.		T.		T.		.18	.01		T.	T.		1.52
Lacona	Des Moines	1.02	.73				.01	.01					.50											.01	.01		.02	.50			.02		2.86
Lamoni‖‖	Grand	2.87	.77	.41		.03		.12	T.												.17		.66	24	.03			.27	T.				5.60
Melrose	Des Moines	1.52	.78	.60	.10																									.25			3.25
Mount Ayr	Grand	2.39	.06	.49			T.	.12					.15						.02		.10		.62					.45					4.40
Tingley	Platte	2.05	.43	.27	T.		.09	.11					.08			.09			.01		.07		.49					.32					4.01
Winterset	Des Moines	.78	.72		T.	.12		.98							T.	T.							.08		T		.12	.22					3.02
Southeast District																																	
Bonaparte (near)	Des Moines	3.46	.64					.38					.29	.17		T.			.12	.14	T.		T.		.09		T.	.08		T.			5.37
Burlington‖‖	Mississippi	.09	1.68	.10				.77	.01				1.62	.33	.02		.04			.42					.12			.02			.02		5.24
Columbus Jct.	Iowa	.45	.39	.01				1.42				.08	1.02	.23		.01				.35					.01		.01	.15		T.	.01		4.14
Fairfield	Skunk	1.58	.30					.22					.18															.15			T.		2.43
Keokuk***	Mississippi	1.24	.21		T.			.18					.50	.06		T.			1.31	.12	T.		.01		.24		.03	.01					3.91
Keokuk No. 2	Mississippi	1.37	1.11	.01	.01			.19					.61	.10						1.42	.01		.03		.24		.05	.03					5.18
Keosauqua	Des Moines	4.61	.60					T.					.03	T.			T.		.37								.12						5.73
Mt. Pleasant	Skunk	1.30	.54					.38					.28	.18		.04			.04	.29					.01			.08		.04			3.18
Oskaloosa	Des Moines	.80	.61				.04	1.02				T.	.17			.04			T.				T.		T.		.03	.05			T.		2.76
Ottumwa	Des Moines	1.67	.42					.35					.15								.21	.01			T.		T.	.14			.01		2.96
Sigourney (near)	Skunk	.50	.57					.18				T.	.57	T.		.06			.03	.17					T.		T.	T.			T.		2.08
Stockport (near)	Skunk	1.82	.50					.15					.44	.04		T.			.07	.13	T.				.04			.20					3.39
Washington	Skunk	.45	.38					1.08				.12	1.34	.08		.02	T.		T.	.68					T.			.06		.01	T.		4.22
Wever	Mississippi	2.50	.38					.16					1.43	.08		.08				.56					.15								5.34

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.

T. Precipitation is less than .01 inch or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level)					Relative Humidity, %					‡‡Wind					Sunshine	
						Mean							Maximum				
	Mean	Highest	Date	Lowest	Date	7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	Total movement	Average hourly velocity	Miles	From	Date	% possible	Departure from normal
Chas. City	29.94	30.32	3	29.52	11	76	51	56	25	23	3,777	5.2	26	se.	16	61	— 7
Davenport	29.94	30.26	3	29.57	11	74	53	53	30	5	5,907	8.2	35	nw.	11	70	+ 1
Des Moines	29.92	30.28	3	29.52	11	78	53	53	27	5	4,686	6.5	23	sw.	17†	71	+ 5
Dubuque	29.94	30.29	3	29.52	27	74	52	54	26	6	3,792	5.1	24	nw.	27	65	+ 1
Keokuk	29.95	30.24	3	29.52	11	76	54	58	30	5	4,472	6.2	20	s.	17	69	— 3
Sioux City	29.91	30.29	3	29.44	11	73	58	55	29	27	6,966	9.7	47	nw.	11	60	— 3
Omaha,Nb	29.91	30.24	3	30.49	11	74	50	49	25	20†	4,734	6.6	26	ne.	2†	69	+ 1
Means and extremes	29.93	30.32	3	29.44	11	75	53	54	25	20†		6.9	47	nw.	11	66	— 1
Normals and records	29.93	*30.61	10 1913	§29.04	5th 1880	79		60	¶13	7 1926			¶68	w.	22 1917	67	

*Dubuque §Omaha ¶Sioux City ‡Local Mean Time †And other dates.

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

PRECIPITATION

The average precipitation for the State, derived from the means of nine districts of nearly equal area, and based on the records of 116 stations, was 3.08 inches, or 1.42 inches less than the normal. There was a deficiency in each district, being least in the southeastern district where the deficiency amounted to about one-third of an inch, and greatest in the north-central and central districts, where the deficiency was marked. The heaviest rains during the month were not general. On the 1st and 2d heavy to excessive rain occurred over most of the southern half of the State, and none over most of the northern half. On the 6th-7th heavy rains were general over most of the western portion of the State. Heavy rains occurred over most of the State on the 11th-12th, 17th-18th and 26th-27th. A few locally heavy rains occurred on other dates in very limited areas. The rain periods were frequent but the amounts varied greatly. Sioux City reported the greatest June rainfall of record, while two stations reported an inch, or less, and conditions were drouthy over large areas in the central, north-central and northeastern districts. The greatest monthly amount was 8.47 inches at Sioux City, and the least was 0.82 inch at Toledo. The greatest amount in 24 consecutive hours was 4.61 inches at Keosauqua on the 1st.

MISCELLANEOUS PHENOMENA

Fog: 5th, 13th, 23d, 29th.

Hail: 11th, 12th, 13th, 16th, 17th, 22d, 26th, 27th, 28th, 30th.

Halos (lunar and solar): 3d, 6th, 16th, 21st, 26th.

Rainbow: 4th, 27th.

Thunderstorms: All dates except 3d, 5th, 8th, 9th, 10th, 20th, 25th, 28th.

Tornado: 11th.

Daily Maximum and Minimum Temperature for the Month of June, 1929

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	Maximum	80	66	67	71	80	80	72	76	83	92	89	75	66	83	88	87	88	90	87	80	87	83	82	79	80	73	83	78	88	87	.....	80.7
	Minimum	57	45	44	48	50	51	54	48	57	64	61	50	47	49	59	67	70	65	69	65	60	56	50	56	50	51	57	55	55	65	.....	55.9
Alta	Maximum	68	61	63	68	80	72	65	77	83	90	85	67	70	88	92	85	90	82	90	88	82	82	80	78	78	64	81	77	94	90	.....	79.0
	Minimum	54	44	42	45	50	54	57	49	58	65	61	48	42	52	61	66	67	63	56	51	55	57	52	54	49	56	58	53	56	67	.....	54.7
Alton	Maximum	75	62	63	68	77	71	69	73	81	81	81	71	70	80	89	84	90	83	86	77	81	78	75	74	76	71	82	77	94	90	.....	77.6
	Minimum	58	46	44	47	44	50	58	50	60	67	61	52	40	51	60	69	69	62	67	54	53	58	51	53	48	58	55	55	56	68	.....	55.5
Belmond	Maximum	74	61	67	70	80	78	69	75	91	91	82	71	62	79	87	88	89	84	88	77	85	79	83	75	80	74	81	74	88	84	.....	78.9
	Minimum	57	45	39	44	48	48	52	45	46	46	58	51	47	43	57	67	70	70	51	53	57	54	47	55	45	50	59	54	49	68	.....	52.5
Charles City	Maximum	66	61	65	67	78	78	65	73	81	89	77	63	60	78	83	88	89	84	86	77	83	78	81	73	77	74	79	72	88	86	.....	76.6
	Minimum	53	45	41	47	48	50	50	45	50	64	61	52	51	46	56	69	71	64	57	60	59	58	55	53	48	48	61	56	52	66	.....	54.5
Decorah	Maximum	79	61	68	67	75	79	71	74	82	89	80	66	63	76	80	81	82	84	83	73	82	73	78	72	76	76	77	72	84	87	.....	76.4
	Minimum	52	49	39	41	46	46	47	39	49	64	64	59	51	47	46	66	70	72	55	60	53	55	51	51	44	46	60	54	46	74	.....	53.2
Dubuque	Maximum	71	61	66	68	76	79	68	74	77	84	74	64	62	73	80	83	87	87	83	77	82	80	80	71	77	75	79	74	84	87	.....	76.1
	Minimum	48	44	43	46	51	52	51	47	52	60	61	57	55	55	56	71	72	67	64	62	56	64	56	57	52	53	59	60	58	68	.....	56.6
Forest City	Maximum	73	61	68	68	79	77	66	73	80	91	85	70	60	79	85	88	89	83	88	80	82	79	81	75	77	73	80	73	87	85	.....	77.8
	Minimum	54	42	41	45	46	49	55	45	52	62	62	52	45	44	55	68	67	66	54	51	51	52	54	53	45	48	56	52	50	67	.....	52.8
Independence	Maximum	81	61	65	69	77	78	78	73	79	87	86	72	67	73	81	85	89	88	85	84	85	84	80	78	79	78	84	83	87	86	.....	79.4
	Minimum	53	44	39	45	48	49	49	45	50	59	61	59	53	50	54	68	64	71	59	63	56	60	53	57	53	48	48	56	52	65	.....	54.4
Inwood	Maximum	73	73	64	70	73	69	73	73	83	85	85	68	72	82	90	84	92	79	84	75	83	79	79	76	77	66	82	78	95	86	.....	78.3
	Minimum	56	47	46	45	45	50	54	53	59	65	49	47	43	48	59	76	68	59	54	48	52	55	54	49	49	54	54	50	56	65	.....	53.4
Lake Park	Maximum	72	60	68	70	77	71	70	73	81	84	75	65	67	80	87	85	88	80	81	76	76	75	78	73	73	68	80	73	87	83	.....	75.9
	Minimum	53	46	43	47	49	51	55	47	58	61	59	47	41	49	55	65	60	58	55	50	53	53	53	59	50	48	54	51	53	64	.....	52.6
Mason City	Maximum	72	61	63	65	71	77	68	72	81	89	84	67	59	77	82	86	87	83	87	76	82	79	81	74	79	74	78	71	87	83	.....	76.5
	Minimum	55	44	39	42	43	47	51	44	50	66	58	50	47	41	61	6.	73	69	52	60	56	54	46	54	45	44	58	54	49	68	.....	53.0
New Hampton	Maximum																																
	Minimum	52	43	37	42	45	46	50	43	48	63	61	58	50	45	54	68	69	71	55	58	54	56	51	55	45	44	45	53	49	68	.....	52.6
Northwood	Maximum								73	80	89	83	65	58		82	86		79	88	77			79	73	76		80					
	Minimum	43							47	51	66	59	49	48		55	67			58	56				55	49		58					
Pocahontas	Maximum	72	60	66	68	78	78	65	74	83	91	85	72	68	87	89	85	89	83	89	78	83	81	82	77	79	70	82	77	91	86	.....	78.9
	Minimum	60	44	38	45	49	49	56	48	57	57	60	51	42	46	59	64	69	66	53	51	54	56	49	56	47	55	57	54	54	76	.....	54.1
Postville	Maximum	62	57	62	65	73	76	64	68	76	84	75	65	58	69	77	81	84	81	78	73	80	71	76	68	73	74	74	69	81	80	.....	72.5
	Minimum	49	40	38	44	46	52	48	40	45	61	59	51	51	52	56	69	69	67	57	59	55	52	50	55	48	47	57	53	57	67	.....	53.2
Rock Rapids	Maximum	76	63	65	70	78	70	74	76	82	85	79	69	70	80	89	85	90	83	85	77	78	79	76	74	76	70	81	78	92	85	.....	77.8
	Minimum	55	47	45	45	45	50	54	55	58	65	59	50	40	50	57	70	67	60	52	47	42	49	49	49	45	52	51	52	52	65	.....	52.6
Central Division																																	
Ames	Maximum	75	61	64	69	78	79	72	74	80	89	86	68	67	81	88	89	91	88	91	84	87	84	82	78	83	78	84	78	90	89	.....	80.2
	Minimum	58	45	42	44	51	49	52	48	56	62	65	58	50	44	57	71	72	70	56	60	54	63	60	59	47	59	61	58	54	76	.....	56.7
Belle Plaine	Maximum	71	58	73	71	80	83	73	78	82	90	84	75	67	78	83	90	90	87	89	81	87	82	84	76	83	79	85	79	91	89	.....	80.6
	Minimum	53	43	40	40	46	43	50	47	52	61	64	59	52	45	64	68	71	71	56	63	48	62	53	64	46	49	61	56	49	70	.....	54.9
Carroll	Maximum	71	60	61	72	78	77	64	72	80	89	84	77	68	81	88	85	88	85	88	81	83	80	82	76	81	74	85	75	89	90	.....	78.8
	Minimum	58	43	41	44	49	53	55	49	57	63	66	53	42	50	59	66	69	66	55	52	53	60	54	55	49	54	60	51	56	66	.....	54.9
Cedar Rapids	Maximum	75	59	66	71	81	82	72	77	79	87	80	77	68	76	81	87	89	89	88	82	85	82	81	76	83	80	84	79	89	90	.....	79.8
	Minimum	54	44	41	39	46	44	48	47	58	64	60	55	49	51	68	69	71	58	63	48	63	50	62	45	49	62	57	47	61	64	.....	54.0
Davenport	Maximum	69	58	67	71	80	81	69	76	76	84	83	74	66	75	82	87	88	88	89	81	84	79	84	78	81	80	80	79	86	87	.....	78.8
	Minimum	48	45	42	49	55	58	51	48	53	61	63	62	55	55	60	73	72	71	69	66	60	69	63	61	56	57	65	63	60	66	.....	59.2
Des Moines	Maximum	69	58	65	72	79	77	66	76	81	89	82	71	70	80	88	89	91	84	89	81	86	80	83	77	85	72	81	78	90	94	.....	79.4
	Minimum	52	45	43	46	53	54	57	53	59	63	67	53	52	53	60	72	73	68	60	61	56	66	64	61	52	58	65	61	58	69	.....	58.5
Ft. Dodge	Maximum	68	68	65	68	78	80	69	74	81	90	84	70	65	80	89	87	89	85	89	79	85	80	81	75	79	70	82	75	88	89	.....	78.7
	Minimum	60	45	43	43	48	49	54	48	58	63	61	52	47	47	59	67	70	67	53	53	56	59	49	55	47	56	59	55	54	70	.....	54.9
Grinnell	Maximum	75	58	65	70	79	81	73	73	86	88	85	75	72	79	84	89	90	85	91	82	88	79	85	74	82	78	83	75	88	91	.....	80.1
	Minimum	53	42	39	42	47	47	48	50	50	52	63	59	43	50	56	68	70	71	57	61	48	62	53	59	46	53	61	55	64	66	.....	54.5
Guthrie Center	Maximum	70	60	63	72	77	79	67	75	82	92	93	75	69	82	89	87	91	89	90	88	85	82	84	77	81	78	84	91	90	99	.....	81.4
	Minimum	58	44	42	41	50	48	56	52	58	65	70	56	46	51	60	72	70	67	53	55	47	61	53	57	44	56	59	55	54	72	.....	55.7
Iowa City	Maximum	74	58	68	70	80	81	72	77	80	86	86	75	67	77	81	88	89	88	87	80	85	80	84	76	81	79	82	78	87	90	.....	79.5
	Minimum	52	43	41	42	48	50	53	47	51	57	64	61	56	51	57	68	71	72	64	65	52	65	58	64	48	51	63	59	52	66	.....	56.4
Iowa Falls	Maximum	74	60	66	70	78	83	73	71	82	91	85	67	62	79	85	88	91	87	89	77	87	80	81	76	79	77	80	77	89	85	.....	79.0
	Minimum	55	46	42	46	49	48	49	49	53	64	59	55	49	44	55	69	69	70	53	57	57	58	52	57	46	52	60	55	50	63	.....	54.4
Little Sioux	Maximum	67	59	65	68	75	74	70	76	81	88	85	80	73	83	94	87	92	85	89	81	86	79	75	75	82	75	86	78	94	97	.....	80.0
	Minimum	59	48	44	47	48	56	61	54	60	68	71	56	44	49	67	70	71	62	59	51	58	61	57	57	50	57	62	56	62	75	.....	58.0
Marshalltown	Maximum	77	60	68	69	79	80	74	75	82	91	83	70	64	78	87	91	92	85	91	84	87	81	81	76	82	75	84	77	90	89	.....	80.1
	Minimum	55	44	42	45	50	52	50	48	57	64	62	60	50	47	58	70	71	73	59	62	56	64	55	58	51	58	61	56	54	71	.....	56.8
Olin	Maximum	72	58	67	74	82	84	71	76	79	85	78	76	66	78	81	84	87	90	88	82	83	83	84	75	83	82	83	82	86	94	.....	79.8
	Minimum	52	45	38	40	42	44	49	43	45	53	62	60	58	53	52	67	69	71	64	62	49	61	54	60	45	46	64	58	48	64	.....	53.9
Sioux City	Maximum	68	58	62	65	75	66	69	74	80	85	85	60	73	83	91	82	91	81	88	78	83	79	75	75	79	68	84	78	96	89	.....	77.3
	Minimum	56	48	46	50	50	59	60	56	60	67	53	51	47	56	64	66	67	61	61	57	60	60	56	54	57	58	62	57	63	68	.....	57.9
Southern Division																																	
Albia	Maximum	73	57	66	73	78	78	70	75	80	86	86	76	68	80	84	8	89	86	90	82	85	75	83	76	82	82	81	81	88	95	.....	79.8
	Minimum	54	44	40	44	51	53	57	51	58	60	70	60	52	50	59	68	69	72	59	63	54	64	57	63	50	57	62	57	58	74	.....	57.7
Atlantic	Maximum	66	58	63	72	79	78	69	76	82	88	89	79	73	82	89	87	90	86	89	87	85	81	85	80	85	80	85	80	94	97	.....	81.1
	Minimum	56	46	43	41	48	49	57	55	57	63	71	55	44	49	62	70	69	65	51	54	46	58	51	56	44	54	62	53	55	72	.....	55.2
Burlington	Maximum	77	58	68	74	79	82	73	74	82	87	89	77	69	80	80	8	90	90	87	80	87	77	82	77	83	83	83	81	88	95	.....	80.7
	Minimum	54	45	42	47	55	57	61	53	52	58	69	63	56	53	59	68	70	72	61	68	68	67	63	60	57	61	65	63	59	74	.....	60.0
Columbus Jct	Maximum	75	57	64	69	75	78	69	71	75	82	85	77	69	79	78	8	87	85	82	77	81	76	79	75	78	74	78	76	84	89	.....	77.0
	Minimum	52	44	41	42	51	51	53	48	49	58	66	61	55	54	60	6	70	71	66	64	52	67	60	62	51	66	62	60	52	72	.....	57.5
Corning	Maximum	72	63	65	75	79	78	74	78	81	88	93	83	76	83	87	87	89	88	89	81	85	78	81	79	86	82	87	85	90	96	.....	81.9
	Minimum	58	42	44	41	53	49	59	56	58	63	72	58	45	49	49	70	69	65	64	60	52	59	52	59	51	57	62	51	56	73	.....	56.5
Corydon	Maximum	75	58	61	69	73	76	71	74	78	88	88	79	66	76	84	86	88	84	85	79	82	73	80	80	79	81	81	78	87	94	.....	78.4
	Minimum	56	45	42	45	45	52	59	53	58	61	72	62	57	50	60	68	71	72	60	63	53	63	58	62	52	60	63	58	57	75	.....	58.3
Creston	Maximum	68	57	63	70	75	77	72	75	79	87	90	77	70	79	85	85	87	83	87	79	82	77	79	76	81	81	83	77	89	93	.....	78.8
	Minimum	55	45	41	43	53	51	57	55	57	62	71	59	48	52	60	67	67	67	57	60	50	60	57	57	52	56	62	53	58	73	.....	56.8
Fairfield	Maximum	75	56	65	71	78	79	72	81	80	86	88	77	70	78	83	90	90	88	88	79	85	76	83	76	80	82	83	88	88	94	.....	80.3
	Minimum	53	44	38	41	52	53	52	49	54	58	70	61	54	46	56	56	69	71	63	64	51	60	59	63	50	58	62	58	52	74	.....	56.4
Keokuk	Maximum	72	57	64	72	78	78	75	76	78	84	94	76	66	79	82	88	89	89	88	81	83	76	83	78	82	82	83	82	85	94	.....	79.8
	Minimum	52	46	43	48	56	56	59	54	54	60	66	62	54	52	60	71	72	70	68	65	59	66	66	59	56	62	66	65	61	75	.....	60.1
Knoxville	Maximum	73	57	62	68	75	74	74	72	81	85	84	77	69	79	85	88	90	85	88	83	85	79	82	79	83	78	83	80	90	95	.....	79.4
	Minimum	56	44	41	43	53	51	59	51	58	61	72	61	53	49	59	70	71	73	56	63	51	64	54	62	53	58	65	56	54	73	.....	57.8
Lamoni	Maximum	69	57	63	70	76	76	74	76	79	87	92	80	72	81	87	88	88	80	88	79	83	73	80	74	81	81	82	79	88	94	.....	79.2
	Minimum	56	46	41	43	54	54	58	51	60	61	70	60	50	52	60	68	68	70	58	61	53	60	57	59	50	58	61	56	59	72	.....	57.6
Sigourney	Maximum	73	58	66	71	80	80	70	76	80	85	85	75	68	79	81	89	89	86	89	81	86	79	85	74	84	79	82	80	88	95	.....	79.8
	Minimum	54	43	40	43	51	50	56	49	55	58	69	61	53	46	57	68	69	70	61	65	52	64	57	62	49	59	63	58	51	75	.....	56.9
Thurman	Maximum	72	64	65	69	77	75	74	72	80	89	94	92	76	85	95	94	93	88	89	86	84	81	83	74	83	82	87	84	94	96	.....	82.6
	Minimum	63	49	47	46	55	54	61	58	59	68	71	59	48	51	67	72	72	67	55	57	51	61	55	59	49	59	64	55	59	72	.....	58.8
Winterset	Maximum	70	58	65	72	78	78	70	75	80	86	88	80	70	81	86	88	90	87	89	80	85	78	82	78	85	80	83	79	89	95	.....	80.2
	Minimum	56	45	40	43	50	55	57	53	59	64	72	60	50	50	60	70	70	65	57	60	55	60	54	58	50	56	62	55	58	74	.....	57.3
Omaha, Neb.	Maximum	68	56	65	67	76	74	71	76	81	91	92	64	74	84	96	88	93	83	90	78	87	76	80	74	83	82	87	79	95	97	.....	80 2
	Minimum	56	47	47	51	54	60	58	58	62	69	64	54	51	51	68	72	73	67	61	62	61	63	62	59	60	63	66	62	66	74	.....	60.9

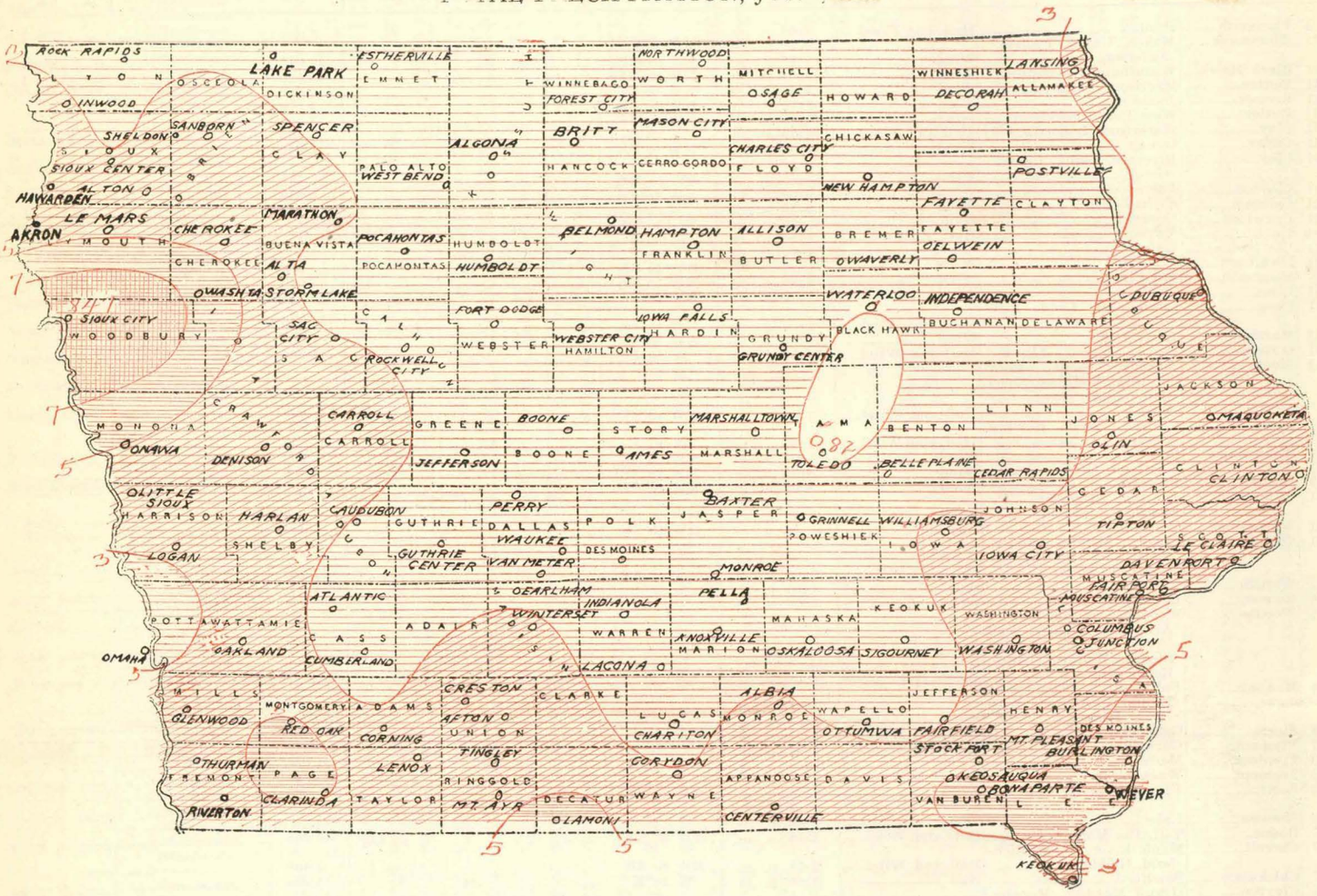
IOWA STORMS, JUNE, 1929

Date	County	Township	Nature of Storm	Time	Storm Moved From	Width of Path Miles	Length of Path Miles	Area of Sq. Miles	Size of Hailstones Inches	Damage	Persons Killed	Persons Injured
4	Plymouth	Hancok	Hail and Flood	9:00 p. m.					½	$ 5,000		
11	Allamakee	Makee, Union, Prairie, Jefferson	Wind	10:00 a. m.	SW to NE					33,000	1	4
11	Black Hawk	Washington, Waterloo	Wind	10:00 a. m.	NW to SE					13,000		1
11	Benton	Harrison	Wind	9:30 a. m.	NW to SE					2,000		
11	Bremer	Jackson	Wind	9:30 a. m.	NW to SE					1,000		
11	Butler	West Point, Jefferson	Wind	9:00 a. m.	NW to SE					3,000		
11	Clay	Waterford, Lonetree, Clay	Hail and Wind	10:00 p. m.	W to E				¼	14,000		
11	Cedar	Inland	Wind	11:00 a. m.	NW to SE					5,000		
11	Clay	Riverton, Sioux, Gillett Grove	Wind	10:00 p. m.	SW to NE					2,500		
11	Clayton	Farmersburg, Giard	Wind	10:00 a. m.	NW to SE					5,000		
11	Calhoun	Twin Lakes	Wind	8:30 a. m.						3,000		1
11	Crawford	Goodrich	Hail	10:30 p. m.	N to SW				½ to 3	Slight		
11	Davis	Marion	Hail	1:00 a. m.	E to W				3	Slight		
11	Des Moines	Union	Wind	9:00 p. m.	N to S			36		5,300		
11	Dickinson	Westport	Wind	5:00 a. m.	NW to SE	3	8	24		300		
11	Humboldt	Weaver	Wind	8:30 a. m.	NW to SE					50		
11	Linn	Cedar	Wind	11:00 a. m.	NW to SE	¼	5	1		Fruit trees		
11	Lyon	Centennial, Lyon, Richland, Garfield	Hail and Wind	9:00 p. m.	NW to SE				Up to 3	100,000		
11	Marshall	Le Grand	Wind	10:00 a. m.	NW to SE					2,000		
11	O'Brien	Floyd, Summit, Lincoln	Hail and Wind	10:00 p. m.	W to E				1	75,000		1
11	Sioux	Settlers, Sioux, Rock, Lincoln, Welcome, Sheridan, Grant, Lynn, Garfield	Hail and Wind	9:00 p. m.	NW to SE				¼ to 4	740,000		
11	Tama	Carlton, Toledo, Howard, Perry	Hail and Wind	4:00 p. m.	W to E				¼ to 3	25,000		
11	Winnebago	Forest	Wind	8:00 a. m.	NW to SE					2,000		
11	Worth	Hartland, Grove	Wind	8:00 a. m.	NW to SE					1,500		
11	Wright	Pleasant	Wind	8:00 a. m.	NW to SE					1,000		
11	Winneshiek	Lincoln, Madison, Decorah, Glenwood	Wind	9:00 a. m.	NW to SE					21,000		1
11	Winneshiek	Washington	Tornado	10:00 a. m.	NW to SE		3			5,000		1
11	Woodbury	Floyd, Moville, Grant, Sioux City, Wolf Creek, Concord, Miller	Hail and Wind	9:00 p. m.	NW to SE				¼ to 1	75,000		
12	Wapello	Adams	Hail	1:00 a. m.					2 to 3	Small		
16	Emmet	Estherville	Wind	4:00 a. m.	S to N			36		5,000		
16	Woodbury	Woodbury, Floyd, Moville, Arlington, Banner, Wolf Creek, Little Sioux, Sloan, Willow, Grant, Rock, Miller	Wind, Hail, Flood	4:00 p. m.					½ to 1½	Flood 310,000 Other $50,000		
16	Monona	Fairview, Kennebeck, Franklin, Ashton, West Fork, Lake	Wind, Hail, Flood	3:00 p. m. 5:00 p. m.					½ to 2	Flood $225,000 Other $125,000		
16	Sioux	Garfield	Hail and Wind	9:00 p. m.	S to N			2	Small	$ 5,100		
17	Plymouth	Garfield	Hail and Wind	9:00 p. m.				36		Crops 15%		
19	Fremont	Madison	Wind	10:00 p. m.	NW to SE					$ 1,000		
22	Fremont	Washington	Hail and Wind	2:00 a. m.					½ to ¾	800		
23	Scott	Pleasant Valley	Wind	1:00 p. m. 2:00 p. m.	NW to SE					65		
26	Monona	Lake	Flood	2:00 p. m.						Crops 10%		
27	Boone	Yell, Des Moines, Jackson	Hail and Wind	3:00 p. m.	SW to NE				½ to 1½	10,000		1
27	Carroll	Maple River, Grant, Richland, Glidden	Hail and Wind	3:30 p. m.	NW to SE				½ to 1	4,000		
27	Chickasaw	Bradford	Hail	4:00 p. m.	W to E			24	½	5,000		
27	Clayton	Grand Meadow, Monona, Wagner, Farmersburg, Clayton	Hail and Wind	4:00 p. m.	NW to SE				1 to 2	50,000		
27	Delaware	South Fork	Hail	5:30 p. m.	W to E	1	4	4		5,000		
27	Dubuque	Dubuque	Hail and Wind	5:00 p. m.	NW to SE				¾ to 1½	15,000		
27	Dubuque	Cascade	Hail	6:00 p. m.		1	6	6	1	10,000		
27	Fayette	Harlan, Fremont	Hail and Wind	5:00 p. m.	W to E	1	3	3	1	2,000		
27	Floyd	Riverton	Hail and Wind	5:00 p. m.	NW to SE				Small Hail	5,000		
									Wind	1,500		
27	Greene	Scranton, Willow, Greenbriar	Hail and Wind	3:00 p. m.	NW to SE				¾ to 1½	5,000		
27	Howard	Howard Center	Hail and Wind	4.00 p. m.	NW to SE		4		Small	No estimate		
27	Jackson	Richland	Hail	5:00 p. m.	N to S	1	6	6	¼ to 1	1,300		
27	Mitchell	Union	Hail and Wind	4:00 p. m.	NW to SE			20	1	No estimate		
27	Story	Franklin, Milford, Washington	Hail and Wind	3:30 p. m.	NW to SE				¼ to 1	2,000		
27	Winnesheik	Glenwood	Hail	4:00 p. m.	N to S	1	6	6	Small	Some crop damage		
28	Fayette	Smithfield	Hail and Wind							11,000		
30	Butler	Ripley	Hail	12:00 m.	N to S	1½	3	5	Marbles	4,000		
30	Cedar	North part of county	Wind	1:00 p. m. 2:30 p. m.	W to E					50,000 Buildings 5,000 Crops		1
30	Clinton	Several over county	Wind	2:00 p. m.	NW to SE					50,000		
30	Jones	Greenfield, Rome, Hale, Oxford	Wind	4:00 p. m. 1:00 p. m.	NW to SE			72		15,000		
30	Linn	Cedar, Bertram	Wind	1:00 p. m.	NW to SE					20,000		
30	Sac	Eden	Hail and Wind	6:30 p. m.	NE to SW		6		1	Crops 10%		
30	Scott	Cleona	Hail and Wind	2:00 p. m.	NW to SE				1⅛	1,700		
30	Scott	Pleasant Valley, Le Claire	Wind	2:00 p. m.						Trees and poles		
30	Woodbury	West Fork, Grant, Little Sioux, Oto	Hail	p. m.						Considerable to crops		
30	Monona	Maple, Cooper	Hail	p. m.						Considerable to crops		

RIVERS

Except for a slight rise near the middle of the month there was a gradual fall on the Mississippi River throughout the month, with the average stage considerably below normal. There was considerable fluctuation on the Missouri River though no marked changes. The stage averaged below normal at Sioux City and above at Omaha. A general falling tendency prevailed on the principal streams in the interior of the State but there were a few slight rises with the average stage below normal. Heavy rains in northwestern Iowa on the 16th caused floods in Woodbury County and small adjacent areas.

TAL PRECIPITATION, JUNE, 1929



SCALE OF SHADES IN INCHES

Less than 1	1 to 3	3 to 5	5 to 7	More than 7

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU

CHARLES D. REED, Meteorologist

VOL. XL. DES MOINES, IOWA, JULY, 1929 No. 7

GENERAL SUMMARY

The temperature during July averaged 0.4° above normal. The first three weeks were cool, with a large number of fluctuations, but the rest of the month, excepting the 29th and 30th, in the western and central portions, was continuously above normal. The week 22d to 28th was the warmest of the year. The month was more pleasant than the average July, due to the fact that during the warmest weather the humidity was low, and very few nights could be classed as hot. Heat prostrations were few. There were no great extremes in temperature; the highest observed temperature was well below the average for July, and except at two stations no unusually low minima occurred.

The average precipitation for the State also averaged slightly more than the normal, but the amounts showed great variation. The first half of the month was decidedly wet, and during this period more than 75% of the total occurred. A number of stations in the south-central, southeastern, east-central and northwestern districts, reported no appreciable rainfall after the 15th. The storm damage was less than usual for July, but a large portion of the State was affected. The main damage was caused by wind squalls and hail. Strong winds accompanied nearly all the heavy rains, and local damage was reported from a large number of places; hail damage was mostly in small patches and no exceptionally heavy losses occurred. Much of the rainfall occurred as heavy downpours, which caused small streams to overflow and considerable grain in the shock was either washed away or ruined by being wet. The worst floods occurred in the extreme southwestern portion of the state following the heavy rains of the 5th, and the greatest damage occurred in Page County, which included damage to corn and shocked or stacked grain, the washing out of 17 bridges, and submerged railway tracks; and many automobiles attempting to reach points of safety were stalled. On some of the branch line railways traffic was suspended for more than three days. The almost continuous rainfall during the first half of the month interfered very much with farm operations, damaged a large amount of hay and grain in the fields, and many corn fields in the eastern and southern portions became weedy. The latter part of the month was more favorable. The warm weather caused corn to make rapid growth where moisture was sufficient, and hay was harvested under good conditions; however, the dry weather was beginning to affect many truck crops in the dry areas, some pastures were becoming brown and bare, and in some localities corn leaves rolled in the afternoons, and some firing was reported.

One tornado was reported during the month. It occurred in Cedar County, in the eastern portion of Dayton Township, and touched a part of three sections. Owing to the short distance traveled and the absence of buildings, very little damage resulted. Lightning caused the death of two people, one in Des Moines and the other in Delaware County. There was considerable loss to stock from lightning and from being drowned.

COMPARATIVE DATA FOR THE STATE—JULY

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
1873	74.0	+ 0.3	96	54	2.78	— 1.05	7.73	0.85	.....	.....	.....	.....	.....
1874	77.8	+ 4.1	101	56	3.04	— 0.79	6.15	0.55	.....	.....	.....	.....	.....
1875	72.8	— 0.9	97	56	6.05	+ 2.22	9.70	1.60	.....	.....	.....	.....	.....
1876	74.2	+ 0.5	95	54	6.15	+ 2.32	11.92	1.84	.....	.....	.....	.....	.....
1877	74.0	+ 0.3	97	54	2.55	— 1.48	7.55	0.38	.....	.....	.....	.....	.....
1878	76.5	+ 2.8	104	52	5.13	+ 1.30	13.20	0.90	.....	.....	.....	.....	.....
1879	76.0	+ 2.3	102	55	2.20	— 1.63	8.66	0.00	.....	.....	.....	.....	.....
1880	73.8	+ 0.1	98	48	4.16	+ 0.33	10.40	1.30	.....	.....	.....	.....	.....
1881	75.9	+ 2.2	100	50	5.33	+ 1.50	16.31	0.28	.....	.....	.....	.....	.....
1882	69.1	— 4.6	94	46	3.66	— 0.17	7.30	0.85	.....	.....	.....	.....	.....
1883	72.9	— 0.8	100	46	5.14	+ 1.31	13.99	1.26	.....	.....	.....	.....	.....
1884	71.0	— 2.7	96	50	5.41	+ 1.58	11.51	0.70	.....	.....	.....	.....	.....
1885	74.6	+ 0.9	102	48	4.73	+ 0.90	11.45	0.68	.....	.....	.....	.....	.....
1886	76.2	+ 2.5	103	48	0.50	— 3.33	2.20	0.00	.....	.....	.....	.....	.....
1887	77.0	+ 3.3	105	45	2.85	— 0.98	8.43	0.87	.....	.....	.....	.....	.....
1888	75.9	+ 2.2	103	38	4.31	+ 0.48	8.45	1.17	.....	.....	.....	.....	.....
1889	72.6	— 1.1	102	40	4.00	+ 0.17	8.25	1.15	.....	.....	.....	.....	.....
1890	75.2	+ 1.5	110	45	2.04	— 1.79	6.16	0.06	.....	.....	.....	.....	.....
1891	68.5	— 5.2	99	41	4.22	+ 0.39	8.20	1.67	.....	8	13	13	5
1892	73.0	— 0.7	104	38	5.29	+ 1.46	12.86	1.71	.....	9	16	10	5
1893	75.0	— 1.3	102	47	3.33	— 0.50	8.84	1.49	.....	7	19	10	2
1894	76.4	+ 2.7	109	39	0.63	— 3.20	3.50	T.	.....	3	22	8	1
1895	72.1	— 1.6	104	35	3.40	— 0.43	10.10	0.45	.....	7	15	12	4
1896	73.6	— 0.1	104	42	6.90	+ 3.07	12.67	1.61	.....	9	14	11	6
1897	75.6	+ 1.9	106	42	3.26	— 0.57	7.60	1.01	.....	6	18	10	3
1898	73.4	— 0.3	102	42	2.98	— 0.85	12.88	0.55	.....	7	19	9	3
1899	73.1	— 0.6	101	38	3.07	— 0.76	8.66	0.42	.....	7	16	10	5
1900	73.4	— 0.3	102	37	6.15	+ 2.32	18.45	1.80	.....	9	16	10	5
1901	82.4	+ 8.7	113	46	2.34	— 1.49	5.97	0.27	.....	5	21	9	1
1902	73.1	— 0.6	99	41	8.67	+ 4.84	13.57	4.82	.....	13	14	10	7
1903	72.9	— 0.8	100	40	4.83	+ 1.00	12.72	0.94	.....	9	17	9	5
1904	70.6	— 3.1	100	38	4.41	+ 0.58	11.97	1.28	.....	10	16	9	6
1905	70.6	— 3.1	102	40	2.91	— 0.92	7.08	0.69	.....	9	14	10	7
1906	70.9	— 2.8	102	42	3.04	— 0.79	7.05	0.26	.....	8	18	10	3
1907	73.7	0.0	102	41	7.27	+ 3.44	13.66	3.97	.....	13	16	11	4
1908	73.0	— 0.7	100	42	3.66	— 0.17	9.21	0.70	.....	8	16	10	5
1909	72.3	— 1.4	102	46	4.77	+ 0.94	12.20	1.20	.....	10	15	8	8
1910	74.5	+ 0.8	108	43	1.86	— 1.97	5.69	0.12	.....	7	19	8	4
1911	75.5	+ 1.8	111	38	2.27	— 1.56	6.62	0.08	.....	7	18	10	3
1912	74.6	+ 0.9	103	38	3.71	— 0.12	7.56	1.17	.....	10	17	10	4
1913	76.1	+ 2.4	108	45	1.82	— 2.01	6.23	T.	.....	5	21	8	2
1914	76.6	+ 2.9	109	43	2.27	— 1.56	6.50	0.44	.....	5	20	8	3
1915	69.5	— 4.2	92	40	8.32	+ 4.49	15.83	3.68	.....	14	10	12	9
1916	79.7	+ 6.0	105	48	1.78	— 2.05	6.87	0.10	.....	5	23	7	1
1917	74.3	+ 0.6	106	38	2.27	— 1.56	6.06	0.23	.....	7	21	8	2
1918	73.1	— 0.6	105	40	3.17	— 0.66	8.05	0.26	.....	8	19	8	4
1919	77.4	+ 3.7	104	41	2.86	— 0.97	7.82	0.39	.....	6	22	8	1
1920	72.3	— 1.4	102	45	4.22	+ 0.39	7.49	1.11	.....	9	19	9	3
1921	77.9	+ 4.2	104	41	2.53	— 1.30	7.45	0.42	.....	7	19	9	3
1922	71.5	— 2.2	98	40	6.31	+ 2.48	11.72	3.13	.....	11	14	12	5
1923	76.5	+ 2.8	102	47	1.75	— 2.08	5.54	0.29	.....	5	19	9	3
1924	70.2	— 3.5	99	41	3.67	— 0.16	8.90	0.57	.....	9	16	11	4
1925	74.1	+ 0.4	105	40	2.66	— 1.17	7.93	0.80	.....	8	19	10	2
1926	74.8	+ 1.1	109	38	3.72	— 0.11	9.08	0.82	.....	10	15	10	6
1927	72.9	— 0.8	102	45	1.96	— 1.87	4.80	0.09	.....	7	18	10	3
1928	73.9	+ 0.2	98	43	4.43	+ 0.60	9.32	0.65	.....	8	18	10	3
1929	74.1	+ 0.4	98	43	4.31	+ 0.48	10.30	1.47	.....	9	16	10	5

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

Three meteors, out of the ordinary class, were noted. The brilliant one about 9:46 p. m. of July 25, attracted much attention, and reports of it were received from more than 100 persons in all sections of Iowa. Observers as near to the meteor as extreme eastern Iowa and in the country, free from other sounds, heard no sound in connection with the meteor. It was visible only a few seconds. It resembled a sky rocket and made sufficient light to cast shadows in the eastern half of Iowa and to enable one to read large newspaper print at the Mississippi River. Many observers reported that it was of "blinding brilliancy." A preliminary report by Prof. C. C. Wylie of the State University at Iowa City appears elsewhere in this issue.

F. L. D.

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area, and based on the records of 106 stations, was 74.1°, or 0.4° higher than the normal. There was an excess in all divisions except the central which was 0.6° below normal and the southeastern which was exactly normal. The greatest excess was in the northwestern district with an excess of 1.2°. There were one or more stations in every district that showed a

Climatological Data for July, 1929

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		
Northwest District																				
Akron	Plymouth	1,153	2								2.11	— 1.70	0.86	0	7	21	7	3	s.	Orlan C. Moore
Alta	Buena Vista	1,513	37	74.5	+ 2.1	97	22	51	9	31	2.95	— 1.30	1.34	0	8	18	11	2	s.	D. E. Hadden
Alton	Sioux	1,305	23	74.6	+ 1.1	97	27	52	2†	36	1.69	— 1.85	1.26	0	5	12	17	2	s.	W. S. Slagle
Cherokee	Cherokee	1,196	8	72.8	+ 1.7	94	27	50	7†	35	2.82	— 1.00	0.88	0	8	19	10	2	s.	J. E. Wirth
Estherville	Emmet	1,298	33	75.3	+ 3.4	97	13	50	2	38	2.45	— 1.71	0.55	0	8	22	5	4	s.	A. O. Peterson
Hawarden	Sioux	1,181	2								4.59	+ 0.96	3.35	0	5	12	12	7	s.	Earl V. Slife
Inwood (near)	Lyon	1,474	21	73.9	+ 1.3	97	27	49	9	36	4.02	+ 0.65	1.79	0	9	22	5	4	sw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	71.8	— 0.2	94	25	52	2†	33	3.86	+ 1.06	1.42	0	5	15	6	10	sw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	74.4	+ 1.1	95	25†	50	9	35	1.88	— 2.20	0.93	0	7	21	5	5	s.	Henry Newell
Marathon	Buena Vista	1,390	2								2.16		1.15	0	7	21	5	5	sw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	73.6	+ 0.9	94	22	52	2	32	3.34	— 0.11	1.41	0	7	26	0	5	sw.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	73.3	+ 0.7	95	22	48	2	38	3.11	— 0.26	0.82	0	7	25	4	2	s.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	73.1	+ 0.3	94	22†	50	7†	35	3.04	— 0.46	1.54	0	4	12	15	4	ne.	J. W. Dow
Sheldon	O'Brien	1,418	17	73.2	+ 0.2	94	22†	50	2	36	3.15	— 0.95	1.88	0	6	17	10	4	s.	Ross E. Forward
Sioux Center	Sioux	1,461	29	74.2	+ 1.2	97	27	50	9	36	3.10	+ 0.73	1.95	0	2	17	11	3	se.	F. C. Aue
Spencer§	Clay	1,319	14	75.4	+ 2.0	97	26†	52	6†	39	2.30	— 1.20	1.03	0	6	12	15	4	sw.	E. W. Little
Storm Lake‡‡	Buena Vista	1,438	39	74.8	+ 1.3	93	22†	53	2†	30	4.19	+ 0.12	2.75	0	5	23	5	3	s.	L. B. Florey
Washta	Cherokee	1,157	30	73.0	+ 0.7	94	27	51	29	36	2.65	— 1.58	0.76	0	8	20	6	5	s.	H. L. Felter
West Bend	Palo Alto	1,197	35	74.0	+ 0.8	94	22†	50	2	36	2.67	— 0.80	1.55	0	7	21	7	3	s.	Jos. Dorweiler
Means and extremes				73.9	+ 1.2	97	13†	48	2	39	2.95	— 0.77	3.35	0	6	19	8	4	s.	
North Central District																				
Algona	Kossuth	1,224	55	72.8	— 0.2	90	22†	50	20	33	2.49	— 0.57	0.79	0	5	24	5	2	se.	W. E. Laird
Allison‡‡	Butler	1,060	14																	E. W. Detra
Belmond	Wright	1,181	18	73.2	— 0.4	94	25	48	2	38	3.62	0	1.12	0	10	15	8	8	sw.	H. F. Luick
Britt	Hancock	1,236	41	73.2	+ 2.0	95	25	50	2	37	3.01	— 0.94	1.81	0	7	24	2	5	sw.	E. P. Healy
Charles City	Floyd	1,015	37	72.9	+ 0.6	92	25	50	2	31	3.54	— 0.23	1.77	0	12	16	8	7	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	71.9	— 0.3	95	26	48	19	33	4.18	+ 0.61	1.68	0	9	15	12	4	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								2.87	— 0.78	1.45	0	7					L. H. Davis
Humboldt	Humboldt	1,095	40	74.0	— 0.1	96	26	50	2	34	3.65	— 0.09	1.35	0	6	17	9	5	sw.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	72.2	— 0.2	95	25†	46	19	38	1.69	— 1.83	0.64	0	9	13	15	3	se.	American Beet Sugar Co.
Northwood	Worth	1,222	32	72.2	+ 1.0	93	25	49	19	31	2.41	— 1.42	1.10	0	9	19	8	4	nw.	Charles Dwelle
Osage	Mitchell	1,163	34	72.8	+ 0.9	93	24†	49	19	34	2.33	— 0.94	0.86	0	8	11	12	8	sw.	Dr. C. E. Juhl
Means and extremes				72.8	+ 0.3	96	26	46	19	38	2.98	— 0.62	1.81	0	8	17	9	5	sw.	
Northeast District																				
Decorah	Winneshiek	872	35	72.8	+ 0.6	95	26	46	2	38	3.19	— 0.86	1.06	0	11	22	5	4	sw.	M. D. Whitney
Dubuque	Dubuque	700	55	74.0	— 0.1	94	25	52	20	30	1.47	— 2.47	0.65	0	11	10	10	11	s.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	74.2	+ 2.3	95	24†	47	20	43	1.77	— 2.06	0.90	0	8	22	7	2	sw.	R. Z. Latimer
Independence	Buchanan	956	64	73.2	+ 0.2	94	13	49	20	30	3.88	— 0.26	1.15	0	8	22	7	2	sw.	Dr. Geo. Boody
Lansing	Allamakee	632	21								2.33	— 1.70	0.86	0	10					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	72.5	+ 0.3	94	25†	49	20	40	1.93	— 1.84	0.77	0	5	13	13	5	sw.	D. W. Dawson
Oelwein	Fayette	1,036	5	73.4	+ 1.2	92	25†	53	20	34	4.95	+ 1.03	3.10	0	6	21	7	3	s.	John T. Ridler
Postville (near)	Clayton	1,192	29	70.6	+ 0.6	90	26†	47	20	31	1.82	— 2.57	1.37	0	4	22	6	3	sw.	F. L. Williams
Waterloo	Black Hawk	854	45	74.2	+ 0.5	95	25	51	2	37	3.40	— 0.58	1.05	0	9	18	9	4	nw.	R. B. Slippy
Waverly	Bremer	936	32	73.3	+ 0.8	94	25	51	10	36	4.35	+ 0.60	2.42	0	7	24	7	0	s.	D. H. Murphy
Means and extremes				73.1	+ 0.7	95	24†	46	2	43	2.91	— 1.07	3.10	0	8	19	8	4	sw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	74.0	+ 1.3	92	27†	56	2†	29	4.39	+ 0.72	1.28	0	11	16	11	4	s.	George Kibby
Carroll	Carroll	1,265	38	73.6	+ 0.4	94	25	54	7†	34	3.77	+ 0.19	1.17	0	7	23	6	2	se.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	73.8	+ 0.4	94	31	52	9	33	3.73	— 0.02	1.66	0	9	16	11	4	s.	V. L. Byers
Guthrie Center	Guthrie	987	33	74.4	+ 0.8	97	25	50	10†	36	4.31	+ 0.09	2.03	0	7	13	15	3	s.	Floyd H. Bainter
Harlan	Shelby	1,192	29	73.2	+ 0.1	93	31	52	9†	32	3.61	— 0.27	1.09	0	11	15	8	8	s.	Walter Bell
Jefferson	Greene	1,052	29	73.4	+ 0.1	93	27	53	10	31	2.44	— 1.24	1.26	0	8	14	10	7	sw.	W. I. Lyon
Little Sioux	Harrison	1,040	23	75.2	+ 0.8	95	27	50	9	31	5.17	+ 0.97	2.97	0	11	14	14	3	s.	H. W. Kerr
Logan	Harrison	1,120	61	74.0	— 0.2	94	27	52	9	34	6.03	+ 1.62	1.96	0	11	7	23	1	e.	Amy Ann Stern
Onawa	Monona	1,051	27	74.4	+ 0.1	95	27	52	9	31	4.08	— 0.07	1.50	0	9	18	7	6	sw.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32	73.6	+ 0.5	97	22	52	18	35	4.60	+ 0.81	1.40	0	9	23	3	5	nw.	A. W. McIsaac
Sac City	Sac	1,269	52	73.4	+ 0.5	93	22†	53	10	31	3.49	— 0.18	1.55	0	6	16	8	7	s.	F. P. Kessler
Sioux City	Woodbury	1,135	39	75.8	+ 1.5	97	27	55	9	28	3.27	— 0.27	1.17	0	8	8	14	9	s.	U. S. Weather Bureau
Means and extremes				74.1	+ 0.6	97	22†	50	9†	36	4.07	+ 0.19	2.97	0	9	15	11	5	s.	
Central District																				
Ames	Story	926	51	74.2	+ 0.2	93	25†	53	20	36	6.62	+ 2.76	2.40	0	10	16	8	7	s.	Iowa State College
Baxter‡‡	Jasper	998	28	73.4	— 0.8	94	25	50	20	37	5.56	+ 1.67	1.70	0	9	16	11	4	sw.	F. A. Kanne
Boone (near)	Boone	894	23	73.0	— 0.5	94	31	49	10	36	4.64	+ 0.92	1.05	0	10	14	12	5	s.	C. F. Henning
Des Moines	Polk	861	50	75.3	— 0.1	95	31	56	20	32	3.72	+ 0.22	2.05	0	9	7	13	11	sw.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	73.8	— 0.2	95	25	50	2	34	4.14	+ 0.23	1.12	0	10	24	4	3	sw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	73.1	— 1.2	95	25†	51	9	36	4.26	— 0.11	1.74	0	7	12	13	6	sw.	R. E. Bates
Grundy Center	Grundy	976	37	73.2	— 0.9	94	25	49	20	32	5.62	+ 1.89	2.00	0	11	21	7	3	sw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	73.1	+ 0.8	95	27	52	2†	36	3.99	+ 0.05	1.78	0	8	16	9	6	s.	C. H. Gilbert
Marshalltown	Marshall	947	36	74.4	— 0.9	94	25	52	20	30	5.02	+ 1.01	2.09	0	11	11	14	6	sw.	C. C. Pigman
Monroe	Jasper	922	16	74.9	— 0.1	93	25†	54	20	30	4.89	+ 1.33	2.50	0	9	17	6	8	s.	J. A. Dibel
Perry	Dallas	975	27	73.6	— 0.6	94	31	50	10	35	4.21	+ 0.17	1.64	0	8	13	14	4	se.	Eugene N. Hastie
Toledo	Tama	847	34	72.7	— 1.5	93	25	50	20	34	6.08	+ 2.54	1.77	0	9	16	10	5	sw.	H. P. Giger
Van Meter	Dallas	872	9								4.60		2.50	0	7					Calvin K. Smith
Waukee	Dallas	1,032	25	72.9	— 1.2	94	27†	43	20	36	5.81	+ 1.27	3.10	0	10	17	8	6	sw.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	73.0	— 1.0	94	22†	48	2	39	5.48	+ 2.14	1.75	0	10	18	9	4	se.	Frank A. Bonebright
Means and extremes				73.6	— 0.6	95	25†	43	20	39	4.98	+ 1.13	3.10	0	9	16	10	5	sw.	

Daily Precipitation for July, 1929

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	
Northwest District																																	
Akron	Big Sioux	.86			.01		.30		.04						.67	.04							.19										2.11
Alta	Raccoon	1.34			.02		.20	.06	.05						.60	.18	T.								.50								2.95
Alton	Floyd	.01			.05		.35		.02						1.26						T.												1.69
Cherokee	Little Sioux	.63		.01	.04		.56		.24						.88							.08		.38									2.82
Estherville	Des Moines	.45					.35							.05	.30	.45							.10		.55	.20							2.45
Hawarden	Big Sioux	.16			.02		1.04								3.35							.02											4.59
Inwood (near)	Big Sioux	.28					.01	.28	.20	T.					1.40	.39					T.	.09	.50		.87								4.02
Lake Park (near)	Little Sioux						.97		.01						1.42								.35	1.08				T.					3.86
Le Mars	Floyd	.22			.12		.46		.12						.93							.02	.01	T.									1.88
Marathon	Raccoon				T.	.40	.28	.05		T.		.08		1.15	.08	T.							.12										2.16
Pocahontas	Des Moines	.81		.10	T.		.50		.01					T.	.36	T.							.15	1.41									3.34
Rock Rapids	Big Sioux					.09	.81		.37						.82						.10		.22	.70									3.11
Sanborn	Floyd				T.		.92		.03						1.54									.55									3.04
Sheldon	Floyd				.01		.80		T.						1.88						.02		.01	.43									3.15
Sioux Center	Floyd						1.15								1.95																		3.10
Spencer	Little Sioux	2.75			.08		.70		.03						1.03						.01	.01		.52									2.30
Storm Lake	Raccoon	.55		.05	T.		.47								.69	T.								.20									4.19
Washta	Little Sioux	.17					.76		.33						.60							.08	.10	.18									2.65
West Bend	Des Moines						.35							.11	1.55	.08					T.		.39	.02									2.67
North Central District																																	
Algona	Des Moines						.51						.55		.79								.14		.50								2.49
Allison	Cedar	.35				.21	.15		.05				.53	1.12	.65	.50					T.	T.	.05	.01									3.62
Belmond	Iowa						.08						1.81	.15	.67	.20							.11			.02							3.04
Britt	Iowa			.19	T.		.33		.27				.11	1.68	.02	.13					.05		.01	.02	.65	.08							3.54
Charles City***	Cedar																																
Forest City	Cedar	.15			T.		.05	.02		T.			.46	1.68	T.	.29						T.	.19	T.	.01	1.30							4.18
Hampton	Cedar					.23	.10		T.				.10	.86	1.45	T.								.03	.10						T.		2.87
Humboldt	Des Moines	.97		T.			.38						.52	.29	1.35	T.							T.	.14									3.65
Mason City	Cedar			T.	.07	T.	.19		.64				.10	.37	.04						.05		.03	T.		.20							1.69
Northwood	Cedar				.12		.10		.45				1.10		.02						T.	.05	.03	.26		.28							2.41
Osage	Cedar				.45		.50		.86				.08	.02	T.	T.					.03			.16		.23							2.33
Northeast District																																	
Decorah	Mississippi			.04			.06	.40	.02	.44				1.06		15						.01			.05	.75			.21				3.19
Dubuque***	Mississippi	.05			.05	T.	.65		.17				T.	.29	.01	.05						T.		.06	.01	.06						.07	1.47
Fayette	Mississippi	.06			.03	T.	.13						.04	.86	.02										.02	.61			T.				1.77
Independence	Wapsipinicon	.95					.85	.11						1.15	.21	.07	.06									.48							3.88
Lansing	Mississippi	.06			.02		.02	.06		.28				.55		.01									.86	.46	.01						2.33
New Hampton	Wapsipinicon				.20			.22					.20	.77												.54							1.93
Oelwein	Wapsipinicon	.20			T.		.40						T.	3.10	.10	.80		T.								.35							4.95
Postville (near)	Mississippi								.35				.02	1.37												.08						T.	1.82
Waterloo	Cedar	1.05			.10		.02	.18						1.00	.04	.49	T.									.50			.02				3.40
Waverly	Cedar	.28			.02		.15						T.	2.42	.12	.91								T.		.45							4.35
West Central District																																	
Audubon (near)	Nishnabotna	.61		.06	T.	.04	.28		.19				.04	1.28	1.14	.01									.61				T.	.10			4.39
Carroll	Raccoon	.62			.27	.03							1.00	.43	1.17										.25								3.77
Denison	Missouri	.64		.14			.25						.11	1.66	.72									.12	.04					.05			3.73
Guthrie Center	Raccoon	.67		.18		.33	.31							.18	2.03	.61																	4.31
Harlan	Nishnabotna	1.07		.03	T.	.12	.19		T.			.05	.02	.24	.65			T.						.75	.34					.15		3.61
Jefferson	Raccoon	.52		.19	T.	.02	.10							.58	.68	.08					T.		T.	.27	T.					T.		2.44
Little Sioux	Little Sioux	.38		.04	.01	.09	.18		T.			.03		.24	2.97							.04		.61						.58		5.17
Logan	Missouri	.58		.03	T.	.11	.47					.32	.29	1.45	1.96			T.				.04		.36						.42		6.03
Onawa	Missouri	.40		T.		.03	.60		.07				T.	.90	.60							.12		.66						.70		4.08
Rockwell City	Raccoon	1.00		.20	.20	.05	T.						1.05	.10	1.40								.20	.40									4.60
Sac City	Raccoon	1.00		.11	.08	T.	.67		T.						1.55									.08									3.49
Sioux City***	Missouri			.06	T.	T.	.55	.17	T.			T.	T.	.01	.78	T.		T.				1.11	.08	.51				T.					3.27
Central District																																	
Ames	Skunk	1.32		.04	.07	.17	.68							.45	1.30	.17		.02						2.40									6.62
Baxter	Skunk	1.66		.05		.08	.57		.03					.58	.59	1.70									.30								5.56
Boone (near)	Des Moines	1.05			.20	.05	.11	.78						.71	.04	.89									.32	.49							4.64
Des Moines***	Des Moines	.25		.12	.01	.12	.92		T.			.03	T.	.17	2.05						T.			T.	.05					T.		3.72
Fort Dodge	Des Moines	.93			.22		.16						.41	1.12	.42	.53	.02						.01		.32								4.14
Grinnell	Iowa	1.44		T.		.19	.27					T.		.48	.57	1.17									.14								4.26
Grundy Center	Cedar	.62			.15		.14			.06		.06		1.96	1.50	.50									.40	.15			.08				5.62
Iowa Falls	Iowa	.98			.05	.08	T.							.89	.11	1.78							T.		.03				.07				3.99
Marshalltown	Iowa	1.41			.07	.01	.11	.41	T.			T.	.10	.52	.23	2.09	.01					T.				.06				T.			5 02
Monroe	Des Moines	1.15			.03	.61						.05	.16	.33	1.42	1.08	T.	T.							.06								4.89
Perry	Raccoon	.63		.22	T.	.31	.26		T.					.22	.26	.67								T.	1.64								4.21
Toledo	Iowa	1.77			.12	.07	.95		T.			.75		.70	1.20	.50										.02							6.08
Van Meter	Raccoon	.67					.60	.20						.45		2.50									.15					.03		4.60
Waukee	Raccoon	1.00		.16	.02	.13	.95		.12				T.	.30	1.60	1.50									.03					T.		5.81
Webster City	Des Moines	1.10		.03	.17		.08		.16				T.	1.50	1.75	.03					T.			.40					.26				5.48
East Central District																																	
Belle Plaine	Iowa	1.50			.03	.09	.37		T.					.63	.95	.18									.21	.26							4.22
Cedar Rapids	Cedar	2.68			.02	.03	.21	.97		T.				.07	.46	.83	T.	T.								.03							5.30
Clinton	Mississippi	.70			.04	.03	.38	.87	.21			.30		.41		.12													.01		T.		3.07
Davenport***	Mississippi	.35			.06	.41	.23		2.02			.13		1.22	.04	1.15						T.			.03				T.				5.64
Davenport No. 2	Mississippi	.96			.08	T.	.54	.02	1.91	.25		.12		1.22	.02	1.16									.04								6.32
Fairport	Mississippi	2.35	.03		.35	.09	.42	.03	1.03	.27	.43			1.21	.23	1.84				T.					T.				T.				8.28
Iowa City	Iowa	2.17	.27		.11	T.	.24	.08		.09			T.	.03	.18	2.07						T.			.02	.03			.10				5.42
Le Claire	Mississippi	1.46	T.		T.	T.	.39	.04		1.68		.17	T.	.02	.71	.49	.03									.02							5.01
Maquoketa (near)	Maquoketa	.62			.03	.04	.77	.05	.07				.08		.42		.06								.40								2 54
Muscatine	Mississippi	2.71	.01		.38	.07	.43	.15		.94		.07	.17	.57	.06	3.06	.09									.06		.01					8.78
Olin	Wapsipinicon	.70				.11	.65					T.		.37	T.	.47									.78								3.08
Tipton (near)	Cedar	1.01					.43		1.80					.28	.12	.90																	4.54
Williamsburg	Iowa	1.51				.13	.58								1.79										1.64								5.65

Daily Precipitation for July, 1929—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	
Southwest District																																	
Atlantic‖‖	Nishnabotna	.80			.01	.09	.63	.17				.12		.22	.27	.48	T.		T.						1.23						.07	.15	4.24
Bedford	102				T.	.92	1.65				.17	.68		T.		2.12														.62		6.16
Clarinda‖‖	Nodaway	37			.11	.10	4.25	.27				.96	.20	.07		1.75									.14						.25	.32	8.79
Corning	Nodaway	.24		.03	.02	.31	.45				.03	.12	.07	.09		1.40									.02						.80		3.58
Cumberland (near)	Nodaway	.60		.04		.32	.37				T.	.12	.02	.56	.23	.57						T.			1.14						.27		4.24
Glenwood	Missouri	.38				.38	2.20				T.	.98	.20	1.50	.14	.40									.12						1.08		7.38
Lenox	Missouri	.53				.78	.50				T.	.12	T.	.05		.80															1.20		3.98
Oakland	Nishnabotna	.88			.04	.31	.69					2.08	.15	.20	.15	.85								1.18							1.24		7.77
Red Oak (near)	Nishnabotna	.43			T.	.34	2.48				T.	1.14	.32	.11											.04						.48		5.34
Riverton (near)	Nishnabotna	.33			.01	1.38	2.08				.12	2.63	.21	.03		1.90								.57							2.94	.10	12.30
Thurman	Missouri	.38			.02	1.00	1.98				T.	1.70	.32	.15	.03	1.07									.60						2.72	.12	10.09
Omaha, Neb.***	Missouri	.30			.01	.21	1.26				T.	.53	.04	.84	1.33	.16								.10							.26	T.	5.01
South Central District																																	
Afton	Grand	.37		.03	.10	.11	1.05					.04	.03	.09			.03					T.									.92		2.77
Albia‖‖	Des Moines	.31			.20	.23	.94	.09		T.		.10	.23	.07		1.01	.02								.08				.03				3.34
Centerville	Chariton	.23			.17	.02	2.64	.03	T.			1.43	T.	.02	1.37	1.40	T.								T.						.02		7.33
Chariton (near)	Chariton	.42		T.	T.	.52	1.20		.18			T.		T.	1.63	.75	T.																4.70
Corydon (near)	Chariton	.28			.09		1.92		T.			.32	.11	.02	.43	2.32									.02				.13		.11		5.75
Creston‖‖	Missouri	.26	T.		.02	.10	1.42	T.	T.			.10	T.	.09	.06	1.17	T.						T.		.03						.38	.01	3.64
Earlham (near)	Des Moines	.39		.17		.33	.56		.17			T.	.15	.13	.80	.07						T.			.10								2.87
Indianola	Des Moines	.68		.09	.05	.15	.64					.03	.02	.15	1.25	.51															.02		3.59
Knoxville	Des Moines	.76		T.	T.	.38	.80		T.			T.	T.	.18	.38	.18					T.				T.						T.		2.68
Lacona	Des Moines	.34		.06	.01	.05	.78							.01	.52	.58																	2.35
Lamoni‖‖	Grand	.67				.34	2.62	.07	T.			1.66	.12			.01															1.45	.39	7.33
Melrose	Des Moines	.20		.55	.41	1.46									2.07	1.00	.10																5.79
Mount Ayr	Grand	.28	.03		.21	1.08	1.59					.25				.03															.47		3.94
Tingley	Platte	.61			.01	.70	.78					.04	T.	.01		.14	.01								.13						.34		2.64
Winterset	Des Moines	.33		.16	T.	.15	.75					.05	.15	.08	.40	.03									.10						.03		2.23
Southeast District																																	
Bonaparte (near)	Des Moines	.34		.05	T.	.76	.43		.21	.06		.82	T.	.10	.17	.85	T.								.18	T.					T.		3.97
Burlington‖ ‖	Mississippi	.27			T.	.07	2.09	.11		.05		.02	.64	T.	.27	2.02	.25																5.79
Columbus Jct.	Iowa	1.56	.01		.66	.70	.43		.26	.05		.63		.19	2.30	.98									.03	.01							7.81
Fairfield	Skunk	.77		.03	.19	.26	.66					.47		.10	.58	1.22									.13								4.41
Keokuk***	Mississippi	.28		.01	.02	1.18	.11		1.19		T.	.97		.08	.22	1.69	T.									T.					T.		5.75
Keokuk No. 2	Mississippi	.36		.03	.01	.02	1.27	.13		1.23		1.17		.12	.24	1.66		.01															6.25
Keosauqua	Des Moines	.12			.01		.86		.02			.50		.02	.42	1.22																	3.17
Mt. Pleasant	Skunk	.21		.05	.24	.10	1.21		.17			.76		.44	.30	.77	T.								.04						T.		4.29
Oskaloosa	Des Moines	1.03		.03	.04	.55	.77		.07			.05	.04	.12	.57	1.25	T.								.44	.02			T.		T.		4.98
Ottumwa	Des Moines	.71		T.	.21	.23	1.19		.08	T.		.23		.04	.98	.49															T.		4.16
Sigourney (near)	Skunk	1.32		.01	.17	.70	.51		T.			.10		.12	.66	.97					T.				.45								5.01
Stockport (near)	Skunk	.26		.04	.06	1.38	.51		.07	.01		.44		.12	.24	.67	.02								.04								3.86
Washington	Skunk	1.10			.38	1.75	.33					.42		.24	1.30	1.16									.25								6.93
Wever	Mississippi	.30		T.	.70	.20	1.35	.05	T.	T.	T.	.77	.06	.24	.86	T.						T.											4.53

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.

T. Precipitation is less than .01 inch rain or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level)					Relative Humidity, %					‡‡Wind					Sunshine	
						Mean							Maximum				
	Mean	Highest	Date	Lowest	Date	7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	Total movement	Average hourly velocity	Miles	From	Date	% possible	Departure from normal
Chas. City	30.00	30.24	14	29.64	6	79	51	58	25	28†	3,681	4.9	17	sw.	3	69	— 6
Davenport	30.00	30.27	20	29.70	4	78	54	57	23	28	4,752	6.4	48	nw.	8	73	+ 1
Des Moines	29.98	30.22	10	29.67	6	80	58	59	22	28	4,141	5.6	22	sw.	3†	61	—12
Dubuque	30.00	30.30	20	29.63	4	75	49	55	26	28†	3,519	4.7	24	s.	8	68	— 2
Keokuk	30.03	29.26	20	29.77	6	77	55	61	29	29	3,579	4.8	24	sw.	5	65	—12
Sioux City	29.97	30.20	19	29.61	27	81	57	57	30	28	6,729	9.0	32	sw.	23	72	0
Omaha, Nb	29.98	30.19	9	29.70	6	76	54	56	24	28	4,089	5.5	21	nw.	14	64	—11
Means and extremes	29.99	30.30	20	29.61	27	78	54	58	22	28		5.8	48	nw.	8	67	— 6
Normals and records	29.97	*30.47	7th 1892	§29.29	9th 1926	79	57	¶13	25th 1894				‖52	ne.	13th 1905	73	

*Davenport §Sioux City ¶Des Moines ‖Omaha ‡Local mean time †And other dates

number of stations most of the monthly total occurred during a single shower period and local floods occurred at several places. The average number of rainy days was nine, being greatest in the southeastern district with an average of eleven days, and least in the northwestern district with an average of six. For individual stations the range was from fifteen to two. The greatest amount from a single station was 12.30 at Riverton, and the least was 1.47 inches at Dubuque. The greatest amount occurring in 24 consecutive hours was 4.25 inches at Clarinda on the 6th.

MISCELLANEOUS PHENOMENA

Fog: 1st, 7th, 15th, 16th, 17th, 18th, 31st.

Hail: 3d, 4th, 5th, 6th, 8th, 11th, 13th, 14th, 23d, 31st.

Halos (lunar and solar): 3d, 7th, 10th, 12th, 19th, 20th, 23d, 30tl

Haze: 10th, 16th.

Meteors: 9th, 25th, 27th.

Rainbow: 6th, 8th, 10th.

Thunderstorms: All dates except 2d, 5th, 9th, 10th, 16th, 17th, 18th, 19th, 26th, 27th, 29th.

Tornado: 6th.

RIVERS

The average stage of all the principal rivers was below normal. The principal rises on the Mississippi River occurred during the latter part of the 1st and 2nd weeks; thereafter the tendency was to lower stages though there were slight fluctuations with the lowest stages near the end of the month. On the Missouri River there was a general falling tendency through the month except for a slight rise during the 2d week. The highest stages occurred on the 1st and the lowest on the last of the month. Low stages prevailed on most of the larger streams in the interior of the state with falling stages most of the time and no important fluctuations. The only floods of consequence occurred in the smaller rivers in the southwestern portion of the state.

Daily Maximum and Minimum Temperature for the Month of July, 1929

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	Maximum	85	85	84	85	86	75	77	81	80	86	87	88	89	81	80	80	80	84	75	70	83	90	81	87	90	90	90	88	90	89	86	84.0
	Minimum	62	52	62	60	58	64	52	57	54	58	61	68	73	68	60	59	60	57	52	50	58	69	69	70	72	70	69	62	58	60	65	61.6
Alta	Maximum	82	85	87	82	89	74	85	76	80	81	87	89	92	76	74	88	87	81	84	84	89	97	84	92	94	93	94	88	91	91	92	86.1
	Minimum	62	54	63	60	60	59	54	62	51	56	62	71	73	68	61	66	64	61	56	59	64	69	69	66	70	70	69	64	61	63	61	62.9
Alton	Maximum	83	86	91	86	84	80	83	76	80	80	84	89	91	85	72	85	83	82	81	82	88	94	91	92	94	95	97	92	90	90	87	86.2
	Minimum	59	52	64	52	56	63	52	66	54	55	64	73	75	67	69	67	67	58	57	63	68	70	68	67	70	72	71	57	54	57	66	63.0
Belmond	Maximum	84	82	82	87	84	74	83	84	79	84	87	88	89	83	77	85	87	81	76	73	85	93	92	91	94	93	93	88	91	89	90	85.4
	Minimum	63	48	60	60	55	64	60	67	53	54	54	71	69	67	51	67	61	56	51	51	60	65	72	66	67	72	70	60	53	57	63	60.9
Charles City	Maximum	84	80	83	83	80	76	82	85	76	83	84	90	87	72	80	81	89	81	74	74	84	91	78	91	92	92	91	84	89	89	87	83.7
	Minimum	60	50	60	62	58	63	62	62	55	54	62	70	70	64	57	68	65	61	54	53	62	66	70	66	68	73	69	61	58	60	61	62.1
Decorah	Maximum	84	77	83	87	88	80	87	87	75	84	86	89	89	76	83	89	88	81	76	76	85	94	88	93	93	95	93	86	90	92	86	85.8
	Minimum	68	46	47	64	53	65	61	62	55	50	59	66	65	66	58	63	62	57	54	48	60	63	67	65	65	70	69	60	53	54	60	59.8
Dubuque	Maximum	83	77	81	84	80	74	81	86	77	80	79	87	86	74	80	84	87	84	75	74	82	89	91	89	94	94	92	87	90	90	86	83.8
	Minimum	67	58	62	66	61	66	65	66	61	56	65	70	68	65	61	64	65	64	52	52	64	65	70	68	68	75	71	67	60	64	64	64.2
Forest City	Maximum	83	81	82	82	80	77	81	83	73	83	84	87	89	80	78	83	87	82	73	72	85	90	85	92	94	95	92	86	91	89	83	83.9
	Minimum	56	51	57	57	55	62	57	65	51	53	58	65	72	66	56	63	63	57	48	50	61	64	70	63	65	67	67	60	58	58	62	59.9
Independence	Maximum	83	80	80	83	80	76	79	83	85	80	81	88	94	84	78	79	85	84	80	75	82	88	87	87	90	90	90	89	87	88	89	84.0
	Minimum	65	53	58	67	56	64	63	65	58	55	62	69	68	65	58	63	64	60	53	49	60	61	70	69	67	71	69	68	57	69	60	62.5
Inwood	Maximum	85	86	82	80	87	76	83	76	80	83	87	93	90	82	73	85	87	84	80	83	90	95	84	92	95	95	97	86	91	90	88	86.0
	Minimum	55	50	64	54	54	61	51	62	49	58	63	72	72	65	63	64	67	55	56	62	67	68	66	67	70	70	71	55	61	57	68	61.8
Lake Park	Maximum	79	82	85	75	77	68	78	75	82	81	83	91	90	83	72	83	88	76	80	79	87	93	78	87	94	93	92	83	88	91	84	83.1
	Minimum	56	52	62	54	56	60	52	58	54	55	54	70	70	64	62	65	63	57	53	59	63	68	63	64	71	70	69	55	59	58	60	60.5
Mason City	Maximum	83	80	84	81	82	73	80	85	72	81	83	88	90	80	79	83	87	82	72	70	85	93	86	94	95	95	94	86	91	91	88	84.3
	Minimum	59	47	56	57	54	63	60	66	53	55	59	69	71	66	57	65	60	55	46	50	61	65	69	63	68	71	70	59	53	54	63	60.1
New Hampton	Maximum	79	79	75	85	81	76	83	86	78	84	84	91	90	84	82	85	88	86	79	76	85	92	88	93	94	94	93	88	92	91	93	85.6
	Minimum	62	50	58	62	54	63	59	54	53	50	62	68	67	66	56	62	60	58	53	49	58	63	63	64	64	71	66	61	52	55	58	59.4
Northwood	Maximum	83	79	83	80	81	73	82	84	74	82	86	88	87	81	80	84	87	81	71	71	85	90	85	91	93	92	91	84	88	91	85	83.6
	Minimum	60	52	58	59	58	61	60	64	54	56	60	64	70	64	57	66	64	59	49	51	58	65	65	65	68	66	64	62	60	60	65	60.9
Pocahontas	Maximum	84	83	84	82	83	77	81	81	79	80	85	90	91	82	74	85	88	82	80	79	86	94	87	91	93	92	93	88	89	86	89	85.1
	Minimum	63	52	62	57	57	64	55	69	53	53	61	71	72	67	60	67	63	57	54	55	64	66	69	65	70	71	69	60	57	60	65	62.2
Postville	Maximum	77	75	77	80	77	74	79	82	72	80	81	85	82	70	77	80	83	79	70	71	80	87	83	88	89	90	90	82	87	88	86	80.7
	Minimum	62	52	58	62	56	64	61	64	56	51	63	67	65	63	57	61	62	60	51	47	58	63	66	63	65	69	72	63	59	57	61	60.6
Rock Rapids	Maximum	84	86	90	81	86	71	83	76	78	81	86	92	90	78	75	86	87	80	81	83	90	95	87	90	94	92	94	85	90	90	86	85.4
	Minimum	55	48	65	54	55	61	60	63	51	55	61	69	71	65	64	64	65	55	54	60	66	67	64	66	70	70	69	53	56	53	67	61.2
Central Division																																	
Ames	Maximum	84	80	83	84	78	79	81	84	78	81	87	87	87	84	71	82	85	82	78	77	86	91	89	89	93	91	90	89	92	85	93	84.5
	Minimum	60	55	59	62	58	65	60	68	57	54	63	72	73	67	60	68	62	62	58	53	57	65	70	68	70	72	83	76	56	64	63	63.9
Belle Plaine	Maximum	84	80	83	85	78	79	84	89	80	85	88	93	90	82	75	80	89	84	78	78	81	93	94	91	95	95	96	89	88	91	94	86.2
	Minimum	67	52	55	64	55	61	62	65	57	51	64	70	73	67	60	66	65	60	54	50	57	60	79	70	70	67	67	79	54	61	59	62.7
Carroll	Maximum	85	83	84	84	77	82	82	82	78	79	85	88	85	82	71	81	87	82	78	80	84	93	88	92	94	92	92	88	88	84	93	84.6
	Minimum	63	55	58	58	58	57	54	67	54	57	63	72	69	68	62	64	65	60	56	59	64	67	70	69	71	71	70	61	59	59	59	62.6
Cedar Rapids	Maximum	84	79	81	84	77	77	81	88	81	81	82	91	87	81	75	81	89	86	79	75	84	91	92	89	95	93	93	89	90	91	94	85.2
	Minimum	63	51	56	67	54	64	63	65	59	51	65	68	74	65	59	64	62	61	54	50	61	58	68	71	67	67	67	72	51	61	58	62.0
Davenport	Maximum	81	78	81	84	84	81	82	88	81	83	79	90	87	81	81	85	89	86	75	78	83	91	92	85	95	94	93	88	91	89	91	85.5
	Minimum	67	59	64	67	63	67	65	66	65	60	64	69	70	65	61	64	68	62	53	54	65	67	72	73	74	75	75	69	64	69	68	65.9
Des Moines	Maximum	85	81	81	81	79	81	83	85	80	80	85	85	85	77	73	81	87	81	77	78	84	92	92	92	94	93	94	89	91	82	95	84.9
	Minimum	67	61	62	65	61	65	60	68	60	59	68	74	74	66	63	68	64	67	62	56	60	66	71	72	74	72	72	69	61	67	63	65.7
Ft. Dodge	Maximum	83	80	82	84	82	74	83	86	78	84	86	90	88	87	73	83	88	81	80	78	86	94	87	92	95	92	93	88	89	87	89	85.2
	Minimum	63	50	60	59	57	65	55	67	52	56	60	68	68	68	59	67	68	58	55	54	62	67	74	74	70	70	69	62	55	62	63	62.5
Grinnell	Maximum	88	81	80	84	80	78	81	80	78	88	84	89	88	85	72	78	87	81	77	76	85	90	90	88	95	93	95	87	88	85	94	84.7
	Minimum	52	54	57	66	57	64	60	60	51	54	65	68	70	65	59	66	64	62	56	52	57	61	69	68	68	68	68	70	55	62	58	61.5
Guthrie Center	Maximum	88	82	87	90	84	84	87	80	80	80	86	85	86	85	80	82	88	85	78	81	85	95	91	92	97	94	94	96	88	87	93	86.8
	Minimum	61	52	61	62	56	63	54	69	54	50	50	75	72	66	62	67	61	59	58	55	62	67	69	69	69	72	69	64	52	62	60	62.1
Iowa City	Maximum	83	78	81	82	80	78	83	88	81	83	83	90	87	80	76	83	89	85	75	76	85	92	92	85	93	92	92	87	89	89	93	81.8
	Minimum	67	56	57	67	57	65	64	67	62	53	66	69	74	71	60	66	65	64	54	52	62	60	68	72	70	69	69	70	56	62	61	63.7
Iowa Falls	Maximum	83	78	82	84	81	77	81	85	76	83	86	91	87	82	72	80	84	80	76	73	85	93	85	92	94	93	95	85	91	90	88	84.3
	Minimum	66	52	58	57	57	64	61	66	54	53	62	70	70	65	57	67	60	58	55	52	59	65	70	67	68	72	69	65	55	62	62	61.9
Little Sioux	Maximum	91	85	89	86	83	80	85	79	81	78	84	85	84	81	75	82	83	84	82	83	89	93	91	90	93	91	95	88	85	83	92	85.6
	Minimum	65	55	63	68	60	65	57	59	50	57	67	72	73	65	67	66	68	66	60	62	64	71	72	70	72	71	72	65	56	65	66	64.8
Marshalltown	Maximum	85	80	82	86	76	79	83	86	80	84	87	89	88	83	73	78	87	83	77	76	87	91	89	89	94	93	93	89	89	87	93	85.0
	Minimum	65	55	60	64	59	64	62	67	57	58	63	71	72	66	59	67	64	61	59	52	58	65	72	72	70	72	70	68	59	64	63	63.8
Olin	Maximum	88	80	82	86	76	76	82	89	82	81	82	90	88	80	78	84	91	86	76	76	83	93	94	87	96	95	94	92	92	92	96	86.0
	Minimum	65	55	55	64	54	64	63	64	60	50	65	67	70	68	60	60	61	60	51	46	60	55	67	68	70	68	65	71	52	64	58	61.3
Sioux City	Maximum	85	87	92	82	84	75	83	73	80	78	85	88	88	78	74	85	85	83	80	84	90	93	85	91	94	94	97	88	88	85	89	85.3
	Minimum	61	59	66	64	62	64	60	61	55	62	65	73	75	68	65	68	70	63	61	64	66	74	70	72	74	75	73	65	61	69	69	66.4
Southern Division																																	
Albia	Maximum	89	83	81	79	87	80	86	84	80	81	81	89	88	84	74	81	88	87	78	79	86	90	89	87	94	91	93	87	91	81	95	85 3
	Minimum	65	56	59	65	63	65	59	69	59	59	65	70	73	67	63	67	67	65	59	53	58	64	67	71	70	67	69	70	59	66	61	64.2
Atlantic	Maximum	88	85	85	86	81	82	85	84	80	79	86	82	83	83	76	84	82	84	80	83	86	91	93	90	91	90	93	89	92	80	96	85.5
	Minimum	63	52	60	65	58	63	53	66	52	51	63	71	71	67	65	67	59	60	55	58	63	67	69	68	68	68	68	62	53	65	59	62.2
Burlington	Maximum	86	80	83	83	92	82	86	89	82	83	83	92	91	84	74	85	89	84	76	79	88	93	95	86	95	95	93	86	89	88	92	86.5
	Minimum	67	62	61	67	66	65	65	69	68	61	67	69	72	70	65	66	70	72	55	54	63	65	70	75	72	72	73	75	63	75	65	67.1
Columbus Jct	Maximum	80	76	77	81	83	78	80	85	77	83	78	87	83	82	73	79	85	81	73	73	81	86	89	82	90	90	90	83	85	85	86	82.0
	Minimum	66	59	57	65	57	64	62	68	64	55	64	69	72	67	62	65	66	68	54	52	60	59	65	72	70	70	69	73	56	64	59	63.6
Corning	Maximum	90	86	86	83	84	86	84	88	82	78	82	85	85	86	77	82	84	86	81	81	87	93	93	94	96	92	93	90	93	89	94	86.8
	Minimum	65	63	68	67	63	62	53	69	53	50	64	70	70	68	69	68	69	66	52	59	63	63	67	62	68	65	68	67	54	61	60	63.4
Corydon	Maximum	89	79	81	83	86	78	80	82	78	79	80	85	86	82	77	78	84	83	75	77	87	86	87	86	90	87	90	86	86	81	87	83.1
	Minimum	66	58	60	68	64	64	61	70	61	58	67	70	71	69	66	67	67	68	60	55	60	63	68	73	72	69	69	72	59	66	61	65.2
Creston	Maximum	86	81	84	80	84	81	82	83	78	76	83	87	84	83	76	81	84	83	79	82	84	91	92	92	93	93	93	82	90	77	94	84.5
	Minimum	66	58	58	67	64	62	56	68	55	55	66	70	71	70	67	68	64	68	60	54	59	61	67	70	67	65	66	68	68	64	60	63.9
Fairfield	Maximum	83	77	80	83	88	80	81	88	80	83	80	90	88	82	75	80	89	83	75	78	87	92	94	84	93	93	93	86	91	84	91	84.9
	Minimum	67	57	55	65	58	65	61	67	63	51	64	69	74	70	63	66	67	67	56	51	58	59	63	70	70	68	68	73	55	65	57	63.3
Keokuk	Maximum	86	81	81	86	89	82	84	88	82	81	81	90	90	83	72	82	90	85	76	77	84	91	91	88	94	93	93	87	89	84	93	85.7
	Minimum	68	64	61	70	67	67	68	70	67	65	68	71	74	71	67	68	72	68	58	57	64	67	72	75	74	74	75	72	64	70	66	68.2
Knoxville	Maximum	85	80	83	81	80	80	82	86	80	79	83	87	87	82	73	80	87	82	77	78	84	90	90	90	95	93	94	88	91	82	94	84.6
	Minimum	66	58	60	67	57	65	59	68	59	56	67	71	73	69	63	68	65	65	60	53	58	65	69	71	71	69	71	72	56	64	60	64.4
Lamoni	Maximum	86	80	84	82	86	79	83	84	78	76	82	86	86	84	79	81	86	83	78	81	82	90	91	92	92	90	92	86	91	76	93	84.5
	Minimum	65	55	59	65	62	62	58	69	57	56	66	70	71	72	68	67	64	67	59	54	59	60	68	71	69	68	68	69	63	62	61	64.0
Sigourney	Maximum	85	79	81	83	85	80	83	86	81	82	81	89	90	83	71	80	89	83	75	77	85	92	93	89	95	92	93	87	92	85	94	85.2
	Minimum	66	58	57	65	55	64	61	67	61	54	65	69	72	67	61	66	67	66	57	52	58	61	69	68	68	68	70	71	58	66	59	63.4
Thurman	Maximum	92	85	88	88	81	83	84	81	80	78	82	88	84	90	89	84	81	83	80	83	87	90	93	91	92	91	94	87	89	82	92	86.2
	Minimum	66	59	61	67	64	64	58	67	55	54	64	71	73	70	70	70	66	69	58	60	63	69	72	73	71	69	68	68	58	65	67	65.5
Winterset	Maximum	90	82	84	84	78	82	85	85	80	80	85	83	85	82	77	82	87	84	79	81	86	92	93	92	95	93	95	89	90	83	95	85.7
	Minimum	65	53	62	67	60	62	57	69	55	56	66	72	72	68	64	68	63	62	60	54	61	66	70	70	70	70	69	59	59	63	63	63.9
Omaha, Neb.	Maximum	86	85	91	86	82	82	85	79	80	78	83	88	81	86	76	82	79	85	83	84	90	91	91	92	94	94	97	87	88	80	93	85.7
	Minimum	69	65	68	69	65	64	63	65	59	64	65	72	71	67	68	70	69	69	64	64	67	72	73	75	76	75	73	72	65	68	69	68.2

IOWA STORMS, JULY, 1929

Date	County	Township	Nature of Storm	Time	Storm Moved From	Width of Path Miles	Length of Path Miles	Area of Sq. Miles	Size of Hailstones Inches	Damage	Persons Killed	Persons Injured
1	Clinton	Bloomfield	Wind	3:00 p. m.						$4,000		
2	Clinton	Spring Rock	Wind and Flood	4:30 p. m.	W to E					5,700		
3	Carroll	Glidden	Wind and Flood	6:30 p. m.	E to W					$50,000 Flood, $50,000 Wind		
3	Monona	Lincoln	Hail	4:00 a. m.	NW to SE				½	Crops 25%		
4	Hamilton	Marion	Wind	4:00 a. m.	SW to NE					$300		
5	Washington	Dutch Creek	Hail and Wind	5:30 p. m.	NW to SE				¾	Small Crop Damage		
5	Page	SE portion of County	Wind, Rain, Flood	p. m.						No estimate		
5	Louisa	Elm Grove, Morning Sun	Wind	6:00 p. m.	NW to SE					$2,000		
5	Keokuk	Lafayette, Van Buren	Wind	5:00 p. m.	NW to SE				½	Small Crop Damage		
5	Henry	New London	Hail and Wind	6:00 p. m.	N to S				¾	$2,500		
6	Delaware	Dayton	Electric	p. m.	NW to SE					None	1	
6	Cedar	Richland	Tornado	2:00 p. m.	S to N		Short			$550		
6	Benton	St. Clair	Hail	6:30 p. m.	SW to NE					Crops 25%		
8	Scott	Rockingham	Wind, Hail, Flood	2:00 p. m.	SW to NE				¼	$1,000 Flood, $3,000 Other		
9	Polk	City of Des Moines	Electric	3:00 p. m.	NW to SE					None	1	
13	Winneshiek	Decorah	Wind	4:00 a. m.	NW to SE					Heavy Crop Damage		
13	Hamilton	Marion	Wind, Hail, Flood	3:00 a. m.	SW to NE			36	½	$600 Flood, $2,500 Other		
13	Clayton	Marion, Sperry	Wind	5:00 a. m.	NW to SE					Some Crop Damage		
14	Wayne	Walnut	Wind	8:00 p. m.	SW to NE					$25,000		
14	Wapello	Entire County	Wind, Hail, Flood	8:30 a. m.	W to E				Small	Crops 10% by Flood		
14	Taylor	Dallas, Mason, Polk	Wind	7:00 p. m.	N to S					$20,000		
14	Tama	Columbia	Wind	10:00 a. m.	SW to NE	6	6	36		$6,000		
14	Page	Amity, Harlan, Valley	Wind	9:00 p. m.	NE to SW					$5,000		
14	Montgomery	Frankfort, East	Wind and Flood	7:00 p. m.	NE to SW					$2,000 Flood, $13,500 Other		
14	Marion	Red Rock	Wind	8:30 a. m.	NW to SE					$2,000		
14	Louisa	Oakland	Wind	1:00 p. m.	W to E					Crops 15%		
14	Fremont	Prairie	Wind and Flood	8:00 p. m.	NE to SW					$12,000 Flood, $18,000 Other		
14	Dallas	Lincoln	Wind	7:00 a. m.	N to S					Some Crop Damage		
14	Adams	Douglas, Washington	Wind and Hail	6:00 p. m.	NE to SW				¼	$1,200		
23	Osceola	Viola	Wind and Hail	2:30 p. m.	N to S				Small	Crops 10%		
23	Sac	Wheeler, Levey	Hail and Wind	p. m.		2 to 3				Some to Crops		
23	Webster	Roland	Wind	6:00 p. m.	W to E					Oats 25%		
24	Monroe	Bluff Creek	Wind	5:30 a. m.	NE to SW					$1,000		
24	Black Hawk	Bennington, Lester	Wind	11:00 p. m.	NE to SW					$2,000		
31	Buchanan	Madison	Wind and Hail	1:00 p. m.	NW to SE	2			1	Light		
31	Dubuque	New Wine	Wind and Hail	p. m.						Small Bldg. & Crop Damage		

THE METEOR OF JULY 25, 1929

C. C. Wylie, University of Iowa

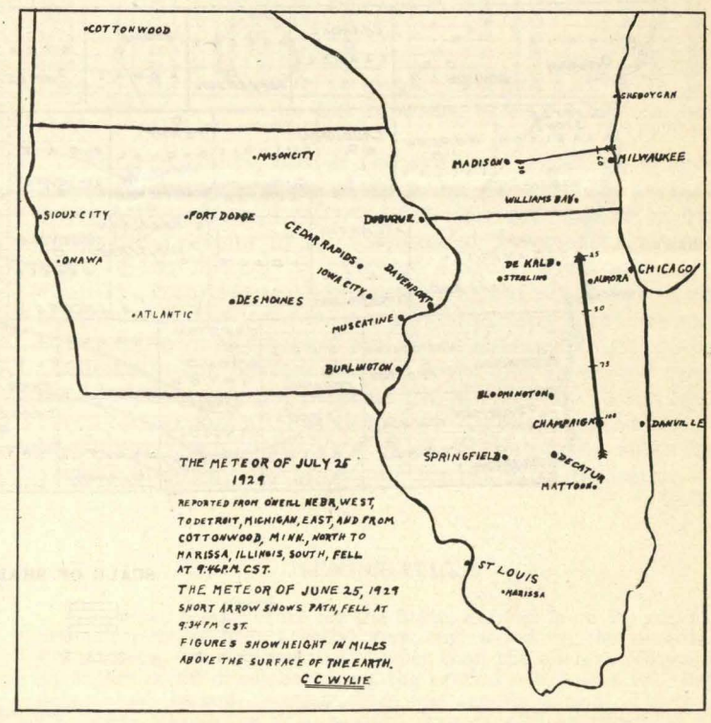
This meteor, which fell at 9:46 P. M. central standard time, has been reported from O'Neill, Nebraska, west, and Cottonwood, Minnesota, northwest, to Detroit, Michigan, east, and Marissa, Illinois, south. (See map for locations of Cottonwood and Marissa.) The reports from west and northwest were collected in Sioux City by the Weather Bureau, and are evidently observations of this meteor. Information has been received from the states of Illinois, Indiana, Iowa, Michigan, Missouri, Minnesota, Nebraska, Wisconsin, and South Dakota. This by no means represents the area over which it was visible. Rather it represents the area over which Mr. Reed and the Department of Astronomy at the University of Iowa can collect information in a short time. If we assume that the meteor was seen as far in other directions as it has been reported to the west and northwest, and it should have been with proper weather conditions, it was seen also in Alabama, Arkansas, Canada, Georgia, Kansas, Kentucky, Maryland, Mississippi, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Tennessee, Virginia, and West Virginia. It lighted up nearly a million square miles of territory, a remarkable record.

Because of its great brilliancy, it gave the majority of observers the impression of being quite close. At the Yerkes Observatory, Williams Bay, Wisconsin, astronomers of long experience started to dodge when they saw the brilliant meteor coming directly toward them, although it seems to have disappeared at a distance from them of about fifty miles. Near Milwaukee, coast guard men on the edge of Lake Michigan thought they saw a "flaming airplane diving into the lake." Even in Nebraska a group was sitting in an unlighted room when "the whole house was lighted up with such an intense bright red light, and all exclaimed at once, 'What was that?' Our first thought was that it was the light from a car thrown just right"; and from that same state, careful reports include such items as that the observer's impression was that the meteor must have fallen within half or three-quarters of a mile of where he was standing. Many letters from Iowa and eastern Illinois contain such expressions as "it fell directly east of us, seemed to be just across the road."

Whether any meteorites reached the surface of the earth we cannot say as yet. The bright meteor itself came low enough, about twenty-four miles, that it appears possible for meteorites to have fallen from there to the surface of the earth. Meteorites fall through our lower atmosphere as dark bodies, not as balls of fire, and as this fall occurred at night they could not have been seen. In our opinion, nothing larger than ten or fifteen pound stones reached the surface of the earth, and as several square miles of territory must be searched, their recovery will be problematical. However, Professor C. P. Olivier of the University of Pennsylvania, President of the American Meteor Society, writes us, "I have hopes that pieces may be recovered."

The letters show that a few other bright meteors were seen that evening, which is not unusual in late July. For example, Mr. Fred E. Allender, of Davenport, sends a sketch of the path of one observed at 11:25 P. M., which was probably brighter than Venus, but we have gotten no other reports of that particular object. The evidence at hand indicates that only one meteor of great brilliancy was seen that evening.

(Continued on Next Page)



The large arrow on the accompanying map shows the path in our atmosphere, the figures beside the arrow being the height in miles above the surface of the earth. The path was computed from two sets of observations; first, those of the astronomers at the Yerkes Observatory as communicated by letter; and second, from the altitude and azimuth of points of appearance and disappearance for certain places in eastern Iowa. These were determined by having an experienced person interview the observer at the exact place from which the meteor was seen, and read the angles from a transit pointed in the direction indicated.

The short arrow in southern Wisconsin shows the path of a meteor a little brighter than Venus as viewed from Iowa. This path was computed from observations made only in the state of Iowa. It fell at 9:34 P. M. on the evening of June 25.

The meteor of July 25 is the third bright meteor in a little more than two years on which Mr. Reed has cooperated with the Department of Astronomy at the University of Iowa, and we appreciate very much the information he has furnished us. Perhaps some who have been helping in this work will be interested in improving the accuracy of the positions they furnish. The best method is, of course, unless it was observed by one familiar with the constellations, to enlist the aid of an engineer, take him with you to the place the meteor was observed, and let him read with a transit the altitudes and azimuths for the points at which the meteor was first seen and last seen. Another method, used by experienced persons when no transit is available, is illustrated by measures furnished by Miss Ruth Berry of Toulon, Illinois. Standing where she saw the meteor, she pointed a yard stick toward the place of disappearance, and a friend measured the east end of the yard stick as 8 inches above and 22½ inches north of the west end. She then pointed toward the place where she had first seen it, and found the east end measured 18 inches above and 22½ inches south of the west end. From these simple measures, which can obviously be made very easily, an astronomer can quickly compute the altitude and azimuth.

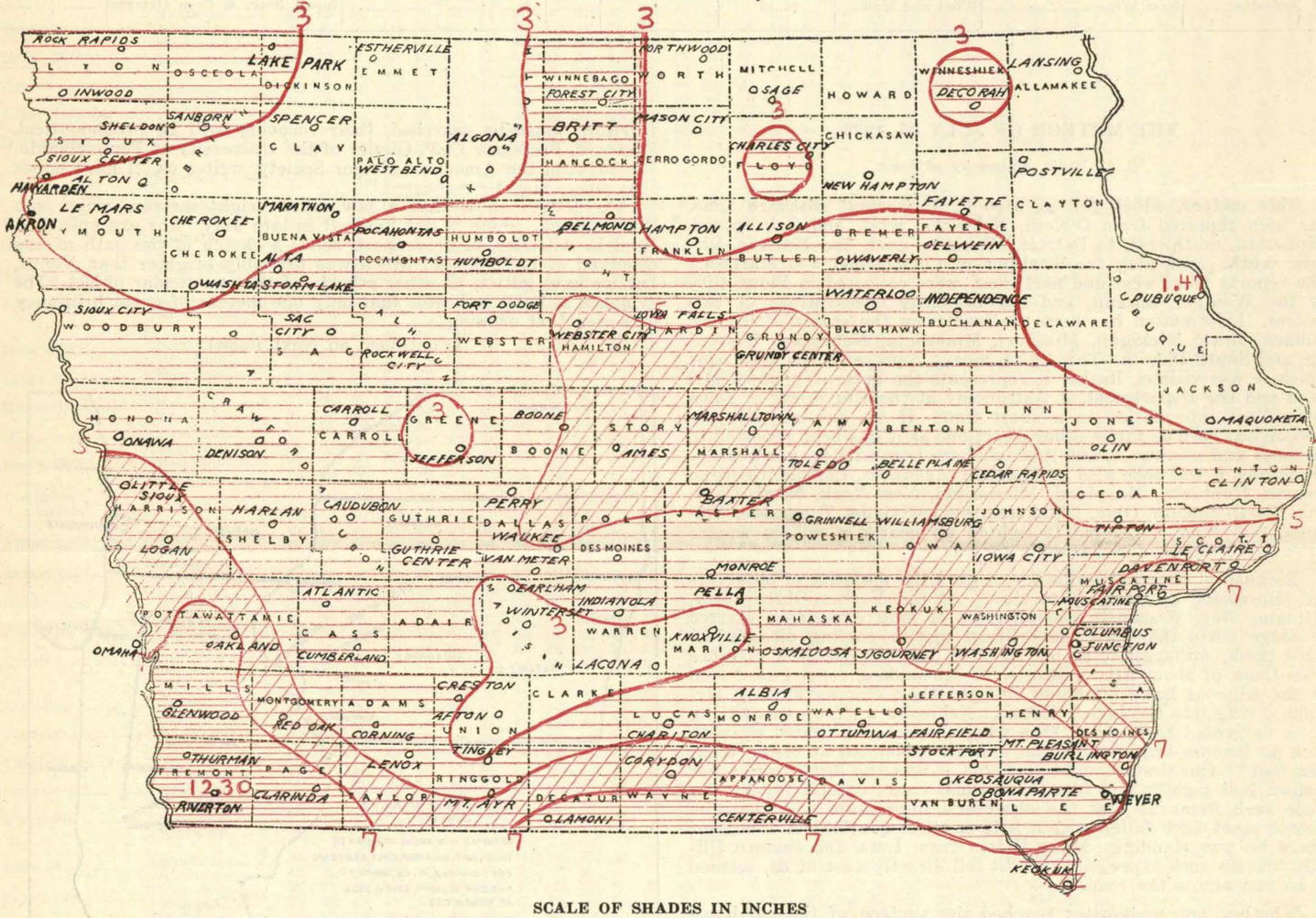
SOUND OF METEORS

In connection with the meteor of July 25, several persons reported sounds, but the lack of agreement and other circumstances indicates that the sounds reported came from other sources than the meteor.

Sound travels only about a mile in 5 seconds, so if a meteor were 50 miles from an observer, he would not hear any sound, if there be sound, till more than four minutes after the disappearance of the meteor. It is doubtful if any sound produced by a meteor could be heard 100 miles, but if it could it would take nearly 10 minutes for the sound to reach the observer. So observers should listen carefully for sounds for at least 10 minutes. Sounds made by the recent meteor at the instant of its disappearance, at a height of 24 miles, would not have been heard by persons directly below till approximately two minutes afterward. Isolated country locations are best for observations of sound.

C. D. R.

TOTAL PRECIPITATION, JULY, 1929



SCALE OF SHADES IN INCHES

Less than 3 | 3 to 5 | 5 to 7 | More than 7

U. S. DEPARTMENT OF AGRI...
CHARLES F. MARVIN, Chief.

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU

CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, AUGUST, 1929 NO. 8

GENERAL SUMMARY

The average temperature for August 1929, was but 0.2° above the normal, but there was a marked contrast between the eastern and western portions. The eastern portion, except a small area in the northeastern district, was considerably below normal, while over the western half there was an excess. The weather during the month was noticeably changeable. The first half of the month was the colder, and the coldest weather generally occurred during the latter part of the first week and at the end of the second week and the beginning of the third week. A rather warm period prevailed from the 21st to the 26th, with the temperature 90° or higher on several days. The warmest periods were somewhat tempered by low humidity, and there was less suffering by both man and beast than is usually experienced in August

The most outstanding feature in connection with the month's weather was the torrential rain storm that occurred during the night of the 1st-2nd. The heavy rain covered an area reaching from the north-central district, southeastward over the east-central district, the area of heaviest rainfall being in a rather narrow strip from Hardin County to Cedar County. The greatest fall, 8.27 inches, occurred in Tama County, at Toledo, from 11:00 P. M. of the 1st to 6:00 A. M. of the 2nd. Most of this amount fell within a period of about two hours, and it is probable that this was the heaviest rainfall ever experienced in the State for such a short time. This unusual downpour caused a rapid rise in the Iowa River and its tributaries; some localities reported the highest stream stages ever known. As a result of the unexpected rise, there were large property losses and many dwellings, both in towns and rural localities, were flooded. The property losses consisted of highway and railway brides washed away, stretches of track washed out, highways damaged, and much shocked grain carried away and farm animals drowned. Miles of railway were under water and many trains had to be detoured or suspended temporarily.

The rainfall averaged 1.00 inch below the normal, but as much of the rain fell in short periods, the effective rainfall for the State was much less than the departure indicates. The area of heaviest rainfall had very little rain after the 2d, and this area as well as the greater portion of the State, was injured somewhat by drouth at some time during the month. Crops suffered considerably in much of the State, particularly in the southwestern and west-central districts; corn fired badly in many fields, the output of commercial canneries was greatly reduced, and gardens in many places were ruined by the dry weather. Very little plowing was done on account of the dry weather, and where attempted the soil was so cloddy that it could not be harrowed. The weather was favorable for the completion of threshing and curing hay, but pastures were generally brown, and in many localities, bare.

F. L. D...

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
1873	75.7	+ 4.0	102	54	4.17	+ 0.73	8.40	0.00					
1874	74.3	+ 2.6	99	55	3.12	— 0.32	9.16	0.85					
1875	68.9	— 2.8	92	41	4.04	+ 0.60	7.60	1.07					
1876	73.2	+ 1.5	96	46	5.15	+ 1.71	10.04	1.50					
1877	71.9	+ 0.2	100	53	4.36	+ 0.92	12.65	0.10					
1878	74.4	+ 2.7	100	50	3.22	— 0.22	9.15	0.43					
1879	72.0	+ 0.3	100	42	2.70	— 0.74	7.50	0.45					
1880	72.5	+ 0.8	104	41	4.77	+ 1.33	9.88	0.77					
1881	76.5	+ 4.8	104	48	2.71	— 0.73	6.85	0.32					
1882	71.5	— 0.2	96	43	1.61	— 1.83	6.90	0.07					
1883	69.2	— 2.5	98	42	2.58	— 0.86	8.95	0.22					
1884	68.5	— 3.2	93	41	4.09	+ 0.65	8.34	1.98					
1885	66.9	— 4.8	98	40	5.90	+ 2.46	12.68	2.79					
1886	74.2	+ 2.5	103	34	2.02	— 1.42	7.13	0.30					
1887	70.8	— 0.9	103	34	2.75	— 0.69	8.85	0.51					
1888	70.4	— 1.3	110	40	4.37	+ 0.93	8.40	0.95					
1889	71.3	— 0.4	104	37	1.87	— 1.57	9.95	0.12					
1890	68.1	— 3.6	102	34	3.25	— 0.19	6.44	1.03					
1891	69.1	— 2.6	106	34	4.24	+ 0.80	13.02	1.23		8	13	12	6
1892	71.4	— 0.3	102	40	2.24	— 1.20	4.69	0.65		5	18	9	4
1893	69.4	— 2.3	101	30	2.32	— 1.12	6.22	0.40		5	19	9	3
1894	74.6	+ 2.9	108	38	1.58	— 1.86	4.53	T.		4	21	8	2
1895	71.9	+ 0.2	103	37	4.43	+ 0.99	10.63	0.67		7	17	9	5
1896	71.7	0.0	104	34	3.52	+ 0.08	12.25	0.86		8	15	11	5
1897	68.9	— 2.8	104	35	1.86	— 1.58	4.98	0.47		6	15	11	5
1898	71.2	— 0.5	103	40	3.44	0.00	10.55	0.58		6	17	9	5
1899	74.4	+ 2.7	100	41	3.68	+ 0.24	10.45	1.12		7	17	10	4
1900	77.4	+ 5.7	103	44	4.65	+ 1.21	10.43	1.26		6	18	10	3
1901	73.8	+ 2.1	105	40	1.29	— 2.15	4.46	T.		5	20	9	2
1902	69.1	— 2.6	98	37	6.58	+ 3.14	15.47	1.57		11	11	11	9
1903	69.1	— 2.6	101	41	6.64	+ 3.20	17.74	2.55		11	12	10	9
1904	69.1	— 2.6	97	35	3.43	— 0.01	6.75	0.66		7	17	8	6
1905	74.3	+ 2.6	104	44	4.05	+ 0.61	8.47	1.04		9	16	9	6
1906	74.1	+ 2.4	101	33	3.95	+ 0.51	10.51	0.92		9	17	9	5
1907	71.1	— 0.6	99	37	4.33	+ 0.89	9.67	1.05		9	17	9	5
1908	70.0	— 1.7	101	38	4.77	+ 1.33	10.55	1.35		9	17	9	5
1909	76.1	+ 4.4	103	33	1.81	— 1.63	8.21	T.		5	21	8	2
1910	71.9	+ 0.2	104	36	3.88	+ 0.44	11.22	0.37		8	15	10	6
1911	71.7	0.0	107	34	3.32	— 0.12	9.47	0.44		9	16	10	5
1912	71.0	— 0.7	101	40	3.78	+ 0.34	7.90	0.89		10	15	10	6
1913	76.6	+ 4.9	108	40	2.68	— 0.76	7.13	0.08		6	17	10	4
1914	73.7	+ 2.0	103	40	2.19	— 1.25	4.90	0.42		7	17	10	4
1915	65.9	— 5.8	91	30	2.81	— 0.63	9.14	0.27		8	16	8	7
1916	74.0	+ 2.3	106	35	2.58	— 0.86	6.23	0.49		7	18	9	4
1917	69.4	— 2.3	102	31	2.29	— 1.15	6.31	0.70		7	19	8	4
1918	76.0	+ 4.3	113	38	3.61	+ 0.17	8.38	0.54		8	16	10	5
1919	71.5	— 0.2	103	38	2.59	— 0.85	5.72	0.97		7	19	9	3
1920	69.3	— 2.4	98	39	3.35	— 0.09	8.52	0.44		7	18	8	5
1921	72.1	+ 0.4	102	37	5.04	+ 1.60	9.04	2.20		8	16	11	4
1922	73.8	+ 2.1	102	42	3.06	— 0.38	9.80	0.33		8	19	8	4
1923	70.6	— 1.1	102	38	5.42	+ 1.98	13.14	1.46		12	15	9	7
1924	71.7	0.0	100	40	5.35	+ 1.91	12.38	1.90		10	16	10	5
1925	72.4	+ 0.7	99	39	3.47	+ 0.03	8.36	0.31		8	18	9	4
1926	73.5	+ 1.8	103	47	3.80	+ 0.36	7.33	1.64		10	16	10	5
1927	67.9	— 3.8	99	35	2.36	— 1.08	5.68	0.67		8	15	10	6
1928	72.7	+ 1.0	100	37	6.42	+ 2.98	12.80	2.16		9	19	8	4
1929	71.9	+ 0.2	102	37	2.44	— 1.00	9.27	0.78		6	18	9	4

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

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area, and based on the records of 104 stations was 71.9°, or 0.2° higher than the normal. The western half of the State was generally above normal, and the eastern half, with the exception of two limited areas, was below normal. The contrast in temperature was marked; a small area in the northwestern district showed an excess of more than four degrees, while there was a deficiency of more than three degrees in the southeastern district. This situation resulted in producing lower mean temperatures at several stations in the southeastern district, generally the warmest portion of the State, than several in the northwestern district, which normally is considerably cooler. The highest monthly mean was 75.3° at Lenox and Thurman and the lowest was 67.0° at Postville. The absolute range for the State was 65°, from 102°, at Keokuk, No. 2 on the 22d to 37° at Decorah on the 15th. The average number of days with the maximum temperature 90°, or higher, was 6. The greatest average was in the southwestern district with 12 days and least in the north-central district with 2. The greatest number at a single station was 15 at Lenox while at Forest City and Mason City the temperature did not reach 90°.

Climatological Data for August, 1929

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District																				
Akron	Plymouth	1,153	2								3.79	+ 0.87	0.99	0	11	21	9	1	se.	Orlan C. Moore
Alta	Buena Vista	1,513	37	73.0	+ 2.7	98	24	47	14	36	2.12	— 1.46	0.52	0	8	20	11	0	s.	D. E. Hadden
Alton	Sioux	1,305	23	72.5	+ 1.6	96	24	42	15	38	3.47	+ 0.37	1.55	0	12	8	21	2	se.	W. S. Slagle
Cherokee	Cherokee	1,196	8	71.8	+ 1.8	97	24	42	15	40	2.46	— 0.71	.79	0	10	23	7	1	s.	J. E. Wirth
Estherville	Emmet	1,298	33	73.0	+ 4.2	99	24	45	15	45	1.33	— 1.86	.45	0	7	21	10	0	s.	A. O. Peterson
Hawarden	Sioux	1,181	2								1.70	— 1.08	.54	0	10	20	6	5	se.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	72.6	+ 2.1	97	24	43	14	37	2.46	— 0.13	1.52	0	6	26	4	1	se.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	71.0	+ 1.5	95	24	46	15	37	2.57	— 0.93	1.00	0	6	16	9	6	se.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	72.7	+ 1.7	100	24	42	15	40	2.01	— 0.67	.69	0	10	25	5	1	se.	Henry Newell
Marathon	Buena Vista	1,390	2								2.89		.88	0	6	22	7	2	s.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	71.5	+ 0.9	92	24	48	14	37	2.85	— 0.52	1.02	0	8	22	9	0	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	71.0	+ 1.3	97	24	40	15	41	3.15	+ 0.80	1.19	0	7	27	3	1	s.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	71.1	+ 0.6	96	24	43	14	38	3.20	— 0.01	.99	0	9	13	11	7	se.	J. W. Dow
Sheldon	O'Brien	1,418	17	72.5	+ 2.0	96	24	44	15	38	3.84	+ 0.84	1.23	0	11	21	8	2	s.	Ross E. Forward
Sioux Center	Sioux	1,461	29	72.6	+ 2.1	96	24	43	14	36	1.48	— 1.34	.51	0	5	15	15	1	se.	F. C. Aue
Spencer	Clay	1,319	14	73.6	+ 3.0	99	24	40	15	44	2.03	— 1.37	.58	0	6	17	11	3	se.	E. W. Little
Storm Lake	Buena Vista	1,438	39	72.7	+ 1.3	95	24	48	14	35	2.95	— 0.19	.84	0	7	19	12	0	ne.	L. B. Florey
Washta	Cherokee	1,157	30	71.4	+ 0.8	98	24	40	15	41	3.07	+ 0.13	.90	0	9	20	9	2	s.	H. L. Felter
West Bend	Palo Alto	1,197	35	71.9	+ 1.3	93	24†	45	15†	39	1.70	— 1.99	.70	0	5	25	6	0	s.	Jos. Dorweiler
Means and extremes				72.2	+ 1.8	100	24	40	15	45	2.58	— 0.50	1.55	0	8	20	9	2	se.	
North Central District																				
Algona	Kossuth	1,224	55	70.9	+ 0.6	93	24	46	12†	41	2.48	— 1.07	1.10	0	6	29	1	1	se.	W. E. Laird
Allison‡‡	Butler	1,060	14																	E. W. Detra
Belmond	Wright	1,181	18	70.7	+ 0.9	92	22	41	15	38	3.52	+ 0.44	2.53	0	5	18	6	7	sw.	H. F. Luick
Britt	Hancock	1,236	41	70.0	+ 0.1	91	24	44	15	34	3.00	— 0.77	2.40	0	4	24	4	3	sw.	E. P. Healy
Charles City	Floyd	1,015	37	69.4	+ 0.3	90	22	44	15	31	1.24	— 2.24	1.20	0	4	18	11	2	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	69.4	— 0.8	89	24	44	15	31	2.70	— 0.67	1.76	0	6	11	17	3	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								3.37	— 0.08	2.86	0	3					L. H. Davis
Humboldt	Humboldt	1,095	40	71.4	— 0.4	94	24	41	15	40	2.93	— 0.37	1.41	0	5	21	10	0	se.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	69.2	— 0.4	89	12†	40	15	37	2.51	— 1.23	1.27	0	3	16	13	2	se.	American Beet Sugar Co.
Northwood	Worth	1,222	32	69.7	+ 1.2	91	24	42	19	37	3.54	— 0.42	2.35	0	6	12	18	1	sw.	Charles Dwelle
Osage	Mitchell	1,163	34	70.2	+ 1.5	90	12†	41	19	37	1.19	— 1.94	.90	0	3	10	16	5		Dr. C. E. Juhl
Means and extremes				70.1	+ 0.3	94	24	40	15	41	2.65	— 0.82	2.86	0	4	18	10	3	se.	
Northeast District																				
Decorah	Winneshiek	872	35	68.7	+ 0.2	92	22†	37	15	43	1.20	— 2.10	.73	0	6	21	8	2	sw.	M. D. Whitney
Dubuque	Dubuque	700	55	70.4	— 1.3	92	22	48	15	28	1.83	— 1.41	1.51	0	3	12	11	8	s.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	70.6	+ 1.2	95	22	39	15	39	2.62	— 0.92	1.78	0	6	21	7	3	sw.	R. Z. Latimer
Independence	Buchanan	956	64	69.8	— 1.5	90	22	45	15	30	3.31	+ 0.10	2.06	0	5	24	3	4	se.	Dr. Geo. Boody
Lansing	Allamakee	632	21								2.85	— 0.10	1.25	0	8					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	70.4	+ 0.6	94	22	40	15	37	1.70	— 1.80	1.30	0	3	15	13	3	se.	D. W. Dawson
Oelwein	Fayette	1,036	5	69.8	— 0.4	91	22	43	15	32	2.45	— 0.87	2.25	0	2	20	7	4	s.	John T. Ridler
Postville (near)	Clayton	1,192	29	67.0	— 0.8	90	22	43	19	30	1.67	— 1.78	.88	0	2	17	12	2	sw.	F. L. Williams
Waterloo	Black Hawk	854	45	70.6	— 0.9	94	22	42	15	36	2.14	— 1.17	1.70	0	4	21	8	2	se.	R. B. Slippy
Waverly	Bremer	936	32	70.2	— 0.4	92	22	43	15	35	3.97	+ 0.73	3.00	0	5	25	3	3	s.	D. H. Murphy
Means and extremes				69.7	— 0.4	95	22	37	15	43	2.37	— 0.94	3.00	0	4	20	8	3	s.	
West Central District																				
Audubon (near)	Audubon	1,297	33	73.0	+ 2.2	96	24	48	15	33	0.84	— 2.79	.40	0	5	22	9	0	sw.	George Kibby
Carroll	Carroll	1,265	38	72.5	+ 1.4	97	21	46	15	36	2.05	— 1.80	.50	0	8	25	6	0	se.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	72.4	+ 0.9	95	21†	46	15	33	3.02	— 0.79	1.90	0	6	15	12	4	s.	V. L. Byers
Guthrie Center	Guthrie	987	33	73.0	+ 1.3	97	12†	41	15	48	0.78	— 3.08	.78	0	1	13	15	3	s.	Floyd H. Bainter
Harlan	Shelby	1,192	29	71.9	+ 0.9	94	21	43	15	36	2.38	— 1.28	.61	0	10				se.	Walter Bell
Jefferson	Greene	1,052	29								1.18	— 2.00	.75	0	3					W. I. Lyon
Little Sioux	Harrison	1,040	23	74.2	+ 1.6	95	21†	44	15	36	2.37	— 1.37	.69	0	10	12	18	1	s.	H. W. Kerr
Logan	Harrison	1,120	61	72.7	0.0	95	21	44	15	35	2.48	— 1.21	.78	0	9	3	26	2	se.	Amy Ann Stern
Onawa	Monona	1,051	27	72.4	+ 0.3	94	21	44	15	35	2.47	— 1.59	.86	0	7	22	6	3	se.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32	71.8	+ 0.7	95	24	45	15	37	2.30	— 1.32	1.50	0	3	30	1	0	nw.	A. W. McIsaac
Sac City	Sac	1,269	52	71.9	+ 0.3	96	24	45	15	36	1.99	— 1.40	.85	0	5				s.	F. P. Kessler
Sioux City	Woodbury	1,135	39	73.8	+ 1.8	94	21	48	15	33	1.55	— 1.58	.50	0	10	15	13	3	se.	U. S. Weather Bureau
Means and extremes				72.7	+ 1.1	97	12†	41	15	48	1.95	— 1.69	1.90	0	6	17	12	2	se.	
Central District																				
Ames	Story	926	51	71.6	— 0.2	91	12†	44	15	35	2.83	— 0.61	1.11	0	6	16	13	2	s.	Iowa State College
Baxter	Jasper	998	28	72.2	0.0	93	10	46	15	35	2.41	— 0.82	1.08	0	6	13	15	3	se.	F. A. Kanne
Boone (near)	Boone	894	23	71.5	+ 0.6	93	12†	39	15	43	2.37	— 1.19	.83	0	8	19	9	3	s.	C. F. Henning
Des Moines	Polk	861	50	73.4	+ 0.3	95	21	49	15	32	2.82	— 0.70	1.02	0	7	12	12	7	sw.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	71.0	+ 0.2	94	24	44	15	37	3.92	+ 0.32	2.56	0	8	23	7	1	se.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	71.2	— 1.4	95	22	44	15	36	2.23	— 1.47	1.00	0	4	18	9	4	w.	R. E. Bates
Grundy Center	Grundy	976	37	70.8	— 1.1	90	12†	45	15	32	2.20	— 1.10	1.90	0	4	23	5	3	sw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	70.2	— 0.9	90	12	43	15	35	3.29	— 0.12	2.56	0	6	14	15	2	sw.	C. H. Gilbert
Marshalltown	Marshall	947	36	72.3	— 0.5	92	21	47	15	36	5.76	+ 2.76	4.97	0	5	17	11	3	se.	C. C. Pigman
Monroe	Jasper	922	16	73.0	— 0.4	94	21	48	14†	32	1.10	— 2.30	.68	0	4	25	0	6	s.	J. A. Dibel
Perry	Dallas	975	27	71.5	— 0.4	94	24	39	15	42	2.59	— 1.48	1.02	0	6	15	12	4	se.	Eugene N. Hastie
Toledo	Tama	847	34	70.4	— 1.7	92	22	43	15	33	9.27	+ 6.34	8.35	0	6	15	11	5	se.	H. P. Giger
Van Meter	Dallas	872	9								2.58		0.85	0	7					Calvin K. Smith
Waukee	Dallas	1,032	25	72.5	0.0	94	21	46	15	34	1.97	— 1.39	1.07	0	7	22	7	1	sw.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	70.2	— 1.4	92	12	39	15	40	3.82	+ 1.00	2.55	0	5	26	5	0	se.	Frank A. Bonebright
Means and extremes				71.6	— 0.4	95	21†	39	15	43	3.28	— 0.10	8.35	0	6	19	9	3	se.	

Climatological Data for August, 1929—Continued

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
East Central District																				
Belle Plaine	Benton	866	38	71.0	— 0.5	93	10†	47	4	35	7.03	+ 3.80	6.46	0	7	18	9	4	se.	O. C. Burrows
Cedar Rapids	Linn	737	46	70.0	— 1.8	95	22	41	15	35	4.99	+ 1.49	3.75	0	5	10	8	13	se.	J. T. Wurster
Clinton	Clinton	595	55	71.5	— 1.2	98	22	45	15	36	2.49	— 1.14	2.19	0	4	20	2	9	s.	Dr. A. P. Bryant
Davenport	Scott	580	57	72.4	— 0.7	98	22	51	15	28	2.69	— 0.80	2.57	0	4	9	16	6	sw.	U. S. Weather Bureau
Davenport No. 2	Scott	690	3	71.8		98	22	45	15	37	3.14		2.89	0	6	20	6	5	sw.	Rex Shriver
Fairport	Muscatine	567	7	72.4	— 0.6	97	22	47	15	31	3.09	— 0.86	1.61	0	7	14	6	11	s.	Bureau of Fisheries
Iowa City	Johnson	733	68	71.0	— 1.0	95	22	45	15	32	3.96	— 0.14	2.72	0	5	14	12	5	s.	Prof. J. F. Reilly
Le Claire	Scott	576	28								3.45	+ 0.42	2.73	0	4					Margaret T. Disney
Maquoketa (near)	Jackson	692	23	69.0	— 0.6	96	22	40	15	38	2.57	— 0.57	1.84	0	3	14	8	9	nw.	John Strodthoff
Muscatine	Muscatine	546	67								2.33	— 1.81	0.90	0	6					William Molis
Olin	Jones	760	29	69.7	— 1.9	97	22	40	15	39	2.02	— 1.58	1.87	0	2	22	6	3	se.	Mrs. L. Stingley
Tipton (near)	Cedar	806	29	69.9	— 2.3	95	22	43	15	34	4.61	+ 0.79	4.50	0	2	6	18	7	s.	John Kroeplen
Williamsburg	Iowa	770	12	70.0	— 0.1	94	22	40	15	38	2.77	— 0.73	2.29	0	5	21	8	2	sw.	Dr. F. C. Schadt
Means and extremes				70.8	— 1.0	98	22	40	15	39	3.47	— 0.12	6.46	0	5	15	9	7	s.	
Southwest District																				
Atlantic	Cass	1,110	37	73.0	+ 0.3	98	24	40	15	42	1.52	— 1.95	0.45	0	10	18	12	1	sw.	Roy L. Fancolly
Bedford	Taylor	1,200									1.46	— 2.10	0.54	0	6	20	8	3	se.	Arthur L. Bishop
Clarinda	Page	1,009	38	74.0	— 0.6	98	21	44	15	37	2.22	— 1.31	0.98	0	9	21	9	1	sw.	Dr. H. C. Hawley
Corning	Adams	1,150	36	74.0	— 1.8	98	21	41	15	39	1.44	— 2.34	0.68	0	7	16	11	4	sw.	J. A. Wilson
Cumberland (near)	Cass	1,225	39								1.40	— 2.05	0.57	0	8	18	11	2	s.	Carl E. Pollock
Glenwood	Mills	1,100	30	75.0	+ 1.0	96	21†	42	15	38	1.19	— 2.17	0.70	0	4	14	15	2	se.	George Mogridge
Lenox	Taylor	1,250	33	75.3	+ 1.6	98	21	47	14	39	1.82	— 1.54	0.53	0	9	20	8	3	se.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	73.2	+ 0.3	94	21†	44	15	37	2.07	— 1.40	0.85	0	7	16	10	5	se.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3								1.07	— 2.57	0.75	0	3	17	12	2	s.	B. R. Bridge
Riverton (near)	Fremont	920	2								0.88	— 2.80	0.36	0	6	19	2	10	s.	Geo. C. Rader
Thurman	Fremont	960	31	75.3	+ 0.9	98	21†	44	15	37	1.32	— 2.75	0.51	0	8	21	7	3	se.	H. H. Askew
Omaha, Neb.		1,105	57	75.8	+ 1.4	98	21	53	15	30	1.56	— 1.49	0.61	0	7	16	13	2	s.	U. S. Weather Bureau
Means and extremes				74.4	+ 0.8	98	21†	40	15	42	1.50	— 2.04	0.98	0	7	18	10	3	se.	
South Central District																				
Afton	Union	1,212	34																	S. R. Brown
Albia	Monroe	949	30	73.0	+ 0.4	98	22	48	15	33	0.91	— 2.42	0.44	0	7	11	8	12	nw.	O. E. McBride
Centerville	Appanoose	1,013	23	74.0	+ 0.8	96	21†	49	14†	31	2.26	— 1.22	0.86	0	7	19	5	7	sw.	Thomas Wood
Chariton (near)	Lucas	1,042	33	73.6	+ 1.7	99	22	48	15	34	1.96	— 1.73	0.75	0	5	18	9	4	sw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	72.4	— 0.8	96	22	48	15	29	1.77	— 1.47	0.82	0	7	12	11	5	se.	J. C. Davis
Creston	Union	1,291	23	73.2	+ 1.2	97	21	45	14	34	1.25	— 2.01	0.43	0	11	14	14	3	se.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	72.2	+ 0.8	96	21	40	15	40	2.28	— 1.55	0.89	0	6	22	4	5	sw.	George Phillips
Indianola	Warren	972	37	73.6	— 0.5	97	21	45	15	37	2.57	— 1.27	0.83	0	6	19	7	5	sw.	Seth F. Shenton
Knoxville	Marion	920	33	73.1	+ 0.7	96	22	48	15	32	1.28	— 2.63	0.53	0	5	14	12	5	ne.	W. J. Casey
Lacona	Warren	824	29								2.03	— 1.42	0.75	0	9	16	11	4		J. B. Alter
Lamoni	Decatur	1,123	21	72.8	+ 0.4	98	21	47	13†	39	1.23	— 2.55	0.50	0	8	18	6	7	ne.	F. S. Parks
Melrose	Monroe	871									1.75		1.00	0	3	17	11	3	sw.	J. M. Carr
Mount Ayr	Ringgold	1,220	35	73.8	+ 0.8	97	21	48	14†	34	1.45	— 1.95	0.55	0	5	25	4	2	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	73.9	+ 1.7	100	21	48	14	35	1.41	— 2.07	0.36	0	8	20	7	4	se.	James A. Verploegh
Winterset	Madison	1,118	37	73.8	+ 0.6	98	21	48	15	34	2.21	— 1.28	0.52	0	7	23	6	2	se.	H. S. Ely
Means and extremes				73.3	+ 0.7	100	21	40	15	40	1.74	— 1.78	1.00	0	7	18	8	5	sw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	71.0	— 1.8	96	22	46	15	31	2.57	— 0.92	0.96	0	7	21	4	6	w.	B. R. Vale
Burlington	Des Moines	544	32	72.8	— 1.6	98	22	50	15	30	2.81	— 0.92	1.16	0	5	15	11	5	ne.	John T. Donnelly
Columbus Junction	Louisa	595	27	69.6	— 3.5	96	22	45	15	30	2.26	— 2.08	0.90	0	6	15	12	4	se.	Miss Musa Todd
Fairfield	Jefferson	780	44	71.0	— 1.8	95	22	41	15	34	5.52	+ 2.05	2.34	0	9	9	12	10	n.	R. M. McKenzie
Keokuk	Lee	614	57	73.2	— 1.8	97	22	52	15	27	1.41	— 1.79	0.85	0	5	10	12	9	s.	U. S. Weather Bureau
Keokuk No. 2	Lee	651		73.5		102	22	48	15	33	1.87		1.13	0	6					J. N. D. Dickinson
Keosauqua	Van Buren	639	36	71.8	— 1.4	95	21	49	14	35	1.16	— 2.11	0.98	0	5	11	13	7	nw.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	72.2	— 1.4	97	22‡	49	15	34	2.50	— 0.77	0.75	0	8	12	13	6	sw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	72.1	0.0	97	22	48	15	32	2.12	— 0.97	0.87	0	7	18	7	6	se.	Roy R. Robinson
Ottumwa	Wapello	649	33	73.3	— 0.7	97	22	47	15	34	1.94	— 1.51	1.10	0	8	22	4	5	se.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	71.8	— 0.8	98	22	46	15	32	2.61	— 0.46	1.27	0	6	18	9	4	se.	W. E. Utterback
Stockport (near)	Van Buren	747	26	71.1	— 1.1	98	22	45	15	33	3.58	+ 0.48	1.25	0	7	21	2	8	s.	C. L. Beswick
Washington	Washington	757	46	71.6	— 0.8	91	22†	45	15	32	1.86	— 1.79	0.78	0	6	16	9	6	e.	D. D. Sherman
Wever	Lee	552		71.9		100	22	44	15	36	1.68		0.57	0	7	13	10	8	s.	H. G. Liddle
Means and extremes				71.9	— 1.3	102	22	44	15	36	2.42	— 1.01	2.34	0	7	15	9	7	se.	
State means and extremes				71.9	+ 0.2	102	22	37	15	48	2.44	— 1.00	8.35	0	6	18	9	1	se.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

PRECIPITATION

The average precipitation for the State, derived from the averages of nine divisions of nearly equal area, and based on the records of 119 stations, was 2.44 inches, or 1.00 inch less than the normal. There was a deficiency in each division, though several areas showed excesses, and in the area extending from Marshall to Cedar Counties the excess was pronounced, due to the torrential rain on the 2d. The average number of rainy days was 6, ranging from 8 in the northwestern to 4 in the north-central and northeastern districts. The greatest number of rainy days at a single station was 12, and the least was 1. Rains occurred at frequent intervals and the greater portion fell during the first two weeks. Locally heavy rains occurred on the 25th and 31st over much of the State, but during all the rain periods there were portions that received only light sprinkles. The greatest rainfall reported was 9.27 inches at Toledo, and the least was 0.78 inch at Guthrie Center. The greatest amount occurring within a 24-hour period was 8.35 inches at Toledo on the 2d.

Daily Precipitation for August, 1929

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	
Northwest District																																	
Akron	Big Sioux	.10	.99		.04	.75					T.	.10		.02								.08				.98			.16		.28	.29	3.79
Alta	Raccoon		.52			.48							.04	.12							.20	.05				.25			T.			.46	2.12
Alton	Floyd	.12	.09		T.	.38				.02	.02	.23		T.							.02	.01	.01			.63			.41		.04	1.51	3.47
Cherokee	Little Sioux	.02	.77		T.	.50				T.	T.	T.	.09	.01						T.	.10	.03				.40			.07		T.	.47	2.46
Estherville	Des Moines		.40			.05			.10				.05								.08					.45						.20	1.33
Hawarden	Big Sioux	.05		.10	.01	.40						T.	.24	.05								T.	.02			.54					.06	.23	1.70
Inwood (near)	Big Sioux		.01			.28				T.			.35				.04	T.			T.	T.				1.52						.26	2.46
Lake Park (near)	Little Sioux		.24							1.00			.06													.92					.20	.15	2.57
Le Mars	Floyd	.11	.10		.01	.69					T.	.23	.07	.04								.05				.17			T.		T.	.54	2.01
Marathon	Raccoon		.88			.28					T.		.05								.40	T.				.80			T.			.48	2.89
Pocahontas	Des Moines	.22	1.02			.32															.55	.05				.16				.20		.33	2.85
Rock Rapids	Big Sioux		T.			.17						.40									.06					1.11			.09		.13	1.19	3.15
Sanborn	Floyd	.03	.25			.43				.09			.40								.04					.99			.02			.95	3.20
Sheldon	Floyd	.07	.10			.19				.02		.60	.12							T.	.07					.99			.30		.15	1.23	3.84
Sioux Center	Floyd	.12	.09		T.	.38						T.														.51			.38				1.48
Spencer	Little Sioux		.58			.24							.10								.07					.54						.50	2.03
Storm Lake	Raccoon	T.	.84			.47															.49	.05				.73			.01			.36	2.95
Washta	Little Sioux	.18	.25			.60					T.		.90	.02						T.		.12				.20			.18			.62	3.07
West Bend	Des Moines	T.	.55			.25							.03													.70						.16	1.70
North Central District																																	
Algona	Des Moines	.20	.40			.14				.54							.10									1.10							2.48
Allison	Cedar																																
Belmond	Iowa		2.53			.18															.09	T.	.02			.70						T.	3.52
Britt	Iowa		2.40			.09															.08					.43							3.00
Charles City***	Cedar	.04	1.16			T.					.01			T.							T.	T.	T.			.03							1.24
Forest City	Cedar		1.76			.04					.34	.37	T.								.05					.14							2.70
Hampton	Cedar		2.86			.11																				.40							3.37
Humboldt	Des Moines	T.	1.41			.20															.13	T.				1.02						.17	2.93
Mason City	Cedar	T.	1.27			T.				T.	.65							T.			T.	T.	T.			.59			T.				2.51
Northwood	Cedar		2.35								.09			.03							.06		.03			.98			T.				3.54
Osage	Cedar		.90								.22															.07							1.19
Northeast District																																	
Decorah	Mississippi	.09	.73	.12					.01			T.	.13										T.					T.			.12		1.20
Dubuque***	Mississippi	T.	1.51	T.		T.	T.			T.	.29		.03	T.								T.	T.						T.				1.83
Fayette	Mississippi		1.78			.21					.10			.09									.34			.01							2.62
Independence	Wapsipinicon		2.06			.06					.96			.16										.07									3.31
Lansing	Mississippi	.21	.38	.13					.30			1.25	.06		.02							.50	T.										2.85
New Hampton	Wapsipinicon		1.30											T.																.10	.30		1.70
Oelwein	Wapsipinicon		2.25								.20																						2.45
Postville (near)	Mississippi		.79										T.										.88										1.67
Waterloo	Cedar		1.70	.01		T.	.03					.40		T.													T.						2.14
Waverly	Cedar		3.00			.06					.78											T.	.08			.05			T.				3.97
West Central District																																	
Audubon (near)	Nishnabotna	.03				.37							T.										.02			.02						.40	0.84
Carroll	Raccoon		.20			.35	.13						.13								.08		T.			.50	.28			T.		.38	2.05
Denison	Missouri					.35					.19		.01										.09			1.90						.48	3.02
Guthrie Center	Raccoon																					T.	T.			.78							0.78
Harlan	Nishnabotna	.11	.03			.45					.13		.61	.09						T.	.05		.03			.30						.55	2.38
Jefferson	Raccoon	T.	.12			.31							T.	T.												.75							1.18
Little Sioux	Little Sioux		.01			.52					.24		.20	.12								.06	.10			.35			.08			.69	2.37
Logan	Missouri	.04				.55					.08		.78	.07								.07	.02			.17			T.			.70	2.48
Onawa	Missouri	.19	T.			.40					.86			.08									.12			.27			T.			.55	2.47
Rockwell City	Raccoon		1.50																	.60					.20							2.30
Sac City	Raccoon	T.	.36			.22															.16					.85			T.			.40	1.99
Sioux City***	Missouri	.12	T.		T.	.50					.04	.46		.04				T.		T.		.07	T.			.02			.02		.20	.08	1.55
Central District																																	
Ames	Skunk		.65			.23					.38										.44	.02				1.11							2.83
Baxter	Skunk		1.08			.46					.20										.55		.04			.08							2.41
Boone (near)	Des Moines		.33			.04	.25														.81	.02	.10			.79						.03	2.37
Des Moines***	Des Moines	T.	.14			.53					.10			T.							.99	T.	.01			1.02						.63	2.82
Fort Dodge	Des Moines		2.56	.05		.13	.04														.30	.19				.59						.06	3.92
Grinnell	Iowa		1.00			.30					.75										.18												2.23
Grundy Center	Cedar		1.90			.10															T.		.10			.10							2.20
Iowa Falls	Iowa		2.56			.08	.15														T.	.04				.12	.31						3.29
Marshalltown	Iowa		1.97			T.	.26				.13			T.								.22			T.	.18							5.76
Monroe	Des Moines	T.	.22			.68															.14		T.			T.						.06	1.10
Perry	Raccoon		.02		.45																.17		.08			1.02			T.			.85	2.59
Toledo	Iowa		8.35			.22					T.		.45								.05		.10			.10							9.27
Van Meter	Raccoon		.05	.10		.13	.37					.85		T.							.28	T.				.80						T.	2.58
Waukee	Raccoon	.02	.12			.53					T.			T.							.18	T.	.01			1.07						.04	1.97
Webster City	Des Moines	T.	2.55			.16															.32	T.	T.			.63						.16	3.82
East Central District																																	
Belle Plaine	Iowa	T.	6.46			.30					.11		.11								.03		.01			.01							7.03
Cedar Rapids	Cedar		3.75	.16		T.	.02					1.04	.02																				4.99
Clinton	Mississippi		2.08	.11		.10					.20												T.	T.									2.49
Davenport***	Mississippi	T.	2.57			T.				T.	.05		T.									.05	.02	T.									2.69
Davenport No. 2	Mississippi		2.89	.06		.02					.09		.01										.07										3.14
Fairport	Mississippi		1.61	.17			1.10	.02				.06											.06			.07							3.09
Iowa City	Iowa		2.39	.33		T.	.56					.51		.14								T.											3.96
Le Claire	Mississippi		2.73	.61			.01					.10		T.									T.	T.	T.		T.						3.45
Maquoketa (near)	Maquoketa		1.84			.04					.69																						2.57
Muscatine	Mississippi		.90	.28			.83				.23			.01										.08										2.33
Olin	Wapsipinicon	T.	1.87			T.					.15															T.							2.02
Tipton (near)	Cedar		4.50								.11																						4.61
Williamsburg	Iowa		2.29			.31					.10		.03	.04																			2.77

Daily Precipitation for August, 1929—Continued

Stations	Drainage Basin	Day of Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals
Southwest District																																	
Atlantic‖‖	Nishnabotna	T.	.11	T.		.40	.14	T.				.04	.08	.01								.03		.07		.16	T.					.45	1.52
Bedford	102	T.	.07			T.			.32					.10							T.		T.	.35		.08						.54	1.46
Clarinda‖‖	Nodaway	.21	.07			.12	.06			.26				.07							T.			.98		.02						.43	2.22
Corning	Nodaway					.37			.05				.18	.03							.02					.11						.68	1.44
Cumberland (near)	Nodaway	.20	.05			.33							.04	.01							.03	T.				.17						.57	1.40
Glenwood	Missouri	.11				.28								T.									T.			.10						.70	1.19
Lenox	Missouri		T.			.28			.05				.12	.10							.45		.05	.18		.06						.53	1.82
Oakland	Nishnabotna	.03	T.			.46							.20	.14								T.	.18			.21						.85	2.07
Red Oak (near)	Nishnabotna		T.			.30															T.		.02			T.						.75	1.07
Riverton (near)	Nishnabotna		T.			.10			.14					.02									.08	.18								.36	0.88
Thurman	Missouri	.02	.01			.32			T.			.05		.01						T.			.33	.07		T.						.51	1.32
Omaha, Neb.***	Missouri	.08	T.			.24								.02						T.		.02	.11			.61			T.			.48	1.56
South Central District																																	
Afton	Grand																																
Albia‖‖	Des Moines		.06	.03	T.		.44			T.		.09										.23		.04			.02					T.	0.91
Centerville	Chariton	T.	T.			.15	.05		.04					T.							.77			.37		.86						.02	2.26
Chariton (near)	Chariton	T.	T.	T.		.55			T.		.12			T.							.32					.75						.22	1.96
Corydon (near)	Chariton		.03			.19			.06												.11		.38	T.		.82						.18	1.77
Creston‖‖	Missouri		.09	.01		.21	.07	T.		T.			.01	.01							.02			.01		.20	.23	T.				.39	1.25
Earlham (near)	Des Moines		.55			.89					.08			T.							.10	T.	T.	T.		.46						.20	2.28
Indianola	Des Moines		.28			.83								T.							.74		.03	T.		.50						.19	2.57
Knoxville	Des Moines	T.	.32			.53	T.														.27					.12						.04	1.28
Lacona	Des Moines	.01	.02	.02		.75					.52										.40		.02				.18					.11	2.03
Lamoni‖‖	Grand		.01	.01		.05	.11			.19														.50			.29					.07	1.23
Melrose	Des Moines					1.00															.50					.25							1.75
Mount Ayr	Grand					.18			.34														.55			.03						.35	1.45
Tingley	Platte		.03			.25			.26	.01		.01											.36			.20						.29	1.41
Winterset	Des Moines	T.	.12			.52					.48			T.							.41		.03			.50	T.					.15	2.21
Southeast District																																	
Bonaparte (near)	Des Moines	T.	.04	.07		.37	.32		T.		.31			.96							T.			.50								T.	2.57
Burlington‖‖	Mississippi		.12	.62			.61					1.16												.30									2.81
Columbus Jct.	Iowa	.01	.87	.03		.57					.42													.36		T.							2.26
Fairfield	Skunk		.22			.72			.01		2.34		1.59	.33							.10			.20		T.						.01	5.52
Keokuk***	Mississippi		T.			.85	T.		T.	.28	T.	T.	.03	T.										.24		T.						.01	1.41
Keokuk No. 2	Mississippi					.12	1.13			.43				.05										.13								.01	1.87
Keosauqua	Des Moines			T.	.03			.98			.02			.06									.07									T.	1.16
Mt. Pleasant	Skunk		.64	.08		.70	.02		.02		.75			.11										.18									2.50
Oskaloosa	Des Moines		.48			.87	T.				.43			.04							.17		T.	T.		.09						.04	2.12
Ottumwa	Des Moines	T.	.05			.41	.05		T.		1.10			T.							.13			.08		.03						.09	1.94
Sigourney (near)	Skunk		.52			1.27			T.		.05		.76					T.					.03			.01						T.	2.64
Stockport (near)	Skunk	T.	.06			.41	.08		T.		.79		1.25	.96																		.03	3.58
Washington	Skunk		.55			.78			T.		.16		.08	.14									T.	.15									1.86
Wever	Mississippi		.12	.05		.41	.14		T.		.57		T.											.32			.07					T.	1.68

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.

T. Precipitation is less than .01 inch rain or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level) Mean	Highest	Date	Lowest	Date	Relative Humidity, % Mean 7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	‡‡Wind Total movement	Average hourly velocity	Maximum Miles	From	Date	Sunshine % possible	Departure from normal
Chas. City	30.03	30.34	19	29.68	13	80	50	58	26	26	3,360	4.5	19	nw.	10	78	+ 7
Davenport	30.03	30.29	19	29.67	13	79	52	59	33	3	4,428	6.0	28	w.	27	79	+ 9
Des Moines	30.01	30.30	19	29.66	13	82	52	57	30	18	3,851	5.2	18	sw.	2	70	0
Dubuque	30.03	30.32	19	29.75	13	81	51	56	36	24	3,170	4.3	21	n.	13	64	0
Keokuk	30.04	30.27	19	29.71	13	78	54	60	32	4	3,602	4.8	24	s.	2	69	— 4
Sioux City	29.99	30.28	27	29.68	2	78	51	52	33	14	6,504	8.7	38	n.	11	85	+15
Omaha, Nb	29.99	30.22	27	29.67	2	76	51	55	32	30	4,237	5.7	26	nw.	13	73	+ 3
Means and extremes	30.02	30.34	19	29.66	13	79	52	57	26	26		5.6	38	n.	11	74	+ 4
Normals and records	29.97	‖30.43	24th 1919	§29.40	10th 1874	82		61	¶19	5th 1918			‖57	sw.	6th 1916	70	

‡Local meantime. †And other dates. ‖Sioux City. §Omaha. ¶Des Moines.

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

ERRATA

Report for July 1929. Page 50. Charles City; mean temperature published 72.9°, should be 73.0°; departure published +0.6°, should be +0.7°. Page 53. Des Moines; sunshine per cent published 61, should be 60. Page 54. Charles City; maximum temperature on 14th, published 72°, should be 74°; mean maximum temperature published 83.7°, should be 83.8°.

MISCELLANEOUS PHENOMENA

Aurora: 15th.

Fog: 8th, 9th, 11th, 18th, 25th, 26th, 27th, 28th, 29th, 30th.

Frost: (light). 15th.

Hail: 1st, 2d, 10th, 12th, 13th, 22d.

Halos (lunar and solar): 4th.

Haze: 11th, 18th, 20th, 24th, 25th, 26th, 27th, 28th, 30th.

Thunderstorms: 1st, 2d, 4th, 5th, 8th, 9th, 10th, 11th, 12th 13th, 16th, 17th, 20th, 21st, 22d, 23d, 25th, 29th, 30th, 31st.

RIVERS

Low stages prevailed on the principal rivers of the State and the average stage was considerably below normal. There was a slow steady fall on the Missouri River throughout the month, the total fall amounting to more than two feet: there was a general falling tendency on the Mississippi River with nearly stationary stages, except there was a material rise below the mouth of the Iowa River during the latter part of the 1st week, due to abnormally heavy rains in the Iowa River Drainage basin on the 2d. There were a few moderate rises on other interior streams, but no serious damage occurred except on the Iowa River and its tributaries.

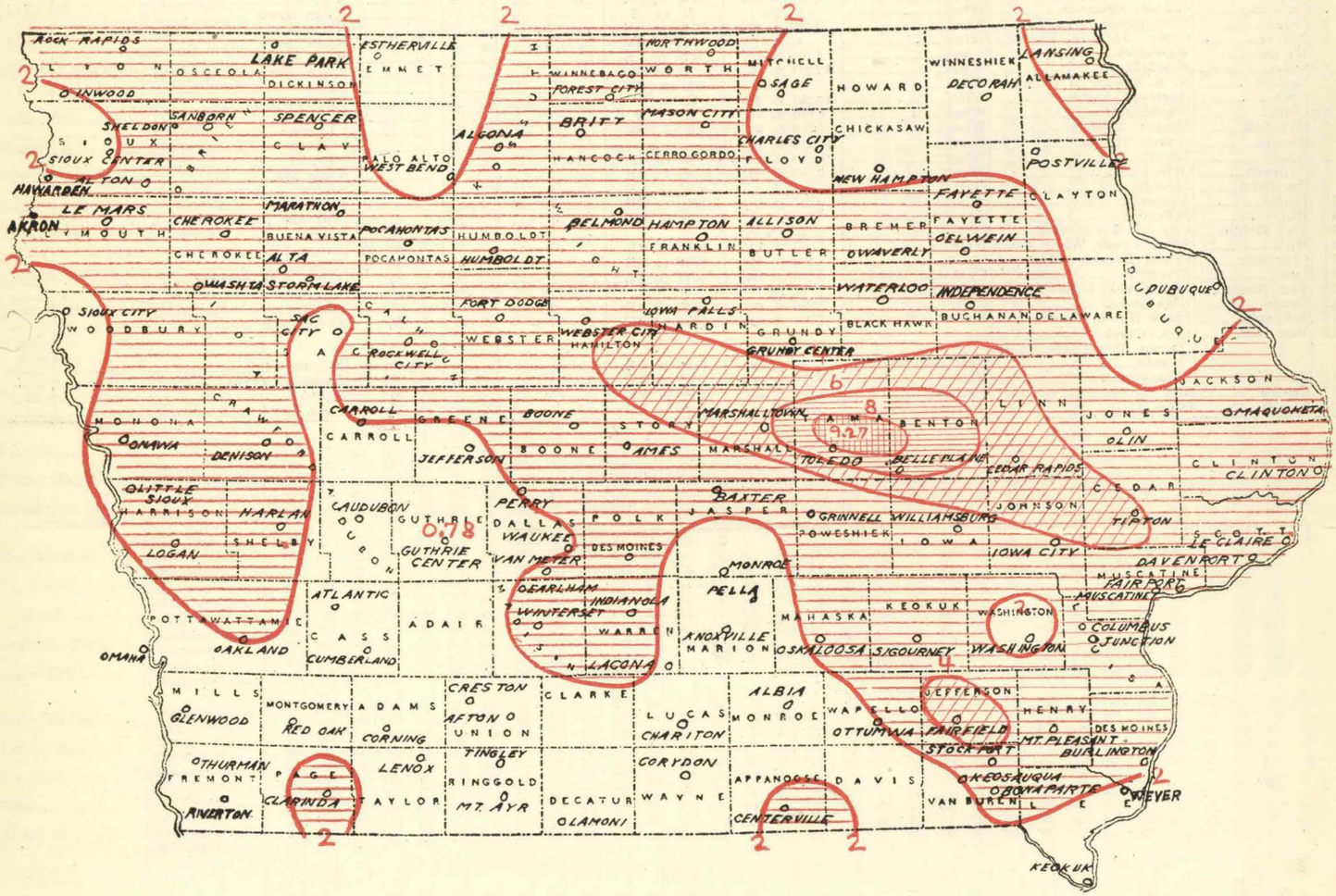
Daily Maximum and Minimum Temperature for the Month of August, 1929

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	Maximum	80	81	77	79	70	77	83	88	88	86	89	87	77	72	79	88	86	84	77	78	85	84	88	93	87	81	80	81	85	87	88	82.7
	Minimum	58	65	60	49	59	53	60	63	61	60	62	46	59	60	61	60	62	63	46	58	63	67	53	66	66	60	50	59	60	62	61	59.1
Alta	Maximum	88	88	76	84	79	79	86	85	91	90	92	91	75	74	83	90	87	90	83	86	88	87	93	98	91	88	86	85	89	92	82	86.3
	Minimum	61	68	57	52	58	55	60	62	60	68	63	59	57	47	48	61	64	56	55	60	64	67	57	68	65	61	53	59	61	62	63	59.7
Alton	Maximum	86	85	79	80	78	79	85	88	90	90	93	86	81	71	80	89	85	86	83	85	85	86	90	96	90	80	82	82	83	88	80	84.5
	Minimum	69	70	57	50	60	55	62	63	63	69	60	58	65	49	42	66	68	54	56	63	67	68	52	67	66	60	52	60	60	62	64	60.5
Belmond	Maximum	82	83	74	79	70	80	83	85	87	88	90	89	79	70	78	85	84	85	77	76	88	92	88	91	89	85	83	82	88	88	80	83.2
	Minimum	52	65	59	47	58	52	57	61	59	65	60	63	63	47	41	57	64	51	49	57	61	55	50	63	66	62	67	62	64	60	66	58.2
Charles City	Maximum	82	76	73	76	70	78	82	84	86	85	87	86	76	68	74	82	82	80	74	76	83	90	86	87	86	85	79	80	85	85	83	80.8
	Minimum	60	61	56	50	58	53	59	64	62	66	63	64	58	50	44	55	59	52	50	58	61	60	55	62	64	58	50	59	59	62	62	57.9
Decorah	Maximum	83	72	74	77	75	82	85	88	90	88	86	90	84	64	80	84	82	79	77	79	82	92	88	92	91	85	85	81	79	88	89	82.9
	Minimum	54	54	62	47	54	50	51	62	60	62	59	59	62	51	37	53	63	49	40	53	55	65	50	54	57	59	51	43	55	59	59	54.5
Dubuque	Maximum	83	68	76	75	69	78	80	84	87	89	85	85	80	63	76	78	83	79	76	78	84	92	85	88	83	85	77	76	82	85	86	80.5
	Minimum	62	54	61	54	57	60	60	63	69	67	64	63	60	54	48	57	61	57	51	54	61	73	66	60	64	65	57	55	58	65	67	60.2
Forest City	Maximum	81	77	73	77	73	76	82	85	86	86	86	85	77	68	75	85	82	78	73	76	82	86	85	89	88	82	80	81	87	87	83	81.0
	Minimum	55	63	60	49	59	52	58	62	57	62	62	58	62	50	44	57	63	54	48	55	59	65	55	63	65	60	52	56	59	59	65	57.7
Independence	Maximum	88	79	75	75	72	78	80	82	86	88	84	84	83	75	73	79	77	81	79	79	83	90	85	85	84	84	83	77	82	85	82	81.2
	Minimum	60	57	65	51	59	60	59	60	65	64	61	63	62	51	45	55	57	56	49	53	61	71	61	60	60	61	53	55	56	59	63	58.5
Inwood	Maximum	83	88	80	81	83	85	87	90	92	92	93	88	79	76	81	90	90	87	84	87	88	88	92	97	90	81	83	87	87	88	82	86.4
	Minimum	60	62	53	50	59	54	61	61	63	69	59	57	61	43	44	62	63	52	57	60	67	60	55	67	64	58	54	63	56	63	65	58.8
Lake Park	Maximum	76	80	75	81	76	78	85	89	92	88	89	99	76	73	80	88	86	80	85	83	89	86	90	95	88	84	82	85	89	91	84	84.3
	Minimum	61	58	54	50	53	58	60	64	61	65	63	58	52	47	46	60	56	53	53	59	64	63	53	64	63	55	56	60	56	61	62	57.7
Mason City	Maximum	83	75	73	77	69	80	84	87	87	85	87	89	80	69	76	85	86	82	70	78	83	89	85	89	89	84	82	82	88	88	82	82.0
	Minimum	50	63	62	47	58	50	55	63	61	61	66	52	64	51	40	51	64	48	44	57	59	69	49	60	66	51	47	55	60	61	61	56.3
New Hampton	Maximum	85	78	76	78	73	82	83	86	88	88	90	90	87	70	77	83	88	85	78	81	85	94	90	89	89	91	83	82	87	87	87	84.2
	Minimum	56	59	62	46	55	53	56	61	60	62	60	61	60	49	40	54	59	53	45	54	60	70	56	61	60	61	51	57	57	58	59	56.6
Northwood	Maximum	85	77	72	77	72	78	82	85	87	85	87	88	74	67	75	83	87	80	79	83	82	89	89	91	88	84	82	80	85	85	84	82.0
	Minimum	57	62	61	48	52	53	59	63	59	63	63	64	60	53	44	54	63	53	42	60	60	64	54	61	67	53	51	58	60	60	59	57.4
Pocahontas	Maximum	79	87	77	80	74	78	84	86	89	90	89	90	78	74	74	89	85	85	78	80	85	89	90	92	91	84	83	83	88	90	79	83.9
	Minimum	55	67	61	49	59	53	57	59	59	62	60	59	63	48	49	58	63	52	61	58	63	65	53	65	66	61	57	64	60	60	65	59.1
Postville	Maximum	78	68	72	70	69	76	80	82	85	84	84	84	75	61	74	79	75	75	73	78	82	90	80	84	83	83	74	76	82	87	84	78.3
	Minimum	55	54	53	48	54	52	55	64	58	58	63	60	60	49	44	55	57	55	43	52	60	65	56	60	60	49	53	59	58	62	55	55.7
Rock Rapids	Maximum	85	85	78	81	81	80	87	89	92	90	92	85	78	73	81	88	87	85	85	86	88	85	89	97	86	80	79	83	83	85	81	84.6
	Minimum	53	67	54	47	59	54	59	65	62	65	57	56	62	46	40	63	62	50	55	60	66	65	48	63	65	55	48	60	55	59	63	57.5
Central Division																																	
Ames	Maximum	81	85	83	79	72	78	83	83	87	89	87	91	87	72	79	85	82	87	82	74	88	89	88	91	90	84	79	82	84	88	82	83.6
	Minimum	60	63	67	52	59	56	60	60	58	60	65	62	67	51	44	53	58	58	54	57	64	75	64	67	62	62	55	55	59	59	66	59.7
Belle Plaine	Maximum	84	77	78	79	66	79	86	88	90	93	89	91	82	72	77	83	83	87	77	76	88	93	90	90	84	88	81	81	87	91	81	83.6
	Minimum	60	62	67	47	59	57	58	59	65	61	61	69	63	49	49	53	54	56	52	55	64	69	64	61	59	63	53	51	54	56	65	58.5
Carroll	Maximum	83	93	83	82	74	80	84	84	90	88	88	92	81	73	81	88	81	88	79	80	97	87	91	94	90	85	82	83	88	89	78	85.0
	Minimum	60	66	63	50	57	55	59	61	57	67	68	60	64	48	46	59	64	56	55	59	61	72	60	65	66	63	54	57	61	63	64	60.0
Cedar Rapids	Maximum	86	76	79	77	69	79	82	86	89	90	88	87	82	68	76	78	87	86	75	75	85	95	88	86	88	88	79	80	84	87	86	82.6
	Minimum	61	58	67	48	59	58	57	57	64	62	59	60	60	51	41	51	56	54	52	53	62	70	66	58	56	62	54	50	52	54	65	57.3
Davenport	Maximum	82	74	81	77	70	78	83	86	87	89	89	88	86	66	76	78	86	86	77	78	85	98	86	89	80	90	78	77	82	85	81	82.3
	Minimum	66	56	60	55	61	61	63	66	72	69	67	66	58	54	51	58	62	61	54	56	68	75	69	62	66	68	59	59	60	64	68	62.4
Des Moines	Maximum	80	81	80	82	69	80	85	82	89	89	91	93	83	73	81	86	87	88	78	76	95	88	91	92	86	88	81	82	85	90	74	84.0
	Minimum	69	64	65	56	59	58	64	65	64	68	68	68	61	53	49	60	65	58	57	59	66	74	69	68	68	67	59	58	62	63	67	62.9
Ft. Dodge	Maximum	78	85	78	80	73	78	84	87	88	89	88	91	79	71	81	88	82	87	79	77	89	91	89	94	90	83	82	83	89	90	80	84.0
	Minimum	57	56	55	48	60	54	58	60	58	65	60	59	64	46	44	57	63	53	52	58	63	69	55	65	67	63	51	55	62	60	65	58.1
Grinnell	Maximum	79	82	80	78	79	79	84	87	90	91	87	90	82	70	80	80	85	89	80	71	87	95	89	89	88	87	81	82	87	89	88	84.1
	Minimum	59	59	58	50	58	55	65	50	62	63	63	61	62	48	44	54	64	58	50	57	62	65	57	63	67	68	54	55	57	56	65	58.4
Guthrie Center	Maximum	90	92	88	94	73	81	84	87	90	90	89	97	84	75	82	89	84	88	90	82	97	92	94	96	93	87	83	80	86	90	80	87.3
	Minimum	59	67	65	46	58	56	58	58	54	61	64	59	59	48	41	57	63	51	56	61	63	76	60	64	67	66	57	58	62	63	66	58.8
Iowa City	Maximum	83	75	78	77	67	80	83	85	89	89	87	89	81	68	77	81	87	86	78	76	88	95	89	88	77	88	80	79	84	87	85	82.5
	Minimum	65	60	65	51	58	59	60	60	68	67	63	62	64	53	45	53	57	56	52	55	65	72	67	61	60	64	53	55	55	56	65	59.5
Iowa Falls	Maximum	78	79	79	79	67	77	84	86	88	88	86	90	83	69	78	84	81	83	73	72	84	87	85	89	88	86	79	81	86	88	82	81.9
	Minimum	56	65	65	49	58	54	57	62	58	65	62	60	63	48	43	55	61	55	49	58	58	70	59	65	67	65	52	54	57	59	68	58.6
Little Sioux	Maximum	88	92	82	81	81	78	85	81	88	88	89	90	80	73	80	86	79	89	79	85	95	88	92	95	90	90	86	82	89	92	83	85.7
	Minimum	66	76	65	53	60	58	61	65	62	67	64	61	65	46	44	60	67	60	62	65	66	68	63	74	69	67	55	62	63	66	65	62.7
Marshalltown	Maximum	82	82	82	75	75	78	83	84	89	90	87	91	80	70	78	85	82	86	77	73	92	91	89	91	88	86	81	82	86	90	80	83.4
	Minimum	61	64	68	68	61	56	60	63	64	68	67	64	65	51	47	57	60	58	52	58	56	64	64	66	67	67	54	57	60	62	68	61.2
Olin	Maximum	85	76	80	80	67	80	83	86	91	93	91	87	86	70	79	81	87	70	78	79	86	97	90	89	79	91	81	80	85	87	79	83.0
	Minimum	61	54	66	48	55	58	58	55	67	63	60	57	60	51	40	48	51	65	60	50	61	65	67	52	53	61	51	48	49	53	62	56.4
Sioux City	Maximum	87	88	80	79	79	78	84	86	90	89	91	87	78	74	80	89	83	86	80	84	94	86	91	93	88	84	84	85	88	88	82	85.0
	Minimum	67	71	61	54	61	59	64	66	65	68	65	63	60	49	48	61	66	58	61	65	68	66	58	72	70	64	55	63	61	65	65	62.6
Southern Division																																	
Albia	Maximum	85	78	83	82	67	77	85	83	88	90	92	92	89	73	81	83	91	91	81	74	94	98	94	94	83	93	83	84	86	89	75	85.1
	Minimum	64	60	68	51	59	58	60	62	64	67	65	64	68	50	48	56	59	59	54	59	63	75	68	66	66	63	54	56	57	60	63	60.8
Atlantic	Maximum	86	89	83	80	77	80	86	76	88	89	93	93	81	77	82	88	83	89	82	87	97	85	96	98	90	95	87	82	88	91	80	86.4
	Minimum	62	73	65	47	57	56	58	60	54	64	62	60	63	45	40	57	63	55	58	61	63	70	61	70	67	63	50	61	56	60	63	59.5
Burlington	Maximum	85	77	79	79	68	76	85	82	87	89	88	90	85	69	79	81	88	86	85	79	93	98	90	87	81	89	81	79	85	88	77	83.4
	Minimum	71	59	68	57	58	60	63	62	70	67	62	65	68	53	50	55	58	66	56	56	66	74	69	63	64	70	61	56	57	60	66	62.3
Columbus Jct.	Maximum	80	75	72	73	71	76	79	81	84	86	84	85	80	71	73	77	85	82	75	73	85	96	85	82	75	85	75	76	81	85	76	79.5
	Minimum	66	57	67	54	58	59	61	59	68	67	64	61	63	52	45	55	57	60	53	55	64	72	67	60	60	61	54	52	52	55	66	59.6
Corning	Maximum	89	92	85	83	80	81	85	80	91	93	95	95	85	78	80	78	89	91	83	85	98	93	97	97	89	92	86	87	90	92	80	87.7
	Minimum	66	67	67	46	58	58	60	60	55	63	64	62	65	45	41	59	60	60	59	61	65	74	64	70	68	61	55	55	57	58	63	60.2
Corydon	Maximum	84	92	85	77	75	76	81	78	85	86	87	91	85	70	77	81	80	87	79	77	91	96	87	87	79	86	79	77	81	86	79	82.6
	Minimum	64	65	70	53	60	59	62	62	63	67	68	66	69	51	48	55	62	61	57	59	65	75	68	68	67	64	64	60	56	59	64	62.3
Creston	Maximum	87	93	80	80	75	80	83	75	88	90	92	93	84	75	80	86	88	90	82	84	97	93	93	94	85	91	84	83	86	90	75	85.7
	Minimum	65	70	67	53	58	58	58	60	58	65	66	63	64	45	47	55	60	60	58	61	65	72	65	68	68	66	57	55	55	56	64	60.7
Fairfield	Maximum	85	78	79	78	65	79	84	86	86	91	89	90	85	71	77	81	81	86	79	77	91	95	91	90	79	89	80	80	86	89	73	82.9
	Minimum	64	57	68	51	58	59	60	60	65	64	63	60	64	50	44	54	58	59	52	56	65	70	68	63	61	61	53	51	53	55	66	59.1
Keokuk	Maximum	86	88	81	79	69	72	82	85	83	86	91	89	90	66	75	79	87	87	77	79	92	97	87	87	83	90	79	77	83	86	74	82.8
	Minimum	71	64	64	58	59	60	64	66	71	70	69	67	64	55	52	57	60	66	58	57	68	76	70	65	65	69	63	58	56	62	69	63.6
Knoxville	Maximum	88	79	78	81	75	80	82	79	89	91	89	93	87	75	80	84	92	88	80	74	93	96	94	93	85	90	81	83	86	90	80	85.0
	Minimum	63	61	70	50	58	60	60	62	63	67	65	65	67	51	48	55	62	56	55	58	65	78	68	67	66	64	55	52	59	62	65	61.2
Lamoni	Maximum	87	95	83	80	74	78	83	73	87	88	90	92	86	74	79	84	90	89	82	84	98	96	91	91	81	93	82	81	84	89	75	85.1
	Minimum	66	74	69	54	58	58	60	62	61	66	68	64	47	47	50	58	58	61	58	60	63	66	66	67	66	63	56	56	56	57	62	60.5
Sigourney	Maximum	81	78	79	80	69	80	84	81	90	91	89	90	83	71	78	81	90	88	79	77	91	98	94	90	82	91	81	81	86	89	77	83.8
	Minimum	65	59	68	52	57	59	61	60	66	66	62	61	66	50	46	55	58	60	52	56	65	72	69	62	62	62	55	52	54	58	66	59.9
Thurman	Maximum	88	93	85	79	82	80	83	80	90	89	94	95	91	83	80	86	86	87	90	90	98	98	90	93	88	93	86	82	86	90	83	87.7
	Minimum	70	77	68	55	60	58	60	62	58	69	66	63	66	46	44	60	64	62	62	65	67	72	66	72	72	65	62	56	57	61	64	62.9
Winterset	Maximum	90	88	87	83	75	80	85	79	90	90	89	95	87	75	82	86	88	88	82	81	98	90	94	96	88	90	80	83	88	90	80	86.4
	Minimum	60	65	64	50	61	57	60	62	60	68	67	63	66	49	48	60	63	57	56	60	64	75	66	68	66	66	54	57	60	60	64	61.2
Omaha, Neb.	Maximum	91	91	80	80	83	79	84	78	90	88	91	93	80	73	80	88	81	89	79	85	98	91	91	94	86	89	83	81	86	90	82	85.6
	Minimum	69	76	68	63	61	58	65	68	65	72	69	68	64	54	53	63	68	63	64	65	68	74	67	73	71	68	63	63	66	67	66	65.9

IOWA STORMS, AUGUST, 1929

Date	County	Township	Nature of Storm	Time	Storm Moved From	Width of Path Miles	Length of Path Miles	Area of Sq. Miles	Size of Hailstones Inches	Damage	Persons Killed	Persons Injured
1	Tama	Columbia	Wind	11:00 p. m.	E to W	.....	.....	.....	.....	$10,000	.....	.....
1	Webster	Gowrie	Wind	11:00 p. m.	NE to SW	.....	.....	.....	.....	20,000	.....	.....
1	Grundy	Felix	Wind and Flood	11:00 p. m.	SE to NW	.....	.....	.....	.....	Wind, $20,000; Flood, $5,000	.....	.....
1	Marshall	Iowa, Timber Creek	Wind	11:00 p. m.	NE to SW	.....	.....	.....	.....	Crops 10%	.....	.....
2	Kossuth	Buffalo, Greenwood Portland, Ramsey	Tornado	1:30 a. m.	NW to SE	3	12	.....	.....	$150,000	.....	.....
2	Kossuth	Wesley	Wind	2:00 a. m.	NW to SE	.....	.....	.....	¼ to ¾	Bldgs. $500; Corn partly d'wn	.....	.....
2	Tama, Benton, Iowa, Linn, Johnson	.....	Flood	.....	.....	.....	.....	.....	.....	Heavy	.....	.....
2	Tama	York	Wind	2:00 a. m.	NW to SE	.....	.....	.....	.....	$2,000	.....	.....
2	Calhoun	Center, Sherman	Wind	a. m.	N to S	.....	8	.....	.....	Corn down	.....	.....
2	Cedar	Farmington	Wind	3:00 a. m.	NW to SE	.....	.....	.....	.....	Corn down	.....	.....
2	Benton	Cedar, Jackson, Taylor	Wind	a. m.	NW to SE	.....	.....	.....	.....	Corn down	.....	.....
2	Wright	Woolstock	Wind	1:00 a. m.	NW to SE	.....	.....	.....	.....	Corn down	.....	.....
2	Scott	Winfield	Wind	12:01 a. m.	W to E	.....	.....	.....	.....	Corn down	.....	.....
2	Emmet	N. E. Corner of County	Wind	a. m.	SE to NW	.....	.....	.....	.....	$1,000	.....	1
2	Iowa	Hartford, Sumner	Wind	12:01 a. m.	E. to W	.....	.....	.....	.....	Crops 5%	.....	.....
2	Linn	Washington	Wind	6:00 a. m.	E. to W	.....	.....	.....	.....	$ 3,000	.....	.....
2	Marshall	Bangor, Liberty	Wind	1:00 a. m.	SE to NW	.....	.....	.....	.....	15,000	.....	.....
2	Hardin	Grant, Tipton	Flood	11:00 p. m.	.....	.....	.....	.....	.....	2,000	.....	.....
2	Jones	Lovell	Wind	6:00 a. m.	W to E	.....	.....	.....	.....	10,000	.....	.....
2	Hancock	Orthel	Wind	2:00 a. m.	NW to SE	.....	.....	.....	.....	Corn 5%	.....	.....
2	Hamilton	Lincoln	Hail	.....	SW to NE	.....	.....	.....	1	$ 200	.....	.....
10	Dallas	Adams	Wind	2:00 p. m.	NW to SE	.....	.....	.....	.....	1,000	.....	.....
10	Harrison	Jefferson	Tornado	1:00 p. m.	SW to NE	.....	.....	.....	.....	Did not touch ground	.....	.....
10	Des Moines	City of Burlington	Wind	p. m.	.....	.....	.....	.....	.....	Light	.....	.....
11	Mills	Silver Creek, White Cloud	Hail	2:00 p. m.	NW to SE	.....	.....	.....	⅛ to ½	Crops 20%	.....	.....
11	Cherokee	Grand Meadow, Willow	Hail	5:00 p. m.	NW to SE	.....	.....	.....	¼ to ½	Crops 20%	.....	.....
11	Lyon	Riverside	Hail and Wind	5:30 p. m.	NW to SE	.....	.....	.....	¼	Light crop damage	.....	.....
12	Van Buren	Lick Creek, Union	Hail and Wind	p. m.	.....	.....	.....	.....	.....	Considerable to crops	.....	.....
12	Tama	Highland	Hail	5:00 p. m.	NW to SE	.....	.....	.....	.....	$3,000	.....	.....
12	Jefferson	Black Hawk, Fairfield	Hail	1:00 p. m.	NW to SE	.....	.....	.....	½	Crops 10%	.....	.....
12	Van Buren	Lick Creek, Union, Van Buren, Bonaparte, Farmington	Hail and Wind	6:00 p. m.	NW to SE	.....	.....	.....	½ to 3	$75,000	.....	.....
12	Keokuk	Lafayette	Hail	8:00 p. m.	SW to NE	.....	.....	.....	½ to 1	Light to crops	.....	.....
13	Louisa	Elm Grove	Hail	3:00 p. m.	SW to NE	.....	.....	.....	¾	$1,000	.....	.....
25	Clarke	Osceola	Hail and Wind	6:00 a. m.	NW to SE	.....	.....	.....	½	Corn down	.....	.....

TOTAL PRECIPITATION, AUGUST, 1929



SCALE OF SHADES IN INCHES

Less than 2	2 to 4	4 to 6	6 to 8	More than 8

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, SEPTEMBER, 1929 No. 9

GENERAL SUMMARY

There were no unusual features in connection with the weather during September, 1929. The temperature averaged somewhat below the normal but the deficiency was just one-half of what it was a year ago. Temperatures were rather uniform, with very few fluctuations. The month opened with a rather warm period of three days duration, and the maxima for the month occurred within this period. Following this brief period there was a decided change to cooler, and until the end of the third week temperatures were almost continuously below normal. This period was followed by a week of warm weather and the last two days were considerably below normal. Light frost occurred in favorable localities in northern districts on the 5th, and a larger number on the 10th and 11th, but there was little or no damage. Frost was general over most northern and central sections on the 14th and 16th, which caused slight damage in scattered areas. A general frost occurred on the 18th that affected the entire State except small areas in the extreme southern portion. Over practically all northern and most central districts, this frost was killing, and over the rest of the State the damage was in varying degrees. In that portion of the State where the freezing was most severe, corn was well matured generally and only some late fields were badly injured. There will be some chaffy corn in localities, but the amount will not be large. In portions of the State the growth of corn was not stopped, and at the end of the month there were fields along the Mississippi River and some bottom lands in the southern portion of the State that were still subject to damage from freezing. Truck crops were generally killed in all northern districts, and some damage resulted in the rest of the State, but as there was no subsequent freezing after the 18th, some crops made a recovery and a number of commercial canneries were still operating at the end of the month, and fresh vegetables continued plentiful.

Rainfall was generally ample and very evenly distributed except in a few small areas, the principal dry area being in the vicinity of Dubuque. In this district pastures were generally bare and the soil was too dry to plow. In the rest of the State conditions were generally favorable; plowing has progressed satisfactorily, and some wheat had been seeded and was up in places showing a good stand. A large number of places reported heavy daily amounts of rainfall, but in nearly all cases the rate of fall was slow and few heavy downpours occurred. Storms of a damaging character were almost entirely lacking, though thunderstorms occurred on a large number of days. The greatest damage occurred on the 8th in Wapello and Marion counties.

F. L. D.

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
1873	59.1	— 5.2	89	33	2.18	— 1.49	5.40	0.81	.....	.....	.....	.....	.....
1874	62.8	— 1.5	90	40	6.04	+ 2.37	9.50	4.50	.....	.....	.....	.....	.....
1875	60.6	— 3.7	92	37	5.02	+ 1.35	9.38	1.33	.....	.....	.....	.....	.....
1876	60.4	— 3.9	86	38	6.42	+ 2.75	12.60	3.42	.....	.....	.....	.....	.....
1877	65.4	+ 1.1	96	40	1.95	— 1.72	5.20	0.65	.....	.....	.....	.....	.....
1878	62.9	— 1.4	92	38	3.13	— 0.54	10.85	0.70	.....	.....	.....	.....	.....
1879	59.3	— 5.0	90	24	2.70	— 0.97	9.45	0.57	.....	.....	.....	.....	.....
1880	61.1	— 3.2	90	30	4.18	+ 0.51	11.64	0.10	.....	.....	.....	.....	.....
1881	64.5	+ 0.2	103	37	7.14	+ 3.47	13.35	2.64	.....	.....	.....	.....	.....
1882	63.4	— 0.9	97	31	0.87	— 2.80	3.71	0.00	.....	.....	.....	.....	.....
1883	58.5	— 5.8	93	30	2.04	— 1.63	6.26	0.06	.....	.....	.....	.....	.....
1884	66.5	+ 2.2	95	30	5.20	+ 1.53	11.00	2.20	.....	.....	.....	.....	.....
1885	61.7	— 2.6	92	32	3.04	— 0.63	5.59	0.65	.....	.....	.....	.....	.....
1886	63.0	— 1.3	97	30	4.68	+ 1.01	7.93	0.39	.....	.....	.....	.....	.....
1887	62.1	— 2.2	98	30	6.17	+ 2.50	12.87	1.40	.....	.....	.....	.....	.....
1888	59.9	— 4.4	96	26	1.07	— 2.60	3.44	0.10	.....	.....	.....	.....	.....
1889	60.7	— 3.6	96	23	2.80	— 0.87	7.19	0.70	.....	.....	.....	.....	.....
1890	59.5	— 4.8	96	23	2.71	— 0.96	4.85	0.30	.....	.....	.....	.....	.....
1891	67.3	+ 3.0	104	28	1.33	— 2.34	3.60	0.13	.....	4	20	7	3
1892	61.7	+ 0.4	99	29	1.53	— 2.14	4.15	0.16	0	4	16	8	6
1893	64.7	+ 0.4	102	18	2.34	— 1.33	5.49	0.74	0	4	20	6	4
1894	65.1	+ 0.8	100	26	3.57	— 0.10	7.43	0.67	0	8	15	10	5
1895	66.8	+ 2.5	103	22	3.03	— 0.64	7.43	0.85	T.	5	18	8	4
1896	58.5	— 5.8	95	22	4.09	+ 0.42	9.96	1.82	0	10	11	9	10
1897	70.9	+ 6.6	106	26	2.04	— 1.63	5.88	0.00	0	4	23	5	2
1898	65.3	+ 1.0	99	29	2.69	— 0.98	8.45	0.41	0	7	16	9	5
1899	62.5	— 1.8	104	15	0.93	— 2.74	4.32	T.	0	4	16	9	5
1900	64.4	+ 0.1	99	26	4.98	+ 1.31	8.82	2.48	T.	9	15	8	7
1901	63.3	— 1.0	102	26	4.77	+ 1.10	13.62	1.71	0	9	13	9	8
1902	59.1	— 5.2	88	23	4.35	+ 0.68	10.41	1.65	0	9	15	6	9
1903	60.8	— 3.5	94	28	3.81	+ 0.14	8.79	1.42	0	10	14	6	10
1904	64.0	— 0.3	91	30	2.78	— 0.89	8.33	0.99	0	7	13	8	9
1905	65.8	+ 1.5	96	36	3.81	+ 0.14	13.18	0.50	0	8	14	8	8
1906	67.2	+ 2.9	100	27	4.16	+ 0.49	11.10	0.64	0	8	16	8	6
1907	62.8	— 1.5	98	25	2.75	— 0.92	6.06	1.38	0	8	15	9	6
1908	67.9	+ 3.6	98	20	1.20	— 2.45	3.46	0.25	T.	3	21	6	3
1909	62.4	— 1.9	94	30	3.58	— 0.09	7.34	1.39	0	9	14	8	8
1910	63.2	— 1.1	99	30	3.59	— 0.08	7.43	1.18	0	9	14	7	9
1911	65.8	+ 1.5	103	32	5.12	+ 1.45	13.73	1.19	T.	10	11	9	10
1912	62.1	— 2.2	104	24	3.98	+ 0.31	10.12	0.28	T.	11	12	8	10
1913	64.5	+ 0.2	107	19	3.31	— 0.36	7.44	0.45	0	9	15	8	7
1914	64.5	+ 0.2	99	30	7.88	+ 4.21	16.24	2.48	0	10	16	7	7
1915	63.7	— 0.6	91	30	6.03	+ 2.36	12.45	2.88	0	11	11	8	11
1916	62.5	— 1.8	98	21	3.89	+ 0.22	9.71	1.45	T.	7	17	8	5
1917	62.6	— 1.7	97	28	2.90	— 0.77	8.68	0.39	0	7	15	7	8
1918	58.6	— 5.7	93	20	1.87	— 1.80	4.62	0.48	T.	6	16	8	6
1919	67.5	+ 3.2	99	33	5.34	+ 1.67	11.82	1.49	0	8	16	6	8
1920	66.5	+ 2.2	98	24	3.30	— 0.37	7.21	0.69	0	8	17	8	5
1921	67.3	+ 3.0	99	31	6.72	+ 3.05	11.95	1.72	0	11	14	8	8
1922	67.1	+ 2.8	103	31	2.03	— 1.64	4.34	0.31	0	6	20	6	4
1923	64.2	— 0.1	92	28	5.79	+ 2.12	12.14	1.88	0	11	14	8	8
1924	59.1	— 5.2	91	25	3.13	— 0.54	5.68	1.01	0	8	16	7	7
1925	69.0	+ 4.7	105	32	5.04	+ 1.37	9.13	1.54	0	9	14	10	6
1926	63.0	— 1.3	92	18	9.76	+ 6.09	18.57	4.75	T.	11	8	7	15
1927	67.4	+ 3.1	101	29	4.56	+ 0.89	11.94	2.02	T.	10	15	8	7
1928	60.5	— 3.8	93	24	3.08	— 0.59	9.98	1.04	0	6	19	7	4
1929	62.4	— 1.9	98	25	3.74	+ 0.07	7.36	1.55	T.	9	14	7	9

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

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area, and based on the records of 105 stations, was 62.4°, or 1.9° below normal. The greatest deficiency occurred in the extreme northwest portion, but in general the greatest deficiency was in the western portion and it diminished gradually to the east; the deficiency at a number of stations near the Mississippi River was less than one half degree and one station reported a slight excess. The highest monthly mean was 66.3°, at Keokuk, No. 2, and the lowest 57.6°, at Rock Rapids. The absolute range for the State was 73°, from 98° at Decorah on the 2d, to 25° at Humboldt, Sanborn and Webster City on the 18th. Temperatures of 90°, or higher, occurred at all but four stations and the average number for the State was two; the greatest number was four at Wever. All stations in the three northern districts had one or more days of freezing weather except Dubuque. The average number for the State was less than one, the greatest number at any station was three; at about one-third of the stations the temperature did not reach freezing.

Climatological Data for September, 1929

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District																				
Akron	Plymouth	1,153	2								2.71	— 0.08	1.00	0	6	11	13	6	nw.	Orlan C. Moore
Alta	Buena Vista	1,513	37	59.8	— 2.9	93	2	29	18	34	4.02	+ 0.74	2.05	0	10	12	9	9	s.	D. E. Hadden
Alton	Sioux	1,305	23	59.5	— 3.3	91	2	29	18	33	2.76	— 0.20	1.08	T.	11	8	12	10	s.	W. S. Slagle
Cherokee	Cherokee	1,196	8	60.2	— 2.0	93	2	26	18	41	4.54	+ 1.27	1.88	0	10	14	7	9	s.	J. E. Wirth
Estherville	Emmet	1,298	33	60.8	— 0.9	96	3	27	18	36	4.40	+ 1.07	.80	0	11	13	11	6	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								3.06	+ 0.18	1.10	0	6	12	3	15	s.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	59.0	— 4.1	93	3	29	18	39	4.10	+ 1.31	1.86	0	11	14	6	10	se.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	58.4	— 3.1	91	2†	27	18	35	5.54	+ 1.93	2.75	0	9	7	9	14	sw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	60.1	— 3.6	93	2	28	18	35	2.91	— 0.32	1.28	0	9	15	5	10	n.	Henry Newell
Marathon	Buena Vista	1,390	2								4.91		1.66	0	11	12	6	12	nw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	60.8	— 2.7	95	2	27	18	34	3.67	+ 0.08	1.08	0	9	15	3	12	s.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	57.6	— 4.1	89	2†	26	18	33	5.71	+ 3.12	1.80	0	11	17	4	9	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	58.0	— 4.8	90	2	25	18	34	5.18	+ 1.98	1.81	0	11	11	7	12	se.	J. W. Dow
Sheldon	O'Brien	1,418	17	59.6	— 3.8	90	2	28	18	36	4.66	+ 1.40	1.89	0	12	11	8	11	se.	Ross E. Forward
Sioux Center	Sioux	1,461	29	58.4	— 4.6	92	2	30	18	33	3.24	+ 0.29	1.30	0	6	15	6	9	nw.	F. C. Aue
Spencer	Clay	1,319	14	59.9	— 3.6	95	2	26	18	36	3.80	+ 0.48	1.75	0	5	9	12	9	se.	E. W. Little
Storm Lake	Buena Vista	1,438	39	60.4	— 3.6	91	2	28	18	33	3.46	+ 0.21	1.42	0	9	13	9	8	s.	L. B. Florey
Washta	Cherokee	1,157	30	60.4	— 3.1	93	2†	27	18	36	3.88	+ 0.49	1.92	0	9	16	3	11	s.	H. L. Felter
West Bend	Palo Alto	1,197	35	61.2	— 2.2	95	2	26	18	34	4.21	+ 1.07	1.25	0	8	15	7	8	nw.	Jos. Dorweiler
Means and extremes				59.6	— 3.3	96	3	25	18	41	4.04	+ 0.88	2.75	T.	9	13	7	10	s.	
North Central District																				
Algona	Kossuth	1,224	55	60.6	— 2.7	95	2	27	18	30	5.09	+ 1.77	1.35	0	8	21	0	9	se.	W. E. Laird
Allison‡‡	Butler	1,060	14																	E. W. Detra
Belmond	Wright	1,181	18	61.4	— 2.2	94	2	26	18	35	3.12	— 1.08	1.12	0	9	9	6	15	se.	H. F. Luick
Britt	Hancock	1,236	41	60.9	— 1.5	95	2	27	18	33	3.79	+ 0.33	1.65	0	10	10	6	14	sw.	E. P. Healy
Charles City	Floyd	1,015	37	60.4	— 0.6	93	2	29	18	32	3.96	+ 0.28	1.74	0	10	14	8	8	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	60.4	— 2.3	94	2	27	18	35	3.67	+ 0.34	.87	0	10	7	11	12	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								3.98	+ 0.55	2.25	0	7					L. H. Davis
Humboldt	Humboldt	1,095	40	61.8	— 2.4	96	2	25	18	34	3.12	— 0.15	.92	0	8	11	10	9	s.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	60.1	— 1.6	94	2	26	18	36	4.09	+ 1.28	1.61	0	9	14	11	5	nw.	American Beet Sugar Co.
Northwood	Worth	1,222	32	60.0	— 1.0	92	2	28	18	33	4.61	+ 1.08	1.40	0	8	12	8	10	nw.	Charles Dwelle
Osage	Mitchell	1,163	34	60.4	— 0.8	94	2	28	18	32	4.09	+ 0.58	1.56	0	7	13	7	10	s.	Dr. C. E. Juhl
Means and extremes				60.7	— 1.7	96	2	25	18	36	3.95	+ 0.38	2.25	0	9	12	8	10	se.	
Northeast District																				
Decorah	Winneshiek	872	35	61.2	— 0.4	98	2	27	18	39	3.55	— 0.56	1.23	0	10	17	7	6	nw.	M. D. Whitney
Dubuque	Dubuque	700	55	62.6	— 1.4	91	2	35	18	33	1.55	— 2.46	.91	0	7	13	6	11	s.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	62.0	— 0.3	95	2†	28	18	37	4.74	+ 1.07	2.24	0	6	18	2	10	s.	R. Z. Latimer
Independence	Buchanan	956	64	62.2	— 1.7	92	3	31	18	31	5.72	+ 1.77	3.45	0	8	18	0	12	se.	Dr. Geo. Boody
Lansing	Allamakee	632	21								2.70	— 0.99	.94	0	10					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	61.7	— 0.7	94	2	28	18	37	4.70	+ 1.11	2.00	0	7	13	9	8	se.	D. W. Dawson
Oelwein	Fayette	1,036	5	62.8	0.0	97	2	30	18	33	4.90	+ 1.11	1.80	0	7	12	8	10	s.	John T. Ridler
Postville (near)	Clayton	1,192	29	60.0	— 0.8	89	2†	30	18	30	3.41	— 0.43	1.62	0	7	16	8	6	se.	F. L. Williams
Waterloo	Black Hawk	854	45	62.9	— 1.2	93	2†	28	18	36	3.66	— 0.38	1.65	0	8	18	3	9	se.	R. B. Slippy
Waverly	Bremer	936	32	61.8	— 1.6	93	3	29	18	37	4.10	+ 0.60	1.49	0	10	21	3	6	s.	D. H. Murphy
Means and extremes				61.9	— 0.9	98	2	27	18	39	3.90	+ 0.08	3.45	0	8	16	5	9	s.	
West Central District																				
Audubon (near)	Audubon	1,297	33	62.2	— 1.5	93	2	33	18	32	2.91	— 0.85	1.05	0	7	12	12	6	s.	George Kibby
Carroll	Carroll	1,265	38	61.6	— 2.1	93	2	31	18	34	3.88	+ 0.41	1.65	0	9	13	10	7	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	61.5	— 2.5	91	2	31	18	33	2.67	— 0.45	1.55	0	8	10	10	10	s.	V. L. Byers
Guthrie Center	Guthrie	987	33	62.2	— 2.4	94	2	29	18	37	3.26	— 0.51	.90	0	7	5	17	8	s.	Floyd H. Bainter
Harlan	Shelby	1,192	29	61.2	— 2.6	92	2	33	18	37	3.34	— 0.43	1.36	0	8	9	10	11	nw.	Walter Bell
Jefferson	Greene	1,052	29	61.6	— 2.0	95	2	28	18	34	3.66	— 0.33	1.46	0	8	14	5	11	sw.	W. I. Lyon
Little Sioux	Harrison	1,040	23	62.3	— 3.0	94	2	34	18	37	2.99	— 0.18	.88	0	11	7	15	8	n.	H. W. Kerr
Logan	Harrison	1,120	61	61.8	— 3.9	92	2†	33	18	34	4.72	+ 1.56	1.45	0	7	7	18	5	ne.	Amy Ann Stern
Onawa	Monona	1,051	27	61.2	— 3.4	92	2†	35	18	33	3.31	— 0.20	1.10	0	9	10	7	13	nw.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32	61.0	— 2.8	97	2	28	18	35	4.13	+ 0.08	1.35	0	8	16	4	10	nw.	A. W. McIsaac
Sac City	Sac	1,269	52	60.8	— 2.9	95	2	30	18	30	2.34	— 1.02	.49	0	8	14	5	11	s.	F. P. Kessler
Sioux City	Woodbury	1,135	39	60.6	— 2.8	96	2	34	18	32	3.18	+ 0.15	1.37	0	10	6	12	12	se.	U. S. Weather Bureau
Means and extremes				61.5	— 2.7	97	2	28	18	37	3.37	— 0.14	1.65	0	8	10	10	10	s.	
Central District																				
Ames	Story	926	51	62.4	— 2.0	91	2	31	18	30	4.60	+ 0.93	1.71	0	6	14	10	6	s.	Iowa State College
Baxter	Jasper	998	28	63.4	— 1.2	90	3	30	18	34	5.23	+ 1.26	2.70	0	7	9	11	10	se.	F. A. Kanne
Boone (near)	Boone	894	23	62.2	— 1.6	94	2	27	18	37	5.15	+ 1.10	2.28	0	12	13	9	8	s.	C. F. Henning
Des Moines	Polk	861	50	63.8	— 1.8	92	2	37	18	30	4.67	+ 1.00	2.10	0	9	8	12	10	s.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	61.6	— 2.4	96	2	27	18	36	4.27	— 0.11	1.07	0	12	15	7	8	nw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	63.3	— 1.6	92	2	30	18	37				0		18	4	8	sw.	R. E. Bates
Grundy Center	Grundy	976	37	62.1	— 2.5	92	3	28	18	39	5.51	+ 1.74	1.75	0	9	16	6	8	sw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	61.2	— 1.4	93	2	30	18	32	5.42	+ 1.62	2.68	0	11	12	9	9	s.	C. H. Gilbert
Marshalltown	Marshall	947	36	63.0	— 2.4	92	3	31	18	32	2.83	— 1.28	1.23	0	9	14	6	10	s.	C. C. Pigman
Monroe	Jasper	922	16	63.6	— 2.5	92	2	32	18	31	4.05	— 0.05	1.04	0	7	15	8	7	s.	J. A. Dibel
Perry	Dallas	975	27	61.6	— 2.9	91	2	27	18	35	7.36	+ 3.59	3.01	0	9	12	10	8	nw.	Eugene N. Hastie
Toledo	Tama	847	34	62.2	— 2.9	93	3	29	18	35	3.35	— 0.62	.95	0	8	18	5	7	sw.	H. P. Giger
Van Meter	Dallas	872	9								3.36		1.75	0	7					Calvin K. Smith
Waukee	Dallas	1,032	25	62.0	— 2.8	91	2	29	18	33	4.42	+ 0.48	1.86	0	8	14	7	9	se.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	61.7	— 2.3	94	2	25	18	36	5.15	+ 1.21	1.89	0	9	17	6	7	se.	Frank A. Bonebright
Means and extremes				62.4	— 2.2	96	2	25	18	39	4.53	+ 0.62	3.01	0	9	14	8	8	s.	

Climatological Data for September, 1929—Continued

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
East Central District																				
Belle Plaine	Benton	866	38	63.3	— 1.1	94	2†	28	18	44	2.53	— 1.04	.71	0	10	17	4	9	nw.	O. C. Burrows
Cedar Rapids	Linn	737	46	63.6	— 1.0	94	2	32	18	42	2.20	— 1.40	.62	0	10	15	1	14	se.	J. T. Wurster
Clinton	Clinton	595	55	64.4	— 0.8	94	2	32	18	36	3.30	— 0.19	1.65	0	8	16	4	10	s.	Dr. A. P. Bryant
Davenport	Scott	580	57	64.6	— 1.0	92	2	35	18	30	3.13	— 0.45	.97	0	11	11	7	12	s.	U. S. Weather Bureau
Davenport No. 2	Scott																			Rex Shriver
Fairport	Muscatine	567	7	65.2	— 0.8	94	3†	34	18	32	3.59	— 0.01	1.11	0	9	13	6	11	s.	Bureau of Fisheries
Iowa City	Johnson	733	68	64.0	— 0.8	93	2	31	18	38	2.36	— 1.52	.86	0	8	13	7	10	se.	Prof. J. F. Reilly
Le Claire	Scott	576	28								4.71	+ 1.30	1.27	0	11					Margaret T. Disney
Maquoketa (near)	Jackson	692	23	62.2	— 1.0	93	2	31	18	42	2.35	— 1.93	.89	0	8	15	6	9	se.	John Strodthoff
Muscatine	Muscatine	546	67								3.91	+ 0.31	1.15	0	10					William Molis
Olin	Jones	760	29	63.4	— 0.3	94	2	30	18	46	1.92	— 1.75	.64	0	8	17	5	8	se.	Mrs. L. Stingley
Tipton (near)	Cedar	806	29	63.4	— 1.4	91	2	29	18	39	2.54	— 1.39	.75	0	6	11	13	6	s.	John Kroeplen
Williamsburg	Iowa	770	12	62.2	— 1.4	93	2	29	18	36	3.55	— 0.10	1.67	0	5	18	8	4	se.	Dr. F. C. Schadt
Means and extremes				63.6	— 1.0	94	2†	28	18	46	3.01	— 0.68	1.67	0	9	15	6	9	se.	
Southwest District																				
Atlantic	Cass	1,110	37	62.0	— 3.0	94	2	31	18	40	4.38	+ 0.97	1.18	0	10	12	10	8	sw.	Roy L. Fancolly
Bedford	Taylor	1,200									3.80	— 0.26	1.30	0	7	17	3	10	se.	Arthur L. Bishop
Clarinda	Page	1,009	38	63.2	— 3.1	91	2	37	18	35	3.88	+ 0.41	1.44	0	14	13	13	4	se.	Dr. H. C. Hawley
Corning	Adams	1,150	36	62.9	— 2.0	91	2†	35	18	41	4.30	+ 0.38	1.41	0	8	13	4	13	se.	J. A. Wilson
Cumberland (near)	Cass										4.35	+ 0.97	1.03	0	7	15	6	9	s.	Carl E. Pollock
Glenwood	Mills	1,100	30	63.4	— 3.3	94	2	38	18	32	3.13	+ 0.45	1.09	0	8	8	15	7	se.	George Mogridge
Lenox	Taylor	1,250	33	63.7	— 2.0	90	2†	33	18	39	3.53	— 0.68	1.25	0	12	13	7	10	se.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	62.3	— 2.8	91	2†	32	18	32	4.47	+ 1.21	1.87	0	9	11	6	13	se.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3								4.07	+ 0.53	2.46	0	6	13	12	5	s.	B. R. Bridge
Riverton (near)	Fremont	920	2								2.63	— 1.17	1.20	0	9	15	5	10	s.	Geo. C. Rader
Thurman	Fremont	960	31	64.2	— 3.4	93	2	39	10	37	2.70	— 1.56	.66	0	9	11	8	11	s.	H. H. Askew
Omaha, Neb.		1,105	57	63.6	— 3.2	95	2	41	18	29	2.05	— 1.16	.84	0	13	14	7	9	s.	U. S. Weather Bureau
Means and extremes				63.2	— 2.8	95	2	31	18	41	3.61	+ 0.01	2.46	0	9	13	8	9	se.	
South Central District																				
Afton	Union	1,212	34	63.0	— 2.1	91	2	36	18	32	4.06	— 0.32	1.21	0	12	14	7	9	sw.	S. R. Brown
Albia	Monroe	949	30	64.3	— 1.1	94	2	33	18	32	5.50	+ 1.44	3.72	0	9	13	7	10	sw.	O. E. McBride
Centerville	Appanoose	1,031	27	64.4	— 1.2	91	2	34	18	31	5.18	+ 1.08	3.51	0	8	13	8	9	se.	Thomas Wood
Chariton (near)	Lucas	1,042	33	64.2	— 0.6	91	2	33	18	35	2.43	— 1.51	1.10	0	4	14	10	6	sw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	63.3	— 2.4	90	2	35	18	29	2.93	— 1.16	1.25	0	8	14	4	12	se.	J. C. Davis
Creston	Union	1,291	23	62.4	— 1.7	89	2†	35	18	36	4.00	0.00	1.60	0	12	12	9	9	se.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	61.3	— 3.3	91	2	30	18	36	3.49	— 0.20	2.17	0	5	22	1	7	sw.	George Phillips
Indianola	Warren	972	37	64.2	— 1.4	91	2	32	18	34	2.76	— 0.97	1.10	0	8	19	5	6	n.	Seth F. Shenton
Knoxville	Marion	920	33	61.8	— 1.0	93	2	34	18	31	2.62	— 1.52	1.35	0	6	9	11	10	se.	W. J. Casey
Lacona	Warren	824	29								2.35	— 2.01	1.02	0	9	9	15	6		J. B. Alter
Lamoni	Decatur	1,123	21	63.3	— 1.4	91	3	34	18	35	2.97	— 1.04	1.83	0	11	17	5	8	se.	F. S. Parks
Melrose	Monroe	871									4.48		3.41	0	5	17	8	5	sw.	J. M. Carr
Mount Ayr	Ringgold	1,220	35	63.8	— 1.6	89	2†	35	18	34	3.00	— 0.95	1.75	0	5	18	5	7	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	63.4	— 1.4	90	2†	35	18	35	3.93	— 0.21	1.98	0	9	17	6	7	se.	James A. Verploegh
Winterset	Madison	1,118	37	63.0	— 2.5	91	2	31	18	33	3.07	— 0.68	.85	0	8	16	6	8	se.	H. S. Ely
Means and extremes				63.5	— 1.7	94	2	30	18	36	3.52	— 0.51	3.72	0	8	15	7	8	se.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	64.2	— 1.7	92	2	33	18	31	3.60	— 0.53	1.28	0	6	18	6	6	se.	B. R. Vale
Burlington	Des Moines	544	32	65.8	— 1.4	93	2†	37	18	30	3.34	— 0.58	.76	0	11	12	9	9	sw.	John W. Donnelly
Columbus Junction	Louisa	595	27	63.2	— 2.9	92	2	34	18	32	3.92	+ 0.26	1.34	0	11	15	9	6	se.	Miss Musa Todd
Fairfield	Jefferson	780	44	64.2	— 1.4	95	2	32	18	38	3.19	— 0.44	1.34	0	5	12	10	8	sw.	R. M. McKenzie
Keokuk	Lee	614	57	65.4	— 2.1	92	2	42	18	29	4.77	+ 0.93	1.81	0	10	12	10	8	s.	U. S. Weather Bureau
Keokuk No. 2	Lee	651		66.3		95	2	41	14†	33	4.98		1.85	0	11					J. N. D. Dickinson
Keosauqua	Van Buren	639	36	63.6	— 2.2	94	2	33	18	35	3.56	— 0.64	1.52	0	7	9	13	8	nw.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	65.6	— 0.5	93	2	34	18	38	3.83	+ 0.30	1.40	0	7	10	11	9	se.	J. H. Jericho
Oskaloosa	Mahaska	835	52	64.0	— 0.9	94	2	33	18	34	3.30	— 0.10	1.33	0	10	12	7	11	se.	Roy R. Robinson
Ottumwa	Wapello	649	33	64.9	— 1.4	93	2	34	18	38	3.49	— 0.36	1.49	0	8	19	3	8	se.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	64.2	— 0.9	95	2	33	18	41	3.49	— 0.20	1.41	0	8	13	9	8	s.	W. E. Utterback
Stockport (near)	Van Buren	747	26	64.0	— 1.0	94	2	34	18	34	4.00	— 0.09	1.63	0	7	17	5	8	s.	C. L. Beswick
Washington	Washington	757	46	65.3	+ 0.1	95	2	32	18	39	3.63	+ 0.25	1.35	0	8	13	8	9	sw.	D. D. Sherman
Wever	Lee	552		64.9		95	2	34	18	36	3.44		1.10	0	9	14	6	10	e.	H. G. Liddle
Means and extremes				64.8	— 1.1	95	2	32	18	41	3.75	— 0.03	1.85	0	8	14	8	8	se.	
State means and extremes				62.4	— 1.9	98	2	25	18	46	3.74	+ 0.07	3.72	0	9	14	7	9	se.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

PRECIPITATION

The average precipitation for the State, derived from the averages of nine divisions of nearly equal area, and based on the records of 118 stations, was 3.74 inches, or 0.07 inch more than the normal. The precipitation was uniformly distributed over most of the State, there being but one rather small area in the northeastern portion that had a pronounced deficiency and only a limited area that had a marked excess, embracing a portion of the central and north-central districts. By dividing the State in two divisions, the northwestern division contained nearly all the area with an excess and the southeastern division contained nearly all the area that was deficient. The rainfall occurred at frequent intervals and the principal periods were general over nearly all portions of the State though there were great variations in the amounts. The greatest amount was 7.36 inches at Perry and the least was 1.55 inches at Dubuque. The greatest amount occurring in a 24-hour period was 3.72 inches at Albia on the 9th.

Daily Precipitation for September, 1929

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	
Northwest District																															
Akron	Big Sioux			T.	1.00		.21	.09	.74	.27						T.				.32					.02		.40	T.				2.71
Alta	Raccoon			1.50	.55			.10	.20	.86																	.20	.20		.07		4.02
Alton	Floyd			.05	1.03		.08	.06	.38	.36				.04		T.			T.	.04						.03	.67	.02		T.		2.76
Cherokee	Little Sioux			.66	1.22		.11	.16	.50	.82						T.	T.		T.	.14	T.	T.				T.	.45	.06	.42	T.		4.54
Estherville	Des Moines				.80	.50		.10	.25	.55	.05									.05							.73	.38	.74	.25		4.40
Hawarden	Big Sioux			T.	1.10		.19	.10	.76	.22									T.							T.	.69	T.	T.	T.		3.06
Inwood (near)	Big Sioux				.72	.11		.29	.19	.63	.04									.04							1.86	.12	.05	.05	T.	4.10
Lake Park (near)	Little Sioux			.60	2.15			.15	.40	.22																.44	.93	.18	.47			5.54
Le Mars	Floyd				1.28		.09	.17	.57	.44									.03	.03							.29	.01	T.			2.91
Marathon	Raccoon			.84	.82		.16	.05	1.05	.05									.28	T.	T.			T.		.67	.20	.70	.09			4.91
Pocahontas	Des Moines				.85			.07	.53	.55										.25							.55	.58	.26	.03		3.67
Rock Rapids	Big Sioux			.02	.90		.15	.23	.52	.46										.13						.80	1.80	.30	.40			5.71
Sanborn	Floyd			.35	1.46			.25	.70	.27	.27									.10						.33	1.04	.33	.08			5.18
Sheldon	Floyd			.24	1.65		.09	.14	.36	.41						T.				.11						.13	1.27	.21	.04	.01		4.66
Sioux Center	Floyd				.82		.22		.48	.30																	1.30	.12				3.24
Spencer	Little Sioux				1.75				.47	.30							T.			.08								1.20				3 80
Storm Lake	Raccoon				1.42				.64	.67						T.				.44	T.	.01			.02		.02	.12	.12			3.46
Washta	Little Sioux			.24	1.68		T.	.30	.55	.50										.10							.35	.12	.04			3.88
West Bend	Des Moines				1.25			.08	.32	.87										.15							.50	.18	.86			4.21
North Central District																															
Algona	Des Moines				1.35				.70	.60										.30						.75	.15	.70	.54			5.09
Allison	Cedar																														
Belmond	Iowa				.72			.07	.62	.50				.31		T.				.02							.05		.61	.22		3.12
Britt	Iowa				.68			.12	.35	.55			.09							.12	.02						.21	.10	1.55			3.79
Charles City***	Cedar				.30		.01	.02	1.24	.50			.30	T.		T.				T.						.02	.01	.02	1.54	T.		3.96
Forest City	Cedar				.12	.87		.06		.80	.49			.06			T.										.18	.06	.68	.35		3.67
Hampton	Cedar				.45				1.13	1.12			.30							.13							.08		.77			3.98
Humboldt	Des Moines				.92			.02	.46	.42			.04						T.	.30	T.						T.	.36	.60			3.12
Mason City	Cedar				.65			.10	.57	1.04			.34			T.											.05	.01	1.29	.01		4.09
Northwood	Cedar				.80			.03	.47	1.05	T.		.28	T.		T.											.55	T.	1.40	.03		4.61
Osage	Cedar				.29			.06	.85	1.56			.26														.19		.88			4.09
Northeast District																															
Decorah	Mississippi					.62				1.15	.08			.12	.03		.06										.36	.28	.58	.27		3.55
Dubuque***	Mississippi				.19				T.	.07			.04	T.		.03	.31	T.		T.							T.	T.	.69	.22		1.55
Fayette	Mississippi				.48				.28	1.96			.41			T.											T.		.48	1.13		4.74
Independence	Wapsipinicon				.21	.23				3.45			.31				.47			.17									.17	.71		5.72
Lansing	Mississippi					.58				.68				.22	.04		.03	.03									.13	.05	.55	.39		2.70
New Hampton	Wapsipinicon				.56	.06				1.00			.15	T.		T.											.63		.30	2.00		4.70
Oelwein	Wapsipinicon				.60					1.80			.30				.35			.20									.80	.85		4.90
Postville (near)	Mississippi				.28				T.	1.62			.35			T.	.04										.06		.30	.76		3.41
Waterloo	Cedar				T.	.50				1.65	.01			.25			.15			.15	T.								.01	.91		3.66
Waverly	Cedar				.78			.01	.39	1.10			.24							.07							.07	.04	1.00	.40		4.10
West Central District																															
Audubon (near)	Nishnabotna				1.05				.54	.45			.25				T.			.44	T.						T.	.08	.10			2.91
Carroll	Raccoon	T.			1.65	.08	T.	.05	T.	.97			.30				T.	.02		.56									.03	.22		3.88
Denison	Missouri				1.55			.04	.30	.31			.10							.29							.05		.03			2.67
Guthrie Center	Raccoon				.87				.37	.44			.16							.90									.40	.12		3.26
Harlan	Nishnabotna				1.36	T.	T.	.02	.45	.45			.43	T.						.38							.03	T.	.22	T.		3.34
Jefferson	Raccoon				1.46			T.	.50	.54			.24						.03	.55							T.	T.	.03	.31		3.66
Little Sioux	Little Sioux			.02	.86		.02	.16	.76	.51						.01				.59					.01		.03		.02			2.99
Logan	Missouri				.96	T.		.10	1.28	.22			.68	T.						1.45							.03					4.72
Onawa	Missouri			.19	.91		T.	.13	.80	.50			.18				T.		T.	.35		T.					.15		.10			3.31
Rockwell City	Raccoon				1.00		.08	.45		.45			.15							.55							.10		1.35			4.13
Sac City	Raccoon				.47			.06	.47	.32										.41							.07	.05	.49			2.34
Sioux City***	Missouri			.79	.58	T.	.35	.01	.71	.22						T.	.01		T.	T.	T.	T.			T.	.10	.40	T.	.01	T.		3.18
Central District																															
Ames	Skunk				.58				.83	.88			.11							.71										1.49		4.60
Baxter	Skunk				.22					2.70			.10				.52			.72									.39	.58		5.23
Boone (near)	Des Moines	.05			.47	.38		.01		2.28			.05	.08			.01	.03		.75	T.							.01		1.03		5.15
Des Moines***	Des Moines				.69		T.		1.10	1.00			.06			.39	T.		.23	.92							T.	T.	.23	.05		4.67
Fort Dodge	Des Moines				.72	.35		.02	.01	1.01			.31	.03						.57	.01							.04	.15		1.05	4.27
Grinnell	Iowa				.45				**	**			.50				.40			.75									.10	.90			**
Grundy Center	Cedar				.35				1.10	1.75			.30			.35		.16									.15		.47	.88			5.51
Iowa Falls	Iowa				.32	.48				2.20	.48		.10	.12		T.				.48	.05								06	.08	1.05		5.42
Marshalltown	Iowa	T.			T.	.34		T.		.63	T.		.01	.06			.26			.29	.01							T.	.15	1.08		2.83
Monroe	Des Moines	T.			1.01	.19	T.		.21	.92			T.			T.	.32			1.02	T.								T.	.35		4.05
Perry	Raccoon	1.76			.88				1.91	1.10			.15			T.	T.		.03	.90	T.	T.					T.	T.	.06	.57		7.36
Toledo	Iowa				.75		.05	T.	T.	.95			.10				.50			.40									.25	.35			3.35
Van Meter	Raccoon				.30	.10				1.75			.08				.13			.80									.20				3.36
Waukee	Raccoon				.46			T.	.41	1.86			.15			T.	.08			1.30								T.	.11	.05			4.42
Webster City	Des Moines				1.02		T.	.06	.71	1.18			.33							.41							T.	.04	1.35	.05			5.15
East Central District																															
Belle Plaine	Iowa	.01			.66	.05			.04	.38			.10	.01			.32			.32										.64			2.53
Cedar Rapids	Cedar					.62				.51	.01			.14			.20			.23	.03						.06		.01	.39			2.20
Clinton	Mississippi				.15	1.50		T.		.58							.32			.02						.21			.04	.48			3.30
Davenport***	Mississippi				.79	.03	.04		T.	.97			.04			.01	.26	T.		.21						.10	T.		.04	.64			3.13
Fairport	Mississippi				.12	1.11	.03			1.05			.03				.26			.44									.03	.52			3.59
Iowa City	Iowa					.10				.59	.02			.14			.32			.29	.04									.86	T.			2.36
Le Claire	Mississippi					1.27	T.			.62	.78			.02			.01	.37		.06	.12					T.	.09			1.25	.12			4.71
Maquoketa (near)	Maquoketa				.43					.21			.11	.04			.57			.04									.06	.89			2.35
Muscatine	Mississippi					1.15				.77	.22			.05			.12	.14		.45	.06									.90	.05			3.91
Olin	Wapsipinicon				T.					.64			.22	.04		.03	.10			.12									.15	.62			1.92
Tipton (near)	Cedar				.25					.45			.15				.70			.24										.75			2.54
Williamsburg	Iowa				.21					.67			.13			T.	T.			.87										1.67			3.55

Daily Precipitation for September, 1929—Continued

Stations	Drainage Basin	Day of Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals
Southwest District																																	
Atlantic‖‖	Nishnabotna	.01			1.18	.18	T.			1.13	T.		.25	T.						1.17	.03	T.							.29	.13	.01		4.33
Bedford	102	.25			.15				1.04	.26			.36				.56			1.18	T.											3.80
Clarinda‖‖	Nodaway	.16			.22	.10	.01			1.44			.29	.07			.35			.93	.13	.03						.07	.06	.02		3.88
Corning	Nodaway				.27				1.25	.79			.30				.18			1.41	.02							.08				4.30
Cumberland (near)	Nodaway				1.03			T.	1.00	.80			.20							.97	.02						T.	.33	T.			4.35
Glenwood	Missouri			.48	.73				.39	.70			.33	.08						.40	.02											3.13
Lenox	Missouri	.30			.26				.59	.20			.30			.10	.32			1.25	.02	.02					T.	.11	.06			3.53
Oakland	Nishnabotna			.03	1.84				.42	.86			.29							.89	.02							.06	.06			4.47
Red Oak (near)	Nishnabotna				.72				1.48	.98			.22			T.				.43						T.	T.	.24	T.			4.07
Riverton (near)	Nishnabotna				.12				.44	.76			.30	.44		.05				.37						T.	.04	.11	T.			2.63
Thurman	Missouri			.02	.49				.35	.66			.30	.18	.15					.33	T.					T.		.22				2.70
Omaha, Neb.***	Missouri			.26	.12	.01	.01		.30	.54			.58	T.					.09	.03	.01	.01			T.	T.	T.	.08	.01			2.05
South Central District																																	
Afton	Grand	.37			.36	.03			.13	.80			.18			.05	.78			1.21	.03						.10	.02				4.06
Albia‖‖	Des Moines	.08	T.			.08		T.		3.72			.05	.01			.11			1.05	.22					T.		T.	T.	.18		5.50
Centerville	Chariton	.10			.02				T.	3.51			.16				.05			1.24	.02							T.	.08			5.18
Chariton (near)	Chariton				T.				1.10	.31			T.				.22			.80	T.								T.			2.43
Corydon (near)	Chariton				.04		.01			1.25			.15			.10				.93	T.							.01	.41			2.93
Creston‖‖	Missouri	.46	T.		.12	.17	T.	T.		.71	T.		.24	.01	T.		.51	T.		1.60	.02	.01	T.					.14	.01			4.00
Earlham (near)	Des Moines	.11			.41		T.		1.06	1.11						T.		T.		.89	T.		T.				T.	T.	T.			3.49
Indianola	Des Moines				.60	.01			.02	.60			.06				.36			1.10						T.		T.	.01			2.76
Knoxville	Des Moines					.10			T.	.67			.03				.42			1.35							.05		T.			2.62
Lacona	Des Moines	.09			.57				.49				.01				.01			1.02							.14	.01		.01		2.35
Lamoni‖‖	Grand	.19			.01	.02		.02		.23			.24	.09	T.		.18			.90	.93	T.								.16		2.97
Melrose	Des Moines			.24					3.41							.03				.60									.20			4.48
Mount Ayr	Grand				.17				.15	.62			.31							1.75												3.00
Tingley	Platte	.12			.15	.09			.15	.32			.27	T.			.80			1.98	.05							T.	T.			3.93
Winterset	Des Moines	.21			.35				.28	.78			.15			T.	.33			.85							T.	.12	T.			3.07
Southeast District																																	
Bonaparte (near)	Des Moines				T.	1.00	T.			.76			.24				.09			1.28								T.	.23			3.60
Burlington‖‖	Mississippi					.76	.03	.01		.20				.22			.67	.06		.68	.18					T.			.03	.50		3.34
Columbus Jct.	Iowa				.02	.78		.02	.10	1.24			.03				.18			.82							T.	.02	.01	.70			3.92
Fairfield	Skunk				T.	.38		T.		1.34			.08				T.			1.23									.16			3.19
Keokuk***	Mississippi				1.02	.02		T.	.06	1.75			.26	.01			.24		T.	1.15	T.					T.		T.	.25	.01		4.77
Keokuk No. 2	Mississippi				.03	1.03	.03			1.85			.26	.05			.06			1.16	.05								.23	.03		4.98
Keosauqua	Des Moines					.50		.02		1.52			.22				.02			1.10									.18			3.56
Mt. Pleasant	Skunk				.05	.77				1.40			.21				.17			.96						T.			.27			3.83
Oskaloosa	Des Moines	T.		.07	.13			.02	.09	1.06			.06				.21		T.	1.33								.04	.29			3.30
Ottumwa	Des Moines				.08	.10				1.49			.04				.14			1.48								.01	.15			3.49
Sigourney (near)	Skunk		T.		.05			T.	.36	1.05			.06				.20		T.	1.00								.02	.75			3.49
Stockport (near)	Skunk				.23	.22				1.63			.22	T.			.15			1.49									.06			4.00
Washington	Skunk				.22	.20	T.			1.35			.04				.23			.78								.01	.80			3.63
Wever	Mississippi				.20	.60	.01	.01		.48			.22	T.			.59			1.10	T.					T.			.23			3.44

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.

T. Precipitation is less than .01 inch rain or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level) Mean	Highest	Date	Lowest	Date	Relative Humidity, % Mean 7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	‡‡Wind Total movement	Average hourly velocity	Maximum Miles	From	Date	Sunshine % possible	Departure from normal
Chas. City	30.05	30.44	18	29.68	13	83	52	66	30	6	4,201	5.8	22	sw.	2	64	+ 3
Davenport	30.01	30.38	18	29.68	4	80	55	61	32	23	5,140	7.1	30	s.	14	68	+ 5
Des Moines	30.02	30.42	18	29.67	15	82	54	62	31	14†	4,322	6.0	25	sw.	15	59	— 3
Dubuque	30.05	30.41	18	29.68	13	78	50	59	31	24	3,792	5.3	20	s.	15	56	— 3
Keokuk	30.05	30.40	18	29.72	4	81	55	63	33	14	3,901	5.4	27	sw.	4	63	— 1
Sioux City	30.02	30.43	18	29.58	15	84	60	64	28	5	7,765	10.8	39	s.	23	50	—13
Omaha, Nb	30.02	30.41	18	29.66	15	81	53	59	31	10†	4,969	6.9	26	nw.	6	62	— 3
Means and extremes	30.04	30.41	18	29.58	15	81	54	62	28	5		6.8	39	s.	23	60	— 2
Normals and records	30.02	*30.67	25th 1926	¶29.20	29th 1927	83		64	§18	28th 1921			‖58	w.	7th 1872	62	

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

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

MISCELLANEOUS PHENOMENA

Fog: 6th, 14th, 16th, 25th, 26th, 27th.

Frost: 5th, 10th, 11th, 14th, 16th, 18th, 30th.

Halos (lunar and solar): 7th, 11th.

Hail: 8th.

Thunderstorms: 3d, 4th, 5th, 7th, 8th, 9th, 11th, 12th, 15th, 16th, 18th, 19th, 20th, 25th, 26th, 27th, 28th, 29th, 30th.

RIVERS

Low stages prevailed on all rivers. There was considerable fluctuation with falling stages predominating, but the daily changes were slight except a rise of 1.4 feet occurred at Dubuque on the 10th. At all other stations on the principal rivers the extreme stages for the month were less than one foot. On the interior streams the daily changes were slight. The greatest rise reported was 1.2 feet at Van Meter on the 9th, from a stage of 1.8 feet on the 8th to 3.0 feet on the 10th, which were the extreme stages for the month. The extreme stages on most interior streams were less than one-half foot.

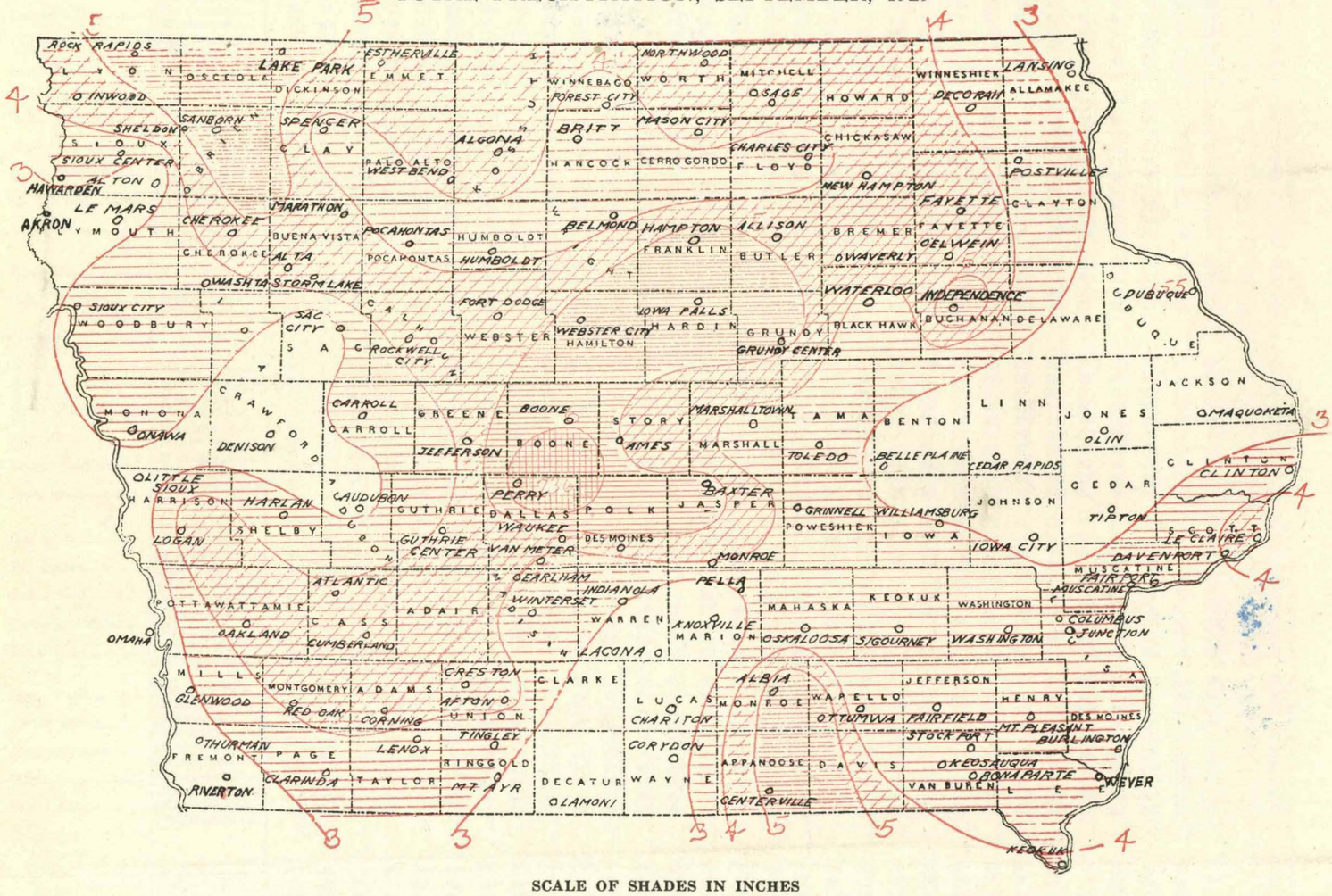
Daily Maximum and Minimum Temperature for the Month of September, 1929

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	Maximum	86	95	92	80	70	68	62	59	60	68	74	73	60	66	72	70	67	54	51	55	70	82	83	83	82	75	81	74	60	60		71.1
	Minimum	65	69	68	50	43	50	44	49	52	42	47	53	45	36	53	40	40	27	42	43	50	56	59	60	59	59	64	53	45	38		50.0
Alta	Maximum	88	93	92	69	72	63	59	58	58	74	75	65	63	71	71	69	63	56	45	53	74	84	83	85	85	69	77	65	62	67		70.3
	Minimum	62	67	68	47	44	44	44	50	46	40	47	52	47	38	53	43	41	29	41	43	49	58	61	61	56	56	59	50	46	40		49.4
Alton	Maximum	85	91	90	75	68	64	53	55	55	70	72	66	62	68	70	68	62	54	50	53	77	85	84	83	83	68	68	62	60	60		68.7
	Minimum	63	66	70	49	40	45	43	50	50	37	43	53	50	40	56	38	48	29	42	45	50	64	64	63	57	59	60	50	47	37		50.3
Belmond	Maximum	87	94	92	80	72	74	68	65	63	71	78	68	61	71	76	72	61	57	48	56	70	83	83	85	85	77	87	73	62	64		72.8
	Minimum	66	69	76	49	40	49	56	49	52	41	46	52	49	36	52	39	38	26	42	42	51	55	58	58	56	58	63	53	40	35		49.9
Charles City	Maximum	86	93	91	76	69	74	68	73	68	67	75	56	56	68	76	68	58	54	50	61	68	80	81	83	82	74	85	66	61	60		70.9
	Minimum	63	66	71	50	44	50	49	52	52	47	47	52	41	36	51	45	35	29	42	41	53	55	58	54	57	58	62	53	45	38		49.9
Decorah	Maximum	91	98	97	85	71	76	69	75	75	75	78	69	56	70	77	70	70	58	55	64	69	81	83	86	86	75	86	75	62	64		74.9
	Minimum	57	68	71	53	44	45	50	51	55	46	39	50	46	35	46	45	38	27	28	30	45	50	51	53	53	52	56	59	49	36		47.6
Dubuque	Maximum	85	91	89	80	70	72	74	76	79	68	74	58	60	69	76	68	61	58	51	62	69	76	79	83	80	79	85	73	61	63		72.3
	Minimum	65	68	72	56	53	52	57	59	55	50	44	51	50	41	51	55	41	35	42	47	52	52	51	50	60	62	61	59	54	45		53.0
Forest City	Maximum	85	94	92	82	72	69	63	63	62	68	77	68	59	70	75	72	63	54	50	58	68	82	83	83	82	75	83	76	60	60		71.6
	Minimum	61	66	67	65	41	50	44	52	54	41	45	50	50	35	49	41	38	27	40	40	50	54	57	57	57	55	60	54	43	37		49 3
Independence	Maximum	86	91	92	86	69	72	71	74	74	68	73	72	59	68	77	74	67	58	54	60	69	77	78	80	82	80	84	85	67	60		73.6
	Minimum	60	64	68	60	47	49	51	55	50	46	47	51	51	37	47	49	43	31	41	40	50	51	52	51	56	64	61	60	52	41		50.8
Inwood	Maximum	82	92	93	74	73	58	56	52	52	75	73	73	65	73	74	72	66	53	48	52	73	84	86	86	83	68	63	59	62	62		69.4
	Minimum	62	65	68	47	38	43	43	48	48	36	46	51	45	38	54	38	41	29	41	44	50	64	65	58	56	59	56	49	45	34		48.7
Lake Park	Maximum	87	91	91	69	73	59	57	56	54	73	75	66	60	72	73	73	62	57	50	56	69	85	87	77	84	69	67	64	59	62		69.2
	Minimum	64	64	67	47	41	43	48	44	49	39	45	50	45	37	51	40	38	27	42	44	47	54	59	58	55	55	50	48	45	36		47.7
Mason City	Maximum	86	94	92	80	70	74	67	68	63	68	76	65	63	69	76	71	59	55	49	60	68	82	82	84	82	74	85	73	62	62		72.0
	Minimum	62	62	72	50	40	50	45	49	52	43	45	50	45	33	52	38	37	26	40	37	51	54	56	52	55	56	61	52	46	36		48.2
New Hampton	Maximum	88	94	93	86	74	78	74	75	70	70	77	69	57	71	79	70	65	58	53	63	68	80	82	85	85	77	87	75	78	64		74.8
	Minimum	61	64	69	52	42	45	50	50	54	45	44	51	48	34	49	43	37	28	36	35	48	51	54	51	56	57	60	56	48	39		48.6
Northwood	Maximum	85	92	90	80	69	72	65	69	63	68	76	64	54	69	74	68	56	55	50	62	69	81	83	83	83	71	83	77	61	62		71.1
	Minimum	62	63	69	51	44	52	47	51	50	45	46	50	44	36	50	43	40	28	40	38	50	54	56	54	57	56	57	52	42	38		48.8
Pocahontas	Maximum	86	95	92	79	73	67	64	60	60	72	76	60	65	70	75	72	63	56	49	56	72	85	85	84	84	73	80	70	67	62		71.7
	Minimum	63	65	70	49	43	52	45	50	52	41	42	51	49	37	53	40	44	27	42	44	50	54	60	59	58	59	63	54	46	37		50.0
Postville	Maximum	85	89	89	72	76	71	69	69	74	64	73	60	56	66	74	65	65	55	50	60	68	76	77	80	82	83	86	72	59	60		70.8
	Minimum	61	69	69	51	51	59	50	52	53	44	43	47	42	37	49	40	39	30	34	36	47	50	54	53	55	60	59	55	46	40		49.2
Rock Rapids	Maximum	81	89	89	76	70	62	55	53	53	67	70	65	60	68	70	68	62	54	50	54	74	82	82	81	80	68	66	59	59	61		67.7
	Minimum	60	61	65	47	38	43	43	47	49	37	42	50	45	37	54	37	42	26	42	44	49	49	65	57	55	57	57	49	45	35		47.6
Central Division																																	
Ames	Maximum	87	91	90	82	70	73	68	65	65	71	76	66	65	70	79	70	65	58	51	55	70	82	82	83	82	81	87	77	62	69		73.1
	Minimum	66	64	68	52	46	52	45	54	55	45	46	54	52	41	50	47	48	31	43	45	51	54	56	53	58	63	64	59	50	42		51.8
Belle Plaine	Maximum	89	94	94	82	73	74	75	77	77	73	79	63	68	78	82	78	68	61	50	58	72	83	83	87	80	84	91	77	64	67		76.0
	Minimum	61	64	67	55	48	45	51	55	57	45	42	52	51	34	42	53	41	28	43	45	49	51	53	51	54	64	61	64	53	39		50.6
Carroll	Maximum	87	93	91	82	72	72	66	61	61	75	77	66	63	72	78	73	66	55	47	52	73	82	82	81	83	81	83	72	62	64		72.4
	Minimum	63	69	70	49	44	51	45	51	51	41	49	51	50	39	53	44	48	31	40	42	49	57	61	58	59	60	62	54	47	39		50.9
Cedar Rapids	Maximum	87	94	90	78	74	72	78	77	80	73	78	63	66	72	80	73	65	62	52	61	72	80	82	87	79	82	89	78	70	69		75.4
	Minimum	63	65	69	58	50	45	56	58	58	46	41	47	50	36	48	54	48	32	43	45	53	51	53	45	55	62	61	66	54	42		51.8
Davenport	Maximum	85	92	90	88	71	69	77	81	81	72	74	65	66	69	76	70	66	57	52	61	72	78	78	81	76	79	86	78	67	65		74.1
	Minimum	66	70	72	58	55	55	60	61	57	53	52	55	49	43	52	55	42	35	45	48	53	50	52	55	66	64	60	67	55	49		55.1
Des Moines	Maximum	88	92	91	80	71	74	71	69	68	74	77	62	67	71	80	72	67	55	48	56	70	84	83	84	82	83	87	74	63	65		73.6
	Minimum	70	72	73	53	50	57	49	58	50	45	49	55	50	41	54	51	45	37	43	45	52	57	59	58	61	64	64	58	52	46		53.9
Ft. Dodge	Maximum	87	96	94	79	72	73	66	62	63	72	79	63	64	72	77	73	64	58	51	56	71	84	84	85	84	81	87	69	62	65		73.1
	Minimum	66	68	68	49	42	50	45	50	53	42	45	52	50	36	52	42	44	27	42	45	51	57	59	58	58	59	62	55	42	38		50.2
Grinnell	Maximum	88	92	88	85	74	75	74	72	70	71	78	71	67	73	80	74	70	58	52	54	71	90	80	83	81	80	89	79	76	65		75.3
	Minimum	61	65	70	54	47	49	52	54	49	42	46	52	51	36	48	49	46	30	40	44	49	65	54	52	55	62	62	64	50	42		51.3
Guthrie Center	Maximum	87	94	92	83	70	72	67	64	63	73	78	68	65	70	89	73	65	56	51	54	75	83	83	82	83	83	85	74	62	63		73.6
	Minimum	65	69	70	49	42	48	44	54	53	41	41	52	52	38	52	44	44	29	42	44	49	56	61	58	57	59	64	57	50	39		50.8
Iowa City	Maximum	87	93	91	78	73	72	77	79	79	71	77	63	67	71	78	72	65	60	51	58	71	80	80	86	80	82	88	76	71	67		74.8
	Minimum	63	63	69	62	52	49	57	57	59	47	44	50	54	37	48	55	49	31	44	47	53	52	52	48	61	64	62	65	56	43		53.1
Iowa Falls	Maximum	87	93	92	80	71	72	67	68	66	69	78	65	61	69	79	69	61	54	49	55	70	81	82	85	81	81	87	73	61	60		72.2
	Minimum	65	66	71	51	43	49	46	52	55	44	47	52	49	37	52	43	40	30	42	43	50	54	52	53	57	57	63	55	48	41		50.2
Little Sioux	Maximum	86	94	92	78	72	70	60	63	61	76	72	68	62	77	78	78	69	59	53	53	81	85	85	84	85	79	75	65	64	67		73.0
	Minimum	68	70	70	49	42	48	46	51	52	40	45	52	50	40	42	48	46	34	42	45	51	64	64	63	66	61	58	53	48	39		51.6
Marshalltown	Maximum	89	90	92	81	71	75	70	73	69	71	78	65	66	71	80	70	65	58	51	56	71	82	83	86	82	81	89	76	63	65		74.0
	Minimum	65	68	70	52	47	51	48	55	56	44	49	54	51	39	51	48	46	31	42	45	52	55	56	56	57	63	64	59	50	40		52.1
Olin	Maximum	88	94	93	82	75	76	80	80	83	74	78	65	65	64	78	73	69	60	53	65	70	80	82	86	82	82	88	75	70	67		76.2
	Minimum	55	59	67	66	51	46	57	57	60	48	38	45	56	34	42	55	44	30	40	42	52	50	44	40	57	62	59	64	55	42		50.6
Sioux City	Maximum	85	96	91	69	70	62	56	57	55	75	73	68	63	75	73	71	66	57	48	53	79	84	85	84	83	70	65	57	61	63		69.8
	Minimum	67	69	69	48	44	45	46	50	47	43	49	53	49	46	52	46	41	34	43	45	51	64	64	65	60	59	54	53	48	42		51.5
Southern Division																																	
Albia	Maximum	89	94	91	85	77	71	78	82	73	74	77	63	71	72	79	74	68	60	52	55	70	82	80	84	80	83	89	80	72	68		75.8
	Minimum	63	69	69	55	49	50	51	55	56	44	51	53	52	40	50	53	45	33	42	43	49	55	57	54	60	62	62	66	53	43		52.8
Atlantic	Maximum	87	94	91	74	72	72	69	63	63	77	76	64	68	70	78	73	69	57	51	52	76	83	83	82	84	84	81	73	64	66		73.2
	Minimum	65	70	68	50	42	47	43	55	51	37	43	52	52	39	52	44	43	31	41	44	51	59	60	58	60	61	64	56	50	38		50.9
Burlington	Maximum	89	93	93	89	75	68	74	82	80	71	75	64	68	72	79	69	67	61	51	57	72	80	80	82	81	82	88	87	76	64		75.6
	Minimum	66	67	70	70	54	56	60	61	62	48	50	53	55	42	50	57	54	37	45	46	51	53	51	55	65	67	61	66	58	50		56.0
Columbus Jct.	Maximum	85	92	89	87	69	68	73	80	77	68	72	64	66	67	76	71	64	58	50	56	73	76	76	80	77	79	84	77	71	63		72.9
	Minimum	63	66	71	65	54	52	58	57	59	47	44	50	54	39	48	55	51	34	44	46	50	50	49	48	63	65	60	64	56	46		53.6
Corning	Maximum	86	91	91	78	68	74	71	69	67	78	77	64	71	75	81	76	71	63	54	52	76	83	83	81	82	82	85	78	64	66		74.6
	Minimum	60	69	68	51	42	46	48	55	52	37	44	52	51	36	51	46	44	35	42	44	50	58	60	55	60	61	63	61	52	42		51.2
Corydon	Maximum	84	90	87	84	70	70	73	77	70	71	72	62	67	69	77	73	66	60	46	53	70	79	78	80	78	82	85	79	74	63		73.0
	Minimum	65	68	69	58	51	52	51	58	57	44	50	55	53	41	50	53	50	35	44	44	49	50	56	55	60	63	64	67	53	44		53.6
Creston	Maximum	85	89	89	81	72	74	70	66	65	75	77	65	68	70	81	73	70	55	50	52	74	82	82	82	83	83	84	77	63	65		73.4
	Minimum	63	68	67	50	46	50	50	56	53	39	47	52	50	36	50	48	48	35	41	44	49	56	58	53	58	58	61	60	52	42		51.3
Fairfield	Maximum	90	95	92	89	72	69	77	84	79	70	77	61	68	71	79	70	67	60	50	57	69	79	80	85	77	83	88	82	73	66		75.3
	Minimum	65	64	69	60	53	51	56	56	58	46	43	50	53	40	48	54	51	32	43	46	51	53	53	47	64	59	62	63	56	44		53.0
Keokuk	Maximum	87	92	91	87	69	67	75	82	81	72	74	63	67	69	77	70	69	58	50	58	71	78	78	81	77	83	88	87	76	67		74.8
	Minimum	65	68	73	58	55	58	61	61	55	48	53	55	51	44	51	57	49	42	44	47	53	54	54	57	67	63	63	66	57	51		56.0
Knoxville	Maximum	89	93	91	84	70	74	73	76	71	73	77	68	69	72	81	75	67	58	53	56	70	82	81	84	81	82	88	84	71	65		75.3
	Minimum	66	70	72	55	50	48	53	57	59	45	50	55	54	41	52	52	53	34	43	45	50	57	58	56	57	64	63	65	54	45		54.2
Lamoni	Maximum	86	90	91	84	72	74	73	75	67	77	75	62	71	73	81	74	73	58	50	52	75	83	82	83	83	85	86	83	70	66		75.1
	Minimum	64	65	67	51	47	50	46	57	53	39	49	51	53	38	50	49	47	34	41	43	48	55	56	54	59	61	61	63	51	42		51.5
Sigourney	Maximum	88	95	93	84	73	72	79	83	77	72	77	65	70	73	80	73	68	59	52	55	70	79	80	84	80	83	89	79	74	66		75.7
	Minimum	64	65	69	59	51	49	55	57	58	46	45	51	53	38	39	54	51	33	44	46	52	52	54	50	61	60	61	65	54	44		52.7
Thurman	Maximum	86	93	92	79	70	73	67	68	65	76	76	70	70	72	81	77	73	68	55	54	81	84	84	83	84	84	85	81	65	66		75.4
	Minimum	69	70	69	52	41	48	44	57	54	39	45	53	53	40	55	45	47	40	44	46	53	62	62	60	63	64	64	59	54	41		53.1
Winterset	Maximum	87	91	90	82	70	74	70	65	65	75	78	66	68	71	80	73	67	58	51	53	75	83	82	84	84	85	86	73	63	65		73.8
	Minimum	64	70	70	51	45	50	44	55	55	42	50	53	53	40	52	48	47	31	41	45	50	57	60	56	61	61	65	62	52	40		52.3
Omaha, Neb.	Maximum	87	95	93	73	69	72	63	66	59	76	75	69	67	72	78	76	68	58	48	52	80	85	84	83	83	81	78	62	62	65		72.6
	Minimum	70	72	72	49	50	48	48	54	49	47	54	54	52	49	56	50	46	41	44	45	52	64	63	63	65	65	61	56	50	45		54.5

IOWA STORMS, SEPTEMBER, 1929

Date	County	Township	Nature of Storm	Time	Storm Moved From	Width of Path Miles	Length of Path Miles	Area of Sq. Miles	Size of Hailstones Inches	Damage	Persons Killed	Persons Injured
8	Monroe	Franklin, Troy	Wind and Hail	4:00 p. m.	SW to NE	.....	.....	.....	¾	$40,000	.....	6
8	Wapello	Highland, Columbia	Wind and Hail	4:00 p. m.	W to E	.....	.....	.....	¼	10,000	.....	5
8	Delaware	Coffins Grove, Delaware	Wind	8:00 p. m.	SW to NE	.....	.....	.....	.....	13,000	.....	.....

TOTAL PRECIPITATION, SEPTEMBER, 1929



SCALE OF SHADES IN INCHES

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

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, OCTOBER, 1929 No. 10

GENERAL SUMMARY

The mean temperature for the State averaged exactly normal but there was an excess over most western districts and a deficiency over most eastern districts, the areas being nearly equal. The chief feature of the temperature in general was the large number of fluctuations above and below normal, there being a change on an average of every three days. The longest warm period, which was general over the entire State, extended from the 14th to the 20th, and longest general cold period extended from the 21st to the 24th. This was the coldest period of the month and the only period in which there was general freezing weather. The general temperature conditions were reflected in the departures as the most pronounced daily excesses were in the western portion of the State, and the most pronounced deficiencies in the eastern portion. Frost occurred frequently, beginning on the 4th, but the areas affected amounted to less than one-half of the State, until the general freeze on the 23d. A large area in the northern portion of the State had killing frost in September but much vegetation that was slightly injured revived and in the extreme southeast portion of the State some crops were uninjured at the end of the month, making a growing season of unusual length. The temperature extremes were less than usual, the maximum for the month being considerably less than the average and the minimum considerably higher than the average.

Precipitation averaged more than 25% more than the normal but the distribution was uneven. A large number of stations in the southern portion had more than double the normal, while several in the north-central and northeastern portions had less than one-half of the normal. There were two principal precipitation periods in which most of the monthly total occurred that embraced the entire State; the first occurred during the middle of the second week, and the other during the last four days of the month. There were several other periods that were general in sections, the principal one affecting the largest area, occurred on the 19th. An unusual feature in connection with the weather was the large number of cloudy days that were entirely cloudy and the large number of clear days that were cloudless.

Foggy days were unusually numerous and this fact was emphasized by the effect that it had on air transportation. The number of cloudy days was more than the average, and at times the ceiling was very low, making flying difficult, and with the foggy condition during the last four days caused almost a complete suspension.

From an agricultural standpoint the month was not entirely favorable. The frequent rains interfered with corn husking and would not permit drying so that it could be safely cribbed. Sugar beets were harvested, with no damage from freezing, and commercial canneries were able to complete operations with very little loss of material. Outside work was interrupted only by rainy weather, and building operations and road construction was pushed as much as possible. The frequent rains kept dirt roads in poor condition most of the time, and detours where paving was in progress were generally in bad condition.

F. L. D.

COMPARATIVE DATA FOR THE STATE—OCTOBER

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1873	46.0	— 5.8	76	15	2.64	+ 0.21	4.80	1.25					
1874	51.2	— 0.6	84	25	1.52	— 0.91	2.70	0.65					
1875	47.8	— 4.0	77	22	1.36	— 1.07	2.71	0.28					
1876	47.0	— 4.8	78	18	1.16	— 1.27	3.31	0.18					
1877	49.6	— 2.2	93	28	4.45	+ 2.02	8.08	1.90					
1878	48.9	— 2.9	85	10	2.73	+ 0.30	5.52	0.40					
1879	58.3	+ 6.5	90	11	2.19	— 0.24	6.28	0.28					
1880	47.6	— 4.2	83	13	1.90	— 0.53	6.90	0.25					
1881	52.1	+ 0.3	86	26	6.42	+ 3.99	14.03	3.10					
1882	54.4	+ 2.6	86	23	3.97	+ 1.54	6.50	0.55					
1883	47.2	— 4.6	88	20	3.37	+ 0.94	6.95	0.40					
1884	51.2	+ 2.4	86	17	4.20	+ 1.77	9.00	2.00					
1885	46.7	— 5.1	80	20	2.62	+ 0.19	4.30	0.92					
1886	55.0	+ 3.2	88	18	2.51	+ 0.08	8.15	0.43					
1887	46.4	— 5.4	86	—3	1.46	— 0.97	3.41	0.05					
1888	47.7	— 4.1	84	22	1.16	— 1.27	2.81	0.10					
1889	47.5	— 4.3	94	12	0.58	— 1.85	2.88	0.00					
1890	49.2	— 2.6	84	15	3.44	+ 1.01	6.43	1.59					
1891	50.0	— 1.8	92	19	2.77	+ 0.34	6.53	0.85		6	18	7	6
1892	54.5	+ 2.7	96	14	1.55	— 0.88	2.58	0.00	0.0	4	21	6	4
1893	52.4	+ 0.6	94	10	1.28	— 1.15	4.56	0.02	0.0	4	16	9	6
1894	51.7	— 0.1	90	20	2.67	+ 0.24	5.25	0.03	0.2	8	14	8	9
1895	46.0	— 5.8	88	4	0.47	— 1.96	1.38	0.00	T.	2	19	8	4
1896	47.8	— 4.0	88	12	3.13	+ 0.70	5.05	1.51	T.	5	18	6	7
1897	56.8	+ 5.0	97	12	1.14	— 1.29	3.30	0.03	0.0	4	17	8	6
1898	47.5	— 4.3	88	17	3.56	+ 1.13	5.75	1.27	3.6	8	7	9	15
1899	56.7	+ 4.9	95	17	1.73	— 0.70	4.64	0.15	0.0	5	17	8	6
1900	59.3	+ 7.5	90	21	3.91	+ 1.48	8.00	1.20	0.0	7	16	7	8
1901	54.2	+ 2.4	88	20	1.98	— 0.45	4.23	0.45	T.	6	17	7	7
1902	53.5	+ 1.7	83	20	2.54	+ 0.11	6.66	0.28	T.	5	16	8	7
1903	52.2	+ 0.4	90	16	1.95	— 0.48	4.50	0.32	0.0	5	19	6	6
1904	53.1	+ 1.3	96	16	1.67	— 0.76	4.43	0.14	T.	6	15	8	8
1905	49.2	— 2.6	95	16	3.40	+ 0.97	5.36	1.20	1.6	8	16	6	9
1906	50.5	— 1.3	87	7	1.96	— 0.47	4.25	0.50	0.1	6	14	7	10
1907	50.4	— 1.4	85	10	1.50	— 0.93	3.71	0.30	0.0	5	20	5	6
1908	51.1	— 0.7	89	17	3.38	+ 0.95	8.83	0.58	2.6	8	16	6	9
1909	49.7	— 2.1	97	10	2.22	— 0.21	4.70	0.48	T.	6	16	6	9
1910	55.2	+ 3.4	93	10	0.77	— 1.66	1.73	T.	0.1	4	21	4	6
1911	48.7	— 3.1	87	14	3.34	+ 0.91	7.03	0.73	0.6	10	12	8	11
1912	52.2	+ 0.4	92	16	2.98	+ 0.55	5.77	1.03	T.	6	21	3	7
1913	49.2	— 2.6	89	—2	3.03	+ 0.60	7.29	0.35	1.2	9	15	8	8
1914	55.9	+ 4.1	88	14	3.23	+ 0.80	6.64	0.74	T.	9	16	6	9
1915	54.4	+ 2.6	86	19	1.31	— 1.12	3.25	T.	T.	5	19	6	6
1916	50.9	— 0.9	92	6	2.00	— 0.43	4.33	0.20	2.0	8	16	7	8
1917	42.9	— 8.9	85	0	1.41	— 1.02	4.00	0.15	2.2	6	10	11	10
1918	55.1	+ 3.3	93	21	3.64	+ 1.21	7.56	1.36	0.8	7	13	7	11
1919	50.7	— 1.1	89	8	3.02	+ 0.59	8.65	0.45	T.	10	11	8	12
1920	57.7	+ 5.9	90	11	2.13	— 0.30	4.64	0.48	T.	6	19	6	6
1921	54.6	+ 2.8	90	21	1.96	— 0.47	3.61	0.21	T.	6	17	8	6
1922	56.1	+ 4.3	96	14	1.81	— 0.62	3.93	0.06	T.	5	21	4	6
1923	48.5	— 3.3	81	10	1.22	— 1.21	3.67	0.29	1.7	6	18	6	7
1924	58.1	+ 6.3	89	21	0.87	— 1.56	2.58	0.03	0.0	4	22	5	4
1925	40.2	—11.6	78	—15	2.91	+ 0.48	2.70	0.97	4.9	10	8	8	15
1926	51.2	— 0.6	91	14	1.53	— 0.90	3.91	0.11	T.	7	13	9	9
1927	55.5	+ 3.7	91	24	3.25	+ 0.82	8.51	0.46	T.	7	19	5	7
1928	51.2	+ 2.4	93	17	3.66	+ 1.23	7.38	1.48	0.1	8	15	5	11
1929	51.8	0.0	84	23	3.10	+ 0.67	6.55	1.10	0.7	9	15	5	11

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

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area, and based on the records of 104 stations, was 51.8°, or just equal to the normal. There were four districts with an excess, four that were deficient and one district that was exactly normal. In general the excess occurred in the western portion of the State and the deficiency in the eastern portion. The highest monthly mean was 55.8° at Keokuk, No. 2 and the lowest was 48.2° at Decorah and Postville. The absolute range for the State was 61°, ranging from 84°, at Spencer on the 15th, to 23° at Boone, Harlan and Webster City on the 25th. Temperatures of 32°, or lower, occurred at all stations. The average number of days with freezing temperatures was 5, ranging from seven in the northwestern and north-central districts, to two in the south-central and southeastern districts. The greatest number at any station was 11 at Decorah and Mason City; the least number was 1 at 7 stations, 5 of which were Regular Weather Bureau stations.

Climatological Data for October, 1929

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District																				
Akron	Plymouth	1,153	2								2.45	+ 0.70	0.90	T.	8	15	11	5	n.	Orlan C. Moore
Alta	Buena Vista	1,513	37	51.0	+ 0.9	80	14†	25	24	39	2.38	+ 0.15	0.76	1.0	8	13	6	12	nw.	D. E. Hadden
Alton	Sioux	1,305	23	50.0	+ 0.2	79	15	25	25	41	1.77	+ 0.01	0.85	0.2	7	10	11	10	nw.	W. S. Slagle
Cherokee	Cherokee	1,196	8	51.0	+ 1.5	80	14	27	24	44	2.83	+ 0.92	1.11	T.	8	13	9	9	s.	J. E. Wirth
Estherville	Emmet	1,298	33	50.3	+ 1.2	80	15	27	24	37	3.05	+ 1.14	1.10	4.0	6	13	11	7	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								2.11	+ 0.26	0.79	T.	7	12	7	12	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	49.8	0.0	81	15	24	24	40	2.01	+ 0.10	0.74	1.5	8	20	2	9	nw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	50.2	+ 1.4	81	15	26	23†	47	2.83	+ 1.49	0.90	1.0	8	10	7	14	se.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	50.6	− 0.5	81	15	26	23†	42	1.94	− 0.12	0.78	0	9	14	6	11	se.	Henry Newell
Marathon	Buena Vista	1,390	2								2.17		0.51	2.5	7	5	7	19	sw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	52.0	+ 1.3	81	14†	27	24	44	2.25	− 0.48	0.63	0	8	15	4	12	se.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	48.3	− 0.6	77	15	25	24	40	2.83	+ 1.04	0.75	3.5	8	19	5	7	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	49.2	− 0.2	79	15	24	24	40	2.47	+ 0.62	0.75	0.5	8	13	5	13	ne.	J. W. Dow
Sheldon	O'Brien	1,418	17	50.5	+ 0.3	81	15	25	24	40	2.88	+ 0.88	1.25	1.5	8	14	7	10	nw.	Ross E. Forward
Sioux Center	Sioux	1,461	29	49.6	− 0.2	78	14†	25	24	42	2.42	+ 0.58	1.12	1.0	4	18	4	9	nw.	F. C. Aue
Spencer	Clay	1,319	14	50.8	+ 0.6	84	15	26	24	46	2.30	+ 0.38	0.90	0.5	8	15	5	11	se.	E. W. Little
Storm Lake	Buena Vista	1,438	39	51.8	+ 0.6	79	14†	27	24	36	1.84	− 0.20	0.47	T.	8	12	7	12	se.	L. B. Florey
Washta	Cherokee	1,157	30	51.1	+ 0.6	80	14	25	26	47	2.51	+ 0.40	0.87	0	8	12	7	12	nw.	H. L. Felter
West Bend	Palo Alto	1,197	35	50.8	+ 0.2	80	15†	28	23†	41	2.27	+ 0.24	0.58	0	8	18	1	12	nw.	Jos. Dorweiler
Means and extremes				50.4	+ 0.4	84	15	24	24	47	2.38	+ 0.43	1.25	0.9	8	14	6	11	nw.	
North Central District																				
Algona	Kossuth	1,224	55	49.9	− 0.6	80	14†	28	23†	44	2.03	− 0.24	1.37	0.9	6	19	3	9	se.	W. E. Laird
Allison‡‡	Butler	1,060	14																	E. W. Detra
Belmond	Wright	1,181	18	49.9	− 0.7	81	15	28	21†	44	1.66	− 1.06	0.60	T.	8	9	5	17	nw.	H. F. Luick
Britt	Hancock	1,236	41	50.0	+ 0.3	80	15	27	23	42	1.64	− 0.76	0.44	T.	8	18	1	12	sw.	E. P. Healy
Charles City	Floyd	1,015	37	48.9	+ 0.3	80	15	28	23	39	1.49	− 0.84	0.40	1.2	9	13	4	14	se.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	49.6	+ 0.5	82	15	25	23	45	1.43	− 1.00	0.33	1.0	9	13	7	11	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	3								1.81	− 0.74	0.70	0.2	7					L. H. Davis
Humboldt	Humboldt	1,095	40	51.6	+ 0.3	81	15†	27	25	44	2.55	+ 0.33	1.00	T.	4	13	9	9	ne.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	48.6	− 1.0	81	15	28	21†	43	1.20	− 1.00	0.72	1.0	6	12	9	10	se.	American Beet Sugar Co.
Northwood	Worth	1,222	32	48.9	+ 0.7	82	15	27	23†	40	1.55	− 1.09	0.60	6.5	6	13	9	9	se.	Charles Dwelle
Osage	Mitchell	1,163	34	49.2	+ 0.7	81	15	27	23	40	1.54	− 0.90	0.55	1.0	7	12	7	12	nw.	Dr. C. E. Juhl
Means and extremes				49.6	− 0.1	82	15	25	23	45	1.69	− 0.72	1.37	1.2	7	14	6	11	se.	
Northeast District																				
Decorah	Winneshiek	872	35	48.2	− 0.9	81	15	27	8†	43	2.32	− 0.50	0.60	2.0	8	15	4	12	se.	M. D. Whitney
Dubuque	Dubuque	700	55	50.7	− 1.2	80	15	30	23	32	2.10	− 0.38	0.54	3.0	11	11	5	15	nw.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	49.6	0.0	81	15	28	23	39	1.94	− 0.59	0.40	2.0	8	16	2	13	ne.	R. Z. Latimer
Independence	Buchanan	956	64	51.6	− 0.5	80	15	27	23	36	1.97	− 0.58	0.48	1.1	8	17	2	12	ne.	Dr. Geo. Boody
Lansing	Allamakee	632	21								1.19	− 1.71	0.24	1.5	9					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	49.2	− 1.0	80	15	26	23	40	1.50	− 1.07	0.35	1.0	7	10	7	14	nw.	D. W. Dawson
Oelwein	Fayette	1,036	5	50.0	− 1.2	80	15	27	23	38	1.35	− 1.18	0.45	2.0	5	18	2	11	s.	John T. Ridler
Postville (near)	Clayton	1,192	29	48.2	− 1.1	80	15	27	23	37	1.37	− 1.31	0.38	2.0	6	19	2	10	sw.	F. L. Williams
Waterloo	Black Hawk	854	45	50.3	− 1.6	83	15	27	23†	43	1.57	− 0.87	0.40	1.6	6	18	3	10	w.	R. B. Slippy
Waverly	Bremer	936	32	49.6	− 1.5	81	15	26	25	39	1.36	− 1.24	0.41	1.0	9	19	2	10	nw.	D. H. Murphy
Means and extremes				49.7	− 1.0	83	15	26	23†	43	1.67	− 0.94	0.60	1.7	8	16	3	12	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	52.5	+ 1.7	79	14†	27	23	38	4.08	+ 1.77	1.10	0	9	15	3	13	nw.	George Kibby
Carroll	Carroll	1,265	38	52.2	+ 0.6	80	14	27	23†	40	2.49	− 0.09	0.60	0	8	17	3	11	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	52.2	+ 0.5	79	14†	27	23	41	1.63	− 0.60	0.39	T.	9	13	5	13	sw.	V. L. Byers
Guthrie Center	Guthrie	987	33	52.1	− 0.4	80	18	27	25	44	4.69	+ 2.03	1.02	0	8	9	12	10	w.	Floyd H. Bainter
Harlan	Shelby	1,192	29	51.9	+ 0.7	79	14	23	25	43	2.33	− 0.32	0.59	0	9	15	2	14	sw.	Walter Bell
Jefferson	Greene	1,052	29	52.6	+ 1.2	80	14	30	23	43	1.89	− 0.65	0.55	T.	8	12	6	13	se.	W. I. Lyon
Little Sioux	Harrison	1,040	23	53.2	+ 1.0	83	14	28	21†	46	2.81	+ 0.76	0.92	0	10	12	7	12	n.	H. W. Kerr
Logan	Harrison	1,120	61	52.4	− 0.8	82	14	27	23	43	2.73	+ 0.35	0.77	0	9	8	16	7	ne.	Amy Ann Stern
Onawa	Monona	1,051	27	52.2	+ 0.4	80	14	27	25	44	3.60	+ 1.42	0.80	0	9	12	5	14	se.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32	51.6	− 0.2	81	14†	28	23†	41	2.33	− 0.26	0.60	0	6	22	0	9	s.	A. W. McIsaac
Sac City	Sac	1,269	52	51.2	− 0.3	81	14	28	23†	41	1.80	− 0.37	0.48	T.	7	11	9	11	n.	F. P. Kessler
Sioux City	Woodbury	1,135	39	52.4	+ 1.5	81	15	26	23	37	2.23	+ 0.46	0.61	T.	7	12	7	12	nw.	U. S. Weather Bureau
Means and extremes				52.2	+ 0.5	83	14	23	25	46	2.72	+ 0.38	1.10	T.	8	13	6	12	nw.	
Central District																				
Ames	Story	926	51	52.6	+ 0.9	79	15	30	23†	41	1.92	− 0.69	0.65	0	7	17	4	10	se.	Iowa State College
Baxter	Jasper	998	28	51.0	+ 1.6	81	15	27	23†	43	2.15	− 0.27	0.58	0	10	18	2	11	sw.	F. A. Kanne
Boone (near)	Boone	894	23	51.6	− 0.1	81	14†	23	25	49	2.26	− 0.53	0.75	T.	8	13	8	10	s.	C. F. Henning
Des Moines	Polk	861	50	53.6	+ 0.2	80	14	32	23	38	2.74	+ 0.24	0.95	T.	9	14	41	13	e.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	51.8	+ 0.5	83	15	29	23†	44	1.60	− 1.44	0.49	T.	7	13	5	13	sw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	52.4	− 0.6	80	15	26	25	43	2.43	− 0.08	0.78	T.	6	17	2	12	nw.	R. E. Bates
Grundy Center	Grundy	976	37	50.9	− 0.2	80	15	26	23	43	1.94	− 0.85	0.40	1.0	8	17	3	11	sw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	50.3	− 0.4	80	15	28	23	41	1.67	− 0.79	0.50	0.3	9	19	2	10	e.	C. H. Gilbert
Marshalltown	Marshall	947	36	52.3	− 0.7	80	15	28	23	41	1.90	− 0.86	0.48	T.	10	15	4	12	nw.	C. C. Pigman
Monroe	Jasper	922	16	53.5	− 0.5	83	19	29	23	40	3.05	+ 0.55	0.93	T.	8	20	0	11	s.	J. A. Dibel
Perry	Dallas	975	27	52.2	0.0	80	14	29	25	45	2.91	+ 0.19	1.25	T.	7	10	10	11	nw.	Eugene N. Hastie
Toledo	Tama	847	34	50.8	− 2.5	80	15	28	23	41	2.16	− 0.35	0.50	T.	10	16	5	10	ne.	H. P. Giger
Van Meter	Dallas	872	9								2.80		0.80	0	7					Calvin K. Smith
Waukee	Dallas	1,032	25	52.5	− 0.3	79	18	30	23	36	3.25	+ 1.09	0.95	T.	9	18	3	10	n.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	50.4	− 1.0	81	15	23	25	48	1.10	− 1.38	0.27	T.	6	16	5	10	se.	Frank A. Bonebright
Means and extremes				52.1	− 0.2	83	15	23	25	49	2.26	− 0.33	1.25	0.1	8	16	4	11	sw.	

Climatological Data for October, 1929—Contniued

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
East Central District																				
Belle Plaine	Benton	866	38	51.2	— 0.7	82	15	26	25	44	2.73	+ 0.24	0.48	2.0	11	13	7	11	nw.	O. C. Burrows
Cedar Rapids	Linn	737	46	51.0	— 0.4	81	15	27	25	44	2.89	+ 0.44	0.80	0.5	9	14	2	15	nw.	J. T. Wurster
Clinton	Clinton	595	55	51.7	— 1.3	81	15	29	25	38	3.33	+ 0.77	0.93	2.0	10	16	1	14	e.	Dr. A. P. Bryant
Davenport	Scott	580	57	53.2	— 0.5	80	15	30	23	30	3.77	+ 1.38	1.31	1.1	12	13	6	12	e.	U. S. Weather Bureau
Fairport	Muscatine	567	7	52.8	— 1.0	78	15	29	23	34	3.51	+ 1.02	1.00	1.0	13	13	5	13	ne.	Bureau of Fisheries
Iowa City	Johnson	733	68	51.6	— 0.8	80	15	29	23†	39	3.75	+ 1.01	1.18	1.0	12	17	4	10	se.	Prof. J. F. Reilly
Le Claire	Scott	576	28								3.31	+ 0.86	1.11	2.5	12					Margaret T. Disney
Maquoketa (near)	Jackson	692	23	49.5	— 0.7	80	15	26	5	44	3.60	+ 0.71	0.76	1.0	13	15	4	12	nw.	John Strodthoff
Muscatine	Muscatine	546	67								3.33	+ 0.68	1.08	0.5	9					William Molis
Olin	Jones	760	29	49.4	— 1.6	83	15	28	5†	42	3.01	+ 0.52	0.90	1.0	9	17	3	11	sw.	Mrs. L. Stingley
Tipton (near)	Cedar	806	29	52.3	— 0.1	77	16	28	23	40	3.57	+ 1.19	1.26	2.0	8	12	9	10	e.	John Kroeplen
Williamsburg	Iowa	770	12	50.2	— 0.5	78	15	25	25	40	2.61	+ 0.16	0.97	0.3	9	19	3	9	nw.	Dr. F. C. Schadt
Means and extremes				51.3	— 0.7	83	15	25	25	44	3.28	+ 0.74	1.31	1.2	11	15	4	12	nw.	
Southwest District																				
Atlantic	Cass	1,110	37	52.4	+ 0.2	79	14	28	25	43	5.39	+ 2.79	1.95	0	10	13	6	12	nw.	Roy L. Fancolly
Bedford	Taylor	1,200									6.55	+ 3.74	1.72	T.	10	16	3	12	sw.	Arthur L. Bishop
Clarinda	Page	1,069	38	53.4	— 0.6	81	14†	26	25	44	5.67	+ 3.03	1.22	0	10	14	11	6	sw.	Dr. H. C. Hawley
Corning	Adams	1,150	36	52.6	+ 0.2	77	2	25	25	44	6.51	+ 3.75	1.12	T.	9	16	4	11	sw.	J. A. Wilson
Cumberland (near)	Cass	1,225	29								5.32	+ 2.61	1.10	0	9	14	4	13	nw.	Carl E. Pollock
Glenwood	Mills	1,100	30	53.8	+ 0.2	80	14†	30	23	42	4.31	+ 1.63	0.80	0	11	15	5	11	nw.	George Mogridge
Lenox	Taylor	1,250	33	53.6	+ 0.4	82	14	29	23†	40	5.78	+ 3.06	1.18	T.	9	16	4	11	nw.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	53.0	+ 0.7	80	14	28	23†	42	3.31	+ 0.76	0.70	0	8	14	4	13	sw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3								5.72	+ 2.97	1.75	0	9	13	6	12	s.	B. R. Bridge
Riverton (near)	Fremont	920	2								5.97	+ 3.25	2.18	0	10	14	3	14	s.	Geo. C. Rader
Thurman	Fremont	960	31	54.2	+ 0.9	82	18	26	25	45	5.88	+ 2.94	1.46	0	11	16	2	13	s.	H. H. Askew
Omaha, Neb		1,105	57	55.0	+ 0.7	80	14	30	23	32	2.69	+ 0.52	0.86	0	11	14	7	10	n.	U. S. Weather Bureau
Means and extremes				53.5	+ 0.3	82	14†	25	25	48	5.26	+ 2.59	2.18	T.	10	15	5	11	sw.	
South Central District																				
Afton	Union	1,212	34	53.6	+ 0.3	82	14	29	23	33	4.78	+ 2.20	1.20	T.	9	16	3	12	nw.	S. R. Brown
Albia	Monroe	949	30	53.6	+ 0.1	79	15	29	23	37	3.96	+ 1.68	0.95	T.	12	16	3	12	sw.	O. E. McBride
Centerville	Appanoose	1,013	23	53.8	— 0.2	78	14†	31	23	36	5.93	+ 3.72	1.54	T.	12	18	1	12	sw.	Thomas Wood
Chariton (near)	Lucas	1,042	33	54.6	+ 1.8	81	14	29	24	41	3.88	+ 1.56	0.83	T.	11	19	1	11	sw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	53.3	— 0.5	77	17	31	23†	31	4.09	+ 1.50	1.37	T.	10	17	3	11	nw.	J. C. Davis
Creston	Union	1,291	23	52.4	— 0.1	80	14	24	25	42	4.26	+ 1.48	1.06	T.	11	12	6	13	s.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	53.0	+ 1.0	79	14	28	25	43	2.92	+ 0.48	0.66	T.	9	18	2	11	sw.	George Phillips
Indianola	Warren	972	37	54.2	+ 1.0	83	14†	30	25	41	2.84	+ 0.48	1.05	T.	7	15	6	10	se.	Seth F. Shenton
Knoxville	Marion	920	33	53.8	+ 0.1	80	14†	30	23†	38	2.54	+ 0.23	0.58	T.	9	16	4	11	sw.	W. J. Casey
Lacona	Warren	824	29								2.91	+ 0.20	1.00	0	13	14	6	11		J. B. Alter
Lamoni	Decatur	1,123	21	53.4	— 0.1	80	14	29	23	38	4.88	+ 1.95	0.98	0.1	12	17	3	11	se.	F. S. Parks
Melrose	Monroe	871									4.97		1.68	0	7	14	5	12	sw.	J. M. Carr
Mount Ayr	Ringgold	1,220	35	53.4	— 0.2	79	18	29	25	39	4.94	+ 2.42	0.90	0	9	16	2	13	s.	E. O. Gleason
Tingley	Ringgold	1,275	3	53.6	+ 0.5	79	14	30	23	37	4.66	+ 1.97	0.89	T.	10	15	4	12	sw.	James A. Verploegh
Winterset	Madison	1,118	37	53.5	— 0.1	80	14	30	23	37	3.48	+ 1.11	0.68	T.	9	18	2	11	sw.	H. S. Ely
Means and extremes				53.6	+ 0.3	83	14†	24	25	43	4.20	+ 1.70	1.68	T.	10	16	3	12	sw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	53.6	— 0.1	79	15	29	23	36	3.88	+ 0.97	1.03	0.5	10	18	4	9	nw.	B. R. Vale
Burlington	Des Moines	544	32	54.6	— 0.3	79	15	31	23	31	5.02	+ 2.74	1.36	4.0	12	19	3	9	sw.	John W. Donnelly
Columbus Junction	Louisa	595	27	52.2	— 2.1	78	15	29	23	36	3.24	+ 0.69	0.92	2.0	12	18	5	8	se.	Miss Musa Todd
Fairfield	Jefferson	780	44	52.4	— 0.6	79	15	29	23	39	4.34	+ 1.58	0.98	0.5	11	17	3	11	n.	R. M. McKenzie
Keokuk	Lee	614	57	54.8	— 0.6	78	19	31	23	30	1.27	+ 2.01	1.13	0.4	11	16	3	12	e.	U. S. Weather Bureau
Keokuk No. 2	Lee	651		55.8		82	16	30	25	36	5.18		1.05	0.5	11					J. N. D. Dickinson
Keosauqua	Van Buren	639	36								5.40	+ 3.41	1.70	T.	10	17	4	10	nw.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	53.8	— 0.2	77	14†	30	23	35	4.97	+ 2.57	1.40	1.0	11	14	7	10	nw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	53.1	+ 0.3	78	15	27	23	37	3.65	+ 1.40	1.06	1.0	11	16	2	13	sw	Roy R. Robinson
Ottumwa	Wapello	649	33	54.2	— 0.4	80	14	28	25	41	4.79	+ 2.41	1.03	T.	12	9	6	16	se.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	53.0	0.0	80	15	29	23	41	3.23	+ 0.98	0.85	0.4	11	18	2	10	sw.	W. E. Utterback
Stockport (near)	Van Buren	747	26	53.4	+ 1.0	80	15	30	23	39	4.24	+ 2.18	0.99	0	12	19	2	10	n.	C. L. Beswick
Washington	Washington	757	46	53.4	+ 0.1	81	15†	28	23†	41	3.60	+ 1.40	0.93	T.	9	17	4	10	w.	D. D. Sherman
Wever	Lee	552		53.7		81	15	28	25	44	5.75		1.20	0	8				nw.	H. G. Liddle
Means and extremes		552		53.7	0.0	82	16	27	23	44	4.40	+ 2.13	1.40	0.8	11	16	4	11	nw.	
State means and extremes				51.8	0.0	84	15	23	25	49	3.10	+ 0.67	2.18	0.7	9	15	5	11	nw.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

PRECIPITATION

The average precipitation for the State, derived from the averages of nine districts of nearly equal area, and based on the records of 119 stations, was 3.10 inches, or 0.67 inch more than the normal. All stations in the three southern districts and the east-central district showed an excess. The principal deficient area was in the northeastern, central and north-central districts, but the northeastern was the only district that was deficient at all stations. The greatest mothly amount was 6.55 inches at Bedford, and the least was 1.10 inches at Webster City. The greatest amount occurring in 24 consecutive hours was 2.18 inches at Riverton on the 19th.

SNOWFALL

The average snowfall for the State was 0.7 inch. The greatest amount was 6.5 inches at Northwood. At more than one-half of the stations there was no snow, or only a trace. The snow melted soon after falling and much melted as it fell. At only one station was the ground snow-covered more than 24 hours.

Daily Precipitation for October, 1929

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	
Northwest District																																	
Akron	Big Sioux				.16					.08	.04	.90																	.27	.26	.16	.58	2.45
Alta	Raccoon	.03								.30	.02	.76							T.										.20	.30	.27	.50	2.38
Alton	Floyd	.04							T.	.07	T.	.51																	.02	.06	.22	.85	1.77
Cherokee	Little Sioux	.05							T.	.17	.14	1.11							T.										.09	.26	.25	.76	2.83
Estherville	Des Moines	.05									.35	1.10																		.45	.40	.70	3.05
Hawarden	Big Sioux				T.					.07	.04	.67																	.37	.17	.29	.50	2.11
Inwood (near)	Big Sioux	.02								.20	.12	.46																	.08	.20	.19	.74	2.01
Lake Park (near)	Little Sioux	.11								.33	.57	.48																	.02	.22	.39	.71	2.83
Le Mars	Floyd	.12			.07					.05	.12	.78																	.22	.20	.34	.04	1.94
Marathon	Raccoon	T.						T.	T.	.46	.04	.39							T.										.51	.21	.48	.08	2.17
Pocahontas	Des Moines									.16	.15	.63							.01										.12	.37	.36	.45	2.25
Rock Rapids	Big Sioux	.27								.23	.25	.55																	.15	.40	.23	.75	2.83
Sanborn	Floyd	.13								.10	.20	.56																	.05	.33	.35	.75	2.47
Sheldon	Floyd	.03							T.	.10	.20	.56																	.25	.20	.29	1.25	2.88
Sioux Center	Floyd									T.		.78																	.10		.42	1.12	2.42
Spencer	Little Sioux	.10							T.	.10	.10	.90																	.15	.25	.20	.50	2.30
Storm Lake	Raccoon	.02								.06	.10	.47							T.										.19	.42	.20	.38	1.84
Washta	Little Sioux				.10					.02	.12	.87																	.20	.10	.30	.80	2.51
West Bend	Des Moines	.02							T.	.10	.41	.58							T.										.16	.39	.23	.38	2.27
North Central District																																	
Algona	Des Moines									.10	.68	.69																	.12	.09		.35	2.03
Allison	Cedar								T.	.05	.60	.05								.15				T.				.05	.36	.05	.35	1.60
Belmond	Iowa									.08	.40	.36							.05	.06				T.					.20	.05	.44	1.64
Britt	Iowa								T.	.17	.19	.07								.22				.13					.12	.18	.05	.36	1.49
Charles City***	Cedar																																
Forest City	Cedar	.03							T.	.12	.30	.33							.05					.05				T.	.20	.07	.28	1.43
Hampton	Cedar									.20	.05								.70					.02				.25	.20		.39	1.81
Humboldt	Des Moines								T.	T.	1.00	.71																	T.	.44		.40	2.55
Mason City	Cedar								T.	.03	.71	.01							T.	T.				T.					T.	.26	.06	.13	1.20
Northwood	Cedar	T.							T.		.50	.10							T.					.05						.60	.20	.10	1.55
Osage	Cedar	T.							T.	.11	.55	.07								T.				.09					T.	.28	.07	.37	1.54
Northeast District																																	
Decorah	Mississippi										.23		.17							.10	.60				.20					.40	.48	.14	2.32
Dubuque***	Mississippi			.04			T.		T.	T.	.13	.44	.10							.38	T.		.14	.14					.19	.10	.06	.38	2.10
Fayette	Mississippi			.30					T.	T.	.28		.18							.22			T.	.18				**	.38		.40	1.94
Independence	Wapsipinicon									T.	.40	.01	.06							.18				.11				T.	.28	.48	.45	1.97
Lansing	Mississippi			.24							.17		.20	.03							.05			.14	.07					.08		.21	1.19
New Hampton	Wapsipinicon										.27		.18							.14				.15						.35	.11	.30	1.50
Oelwein	Wapsipinicon										.30									.20				.20						.20		.45	1.35
Postville (near)	Mississippi											.12	.22							.11				.20						.34	T.	.38	1.37
Waterloo	Cedar									T.	.36	T.	.18							.14				.16					T.	.40	T.	.33	1.57
Waverly	Cedar									.03	.11	.03	.06							.18				.17					.07	.30		.41	1.36
West Central District																																	
Audubon (near)	Nishnabotna				.46				T.	.10	.39	.06								.28									.42	1.10	.47	.80	4.08
Carroll	Raccoon	T.			.10					.12	.08	.16																	.30	.58	.60	.55	2.49
Denison	Missouri				.39					.05	.12	.21								.05				T.					.18	.20	.08	.35	1.63
Guthrie Center	Raccoon				.32					.12	.90									.73									.40	.87	.50	.85	4.69
Harlan	Nishnabotna	T.			.28				T.	.14	.15	.14							T.	.16									.35	.59	.23	.29	2.33
Jefferson	Raccoon				T.					.02	.06	.01								.32				T.					.25	.55	.27	.41	1.89
Little Sioux	Little Sioux				.37					.11	.04	.43							.01	.08									.35	.33	.17	.92	2.81
Logan	Missouri				.55					.15	.08	.20								.10									.35	.35	.18	.77	2.73
Onawa	Missouri				.60		T.			.08	.35	.47							.15	T.									.25	.35	.55	.80	3.60
Rockwell City	Raccoon									.10	.40	.43																	T.	.60	.20	.60	2.33
Sac City	Raccoon	T.								.03	.30	.37								T.				T.					.18	.32	.12	.48	1.80
Sioux City***	Missouri				.27				T.	.10	T.	.61																	.44	.19	.21	.41	2.23
Central District																																	
Ames	Skunk									.02	.28									.25									.15	.65	.17	.40	1.92
Baxter	Skunk									.04	.58	.05	.10							.33				.04					.28	.33	.08	.32	2.15
Boone (near)	Des Moines									.03	.28	.02								.39				T.					.25	.75	.33	.21	2.26
Des Moines***	Des Moines	T.								.79	.19	.03							.01	.55				T.					.63	.18	.05	.31	2.74
Fort Dodge	Des Moines									.04	.29	.24											T.						.15	.49	.08	.31	1.60
Grinnell	Iowa									.78										.54				.27					.12	.36		.36	2.43
Grundy Center	Cedar									.10	.38	.10								.18				.10					T.	.38	.30	.40	1.94
Iowa Falls	Iowa									.08	.12	.05								.28				.03					.08	.50	.05	.48	1.67
Marshalltown	Iowa	T.							T.	.11	.48	.10	.04							.24	.01			.04						.36	.05	.47	1.90
Monroe	Des Moines									.09	.86									.93	.01			T.					.24	.25	.12	.52	3.05
Perry	Raccoon									.02	.70	T.								.48				T.					.20	.92	.36	.23	2.91
Toledo	Iowa									.10	.45	.10								.50	.10			.10					.05	.37	.10	.29	2.16
Van Meter	Raccoon				T.	.05				T.	.90	.10								T.	.80								.60	.20	.15		2.80
Waukee	Raccoon									.12	.95	.05								.88	.01			T.					.58	.06	.55	.05	3.25
Webster City	Des Moines									T.	.20									.05				T.					.08	.25	.27	.25	1.10
East Central District																																	
Belle Plaine	Iowa									.11	.48	.09	.30							.41	.34			.20					.10	.36	.10	.24	2.73
Cedar Rapids	Cedar									.04	.34	T.	.61							.68	.12		T.	.30					T.	.38	.04	.35	2.89
Clinton	Mississippi			.10							.24		.34								.87		.36	.57					.35	.03	.02	.45	3.33
Davenport***	Mississippi			.16			T.			T.	.25	.36	.03							1.10	.22		.41	.38	T.				.25	.16	.03	.42	3.77
Fairport	Mississippi									.01	.35	.02	.50							.02	1.00		.07	.78	.05				.02	.24	.03	.42	3.51
Iowa City	Iowa									.02	.38	.04	1.14							.82	.19		.09	.35					.08	.27	.03	.34	3.75
Le Claire	Mississippi			.24	.03						.15	.10	.42								1.11	.04		.92	.01					.25	.03	.01	3.31
Maquoketa (near)	Maquoketa			.07							.18	.03	.42							.60	.76		.11	.50	.02				.04	.33	.17	.37	3.60
Muscatine	Mississippi			T.							.30	.10	.65							1.08				.40	.17					.45	.08	.10	3.33
Olin	Wapsipinicon			T.						T.	.25	.02	.75							.28			T.	.90					.08	.30	.03	.10	3.01
Tipton (near)	Cedar										.33		.47						.48	.78			.74							.35	.10	.32	3.57
Williamsburg	Iowa									.06	.46	.03								.97				.33					.09	.29	.03	.35	2.61

Daily Precipitation for October, 1929—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	
Southwest District																																	
Atlantic	Nishnabotna				.40	T.				.17	.13	.07								1.02	.01								.64	1.95	.30	.70	5.29
Bedford	102				.90				T.	.98	.54	.11	T.							1.10	.04			T.					.70	.11	.32	1.72	6.55
Clarinda	Nodaway				.86				.16	.97	.30	.16								1.22									.86	.33	.22	.59	5.67
Corning	Nodaway				.78	.63			.87	.91	.80									1.12				T.					1.00	.04	.36		6.51
Cumberland(near)	Nodaway				.58				T.	.28	.25	.06							T.	1.10									.62	.93	.48	1.02	5.32
Glenwood	Missouri				.65				.20	.28	.20	.08							.06	.60									.70	.80	.32	.42	4.31
Lenox	Missouri				.95				T.	.65	.25	.10								1.18	T.								1.18	.22	.64	.61	5.78
Oakland	Nishnabotna				.62					.16		.10								.70									.50	.67	.23	.33	3.31
Red Oak (near)	Nishnabotna				.73				.12	.63	.12									1.75									.76	.06	1.02	.53	5.72
Riverton (near)	Nishnabotna				.99				.24	.51	.11	.07								2.18									1.00	.15	.42	.30	5.97
Thurman	Missouri				.65				.16	.78	.14	.11							.06	1.46									.85	.97	.34	41	5.80
Omaha, Neb.***	Missouri			.27	.43				.03	.13	.01	.09							T.	.19	T.								.48	.09	.24	.73	2.69
South Central District																																	
Afton	Grand				.59					.25	.31	.11								1.07				T.					1.20	.48	.42	.35	4.78
Albia	Des Moines									.05	.69	.03	.38							.80	.15			.05	.01				.95	.30	.35	.20	3.96
Centerville	Chariton				.15					.17	1.26	.04	.45							.03	.91			.01					1.54	.50	.74	.13	5.93
Chariton (near)	Chariton				.22					.12	.51	.15	.12							.52	.83		T.					.58	.26	.16	T.	.41	3.88
Corydon (near)	Chariton				.15					.97		.28							.03	1.37				.02					.94	.14	.03	.16	4.09
Creston	Missouri	T.			.68	T.				.29	.22	.05	.01							1.06	.01			T.					.92	.19	.36	.47	4.26
Earlham (near)	Des Moines				.44					.14	.40	.05								.66	T.			T.					.60	.06	.29	.28	2.92
Indianola	Des Moines				T.					.04	.51	.05								1.05	T.			T.					.80	.21	T.	.18	2.84
Knoxville	Des Moines									T.	.58	.08								.55	.33			.10					.25	.27	.05	.33	2.54
Lacona	Des Moines				.01					.01	.63	.01	.01						.02	1.00	.01			.01					.75	.40	.04	.01	2.91
Lamoni	Grand				.58				T.	.73	.98	.23	.01						T.	.87	.10			.01					.88	.11	.05	.33	4.88
Melrose	Des Moines										1.06	.43								1.68									.90	.20	.45	.25	4.97
Mount Ayr	Grand				.84					.66	.60	.15								.90				.80					.80	.21	.18	.60	4.91
Tingley	Platte				.89					.57	.52	.10								.73	.02			T.					.74	.30	.20	.59	4.66
Winterset	Des Moines				.42					.15	.55	.03								.65				T.					.68	.40	.35	.25	3.48
Southeast District																																	
Bonaparte (near)	Des Moines									.10	.44	.40	.30								1.03		T.	.23					.54	.43	.24	.17	3.88
Burlington	Mississippi									.18	.96	.17	.47							T.	.55		.05	.52	.03				.71	.65	.26	.47	5.02
Columbus Jct	Iowa									.06	.44	.15	.45							.09	.83		.06	.30					.13	.42	.02	.29	3.21
Fairfield	Skunk									.09	.98	.12	.60							.19	.65		T.	.26					.58	.30	.35	.22	4.34
Keokuk***	Mississippi	T.								.25	.64	.62	.04							.17	.27		.12	.24					1.05	.31	T.	.56	4.27
Keokuk No. 2	Mississippi									.15	.92	.47	.29							T.	.55		.02	.49					1.05	.32	.30	.62	5.18
Keosauqua	Des Moines									.02	.90	.50								.30	1.40			.03					1.10	.40	.45	.30	5.40
Mt. Pleasant	Skunk									.16	.67	.30	.57								1.40		.01	.39					.29	.65	.18	.35	4.97
Oskaloosa	Des Moines									.07	.89	.06	.29							.84	.22			.16	T.				.34	.29	.16	.33	3.65
Ottumwa	Des Moines									.05	1.03	.08	.87							.09	.90			.12	.02				.51	.48	.45	.19	4.79
Sigourney (near)	Skunk	T.								.10	.85	.02	.73							.11	.31			.26					.20	.20	.23	.22	3.23
Stockport (near)	Skunk									.08	.87	.30	.16							.21	.78			.10	.06				.61	.45	.33	.29	4.24
Washington	Skunk									T.	.80	.02								.03	.66		T.	.38					.18	.93	.18	.42	3.70
Wever	Mississippi									1.20		.82								T.	.55			.41					1.14	.65	.43	.55	5.75

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.

T. Precipitation is less than .01 inch rain or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level)					Relative Humidity, %					‡‡Wind					Sunshine	
						Mean							Maximum				
	Mean	Highest	Date	Lowest	Date	7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	Total movement	Average hourly velocity	Miles	From	Date	% possible	Departure from normal
Chas. City	30.07	30.40	8	29.60	31	87	56	67	23	25	4,330	5.8	23	nw.	22	50	— 7
Davenport	30.05	30.38	9	29.65	26	83	56	63	24	7	6,313	8.5	33	ne.	28	57	— 4
Des Moines	30.04	30.36	8	29.55	31	85	56	62	22	25	6,394	8.6	30	e.	28	57	— 6
Dubuque	30.05	30.43	9	29.61	26	85	56	61	28	27†	4,121	5.5	24	n.	22	46	— 9
Keokuk	30.06	30.36	8	29.72	26	83	55	64	22	7	4,666	6.3	22	ne.	28	58	— 3
Sioux City	30.06	30.41	7	29.65	26	80	57	60	23	7	7,228	9.7	39	e.	28	52	—10
Omaha,Nb	30.05	30.37	7	29.71	28	79	55	59	21	25	4,901	6.6	30	nw.	23	58	— 4
Means and extremes	30.07	30.43	9	29.55	31	83	56	62	21	25		7.3	39	e.	28	54	— 6
Normals and records	30.03	*30.69	31st 1913	§28.96	20th 1876	81		62	¶16	6th 1928		‖49	sw.	16th 1880		60	

*Davenport; Also Sioux City on the 29th, 1928. §Omaha. ¶Des Moines. ‖Davenport. ‡Local mean time. †And other dates.

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

RIVERS

Low stages prevailed on all rivers. There were numerous slight fluctuations. On the Mississippi River the extreme stages were less than one-half of a foot and on the Missouri the extremes were less than one foot.

MISCELLANEOUS PHENOMENA

Fog: 1st, 2d, 3d, 4th, 5th, 8th, 11th, 12th, 13th, 14th, 16th, 28th, 29th, 30th, 31st.

Frost: 4th, 5th, 7th, 8th, 11th, 12th, 13th, 14th, 17th, 21st, 23d, 24th, 25th.

Hail: 29th, 31st.

Halos (lunar and solar): 21st, 22d.

Sleet: 23d, 24th, 28th, 29th.

Thunderstorms: 9th, 10th, 11th, 12th, 18th, 19th, 20th, 28th, 29th, 30th, 31st.

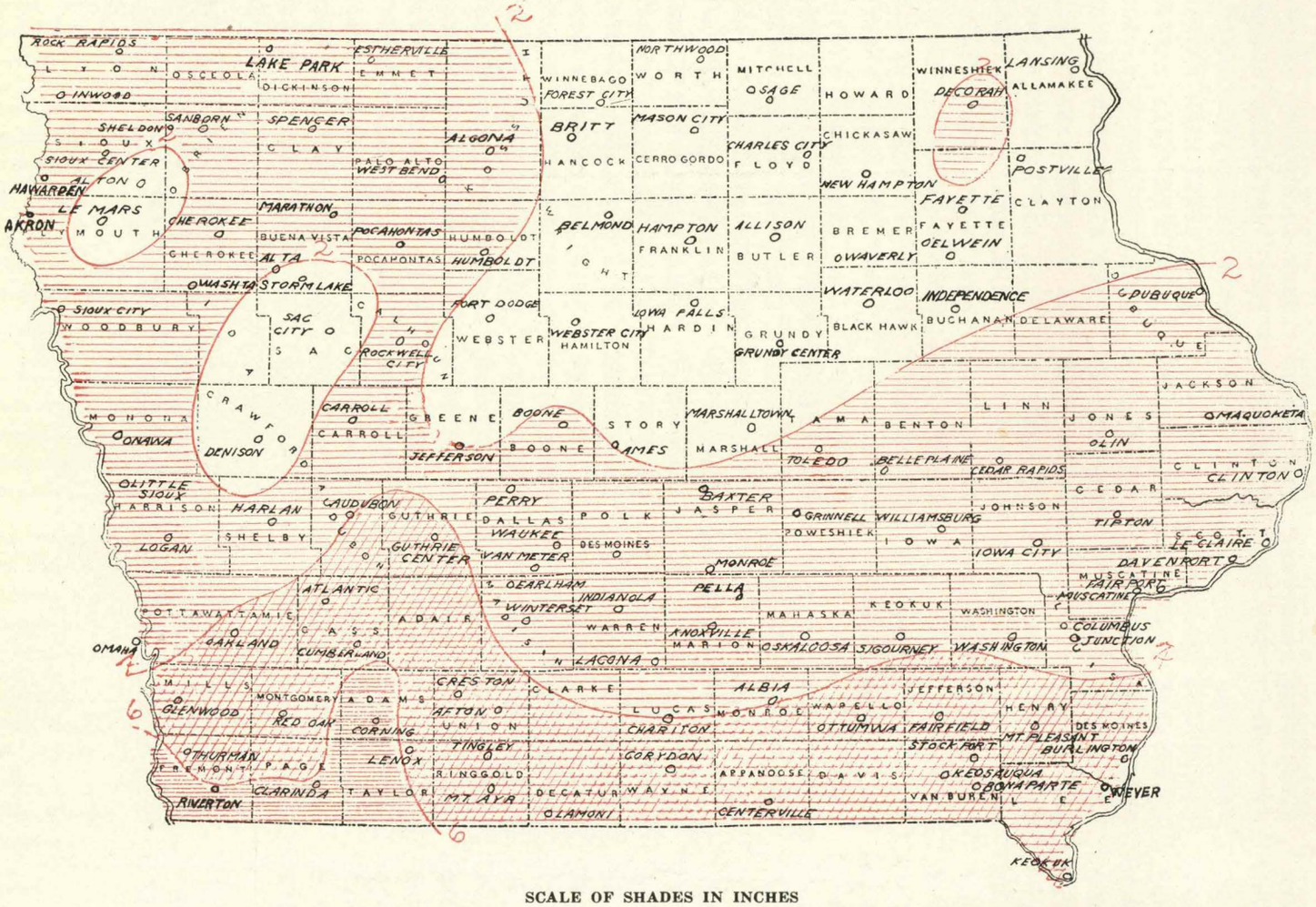
Daily Maximum and Minimum Temperature for the Month of October, 1929

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	Maximum	63	67	69	59	68	65	64	56	50	48	59	55	65	80	78	70	72	80	68	60	55	58	49	52	69	67	58	50	39	41	40	60.5
	Minimum	44	46	47	42	45	53	38	40	44	42	46	43	34	36	40	39	40	40	52	40	31	36	28	28	39	33	37	35	32	34	35	39.3
Alta	Maximum	67	71	70	67	72	66	65	62	51	52	58	56	73	80	80	73	77	77	64	55	54	45	40	53	70	69	65	45	37	39	47	61.3
	Minimum	47	44	46	46	47	49	41	51	45	46	43	40	38	46	52	48	43	52	47	42	33	34	27	25	31	33	39	32	32	34	33	40.8
Alton	Maximum	65	68	69	63	68	66	64	62	59	53	55	54	67	76	79	68	72	77	69	57	53	48	45	50	66	67	61	50	35	36	42	60.1
	Minimum	49	40	41	48	49	52	32	49	46	47	48	42	32	40	53	45	39	54	51	38	28	36	27	27	25	27	35	35	32	34	34	39.8
Belmond	Maximum	64	72	71	62	69	66	66	57	51	49	60	58	69	77	81	71	72	76	65	60	57	46	43	54	72	71	62	43	39	49	60	61.7
	Minimum	43	47	39	40	42	50	34	33	42	41	41	40	29	33	53	47	34	47	53	37	28	36	28	29	31	29	34	34	32	37	38	38.1
Charles City	Maximum	61	67	66	58	67	62	63	53	52	47	60	55	63	72	80	67	68	69	63	62	55	43	40	54	70	67	59	44	40	53	61	59.4
	Minimum	42	46	43	39	41	43	37	33	43	42	45	38	31	35	51	46	37	44	50	38	32	34	28	32	31	31	36	33	33	39	37	38.4
Decorah	Maximum	62	69	63	60	69	62	60	58	53	49	60	62	68	70	81	69	67	68	61	69	56	46	40	54	62	70	59	53	40	50	61	60.4
	Minimum	33	37	40	28	34	52	33	27	42	40	45	43	29	29	51	45	30	40	50	39	32	30	27	31	27	27	35	33	32	37	40	36.1
Dubuque	Maximum	61	66	60	58	69	66	65	60	53	49	62	54	61	70	80	69	66	70	63	67	54	46	38	53	65	67	60	42	44	57	63	59.9
	Minimum	40	40	45	38	35	52	43	35	47	43	47	45	39	38	53	48	40	45	56	45	38	33	30	35	34	43	42	36	37	44	40	41.5
Forest City	Maximum	63	70	66	61	68	65	65	58	50	47	57	57	67	75	82	70	71	73	69	59	56	58	43	54	71	69	60	56	39	44	58	61.3
	Minimum	42	40	44	38	41	48	38	37	43	38	43	45	30	40	51	46	38	44	53	38	28	33	25	26	26	29	34	33	30	32	38	37.8
Independence	Maximum	60	61	66	62	69	68	64	63	56	50	64	69	63	71	80	76	67	70	67	65	60	54	45	53	67	69	64	57	45	53	62	62.6
	Minimum	43	52	45	37	36	50	31	36	41	42	46	43	33	38	48	51	40	41	55	54	32	32	27	33	31	36	40	35	34	40	44	40.5
Inwood	Maximum	62	72	68	65	72	69	68	59	51	52	58	57	70	76	81	70	72	71	68	55	53	45	49	51	67	67	62	51	35	35	37	60.3
	Minimum	49	40	41	47	50	49	34	48	45	46	45	40	35	40	52	44	43	54	46	39	27	35	26	24	27	28	40	35	29	32	33	39.4
Lake Park	Maximum	66	68	68	71	73	69	66	52	51	54	52	52	73	80	81	73	71	79	69	55	54	45	43	53	70	78	64	50	34	35	40	60.9
	Minimum	45	41	41	45	51	48	40	43	42	44	43	44	35	40	53	45	41	51	51	38	31	33	26	26	31	31	33	32	30	32	34	39.4
Mason City	Maximum	62	69	67	58	70	63	64	53	49	47	60	55	65	74	81	67	68	71	66	61	56	44	42	53	70	66	60	48	38	49	59	59.8
	Minimum	39	44	41	36	42	51	32	31	42	40	45	43	29	31	56	47	32	41	54	35	28	34	28	28	30	28	35	34	32	36	39	37.5
New Hampton	Maximum	61	69	69	58	69	64	67	55	52	47	61	62	64	72	80	71	68	68	65	66	57	47	41	55	67	66	62	50	40	49	61	60.7
	Minimum	38	40	41	33	37	46	34	33	41	40	45	42	28	37	50	48	37	41	56	39	29	31	26	30	27	29	34	34	32	38	39	37.6
Northwood	Maximum	63	70	67	59	70	62	64	53	50	45	59	56	67	73	82	77	69	71	69	59	55	40	47	52	70	69	60	45	35	50	59	60.2
	Minimum	38	45	41	36	41	49	38	34	42	40	40	40	31	35	54	40	38	45	55	38	29	30	27	27	30	31	35	35	31	34	37	37.6
Pocahontas	Maximum	67	72	74	64	71	68	67	64	56	50	60	58	73	81	81	70	74	82	74	59	57	57	47	55	72	71	65	45	39	44	53	63.5
	Minimum	44	41	44	45	45	52	38	47	44	45	49	41	33	41	54	48	36	49	54	38	31	46	28	27	28	31	37	34	32	34	37	40.5
Postville	Maximum	65	65	60	55	68	63	63	53	51	46	61	60	52	70	80	72	67	67	68	64	51	43	36	57	66	68	57	40	38	56	60	58.8
	Minimum	40	37	37	31	38	49	38	36	42	40	45	32	33	33	50	45	34	44	52	43	31	33	27	31	29	35	35	34	32	38	41	37.6
Rock Rapids	Maximum	64	67	67	63	70	66	65	57	54	53	56	54	66	71	77	67	70	75	67	56	53	47	45	43	65	66	60	53	36	36	37	58.9
	Minimum	47	39	37	46	50	46	33	45	44	45	45	42	31	35	49	40	36	51	45	36	27	35	27	25	26	26	30	34	31	32	33	37.7
Central Division																																	
Ames	Maximum	62	71	70	61	68	68	68	68	58	52	62	58	72	78	79	73	72	77	69	64	57	50	42	55	70	73	64	53	43	53	60	63.5
	Minimum	44	51	45	45	39	51	38	41	48	46	50	40	32	37	30	53	37	45	56	42	34	38	30	33	30	34	42	37	39	42	41	41.6
Belle Plaine	Maximum	63	71	73	61	73	73	70	63	54	50	65	62	70	79	82	73	73	74	63	71	59	45	40	56	69	72	64	47	43	54	60	63.7
	Minimum	44	41	40	41	32	49	34	34	45	42	49	41	30	35	48	47	34	41	56	43	31	32	29	32	26	34	34	37	38	42	39	38.7
Carroll	Maximum	65	73	71	61	67	67	67	65	57	51	61	59	73	80	79	73	74	77	70	62	56	49	43	52	71	71	64	55	41	44	55	63.0
	Minimum	44	42	45	44	46	52	39	45	46	46	47	38	35	41	54	52	49	49	55	39	34	37	27	27	31	36	38	35	35	37	37	41.4
Cedar Rapids	Maximum	64	72	72	58	72	72	71	67	53	50	65	64	69	77	81	75	72	73	62	70	58	47	38	56	68	70	65	45	44	55	62	63.5
	Minimum	42	37	43	38	31	50	35	32	42	43	49	44	30	33	43	49	35	39	48	46	34	35	28	35	27	32	37	36	38	43	43	38.6
Davenport	Maximum	62	68	68	56	70	72	69	67	54	51	65	59	61	74	80	74	68	71	73	66	55	44	35	50	64	72	64	45	45	60	64	62.2
	Minimum	44	44	47	41	40	52	45	42	48	46	50	49	42	45	55	52	45	47	57	49	39	34	30	35	36	45	45	38	38	45	42	44.1
Des Moines	Maximum	66	75	72	58	70	70	68	67	54	53	63	61	72	80	79	75	73	78	63	66	57	45	45	55	69	72	65	46	44	55	61	63.8
	Minimum	45	50	46	46	40	49	41	43	47	47	51	44	36	42	53	54	44	47	56	42	36	38	32	36	33	42	44	39	39	44	39	43.4
Ft. Dodge	Maximum	68	73	72	63	70	68	68	65	51	50	61	59	73	80	83	72	75	80	69	63	58	48	44	55	72	71	62	49	40	50	59	63.6
	Minimum	43	46	41	44	43	49	35	44	41	45	49	41	30	36	53	48	37	50	53	45	31	38	29	29	30	30	38	35	34	33	38	39.9
Grinnell	Maximum	65	71	71	64	72	71	67	73	61	55	65	64	70	78	80	73	70	75	68	68	57	57	44	55	69	71	66	54	52	54	61	65.2
	Minimum	43	40	42	40	35	38	36	38	45	42	50	40	31	38	52	50	43	45	55	43	32	34	27	32	26	36	36	36	38	40	42	39.5
Guthrie Center	Maximum	67	72	70	62	67	68	67	65	57	53	62	61	72	79	79	74	74	80	67	64	63	56	43	46	69	71	64	60	42	50	67	64.2
	Minimum	42	42	41	45	42	51	34	37	47	46	51	39	31	35	54	52	34	50	56	38	32	39	29	32	27	40	32	32	32	40	39	40.0
Iowa City	Maximum	63	67	71	57	71	70	69	66	53	51	65	63	67	76	80	75	71	73	63	70	57	46	35	52	66	70	64	49	44	56	62	62.6
	Minimum	44	37	44	41	32	50	37	34	47	44	50	44	32	37	47	53	38	42	54	48	35	33	29	35	29	36	41	39	39	43	44	40.6
Iowa Falls	Maximum	64	69	70	57	68	66	66	59	52	48	61	56	68	76	80	69	70	74	67	63	55	46	40	54	70	70	60	53	40	51	60	61.4
	Minimum	44	44	42	40	41	50	34	37	41	42	47	42	30	35	50	48	37	44	56	40	31	36	28	30	30	33	38	34	34	39	39	42.9
Little Sioux	Maximum	70	74	75	63	70	70	70	65	54	56	60	63	78	83	82	78	80	80	68	67	57	47	48	55	75	78	68	56	42	42	42	65.0
	Minimum	47	42	40	49	51	53	36	47	48	48	50	35	35	43	54	45	43	58	55	39	28	34	28	29	30	32	38	38	37	36	36	41.4
Marshalltown	Maximum	63	70	71	60	70	69	68	64	54	50	63	57	69	79	80	72	72	76	67	68	58	46	40	56	69	70	63	50	43	53	61	62.9
	Minimum	47	46	43	42	40	51	40	41	45	43	49	42	33	38	54	52	40	46	58	45	33	36	28	34	32	39	41	36	37	41	41	41.7
Olin	Maximum	62	70	71	57	70	73	70	64	54	50	64	62	67	73	83	74	70	71	64	69	57	47	40	50	57	70	63	44	43	54	62	62.1
	Minimum	36	35	40	32	28	46	32	28	40	43	48	43	31	32	43	48	33	34	40	46	34	34	28	34	28	29	33	33	38	42	46	36.7
Sioux City	Maximum	67	73	70	59	67	67	66	62	51	56	60	59	74	81	81	73	75	79	68	58	54	45	51	51	71	73	63	50	39	39	39	6.20
	Minimum	53	47	46	47	53	48	44	48	49	48	47	43	40	44	58	51	47	56	49	43	33	33	26	27	34	38	40	33	33	34	32	42.7
Southern Division																																	
Albia	Maximum	66	70	73	59	70	73	70	70	58	53	65	64	72	80	79	78	73	78	68	70	57	45	42	53	68	73	66	52	45	54	61	64.7
	Minimum	43	44	44	45	37	48	41	42	48	46	50	42	38	46	51	54	45	47	55	48	34	37	29	32	31	41	40	37	39	43	39	42.5
Atlantic	Maximum	68	74	73	60	67	70	71	69	54	56	62	63	75	79	78	78	76	78	68	67	64	58	43	55	68	69	64	50	42	51	57	64.7
	Minimum	43	44	40	47	40	47	34	39	47	47	50	38	32	37	49	45	37	52	56	39	30	36	29	31	28	35	36	37	38	40	38	40.0
Burlington	Maximum	62	66	68	61	71	76	69	71	58	53	66	63	69	75	79	74	69	73	75	66	60	48	42	52	64	70	62	50	50	60	63	64.0
	Minimum	44	43	49	43	40	50	48	43	49	48	52	47	42	45	53	57	47	46	54	53	40	39	31	34	34	42	47	40	41	48	50	45.1
Columbus Jct.	Maximum	61	64	67	60	69	72	67	67	56	52	66	62	65	73	78	73	67	72	71	67	55	46	40	53	66	73	62	52	46	58	61	62.6
	Minimum	43	38	44	41	33	49	41	35	47	45	50	45	36	38	51	55	39	43	55	50	37	36	29	34	31	40	42	38	39	45	44	41.7
Corning	Maximum	66	77	73	64	63	68	69	67	68	70	66	65	70	74	74	75	75	70	70	61	56	59	45	48	69	71	71	71	44	53	58	65.5
	Minimum	43	43	39	45	36	48	47	45	47	43	33	35	32	37	46	45	39	52	56	38	32	37	30	34	25	33	35	39	39	41	38	39.7
Corydon	Maximum	64	68	69	64	66	70	68	69	60	55	64	61	68	75	76	75	77	76	66	67	64	46	46	57	65	71	62	51	46	56	60	63.9
	Minimum	47	46	44	45	38	49	42	42	48	47	52	43	38	45	46	48	44	48	56	48	35	38	31	33	31	37	42	38	40	43	41	42.7
Creston	Maximum	67	73	73	60	67	71	69	61	51	56	60	61	73	80	78	77	73	78	63	60	57	48	41	54	69	72	62	50	44	54	60	63.3
	Minimum	45	42	45	46	35	48	40	44	46	46	52	36	35	45	46	51	40	49	56	43	34	36	29	35	27	35	42	37	38	41	39	41.4
Fairfield	Maximum	66	66	71	57	71	75	68	72	58	53	69	63	68	76	79	75	70	72	73	69	56	45	40	52	65	72	63	45	46	58	62	63.7
	Minimum	40	36	39	42	32	49	39	34	49	46	51	44	36	39	49	54	37	44	56	50	35	35	29	34	31	40	41	39	39	45	42	41.2
Keokuk	Maximum	63	67	71	52	69	76	70	69	57	56	67	64	69	77	78	78	67	73	78	67	56	44	36	52	64	72	65	51	54	63	66	64.2
	Minimum	46	44	49	45	42	51	46	43	49	48	55	48	42	47	56	55	47	45	58	49	41	33	31	36	36	45	46	40	43	51	44	45.5
Knoxville	Maximum	67	70	72	62	71	72	71	72	59	53	65	62	72	80	80	75	72	80	73	70	62	48	42	56	68	74	65	52	43	54	61	65.3
	Minimum	43	47	40	46	35	50	40	40	49	47	51	42	35	42	52	55	40	47	59	47	35	38	30	36	30	39	42	34	38	43	42	42.4
Lamoni	Maximum	68	74	75	63	70	71	71	64	50	58	63	64	75	80	77	78	74	80	67	67	56	48	41	53	65	74	65	54	47	58	60	64.8
	Minimum	45	46	44	45	37	47	42	38	45	45	52	40	37	47	50	52	45	49	55	44	33	35	29	36	30	36	41	37	38	42	38	41.9
Sigourney	Maximum	65	69	72	61	71	74	70	70	60	52	67	61	70	77	80	75	69	73	66	70	59	49	42	54	67	73	64	55	48	54	61	64.5
	Minimum	44	42	40	43	34	49	39	46	48	45	50	44	33	37	51	55	39	43	55	48	35	35	29	33	31	32	39	38	40	44	45	41.5
Thurman	Maximum	69	70	75	68	70	71	70	64	52	58	64	65	77	81	80	79	78	82	71	67	57	53	48	55	71	74	67	58	45	51	53	65.9
	Minimum	44	50	45	50	43	52	37	48	47	48	52	35	36	42	52	48	43	55	58	39	33	39	31	34	26	35	40	40	40	42	37	42.6
Winterset	Maximum	68	75	73	61	69	71	71	65	58	55	60	62	75	80	78	76	74	78	70	68	58	47	40	54	68	72	65	52	42	52	58	64.4
	Minimum	43	47	44	45	40	51	40	44	48	45	50	40	38	46	52	53	40	52	57	43	33	40	30	35	33	40	35	38	38	40	40	42.6
Omaha, Neb.	Maximum	67	74	75	58	70	69	70	59	51	56	62	64	77	80	79	78	78	76	64	66	56	48	48	54	71	74	67	52	44	48	43	63.8
	Minimum	49	51	50	50	50	54	46	50	48	48	49	43	45	52	57	57	51	59	56	45	39	38	30	33	39	42	46	40	42	39	37	46.3

IOWA STORMS, SEPTEMBER, 1929

Date	County	Township	Nature of Storm	Time	Storm Moved From	Width of Path Miles	Length of Path Miles	Area of Sq. Miles	Size of Hailstones Inches	Damage	Persons Killed	Persons Injured
8	Monroe	Franklin, Troy	Wind and Hail	4:00 p. m.	SW to NE	.....	.....	.....	¾	$40,000	.....	6
8	Wapello	Highland, Columbia	Wind and Hail	4:00 p. m.	W to E	.....	.....	.....	¼	10,000	.....	5
8	Delaware	Coffins Grove, Delaware	Wind	8:00 p. m.	SW to NE	.....	.....	.....	.....	13,000	.....	.....

TOTAL PRECIPITATION, OCTOBER, 1929



SCALE OF SHADES IN INCHES

Less than 2	2 to 4	4 to 6	More than 6

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU

CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, NOVEMBER, 1929 No. 11

GENERAL SUMMARY

The mean temperature for the State was 32.3 degrees, or 4.3 degrees below normal, and 6.4 degrees less than for the same month a year ago. The temperature deficiency was greatest in the central district, where it averaged 4.7 degrees, and least in the east-central district where it averaged 3.8 degrees. The outstanding temperature feature was the cold weather throughout the State on the last two days of the month. In a large part of the east and central sections it was the coldest for the past 31 years. The coldest for the State was 12 below zero on the 30th at Webster City. No large temperature fluctuation occurred in the first 18 days. A cold period prevailed from the 19th to the 24th; then a warm period from the 25th to the 27th inclusive, followed by the last three days of the month with an extreme cold period.

Precipitation averaged 20 per cent less than normal but the distribution was uneven. Most of the stations in the south-central and southwest districts had precipitation in excess of the normal, but the other seven districts were below normal. There were three principal precipitation periods in which most of the monthly total occurred, the first being between the 10th and 13th, the second between the 18th and 20th, and the third during the last four days of the month.

From the agricultural standpoint the month was generally favorable and much fall plowing was done. Unsettled weather interfered somewhat with corn husking in the southern districts, but in the northern half of the State this work was more than 90 per cent completed by the end of the month. Conditions were decidedly favorable for corn picking machines, there being an unusually large number used this year. Outside work was not greatly interrupted by the cold weather, and building operations and road construction were pushed as much as possible. The road construction companies, taking advantage of the opportunities in their favor, did not pour a large amount of cement at a time, and followed close behind with covering for protection from freezing. The dirt roads were generally in good condition, and detours where paving was in progress were generally in bad condition.

The unusually cold weather toward the end of the month, and ice conditions causing unusually low stages on the Mississippi River, resulted in the temporary shutdown of manufacturing concerns because there was insufficient water to operate the power plants.

In connection with a passing storm on the 27th, unusually strong winds occurred, which caused considerable damage. Plate glass windows were broken by the high wind. In the country small buildings of all description were racked and blown down.

N. G. R.

COMPARATIVE DATA FOR THE STATE—NOVEMBER

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1873	36.2	— 0.4	64	— 4	0.72	— 0.83	2.78	0.00					
1874	32.9	— 3.7	71	— 6	2.21	+ 0.66	4.79	1.05					
1875	30.1	— 6.5	60	—16	0.19	— 1.36	0.63	0.00					
1876	31.3	— 5.3	68	— 6	1.70	+ 0.15	3.50	0.16					
1877	33.3	— 3.3	82	—10	1.86	+ 0.31	3.84	0.12					
1878	39.7	+ 3.1	72	12	0.63	— 0.92	2.69	0.00					
1879	36.3	— 0.3	75	4	4.08	+ 2.53	7.90	0.20					
1880	25.3	—11.3	68	—12	1.29	— 0.26	3.30	0.05					
1881	34.4	— 2.2	65	— 1	2.01	+ 0.46	3.97	0.60					
1882	37.5	+ 0.9	76	4	1.71	+ 0.16	7.15	0.30					
1883	36.8	+ 0.2	70	— 3	1.44	— 0.11	4.17	0.00					
1884	35.6	— 1.0	68	—15	0.79	— 0.76	1.90	0.00					
1885	36.4	— 0.2	67	14	0.69	— 0.86	2.60	0.10					
1886	32.1	— 4.5	75	— 4	1.49	— 0.06	5.18	0.30					
1887	35.1	— 1.5	78	—26	0.85	— 0.70	4.10	0.10					
1888	37.1	+ 0.5	82	0	1.56	+ 0.01	6.00	0.00					
1889	33.0	— 3.6	68	— 9	1.44	— 0.11	4.90	0.05					
1890	38.9	+ 2.3	78	— 2	1.31	— 0.24	3.55	0.50					
1891	30.5	— 6.1	84	—24	1.70	+ 0.15	3.64	0.66		7	10	8	12
1892	33.3	— 3.3	70	— 3	1.10	— 0.45	3.16	0.05	1.8	4	11	8	11
1893	34.0	— 2.6	86	—13	1.17	— 0.38	2.56	0.05	4.6	4	16	8	6
1894	32.7	— 3.9	72	— 5	0.92	— 0.63	2.42	T.	0.4	4	9	11	10
1895	34.3	— 2.3	86	—12	1.51	— 0.04	3.01	0.45	4.9	6	9	8	13
1896	29.6	— 7.0	82	—15	1.83	+ 0.28	4.51	0.16	2.9	6	9	8	13
1897	34.3	— 2.3	81	—19	0.66	— 0.89	2.24	T.	1.2	5	12	8	10
1898	32.2	— 4.4	78	—17	1.50	— 0.05	3.61	0.35	8.7	6	14	8	8
1899	43.9	+ 7.3	86	8	1.20	— 0.35	2.97	0.13	0.5	5	12	8	10
1900	33.5	— 3.1	79	— 6	1.06	— 0.49	3.35	T.	3.7	6	12	7	11
1901	35.8	— 0.8	77	2	0.86	— 0.69	2.30	0.20	2.6	3	18	6	6
1902	41.2	+ 4.6	79	4	2.13	+ 0.58	4.19	0.16	1.8	7	9	7	14
1903	34.2	— 2.4	76	— 5	0.52	— 1.03	1.74	T.	1.1	3	13	8	9
1904	41.0	+ 4.4	80	4	0.15	— 1.40	0.50	0.00	0.5	1	20	6	4
1905	38.4	+ 1.8	70	—12	2.84	+ 1.29	5.30	0.90	0.6	5	16	7	7
1906	35.4	— 1.2	76	— 5	2.03	+ 0.48	3.86	0.35	4.4	8	9	7	14
1907	36.7	+ 0.1	68	— 4	1.03	— 0.52	2.27	0.05	0.9	4	17	6	7
1908	39.3	+ 2.7	80	5	1.56	+ 0.01	3.31	0.21	1.4	5	14	7	9
1909	42.4	+ 5.8	84	— 3	5.39	+ 3.84	1.48	2.07	6.8	10	10	7	13
1910	33.4	— 3.2	76	5	0.34	— 1.21	1.03	T.	0.7	3	13	9	8
1911	29.9	— 6.7	79	— 8	1.42	— 0.13	4.99	0.11	1.6	6	11	8	11
1912	40.1	+ 3.5	77	6	0.98	— 0.57	2.38	0.00	T.	2	18	8	4
1913	41.1	+ 7.5	78	10	1.18	— 0.37	3.49	0.20	0.4	6	11	7	12
1914	41.0	+ 4.4	80	— 4	0.22	— 1.33	0.95	0.00	T.	2	19	6	5
1915	40.2	+ 3.6	83	— 5	1.94	+ 0.39	4.86	0.30	1.2	6	11	10	9
1916	37.3	+ 0.7	80	— 8	1.61	+ 0.06	3.65	0.05	3.6	5	16	6	8
1917	40.7	+ 4.1	77	3	0.28	— 1.27	1.02	T.	1.4	3	14	6	10
1918	39.9	+ 3.3	76	0	2.11	+ 0.56	5.10	0.70	4.4	7	13	5	12
1919	33.6	— 3.0	68	—12	3.40	+ 1.85	6.22	1.97	6.3	8	11	7	12
1920	35.4	— 1.2	71	5	2.18	+ 0.63	4.45	0.73	1.2	8	10	5	15
1921	33.6	— 3.0	70	— 5	0.58	— 0.97	1.61	T.	3.4	5	10	5	15
1922	42.2	+ 5.6	74	11	3.54	+ 1.99	5.28	1.96	0.3	9	11	6	13
1923	40.1	+ 3.5	72	9	0.58	— 0.97	1.84	0.00	1.2	3	16	6	8
1924	38.9	+ 2.3	82	0	0.58	— 0.97	1.55	T.	0.4	4	15	7	8
1925	36.1	— 0.5	68	— 6	0.71	— 0.84	2.30	0.10	4.0	4	15	6	9
1926	32.6	— 4.0	71	— 3	2.10	+ 0.55	3.88	0.68	4.2	7	8	7	15
1927	37.7	+ 1.1	81	0	0.87	— 0.68	3.61	T.	0.6	5	7	6	17
1928	38.7	+ 2.1	70	8	3.83	+ 2 28	6.83	0.77	6.9	9	13	4	13
1929	32.3	— 4.3	66	—12	1.24	— 0.31	2.58	0.08	2.7	6	13	8	9

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

TEMPERATURE

The mean temperature for the State, derived from the means of nine districts of nearly equal area, and based on the records of 103 stations, was 32.3°, or 4.3° below normal. There was a deficiency in all divisions of the State. The greatest deficiency, 4.7°, was in the central district. The east-central district had a deficiency of 3.8°, which was the least for the State. The highest monthly mean was 37.4° at Keokuk, No. 2, and the lowest was 28.2° at Sanborn. The absolute range for the State was 78°, from 66° at Ottumwa on the 11th, to —12° at Webster City on the 30th. Temperatures of 32° or lower, occurred at all stations. The average number of days with minimum temperatures 32° or lower was 25, ranging from 28° in the northwest, north-central and west-central districts, to 20° in the southeast district. The highest temperature observed in the State was 66° at Ottumwa, which was the lowest November State Mamimum since 1881, when 65° was reached. The average number of days with temperature zero or lower was 2, ranging from 4 days at 12 stations, to none at Sioux City, Omaha and Keokuk, these being regular Weather Bureau stations with city exposures. The average number of days with the maximum temperatures 32° or lower, was 6, ranging from 9 at stations in the northwest and north-central districts, to 3 recorded in the southeast district at Keokuk No. 2 and Wever.

Climatological Data for November, 1929

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District																				
Akron	Plymouth	1,153	2								0.30	— 0.84	0.08	1.0	7	9	16	5	n.	Orlan C. Moore
Alta	Buena Vista	1,513	37	28.8	— 5.1	54	5	— 4	22†	26	0.89	— 0.53	0.32	7.0	6	8	14	8	nw.	D. E. Hadden
Alton	Sioux	1,305	23	29.6	— 4.0	53	16	— 4	30	32	0.50	— 0.87	0.20	3.2	7	7	15	8	nw.	W. S. Slagle
Cherokee	Cherokee	1,196	8	30.4	— 2.7	55	5	— 3	29	29	0.37	— 1.14	0.15	2.7	5	11	9	10	s.	J. E. Wirth
Estherville	Emmet	1,298	33	29.0	— 5.0	52	1†	— 8	29	30	0.50	— 0.81	0.15	3.5	5	11	14	5	nw.	A. O. Peterson
Hawarden	Sioux	1,181	2								0.18	— 0.88	0.07	T.	6	11	8	11	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	24	28.5	— 4.5	52	26	— 3	22†	30	0.21	— 0.91	0.05	1.4	7	18	5	7	nw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	15	29.2	— 3.8	53	15	— 9	29†	31	0.08	— 0.98	0.05	0.9	3	5	8	17	nw.	P. M. Lawrence
Le Mars	Plymouth	1,224	32	30.8	— 4.2	55	26	— 1	22†	34	0.40	— 0.73	0.15	1.0	8	13	10	7	nw.	Henry Newell
Marathon	Buena Vista	1,390	2								0.60		0.21	4.3	5	5	13	12	nw.	E. G. Smith
Pocahontas	Pocahontas	1,248	24	29.4	— 5.3	55	5	— 6	29	30	0.60	— 1.08	0.24	2.7	7	11	9	10	sw.	F. E. Hronek
Rock Rapids	Lyon	1,349	29	28.4	— 4.8	48	17†	— 2	22†	27	0.25	— 0.94	0.15	0.5	4	20	6	4	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	14	28.2	— 4.3	57	16	— 6	22†	33	0.11	— 1.19	0.11	T.	1	10	5	15	sw.	J. W. Dow
Sheldon	O'Brien	1,418	17	29.6	— 3.6	58	16	— 3	22†	35	0.25	— 1.23	0.10	1.1	6	11	14	5	nw.	Ross E. Forward
Sioux Center	Sioux	1,461	29	29.6	— 3.9	55	16	— 4	22†	32	0.28	— 0.90	0.16	1.5	2	12	10	8	nw.	F. C. Aue
Spencer	Clay	1,319	14	29.2	— 4.4	55	5	— 7	29	40	1.41	+ 0.11	0.54	3.5	7	10	10	10	nw.	E. W. Little
Storm Lake	Buena Vista	1,438	39	30.2	— 5.3	56	5	— 1	22	27	0.78	— 0.52	0.30	4.0	5	15	7	8	sw.	L. B. Florey
Washta	Cherokee	1,157	30	31.5	— 3.5	57	5	— 2	22†	36	0.48	— 0.81	0.25	2.0	3	14	7	9	nw.	H. L. Felter
West Bend	Palo Alto	1,197	35	29.8	— 4.3	56	5	— 9	29	28	0.56	— 0.93	0.33	3.0	4	12	13	5	nw.	Jos. Dorweiler
Means and extremes				29.5	— 4.3	58	16	— 9	29†	40	0.46	— 0.84	0.54	2.3	5	11	10	9	nw.	
North Central District																				
Algona	Kossuth	1,224	55	30.2	— 4.4	55	5	— 9	29	28	0.32	— 1.04	0.12	2.5	5	16	4	10	nw.	W. E. Laird
Allison	Butler	1,060	14																	
Belmond	Wright	1,181	18	29.8	— 4.4	55	5	—10	29	33	0.99	— 0.66	0.35	4.2	9	6	3	21	nw.	H. F. Luick
Britt	Hancock	1,236	41	30.2	— 3.3	53	2†	— 9	29	28	0.47	— 0.98	0.20	0.5	6	6	7	17	nw.	E. P. Healy
Charles City	Floyd	1,015	37	29.2	— 3.8	54	2	— 7	29	30	1.11	— 0.42	0.30	1.2	8	10	9	11	nw.	U. S. Weather Bureau
Forest City	Winnebago	1,226	34	29.0	— 4.5	54	2†	—10	29	31	0.96	— 0.59	0.18	4.8	9	12	4	14	nw.	Dr. M. B. Neil
Hampton	Franklin	1,145	3																	L. H. Davis
Humboldt	Humboldt	1,095	40	30.8	— 4.8	56	9	— 9	30	29	0.78	— 0.89	0.46	4.0	3	7	10	13	nw.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	31	28.8	— 4.7	55	2	— 8	29	33	1.01	— 0.47	0.26	5.0	12	9	15	6	sw.	American Beet Sugar Co.
Northwood	Worth	1,222	32	28.8	— 3.6	55	2†	—10	29	31	0.96	— 1.01	0.30	7.0	8	11	11	8	nw.	Charles Dwelle
Osage	Mitchell	1,163	34	28.7	— 4.5	54	2†	— 9	29	30	0.91	— 0.60	0.27	1.5	6	10	10	10	nw.	Dr. C. E. Juhl
Means and extremes				29.5	— 4.3	56	9	—10	29	33	0.83	— 0.73	0.46	3.4	7	10	8	12	nw.	
Northeast District																				
Decorah	Winneshiek	872	35	30.1	— 4.6	55	2†	—11	30	43	1.22	— 0.62	0.65	1.0	5	12	7	11	nw.	M. D. Whitney
Dubuque	Dubuque	700	55	32.3	— 4.7	57	11	— 4	29†	34	0.68	— 1.02	0.40	0.7	8	10	8	12	nw.	U. S. Weather Bureau
Fayette	Fayette	1,003	40	30.4	— 3.7	61	1	—10	30	39	1.07	— 0.65	0.48	1.6	6	17	5	8	nw.	R. Z. Latimer
Independence	Buchanan	956	64	33.5	— 3.0	55	2†	— 6	29	37	1.03	— 0.41	0.57	0.1	7	8	13	9	nw.	Dr. Geo. Boody
Lansing	Allamakee	632	21								1.44	— 0.51	0.36	0.2	9					Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	31	30.6	— 3.5	55	2†	—10	29	34	1.12	— 0.57	0.37	1.0	5	7	14	9	nw.	D. W. Dawson
Oelwein	Fayette	1,036	5	30.7	— 4.5	55	2	— 7	29	35	1.16	— 0.42	0.40	2.0	4	13	7	10	nw.	John T. Ridler
Postville (near)	Clayton	1,192	29	28.8	— 5.2	55	2	— 9	29	37	1.13	— 0.56	0.49	0.7	5	15	7	8	nw.	F. L. Williams
Waterloo	Black Hawk	854	45	31.3	— 4.8	56	2	— 9	30	37	1.30	— 0.19	0.66	0.5	6	17	7	6	nw.	R. B. Slippy
Waverly	Bremer	936	32	29.8	— 5.8	55	2	— 7	29†	35	1.40	— 0.25	0.59	T.	7	20	3	7	nw.	D. H. Murphy
Means and extremes				30.8	— 4.5	61	1	—11	30	43	1.16	— 0.52	0.66	0.8	6	13	8	9	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	33	31.5	— 3.3	55	5†	— 3	30	26	1.26	— 0.07	0.39	7.7	6	14	11	5	nw.	George Kibby
Carroll	Carroll	1,265	38	30.8	— 5.3	55	2	— 3	29	28	1.03	— 0.29	0.63	2.0	5	18	4	8	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	34	30.6	— 5.0	54	2†	— 3	30	26	0.53	— 0.82	0.34	2.7	6	11	12	7	nw	V. L. Byers
Guthrie Center	Guthrie	987	33	32.6	— 4.4	58	5†	0	22†	31	0.94	— 0.51	0.50	1.0	5	6	18	6	n.	Floyd H. Bainter
Harlan	Shelby	1,192	29	31.2	— 4.6	57	5	— 4	30	33	1.22	— 0.24	0.45	4.5	5	12	7	11	nw.	Walter Bell
Jefferson	Greene	1,052	29	32.0	— 4.2	60	5	— 3	29	30	1.38	— 0.55	0.84	3.0	4	15	4	11	nw	W. I. Lyon
Little Sioux	Harrison	1,010	23	31.9	— 4.6	58	5	— 2	29	35	1.27	— 0.30	0.45	7.1	9	10	11	9	nw.	H. W. Kerr
Logan	Harrison	1,120	61	32.0	— 5.3	56	2†	— 3	30	34	1.68	+ 0.28	0.42	11.0	7	9	17	4	nw.	Amy Ann Stern
Onawa	Monona	1,051	27	32.4	— 3.3	57	2†	0	22	34	0.84	— 0.54	0.35	10.5	7	12	7	11	nw	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	32																	A. W. McIsaac
Sac City	Sac	1,269	52	30.3	— 5.2	54	5	— 3	29	24	0.62	— 0.68	0.25	4.5	6	14	7	9	nw.	F. P. Kessler
Sioux City	Woodbury	1,135	39	31.8	— 3.4	55	10	1	22	29	0.41	— 0.59	0.13	2.4	7	5	14	11	nw.	U. S. Weather Bureau
Means and extremes				31.6	— 4.4	60	5	— 4	30	35	1.02	— 0.41	0.84	5.1	6	12	10	8	nw.	
Central District																				
Ames	Story	926	51	33.0	— 2.9	56	2†	— 4	29†	28	1.29	0.00	0.65	1.3	5	18	3	9	nw.	Iowa State College
Baxter	Jasper	998	28	33.2	— 4.0	59	11	— 7	29	34	1.68	+ 0.25	0.58	1.6	6	16	5	9	nw.	F. A. Kanne
Boone (near)	Boone	894	23	32.0	— 4.6	57	2†	— 8	30	35	1.00	— 0.37	0.48	T.	5	11	10	9	n.	C. F. Henning
Des Moines	Polk	861	50	33.8	— 4.6	58	11	0	29	28	1.87	+ 0.44	0.97	1.5	9	10	13	7	n.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	28	29.8	— 5.5	56	5	— 7	29	33	0.82	— 0.76	0.28	3.5	7	15	4	11	nw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	34	33.2	— 4.5	58	5†	— 6	30	33	1.49	— 0.20	0.58	2.4	5	18	5	7	nw.	R. E. Bates
Grundy Center	Grundy	976	37	31.8	— 4.5	57	9	— 9	29	35	1.88	+ 0.44	0.70	T.	6	12	7	11	nw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	35	30.8	— 4.5	55	2	— 8	29	34	1.41	— 0.19	0.92	3.0	6	15	5	10	nw.	C. H. Gilbert
Marshalltown	Marshall	947	36	32.6	— 4.8	57	9	— 6	29	32	1.03	— 0.49	0.58	1.0	4	12	10	8	nw.	C. C. Pigman
Monroe	Jasper	922	16	33.5	— 5.5	57	9	0	29	32	1.92	+ 0.42	0.83	4.1	4	14	9	7	sw.	J. A. Dibel
Perry	Dallas	975	27	32.4	— 4.6	59	5	— 4	30	30	0.89	— 0.63	0.38	1.5	7	14	8	8	nw.	Eugene N. Hastie
Toledo	Tama	847	34	32.3	— 5.6	60	11	— 7	29	30	1.28	— 0.32	0.45	1.5	7	15	9	6	nw.	H. P. Giger
Van Meter‡‡	Dallas	872	9								1.58		0.80	0.5	5					Calvin K. Smith
Waukee	Dallas	1,032	25	33.0	— 4.1	56	5	— 3	29	31	1.77	+ 0.20	1.05	0.4	5	15	8	7	nw.	O. D. Ellsworth
Webster City	Hamilton	1,042	23	29.9	— 5.7	57	16	—12	30	35	0.88	— 0.73	0.47	1.3	5	11	10	9	nw.	Frank A. Bonebright
Means and extremes				32.2	— 4.7	60	11	—12	30	35	1.37	— 0.14	1.05	1.6	6	14	8	8	nw.	

Climatological Data for November, 1929—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		
East Central District																				
Belle Plaine	Benton	866	38	32.8	— 4.2	60	5†	— 6	30	35	1.73	+ 0.04	0.60	0.7	9	16	5	9	nw.	O. C. Burrows
Cedar Rapids	Linn	737	46	32.8	— 3.6	58	11	— 5	29	35	1.49	— 0.16	0.51	1.0	6	16	0	14	nw.	J. T. Wurster
Clinton	Clinton	595	55	34.7	— 3.2	59	11	— 3	29†	35	1.36	— 0.53	0.65	1.5	8	16	5	9	w.	Dr. A. P. Bryant
Davenport	Scott	580	57	34.6	— 4.4	58	11	— 3	29	28	1.51	— 0.31	0.49	1.5	9	12	6	12	nw.	U. S. Weather Bureau
Fairport	Muscatine	567	7	34.5	— 4.7	58	11	— 3	29	42	1.79	— 0.21	0.89	0.8	7	10	5	15	n.	Bureau of Fisheries
Iowa City	Johnson	733	68	33.8	— 3.8	59	11	— 4	29†	32	1.52	— 0.65	0.79	0.5	7	14	10	6	nw.	Prof. J. F. Reilly
Le Claire	Scott	576	28																	Margaret T. Disney
Maquoketa (near)	Jackson	692	23	32.2	— 3.6	56	2†	— 6	29	37	1.28	— 0.30	0.53	1.2	7	17	3	10	sw.	John Strodthoff
Muscatine	Muscatine	546	67																	William Molis
Olin	Jones	760	29	33.0	— 3.3	57	2†	— 5	30	37	1.15	— 0.47	0.50	0.2	5	18	4	8	nw.	Mrs. L. Stingley
Tipton (near)	Cedar	806	29	33.8	— 3.6	56	1†	— 7	29	35	1.66	— 0.21	0.60	4.0	7	13	12	5	w.	John Kroeplen
Williamsburg	Iowa	770	12	32.8	— 3.7	56	2†	— 5	30	33	2.58	+ 0.88	1.27	0.8	8	20	3	7	nw.	Dr. F. C. Schadt
Means and extremes				33.5	— 3.8	60	5†	— 7	29	42	1.61	— 0.23	1.27	1.2	7	15	5	10	nw.	
Southwest District																				
Atlantic	Cass	1,110	37	33.4	— 4.1	58	11	— 2	30	35	1.19	— 0.11	0.50	3.5	6	12	13	5	nw.	Roy L. Fancolly
Bedford	Taylor	1,200									1.27	— 0.30	0.49	3.0	5	10	7	13	nw.	Arthur L. Bishop
Clarinda	Page	1,009	38	33.7	— 6.0	59	5†	— 4	30	38	1.57	+ 0.05	0.40	3.5	7	12	11	7	w.	Dr. H. C. Hawley
Corning‡‡	Adams	1,150	36								1.86	+ 0.39	0.66	4.5	5	10	3	17	ne.	J. A. Wilson
Cumberland (near)	Cass	1,225	29								1.60	+ 0.51	0.46	5.0	6	13	11	6	nw.	Carl E. Pollock
Glenwood	Mills	1,100	30	33.5	— 5.1	56	2†	— 6	30	30	1.84	+ 0.69	0.50	9.2	6	10	12	8	ne.	George Mogridge
Lenox	Taylor	1,250	33	33.6	— 4.6	61	11	— 4	30	31	1.84	+ 0.37	0.62	4.5	6	16	6	8	nw.	J. L. Hurley
Oakland	Pottawattamie	1,139	9	33.0	— 4.5	57	5†	— 3	30	34	2.18	+ 0.93	1.20	8.8	6	15	6	9	sw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	3								1.16	— 0.26	0.40	10.0	5	12	11	7	nw.	B. R. Bridge
Riverton (near)	Fremont	920	2								1.60	+ 0.11	0.87	5.5	6	17	2	11	nw.	Geo. C. Rader
Thurman	Fremont	960	31	34.0	— 4.4	59	5†	— 7	30	35	1.31	— 0.54	0.45	11.0	5	14	7	9	n.	H. H. Askew
Omaha, Neb		1,105	57	33.8	— 4.7	56	2	3	29	29	1.38	+ 0.31	0.49	8.4	8	12	13	5	nw.	U. S. Weather Bureau
Means and extremes				33.6	— 4.6	61	11	— 7	30	38	1.54	+ 0.15	1.20	6.6	6	13	9	8	nw.	
South Central District																				
Afton	Union	1,212	34	33.8	— 4.7	59	11	— 2	30	33	1.80	+ 0.37	0.80	6.5	8	16	8	6	nw	S. R. Brown
Albia	Monroe	949	30	34.6	— 3.6	61	11	— 1	29	32	1.40	— 0.16	0.75	0.9	7	10	7	13	nw	O. E. McBride
Centerville‡‡	Appanoose	1,013	23	35.0	— 4.5	68	11	— 2	30	36	1.23	— 0.21	0.57	1.2	6	11	7	12	nw.	Thomas Wood
Chariton (near)	Lucas	1,042	33	35.6	— 3.1	60	11	— 2	30	36	1.11	— 0.35	0.51	T.	3	11	13	6	nw.	C. C. Burr
Corydon (near)	Wayne	1,050	35	34.2	— 4.6	57	11	— 3	30	31	1.86	+ 0.36	0.71	3.0	8	13	9	8	nw.	J. C. Davis
Creston	Union	1,291	23	32.2	— 6.0	57	5†	— 6	30	36	2.01	+ 0.29	1.01	3.0	11	11	14	5	nw.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	26	34.0	— 3.2	59	2†	— 3	30	33	1.32	— 0.34	0.60	1.0	4	21	4	5	nw.	George Phillips
Indianola	Warren	972	37	34.6	— 3.7	61	11†	— 2	30	35	1.52	— 0.05	0.48	2.4	6	13	12	5	n.	Seth F. Shenton
Knoxville	Marion	920	33	35.0	— 3.8	59	11	— 2	30	33	2.34	+ 0.78	0.78	0.7	6	14	7	9	nw.	W. J. Casey
Lacona	Warren	824	29								1.58	— 0.10	0.42	2.5	11	9	13	8		J. B. Alter
Lamoni	Decatur	1,123	21	33.6	— 5.1	60	11	— 4	30	34	0.96	— 0.48	0.38	2.1	6	17	3	10	nw.	F. S. Parks
Melrose	Monroe	871									1.76		1.00	1.0	5	9	15	6	nw.	J. M. Carr
Mount Ayr	Ringgold	1,220	35	34.8	— 4.0	60	2	— 5	30	35	1.36	— 0.18	0.64	2.8	5	21	2	7	sw.	E. O. Gleason
Tingley	Ringgold	1,275	3	33.3	— 5.1	57	11	— 3	29†	33	1.61	+ 0.14	0.66	2.8	7	17	9	4	nw.	James A. Verploegh
Winterset	Madison	1,118	37	34.2	— 4.2	59	11	— 1	29	34	2.28	+ 0.81	1.15	2.5	6	17	8	5	nw.	H. S. Ely
Means and extremes				34.2	— 4.3	61	11†	— 6	30	36	1.64	+ 0.10	1.15	2.2	7	14	9	7	nw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	37	35.4	— 4.2	57	5†	— 5	30	34	1.19	— 0.61	0.84	0.5	6	14	5	11	nw.	B. R. Vale
Burlington	Des Moines	544	32	36.4	— 4.7	58	11	0	29†	28	1.22	— 0.64	0.98	1.0	4	13	5	12	nw.	John W. Donnelly
Columbus Junction	Louisa	595	27	34.1	— 5.5	58	11	— 4	30	32	1.61	— 0.13	0.75	1.2	9	18	6	6	nw.	Miss Musa Todd
Fairfield	Jefferson	780	44	33.6	— 4.9	58	11	— 6	30	33	1.27	— 0.89	0.61	1.4	10	13	8	9	nw.	R. M. McKenzie
Keokuk	Lee	614	57	36.6	— 4.5	60	11	2	29	27	1.51	— 0.43	0.84	0.4	6	12	4	14	sw.	U. S. Weather Bureau
Keokuk No. 2	Lee	651		37.4		60	9†	0	29†	31	1.72		1.12	0.4	7					J. N. D. Dickinson
Keosauqua	Van Buren	639	36	34.8	— 4.2	60	11	— 4	30	35	1.85	+ 0.24	1.00	0.5	4	10	10	10	w.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	47	36.1	— 3.6	60	11	— 2	30	32	1.33	— 0.48	0.66	0.2	7	12	7	11	nw.	J. H. Jericho
Oskaloosa	Mahaska	835	52	34.8	— 3.7	58	9†	— 5	30	35	1.63	+ 0.03	0.71	0.8	8	13	8	9	sw.	Roy R. Robinson
Ottumwa	Wapello	649	33	36.2	— 4.0	66	11	— 2	30	40	1.98	+ 0.60	0.95	T.	7	13	4	13	nw.	C. L. Mikesh
Sigourney (near)	Keokuk	790	32	34.8	— 3.4	58	11	— 4	29	32	1.45	— 0.20	0.71	1.2	7	19	3	8	nw.	W. E. Utterback
Stockport (near)	Van Buren	747	26	35.0	— 3.4	59	3†	— 8	30	33	1.34	— 0.30	0.68	1.0	8	15	5	10	nw.	C. L. Beswick
Washington	Washington	757	46	34.4	— 4.3	59	2†	— 6	30	35	1.21	— 0.46	0.62	2.0	7	8	11	11	nw.	D. D. Sherman
Wever	Lee	552		36.2		59	8	— 5	30	35	1.55		1.03	T.	3					H. G. Liddle
Means and extremes				35.4	— 4.0	66	11	— 8	30	40	1.49	— 0.25	1.12	0.8	7	13	7	10	nw.	
State means and extremes				32.3	— 4.3	66	11	—12	30	43	1.24	— 0.31	1.27	2.7	6	13	8	9	nw.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

PRECIPITATION

The average precipitation for the State, derived from the averages of 9 districts of nearly equal area, from the records of 112 stations, was 1.24 inches, or 0.31 inch below normal. There was an excess in the south-central and east-central districts, the remaining seven being below normal. The precipitation which fell in the extreme southwest section of the State was mostly snow. The greatest amount at a single station was 2.58 inches at Williamsburg, and the least was 0.08 at Lake Park. The greatest amount occurring in 24 consecutive hours was 1.27 inches at Williamsburg on the 13th. The average number of days with precipitation 0.01 inch or more for the State, was 6.

SNOWFALL

The average snowfall for the State was 2.7 inches, or 0.4 inch above normal. The average snowfall for most of the State in general was much below normal and in many localities only a trace of snow recorded, but the heavy snowfall in the extreme southwestern section made the State average above normal. The greatest snowfall was 11.0 inches at Logan and Thurman on the 28th, and the least was a trace reported at 8 stations.

Daily Precipitation for November, 1929

Stations	Drainage Basin	Day of Month																													To-tals
		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	
Northwest District																															
Akron	Big Sioux			.01							.08		.04					.05										.02	.04	T.	.06		0.30
Alta	Raccoon									.18			.17	.15					.16		T.					T.		T.	.03	.20	T.	.10		0.89
Alton	Floyd			T.							.10	T.	T.	.02					.03	.02	T.	T.	T.					.03	.20	T.	.10		0.50
Cherokee	Little Sioux	T.		T.						T.	.15	.02	T.	.05					T.	.02	T.	T.	T.	T.				T.	T.		.13		0.37
Estherville	Des Moines										.15		.10						.10										.10		.05		0.50
Hawarden	Big Sioux			T.							.05		.02						.06	.01		T.						T.	.02		.02		0.18
Inwood (near)	Big Sioux										.05	T.	.01						.04	T.	T.		T.	.02				.02	.02		.05		0.21
Lake Park (near)	Little Sioux												T.				.01		.02	T.									T.		.05		0.08
Le Mars	Floyd										.15		.01	.01					.02	.07	T.	T.		T.				.02	.02		.10		0.40
Marathon	Raccoon			T.						.16			.12						.06	T.			T.					T.	T.	.05	.21		0.60
Pocahontas	Des Moines									.04	.20	T	.08	.15					.05	T.									.02		.06		0.60
Rock Rapids	Big Sioux												.15						.03					.02							.05		0.25
Sanborn	Floyd										.11		T.						T.		T.							T.			T.		0.11
Sheldon	Floyd			T.							.10		T.						.05	T.	T.		T.	.01				.01	.02		.06		0.25
Sioux Center	Floyd										.16	T.																.12					0.23
Spencer	Little Sioux			.02							.13		T.	.10					.50	.04								T.	.50		.12		1.41
Storm Lake	Raccoon			T.							.30		T.	.20					T.	.07	T.							T.	.02		.19		0.78
Washta	Little Sioux										.18		T.	.25					T.	T.				T.				.05	T.		T.		0.48
West Bend	Des Moines										.33		.07						T.	T.				T.					.08		.08		0.56
North Central District																															
Algona	Des Moines										.12			.06														.02	.08		.04		0.32
Allison	Cedar									T.	.33	.02	.12	.25					.07	.04				.02				T.	.12		.02		0.99
Belmond	Iowa												.10	.20			.04			.05				T.					.06				0.47
Britt	Iowa	.02											.30						.13	.03	T.			T.	T.		T.	.14	.01	T.	.20		1.11
Charles City***	Cedar			T.	T.					.05	.25																						
Forest City	Cedar			T.	T.						.18		.09	.15					.03	.08		T.		.10	.15			.08	.10		T.		0.96
Hampton	Cedar																																
Humboldt	Des Moines			T.							.46		T.							T.				T.				T.	.12		.20		0.78
Mason City	Cedar	.06		T.							.11		.10	.16					.15	.06	.03			.01	.01		T.	.14	.08		.10		1.01
Northwood	Cedar			.05							.16	T.	.30						.15					.05	.10			.10	T.		.05		0.96
Osage	Cedar										.27		.15	.17					.16	.04	T.			T.	T.			.12					0.91
Northeast District																															
Decorah	Mississippi										.26		.55	.10					.14	T.				T.				.17					1.22
Dubuque***	Mississippi			.01						T.	.40		.09	T.					.03	T.	.01			T.	T.			.02	.01		.11		0.68
Fayette	Mississippi			T.							.34		.41	.07					.10	T.				.01	T.	T.		.14	T.	T.			1.07
Independence	Wapsipinicon			T.							.57		.17	.06					.06	.05				T.	T.			.11	.01				1.03
Lansing	Mississippi	.32			.04						.28	.08	.14	.25						.26	.03				.04								1.44
New Hampton	Wapsipinicon										.35		.37	.15					.20	.05					T.								1.12
Oelwein	Wapsipinicon										.40		.40						.20	T.					T.			.16					1.16
Postville (near)	Mississippi										.42		.49						.17	.02	T.				T.			.03					1.13
Waterloo	Cedar			T.							.38		.66	.08					.08	T.					T.			.05	.05		T.		1.30
Waverly	Cedar			.02							.28		.59	.13					.11	.18				T.				.09					1.10
West Central District																															
Audubon (near)	Nishnabotna			.02							.39		.35	.15					T.	T.		T.							.15		.20		1.26
Carroll	Raccoon			T.						.04	.21		.63						.05										T.		.10		1.03
Denison	Missouri			T.						.11	.23		.09	.03						T.				T.					.05		.02		0.53
Guthrie Center	Raccoon									.09	.25		.50																.05		.05		0.94
Harlan	Nishnabotna			T.						.26	.16		.45	.20					T.	T.								T.	T.		.15		1.22
Jefferson	Raccoon			T.						T.	.34		.84	T.					T.	T.	T.			T.					.10		.10		1.38
Little Sioux	Little Sioux			.01						.30	.15		.30	.12					.06	.02									.16		.15		1.27
Logan	Missouri			T.						.24	.16		.40	.42					.06										.16		.24		1.68
Onawa	Missouri									T.	.35		.05	.15						.04									.10	.10	.05		0.84
Rockwell City	Raccoon																																
Sac City	Raccoon			T.						.25	.11		.08	.08					T.	T.	T.								.04		.16		0.62
Sioux City***	Missouri			T.	T.					.10	.01		T.	.06					.05	T.	T.	T.	T					.01	.02	T.	.13		0.41
Central District																															
Ames	Skunk									T.	.40		.65	.10															.04		.10		1.29
Baxter	Skunk										.54		.58	.39						.05									.10		.02		1.68
Boone (near)	Des Moines			T.						T.	.37		.48	.11						T.	T.						T.	.02		.02		1.00
Des Moines***	Des Moines			T.						.21	.10		.97	.30			T.		.03	T.	.03			T.				.01	.04		.18		1.87
Fort Dodge	Des Moines									.06	.22		.10	.10					.10	T.									.08		.16		0.82
Grinnell	Iowa										.45		.27	.58							.03							T.	.16				1.49
Grundy Center	Cedar			T.						T.	.40		.70	.35					.25									.15	.03		T.		1.88
Iowa Falls	Iowa			T.							.24		.64	.28					.05	T.								T.	.10		.10		1.41
Marshalltown	Iowa			T.						T.	.41		.46	.12					T.	T.	T.			T.				T.	.04		T.		1.03
Monroe	Des Moines			T.						T.	.36		.35	.83					T.	T.	T.							T.	.38				1.92
Perry	Raccoon			T.						.10	.28		.33	.02					T.	T.	T.			T.				.01	.05		.10		0.89
Toledo	Iowa			T.							.45		.20	.40					.04	.06								.07	.06		T.		1.28
Van Meter	Raccoon										.20		.80	.30	.25														.03				1.58
Waukee	Raccoon									T.	.23		1.05	.40					T.	T.	T.							T.	.02		.02		1.77
Webster City	Des Moines			T.							.28		.47	.06				T.	T.	T.				T.					.05		.02		0.88
East Central District																															
Belle Plaine	Iowa			.02							.37		.43	.60					.14	.03	T.			T.				.08	.04		.02		1.73
Cedar Rapids	Cedar										.40		.51	.38					.06	T.								.06	.08		T.		1.49
Clinton	Mississippi			T.							.65		.18	.17					.16	.01	.03						T.	.15	.01				1.36
Davenport***	Mississippi			T.	T.					.01	.48		.11	.38	.03				.15	T.	T.			T.			T.	.09	.14		.12		1.51
Fairport	Mississippi										.58		.21	.65					.20	.07								T.	.03	.02			1.79
Iowa City	Iowa			T.							.32		.17	.79	.02				.15	T.	T.							.04	.03		T.		1.52
Le Claire	Mississippi										.53			.31					.17	.05	.02							.17	.03				1.28
Maquoketa (near)	Maquoketa																																
Muscatine	Mississippi										.43		.05	.50					.15	T.								T.	.02				1.15
Olin	Wapsipinicon										.49		.10	.60					.12									.09	.16	.10			1.66
Tipton (near)	Cedar										.53		.50	1.27					.09	.03								.08	.04		.04		2.53
Williamsburg	Iowa			T.																													

Daily Precipitation for November, 1929—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	
Southwest District																																	
Atlantic	Nishnabotna			T.	T.			T.		.23	.12	T.	.50	.12			T.		T.										.07		.15		1.19
Bedford	102									.18	.15		.30	.49	T.																	1.27
Clarinda	Nodaway									.16	.23		.40	.30	.08														.30		.10		1.57
Corning	Nodaway										.26		.66	.59															.20		.16		1.87
Cumberland(near)	Nodaway			T.						.12	.23		.41	.46			T.		T.	T.									.08		.30		1.60
Glenwood	Missouri									.20	.27		.47	.30															.50		.10		1.84
Lenox	Missouri			T.					T.	.10	.15		.62	.62			T.												.30		.05		1.84
Oakland	Nishnabotna			T.						.18	.25		*	1.20					T.										.15		.40		2.18
Red Oak (near)	Nishnabotna									.40			.14	.40			T.												.06		.16		1.16
Riverton (near)	Nishnabotna			.03						.28	.06		.52	.35	T.	T.	T.												.36		T.		1.60
Thurman	Missouri									.16	.24		.45	.14			T.					T.							.32		T.		1.31
Omaha, Neb.***	Missouri			T.						.38	.01	T.	.40	.22			T.		T.		T.	T.						.03	.11	.01	.22		1.38
South Central District																																	
Afton	Grand									.05	.20		.55	.80			.02		.01										.12		.05		1.80
Albia	Des Moines			T.						T.	.25		.25	.75	.07			T.		T.	.03	T.							.04		.01		1.40
Centerville	Chariton										.27		.15	.57	.11				T.	T.	T.							.02	.11		T.		1.23
Chariton (near)	Chariton										.32		.51	.28	T.				T.		T.							T.	T.				1.11
Corydon (near)	Chariton			.02						.33	T.		.71	.50	.04			T.	.03									T.	.07		.16		1.86
Creston	Missouri			.02	T.		T.		T.	.10	.14	.01	1.01	.47	.01	T.	T.	T.	T.	.01	T.							.01	.10		.10		2.01
Earlham (near)	Des Moines									T.	.15		.60	.49					T.		T.								.08				1.32
Indianola	Des Moines			T.						T.	.36		.48	.42	T.						T.							.02	.04		.20		1.52
Knoxville	Des Moines			T.							.75		.70	.78			T.		T.	T.	T.							.04	.02		.05		2.34
Lacona	Des Moines									.01	.41		.40	.39	.05				.02	.01	.02						.02		.05		.20		1.58
Lamoni	Grand									T.	.26		.16	.38	.05		T.											.07		.04		0.96
Melrose	Des Moines										.38		.20	1.00					.10												.08		1.76
Mount Ayr	Grand										.26		.20	.64															.15		.11		1.36
Tingley	Platte									.05	.24		.46	.66	.04		T.	T.	T.		T.								.10		.06		1.61
Winterset	Des Moines			T.						.05	.20		1.15	.66						T.	T.							.12		.10		2.28
Southeast District																																	
Bonaparte (near)	Des Moines			T.							.14		.05	.84	.04				T.		T.							.09	.03	T.			1.19
Burlington	Mississippi										T.		T.	.98	.04					T.								.10	.10				1.22
Columbus Jct.	Iowa										.39		.19	.75	.07				.04	.01	.02							.06	.08				1.61
Fairfield	Skunk			.02							.32		.07	.61	.04				T.	.04	.02							.07	.06		.02		1.27
Keokuk***	Mississippi		T.	T.						.01	.42		T.	.81	T.		T.		T.	T.	T.							.01	.03		.20		1.51
Keokuk No. 2	Mississippi			.03							.50			1.12	.02						T.							.01	.01	.03			1.72
Keosauqua	Des Moines										.40		.40	1.00					T.									T.	.05				1.85
Mt. Pleasant	Skunk			.03							.24		.12	.66	.14													.09	.05				1.33
Oskaloosa	Des Moines			T.							.36		.38	.71	.05				.03	T.	.02	T.						.04	.04		T.		1.63
Ottumwa	Des Moines			.02							.26		.28	.95	.21			.20			T.							.06	T.		T.		1.98
Sigourney (near)	Skunk			T.							.34		.16	.71	.06				T.	T.	.02							.05	.11		T.		1.45
Stockport (near)	Skunk			.06							.19		.16	.68	.06				.03	T.	T.							.06	.10		T.		1.34
Washington	Skunk										.28		.32	.30					.10	.03								.02	.16				1.21
Wever	Mississippi			T.							.48		T.	1.03					T.	.04									T.				1.55

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

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

***Regular Weather Bureau Station: precipitation is for 24-hour period midnight to midnight.

**Incomplete.

*Precipitation included in the next following measurement.

T. Precipitation is less than .01 inch rain or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level)					Relative Humidity, %					‡‡Wind					Sunshine	
						Mean							Maximum				
	Mean	Highest	Date	Lowest	Date	7 A. M.	12 Noon‡	7 P. M.	Lowest	Date	Total movement	Average hourly velocity	Miles	From	Date	% possible	Departure from normal
Chas. City	30.13	30.78	21	29.48	27	89	65	76	37	17	4,303	6.0	22	nw.	27	51	+ 4
Davenport	30.12	30.73	21	29.46	27	86	62	68	42	2	6,814	9.5	33	nw.	27	49	— 2
Des Moines	30.14	30.78	21	29.58	27	86	59	70	36	2	6,767	9.4	40	nw.	27	60	+ 8
Dubuque	30.11	30.71	21	29.49	27	81	64	70	40	2	4,419	6.1	22	nw.	27	52	+ 6
Keokuk	30.16	30.75	21	29.59	27	78	55	66	25	29	5,183	7.2	37	w.	27	50	— 1
Sioux City	30.17	30.84	21	29.65	26	84	64	68	42	26	7,710	10.7	44	nw.	27	53	+ 1
Omaha,Nb	30.17	30.80	21	29.71	26	79	60	65	32	2	5,727	8.0	30	nw.	18†	59	+ 4
Means and extremes	30.14	30.84	21	29.46	27	83	61	69	25	29		8.1	44	nw.	27	53	+ 3
Normals and records	30.07	*30.96	2d 1896	§29.03	28th 1918	81	72	¶16	6th 1916				‖51	sw.	10th 1919	50	

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

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

RIVERS

Moderately low stages prevailed on all the interior streams with falling stages the latter half of the month. On the Mississippi River the highest stage was reached during the middle of the month, after which it fell continuously, with an extreme fluctuation of 1.9 feet. On the Missouri River the stages averaged above normal. At Sioux City the extreme stages were 4.9 and 5.4 feet, and the average stage exactly normal at 5.2 feet. At Omaha the extreme stages were 4.4 and 7.6 feet. The highest stages prevailed during the first half of the month and the lower stages from the 24th to the 27th, the average being 0.8 feet above normal.

MISCELLANEOUS PHENOMENA

Aurora: 2d, 3d.

Fog: 9th, 10th, 11th, 14th, 15th, 16th, 17th.

Hail: 3d, 29th, 30th.

Halos (lunar and solar): 8th, 11th, 17th, 18th, 21st, 22d, 25th, 29th.

Sleet: 3d, 16th, 18th, 19th, 27th.

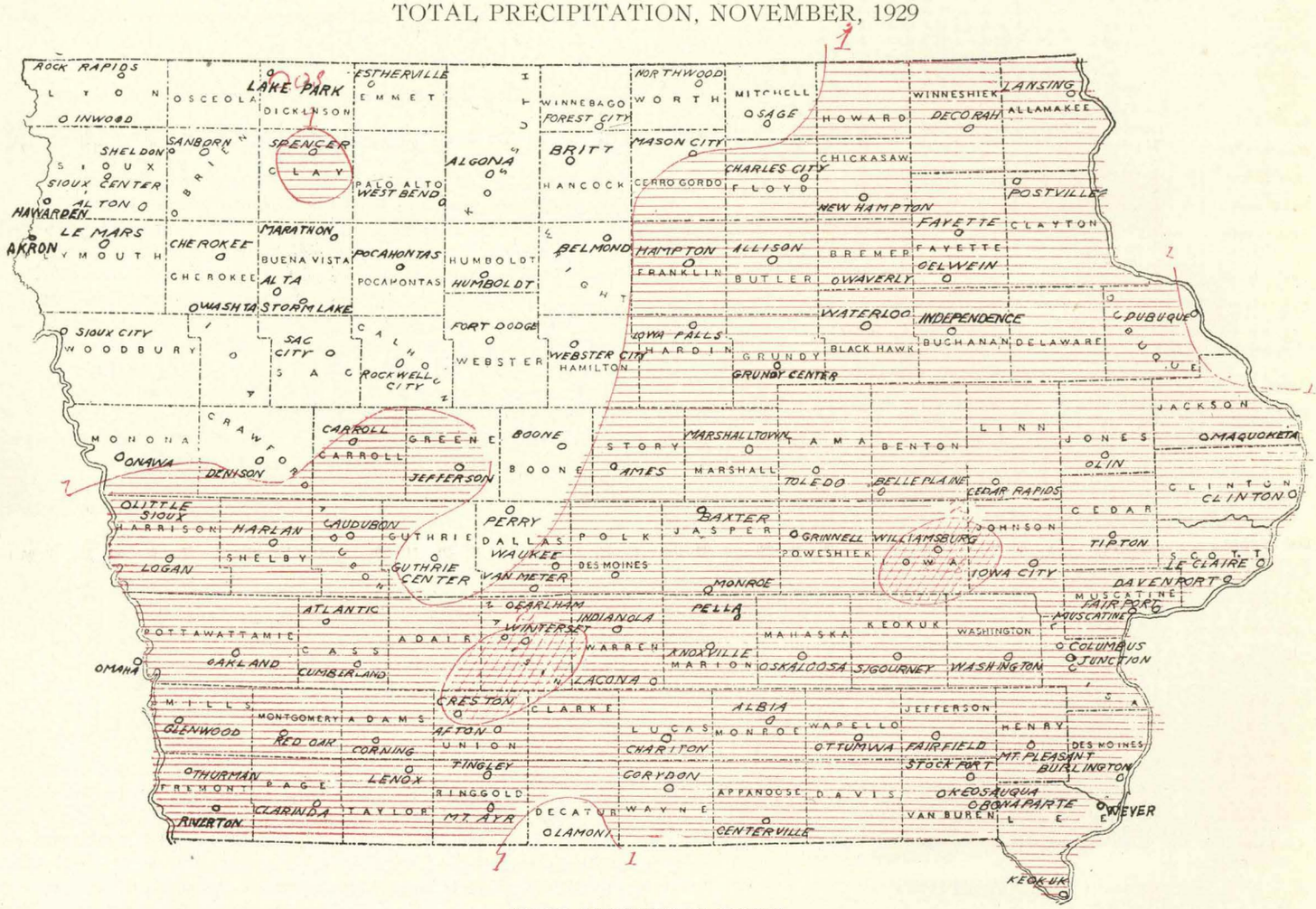
Thunderstorms: 12th, 13th.

Wind (unusually strong): 22d, 27th.

Daily Maximum and Minimum Temperature for the Month of November, 1929

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	Maximum	42	45	44	40	55	49	40	45	50	52	44	40	35	40	45	51	50	47	42	37	25	22	33	24	40	47	46	26	6	17	.....	39.3
	Minimum	31	30	31	30	31	21	24	26	29	39	30	32	29	16	25	30	29	33	19	13	2	— 3	13	8	15	27	25	6	— 9	— 3	.....	21.0
Alta	Maximum	42	49	42	43	54	37	37	47	48	47	37	36	35	42	46	50	52	42	30	24	10	20	25	31	44	51	42	27	11	20	.....	37.4
	Minimum	29	28	29	31	32	21	24	24	28	37	30	29	25	16	26	30	31	30	13	7	1	— 4	7	9	20	28	26	7	— 4	— 1	.....	20.3
Alton	Maximum	44	45	42	42	52	38	37	45	47	49	40	37	40	46	47	53	50	42	32	25	14	20	26	30	50	52	45	29	12	20	.....	38.4
	Minimum	29	28	30	30	30	22	25	25	27	40	29	30	26	14	24	29	29	32	14	14	3	— 2	10	7	22	22	25	28	7	— 2	— 4	20.7
Belmond	Maximum	46	54	46	43	55	41	39	47	51	48	40	37	39	43	50	54	52	40	35	34	24	22	26	29	46	18	43	24	5	20	.....	39.5
	Minimum	31	29	28	29	30	21	23	24	28	38	30	32	29	19	26	29	28	33	18	13	2	— 4	10	10	13	28	19	5	—10	— 7	.....	20.1
Charles City	Maximum	45	54	47	40	52	32	40	45	52	46	41	39	40	43	47	52	51	38	34	25	11	24	26	28	45	47	40	19	3	17	.....	37.4
	Minimum	31	31	30	29	29	22	28	28	30	41	33	35	28	23	28	29	28	33	19	9	0	— 1	8	8	15	30	15	1	— 7	— 4	.....	21.0
Decorah	Maximum	47	55	54	40	51	44	43	44	55	47	45	42	44	45	47	50	52	44	39	28	20	27	32	29	49	45	48	31	12	16	.....	40.8
	Minimum	30	28	28	28	27	26	20	24	24	39	34	36	29	19	27	25	26	26	24	15	2	— 4	6	4	6	30	24	1	—10	—11	.....	19.4
Dubuque	Maximum	49	55	50	42	53	40	44	48	54	47	57	46	44	46	50	45	52	40	37	28	17	23	30	30	50	48	46	18	4	17	.....	40.3
	Minimum	35	31	35	30	30	29	27	30	27	42	42	42	33	31	32	29	33	35	26	14	5	2	14	11	16	33	17	3	— 4	— 4	.....	24.3
Forest City	Maximum	45	54	45	43	54	42	37	45	53	49	45	38	37	43	49	53	52	45	34	35	18	20	25	26	41	49	45	27	10	18	.....	39.3
	Minimum	28	26	27	27	26	19	23	26	25	39	30	31	30	16	25	27	27	33	18	11	— 3	— 8	11	2	10	26	23	5	—10	— 8	.....	18.7
Independence	Maximum	52	55	52	43	53	53	51	46	54	52	55	48	44	47	49	49	52	50	48	34	28	22	29	30	50	48	47	37	31	17	.....	44.2
	Minimum	31	30	34	33	24	24	23	27	26	40	32	38	36	25	30	27	32	34	28	12	4	— 3	16	7	18	28	31	9	— 6	— 5	.....	22.8
Inwood	Maximum	44	44	44	41	42	34	35	46	47	50	40	36	42	47	50	44	50	43	30	25	12	22	28	28	50	52	38	29	15	18	.....	37.5
	Minimum	29	27	25	27	29	19	25	24	28	39	29	28	22	17	23	29	24	29	13	11	1	— 3	8	6	20	25	25	10	— 3	0	.....	19.5
Lake Park	Maximum	40	42	38	42	51	34	36	46	40	51	37	37	40	41	53	52	50	42	33	24	8	20	25	20	47	50	45	24	8	17	.....	36.4
	Minimum	31	27	28	29	30	20	26	26	29	33	31	9	24	17	22	28	25	24	13	6	— 2	— 7	9	3	16	29	25	4	— 9	— 9	.....	17.9
Mason City	Maximum	43	55	44	40	52	36	38	44	53	47	45	47	40	42	47	52	52	37	35	23	12	21	27	26	43	46	45	19	5	17	.....	37.8
	Minimum	32	30	29	30	30	19	25	25	29	40	30	32	28	19	25	31	25	33	18	10	0	— 3	9	6	10	28	18	4	— 8	— 6	.....	19.9
New Hampton	Maximum	47	55	47	41	53	42	44	44	50	46	55	41	40	45	50	54	53	42	38	27	20	19	28	30	46	47	46	36	6	18	.....	40.3
	Minimum	30	28	28	30	26	24	25	26	29	40	33	35	34	22	26	26	29	30	23	13	0	14	13	5	8	28	18	3	—10	— 9	.....	20.9
Northwood	Maximum	43	55	42	43	53	34	38	42	55	47	44	47	45	42	51	55	55	38	35	23	12	20	25	27	41	47	45	18	0	25	.....	38.2
	Minimum	30	27	29	31	27	19	25	26	25	40	31	32	22	20	26	30	28	33	18	10	— 2	— 5	10	4	10	30	16	4	—10	— 5	.....	19.4
Pocahontas	Maximum	44	51	44	43	55	42	37	47	53	49	41	34	32	43	48	53	52	40	34	25	12	23	27	30	46	50	46	27	12	21	.....	38.7
	Minimum	28	29	30	30	29	21	25	24	26	29	30	30	25	13	25	28	31	33	19	12	3	— 3	12	7	17	25	26	5	— 6	— 4	.....	20.0
Postville	Maximum	46	55	50	38	52	35	44	46	54	45	44	42	38	45	47	49	50	37	35	25	13	20	25	28	45	45	44	15	7	15	.....	37.8
	Minimum	30	28	30	25	25	25	24	26	26	40	33	33	31	22	26	27	29	30	25	13	3	— 3	7	6	8	29	14	1	— 9	— 8	.....	19 9
Rock Rapids	Maximum	41	42	40	40	40	40	37	41	47	45	45	40	37	38	41	47	48	44	32	27	14	18	18	28	46	48	48	30	13	19	.....	36 6
	Minimum	31	25	28	29	27	20	25	20	28	38	30	28	23	15	21	25	24	32	12	14	1	— 2	10	8	19	27	30	12	— 2	1	.....	20.1
Central Division																																	
Ames	Maximum	49	56	49	45	56	50	41	48	55	49	48	38	40	45	49	51	53	43	39	28	23	23	30	37	48	53	48	35	10	20	.....	42.0
	Minimum	30	31	34	33	28	24	23	28	27	42	29	33	33	26	30	26	33	32	24	22	6	2	19	12	20	32	35	10	— 4	— 4	.....	23.9
Belle Plaine	Maximum	51	58	57	42	60	45	44	49	57	49	60	45	43	49	49	52	53	41	37	29	22	22	31	38	52	51	45	31	10	21	.....	43.1
	Minimum	29	27	37	27	25	23	22	25	24	42	31	38	36	31	24	23	30	30	27	21	6	— 2	17	8	19	27	31	10	— 5	— 6	.....	22.6
Carroll	Maximum	46	55	45	43	53	46	38	47	51	47	42	37	32	40	47	48	51	44	34	26	19	23	24	37	46	51	45	32	11	20	.....	39.3
	Minimum	28	31	29	31	32	22	23	26	29	40	30	30	29	17	26	28	32	31	19	18	5	0	13	9	23	28	31	10	— 3	1	.....	22.3
Cedar Rapids	Maximum	50	57	52	42	57	44	46	50	51	49	58	47	45	50	51	49	54	38	38	30	23	23	32	35	51	50	46	33	8	20	.....	42 6
	Minimum	31	29	36	28	24	26	24	28	22	42	30	40	38	32	29	22	29	29	28	19	7	0	18	9	16	30	27	7	— 5	— 4	.....	23.0
Davenport	Maximum	51	56	53	42	55	44	46	51	56	50	58	54	46	41	51	47	50	40	39	29	20	24	33	41	50	51	46	24	5	19	.....	42.5
	Minimum	38	35	37	32	32	29	29	36	31	43	41	40	38	37	33	31	36	35	29	18	9	4	16	13	24	34	21	5	— 3	0	.....	26.8
Des Moines	Maximum	50	56	50	43	55	40	42	48	56	50	58	39	40	46	51	54	53	42	36	30	18	27	31	40	52	54	49	32	11	23	.....	42.5
	Minimum	32	33	37	32	32	27	26	30	28	40	32	34	36	29	32	26	35	35	24	14	9	5	18	13	25	31	27	9	0	3	.....	25.1
Ft. Dodge	Maximum	46	55	49	42	56	41	38	47	54	48	46	38	35	40	47	52	54	41	35	26	14	24	28	32	45	50	47	27	7	22	.....	39.5
	Minimum	29	28	28	30	30	22	25	22	23	42	29	32	28	21	25	29	30	34	20	12	3	— 1	13	— 1	20	28	25	5	— 7	— 5	.....	20.8
Grinnell	Maximum	50	56	55	51	58	45	44	50	55	51	58	54	41	46	51	51	51	47	38	28	25	22	30	39	51	51	47	37	15	20	.....	43.9
	Minimum	28	28	30	29	27	23	23	26	26	40	31	35	35	28	25	24	31	29	26	19	5	— 2	18	8	18	26	34	12	— 5	— 6	.....	22.4
Guthrie Center	Maximum	50	57	49	41	58	45	41	50	54	49	50	40	36	42	50	53	54	42	33	28	26	30	30	40	50	53	58	36	15	22	.....	42.8
	Minimum	28	29	36	31	31	23	21	25	23	42	28	32	32	22	25	24	33	22	18	19	6	0	18	10	19	29	31	12	0	1	.....	22.3
Iowa City	Maximum	51	57	54	43	56	43	45	51	57	49	59	44	46	49	50	50	53	39	39	30	24	23	32	39	51	51	46	29	9	20	.....	43.0
	Minimum	32	31	37	30	27	27	26	32	25	43	33	41	37	34	30	23	33	29	29	22	9	1	18	10	19	31	28	9	— 4	— 4	.....	24.6
Iowa Falls	Maximum	47	55	48	42	53	44	39	46	54	51	47	37	38	43	48	53	50	39	36	26	18	21	27	31	49	50	47	31	6	20	.....	39.9
	Minimum	31	29	30	31	30	22	26	24	23	41	31	33	33	19	26	29	34	31	23	16	4	— 2	10	8	15	30	30	6	— 8	— 5	.....	21.7
Little Sioux	Maximum	47	55	48	49	58	41	40	51	45	53	44	38	35	46	51	54	55	43	33	28	19	23	29	45	49	55	49	36	16	24	.....	42.0
	Minimum	29	32	28	30	32	23	23	26	30	41	28	28	27	14	22	28	29	31	18	17	6	0	10	10	25	23	34	13	— 2	0	.....	21.8
Marshalltown	Maximum	49	56	50	43	54	45	42	47	57	48	55	38	39	47	49	54	54	42	37	29	19	23	29	35	51	51	46	28	8	22	.....	41.6
	Minimum	30	31	34	32	30	24	23	27	28	42	34	36	35	26	29	29	33	35	25	19	5	1	16	10	19	30	28	8	— 6	— 3	.....	23.7
Olin	Maximum	50	57	55	41	55	42	47	53	57	48	48	45	45	47	50	45	53	44	39	30	24	22	31	38	50	50	45	45	13	20	.....	43.0
	Minimum	30	26	34	29	23	24	22	28	21	41	40	40	35	32	27	22	30	28	30	22	8	— 1	16	8	13	29	33	12	— 4	— 5	.....	23.1
Sioux City	Maximum	46	50	43	43	54	33	36	48	46	55	39	38	42	51	48	50	50	46	27	25	12	24	30	38	54	54	48	31	14	26	.....	40.0
	Minimum	31	31	33	32	33	25	27	30	31	37	33	31	27	22	31	32	34	25	15	12	3	1	12	12	27	31	31	13	1	6	.....	23.6
Southern Division																																	
Albia	Maximum	50	56	52	44	57	44	47	48	58	50	61	47	43	47	52	49	52	40	37	32	25	25	32	43	50	52	49	34	13	22	.....	43.7
	Minimum	31	30	37	30	30	26	25	33	30	43	34	37	36	33	28	29	35	33	24	22	9	3	19	11	26	29	33	11	— 1	0	.....	25.5
Atlantic	Maximum	51	55	48	47	57	42	40	52	51	48	58	43	50	45	52	55	56	44	36	32	34	27	30	45	49	54	50	37	30	25	.....	44.8
	Minimum	29	30	32	29	29	23	22	26	25	37	28	31	30	22	23	22	33	32	21	18	8	— 3	14	10	25	23	33	10	— 1	— 2	.....	22.0
Burlington	Maximum	53	54	52	45	56	47	47	49	57	53	58	51	49	43	51	48	47	43	39	34	29	25	34	42	48	52	47	33	19	20	.....	44.2
	Minimum	34	34	39	33	30	30	30	36	30	44	37	42	40	36	32	32	39	36	33	23	14	6	23	14	27	33	33	19	0	0	.....	28.6
Columbus Jct.	Maximum	51	57	52	44	56	42	47	52	57	52	58	49	46	48	53	46	50	39	38	32	27	23	33	42	50	50	45	36	8	20	.....	43.4
	Minimum	31	30	35	31	27	27	25	33	25	42	33	37	38	35	30	24	32	31	30	22	10	1	18	10	20	31	34	7	— 2	— 4	.....	24.8
Corning	Maximum																																
	Minimum																																
Corydon	Maximum	49	54	51	42	55	46	43	45	56	51	57	49	42	45	48	48	48	42	36	31	23	24	32	43	50	51	50	38	17	24	.....	43.0
	Minimum	31	31	37	31	29	27	25	34	28	43	32	36	35	33	30	27	37	33	25	22	10	2	15	12	27	29	36	12	0	— 3	.....	25.5
Creston	Maximum	50	55	51	46	57	42	41	47	50	48	57	40	35	45	49	46	52	39	36	30	19	26	30	45	49	53	49	32	11	24	.....	41.8
	Minimum	26	28	33	28	30	26	23	31	26	39	31	31	31	30	25	26	34	31	21	17	7	— 1	16	9	24	25	29	8	— 2	— 6	.....	22.5
Fairfield	Maximum	50	56	52	45	55	42	45	46	56	52	58	46	45	45	49	48	48	41	37	30	26	23	33	42	50	50	49	34	12	20	.....	42.8
	Minimum	32	29	36	28	24	26	25	31	23	43	30	39	39	35	30	22	33	32	28	22	10	0	19	11	19	31	33	10	— 3	— 6	.....	24.4
Keokuk	Maximum	51	56	52	44	57	46	47	47	59	54	60	51	48	43	53	50	45	42	39	32	23	30	34	42	52	51	52	29	9	25	.....	44.1
	Minimum	38	36	37	34	34	33	31	36	32	44	38	43	40	38	33	34	37	35	28	23	13	8	19	15	31	36	29	9	2	3	.....	29.0
Knoxville	Maximum	53	57	53	45	57	47	44	49	58	50	59	50	42	49	52	51	52	41	35	32	25	26	33	43	52	54	49	36	14	22	.....	44.3
	Minimum	31	32	37	32	29	26	25	31	28	43	31	37	35	33	31	24	37	34	25	23	9	2	21	10	24	30	36	14	— 1	— 2	.....	25.6
Lamoni	Maximum	50	55	50	45	56	45	43	47	56	48	60	45	39	48	51	47	50	42	35	31	22	26	31	44	52	53	53	39	14	23	.....	43 3
	Minimum	29	29	35	28	30	27	24	32	29	38	31	32	32	31	27	27	34	31	25	20	9	3	16	10	25	26	33	10	— 2	— 4	.....	23.9
Sigourney	Maximum	52	57	53	45	56	51	46	50	56	50	58	50	41	50	52	48	53	45	37	31	27	25	33	42	50	52	49	38	16	20	.....	44.5
	Minimum	32	29	37	31	29	26	25	32	24	43	30	40	37	34	28	23	34	33	20	22	9	2	18	10	22	30	37	15	— 4	— 3	.....	25.2
Thurman	Maximum	52	57	50	48	59	50	40	48	46	50	59	45	34	42	51	46	55	46	36	32	24	26	31	46	49	56	52	40	21	27	.....	43.9
	Minimum	26	29	34	26	32	27	26	32	26	43	29	31	30	23	21	23	33	34	25	19	12	2	23	11	26	22	38	20	4	— 7	.....	21.0
Winterset	Maximum	51	55	52	46	58	46	41	50	53	49	59	42	37	48	52	55	55	48	35	32	20	22	30	44	51	54	49	35	16	21	.....	43.5
	Minimum	30	31	35	33	32	25	22	30	30	42	32	33	32	28	28	30	36	33	22	20	8	1	17	10	26	29	35	16	— 1	0	.....	24.8
Omaha, Neb.	Maximum	50	56	46	46	56	39	39	47	45	51	45	38	34	42	49	49	54	46	30	28	16	26	30	46	47	55	50	35	15	34	.....	41.5
	Minimum	33	35	35	33	37	27	26	31	33	43	32	29	29	23	32	30	35	30	23	14	8	7	19	19	31	33	35	14	3	5	.....	26.1

TOTAL PRECIPITATION, NOVEMBER, 1929



SCALE OF SHADES IN INCHES

Less than 1 | 1 to 2 | More than 2

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

CLIMATOLOGICAL DATA.

IOWA SECTION

In co-operation with

IOWA WEATHER AND CROP BUREAU

CHARLES D. REED, Meteorologist

VOL. XL DES MOINES, IOWA, DECEMBER, 1929 No. 12

GENERAL SUMMARY

December temperature averaged slightly above normal, with an abnormally mild period from the 24th to the end of the month, but cold periods, with below zero temperatures, prevailed during the opening days of the month and from the 18th to 24th. The greatest departures, amounting to one or two degrees above normal, occurred from the Raccoon Valley south and east to the boundaries of the State, while scattered stations elsewhere had slight deficiencies. The preceding December was much milder.

The maximum temperature for the month occurred at all but three stations on the 30th. During this unusually mild period, several records were broken in maximum temperatures for so late a date in the season. At Davenport, the highest temperature recorded was 61° on the 30th, this being the highest temperature ever observed on any December 30th since the station was established, the previous record being 60° in 1875. Likewise, the maximum of 54° on the 26th exceeded the record for that date, made in 1928, by 5°. At Des Moines, the highest temperature recorded was 61° on the 30th, this being the highest temperature ever observed on that date since the station was established; the previous record was 53° in 1896. Also, the maximum temperature of 55° on the 29th exceeded the record for that date, made in 1908. At Davenport, the lowest reading was —1° on the 3d, equalling the low record for that date made in 1886. Cold waves passed over the State on the 2d and 18th.

Precipitation averaged 66% less than normal, and was evenly distributed. All of the stations throughout the State were below normal. The two principal precipitation periods were on the 1st and 8th-18th.

Beginning on the 7th and ending on the 17th, the State experienced one of the most persistent cloudy and foggy periods of record. At most places in the State the sun was not visible for 10 days. In the vicinity of Davenport the sky was cloudy for 14 consecutive days, 6th-19th, during which time there were 11 consecutive days with not a glint of sunshine, setting a new record for absolute cloudiness. Throughout the remainder of the State there were 10 consecutive days with no sunshine. At Des Moines the absence of sunshine for 10 consecutive days exceeded by 4 days the previous record of consecutive days without sunshine. During this unprecedented period of gloom all flying ceased. At the airports throughout the State there were no incoming planes, and those which landed on the 8th were unable to leave until the 18th because of the uncertainty of finding favorable landing conditions at other terminals. Air mail was generally dispatched by train.

From the agricultural standpoint the month was generally unfavorable. During the milder periods there was some corn husking; and very little corn remained in the field by the end of the month. The snow cover was unusually light during the entire month. Some corn shelling and marketing occurred during the favorable and mild periods.

Road construction and building were practically suspended throughout the State because of unfavorable conditions.

N. G. R.

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
1873	22.6	— 1.5	65	—10	2.51	+ 1.37	8.56	0.60					
1874	24.0	— 0.1	60	—18	0.84	— 0.30	3.22	0.10					
1875	30.0	+ 5.9	68	—18	2.06	+ 0.92	4.73	0.73					
1876	11.9	—12.2	56	—28	0.24	— 0.90	1.40	0.00					
1877	36.8	+12.7	65	—11	2.18	+ 1.04	3.90	1.00					
1878	17.2	— 6.9	52	—17	0.77	— 0.37	2.78	0.10					
1879	16.1	— 8.0	58	—35	1.40	+ 0.26	3.31	0.20					
1880	16.1	— 8.0	55	—25	0.85	— 0.29	2.50	0.06					
1881	33.8	+ 9.7	60	—10	1.24	+ 0.10	4.67	0.10					
1882	21.0	— 3.1	54	—23	1.57	+ 0.43	3.50	0.48					
1883	24.8	+ .07	62	—24	1.03	+ 0.11	2.75	0.00					
1884	16.2	— 7.9	59	—30	2.15	+ 1.01	4.42	0.70					
1885	24.6	+ 0.5	55	—22	1.45	+ 0.31	3.73	0.40					
1886	14.4	— 9.7	55	—32	0.80	— 0.34	1.64	0.10					
1887	20.3	— 3.8	57	—25	2.17	+ 1.03	5.85	0.60					
1888	28.6	+ 4.5	66	— 6	1.46	+ 0.32	2.90	0.25					
1889	35.8	+11.7	69	— 2	1.06	— 0.08	3.20	0.00					
1890	28.5	+ 4.4	68	—18	0.58	— 0.56	2.72	0.00					
1891	32.3	+ 8.2	72	—14	2.41	+ 1.27	4.50	1.21		6	14	9	8
1892	18.9	— 5.2	68	—29	1.65	+ 0.51	3.04	0.20	10.9	8	9	8	14
1893	22.0	— 2.1	70	—21	1.31	+ 0.17	2.80	0.46	7.6	7	10	9	12
1894	30.1	+ 6.0	73	—17	0.95	— 0.19	1.75	0.25	1.3	3	15	6	10
1895	25.4	+ 1.3	63	—16	1.63	+ 0.49	5.74	0.00	4.1	5	11	9	11
1896	30.8	+ 6.7	70	—10	0.65	— 0.49	1.79	T.	1.6	4	10	8	13
1897	18.0	— 6.1	60	—25	1.65	+ 0.51	3.22	0.61	15.9	6	11	7	13
1898	18.1	— 6.0	60	—25	0.48	— 0.66	1.70	T.	3.9	3	15	8	8
1899	22.6	— 1.5	75	—19	1.61	+ 0.47	4.28	0.10	4.3	5	12	9	10
1900	26.9	+ 2.8	63	—10	0.45	— 0.69	2.70	T.	2.4	4	13	6	12
1901	20.5	— 3.6	64	—31	0.93	— 0.21	2.75	0.05	5.4	6	10	9	12
1902	20.1	— 4.0	59	—20	2.23	+ 1.09	5.51	0.67	12.9	8	9	6	16
1903	19.6	— 4.5	58	—27	0.41	— 0.73	1.96	T.	3.7	4	11	9	11
1904	23.4	— 0.7	67	—19	1.44	+ 0.30	3.68	0.06	12.3	5	12	7	12
1905	27.0	+ 2.9	62	—11	0.52	— 0.62	1.69	T.	4.2	3	19	6	6
1906	25.7	+ 1.6	65	— 9	1.43	+ 0.29	2.81	0.37	1.4	6	11	7	13
1907	28.8	+ 4.7	62	— 9	1.00	— 0.14	2.28	0.05	4.7	5	10	7	14
1908	27.2	+ 3.1	67	—17	0.57	— 0.57	2.07	0.05	3.8	3	15	8	8
1909	15.1	— 9.0	60	—26	2.18	+ 1.04	6.10	0.89	13.7	11	10	5	16
1910	23.4	— 0.7	57	—14	0.37	— 0.77	1.39	0.01	3.0	3	15	7	9
1911	27.9	+ 3.8	60	—24	2.57	+ 1.43	4.43	0.62	12.6	7	13	6	12
1912	29.2	+ 5.1	64	—13	0.74	— 0.40	1.75	0.10	1.1	3	18	7	6
1913	32.0	+ 7.9	65	—13	1.02	— 0.12	4.73	0.00	1.3	4	15	5	11
1914	15.7	— 8.4	63	—31	1.30	+ 0.16	2.24	0.57	11.1	9	10	6	15
1915	25.0	+ 0.9	56	—10	0.69	— 0.45	1.70	T.	4.6	5	11	8	12
1916	18.7	— 5.4	67	—25	1.04	— 0.10	2.00	0.35	6.7	6	15	8	8
1917	14.5	— 9.6	62	—40	0.56	— 0.58	1.70	0.14	6.7	6	10	9	12
1918	32.7	+ 8.6	68	— 7	1.30	+ 0.16	3.30	0.37	5.1	8	9	8	14
1919	15.0	— 9.1	52	—36	0.54	— 0.60	1.55	0.08	5.8	4	11	7	13
1920	26.4	+ 2.3	65	—26	1.16	+ 0.02	2.64	0.26	7.4	5	10	8	13
1921	28.2	+ 4.1	69	—22	1.02	— 0.12	3.72	T.	2.9	4	14	9	8
1922	24.0	— 0.1	65	—25	0.37	— 0.77	0.97	T.	2.2	3	16	7	8
1923	33.5	+ 9.4	68	—21	0.76	— 0.38	2.22	T.	4.4	4	14	6	11
1924	15.4	— 8.7	62	—33	1.79	+ 0.65	2.93	0.90	8.1	8	12	6	13
1925	21.0	— 3.1	64	—25	1.30	+ 0.16	3.52	0.30	10.6	5	12	8	11
1926	21.9	— 2.2	58	—21	1.06	— 0.08	2.42	0.28	5.7	4	10	7	14
1927	18.7	— 5.4	59	—22	1.04	— 0.10	2.60	0.23	4.4	5	13	8	10
1928	28.7	+ 4.6	57	—15	0.89	— 0.25	1.98	0.12	2.3	5	12	7	12
1929	24.8	+ 0.7	65	—13	0.39	— 0.75	1.21	0.03	3.8	5	12	6	13

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

TEMPERATURE

The mean temperature for the State, derived from the means of 9 districts of nearly equal area, and based on the records of 102 stations, was 24.8°, or 0.7° above normal. There was an excess in all the divisions of the State except the northeast district, and this district averaged exactly normal. The greatest excess, 1.2°, was in the south-central district. The highest monthly mean was 30.0° at Keokuk, and the lowest was 19.2° at Rock Rapids. The absolute range for the State was 83°, from 67° at Guthrie Center on the 30th, to —16° at Britt and Forest City on the 19th. Temperatures of zero or lower occurred at all stations, ranging from 10 days at Sioux Center, to 1 at each of the three stations, Dubuque, Davenport and Fairport. The average number of days with minimum temperatures 32° or lower, was 28, ranging from 31 days in the northwest, north-central and northeast districts, to 26 days in the southeast district. The average number of days with temperature zero or lower, was 6. The average number of days with the maximum temperatures 32° or lower, was 13, ranging from 21 days at three of the stations in the northwest district, to 8 days at four stations in the southeast district.

Climatological Data for December, 1929

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District																				
Akron	Plymouth	1,153	3								0.15	— 0.50	0.10	2.0	4	10	9	12	nw.	Orlan C. Moore
Alta	Buena Vista	1,513	38	21.8	+ 0.4	52	30	—10	19	34	0.24	— 0.67	0.08	1.5	7	12	8	11	nw.	D. E. Hadden
Alton	Sioux	1,305	24	21.2	+ 0.4	51	30	— 9	19	37	0.31	— 0.49	0.10	2.5	5	11	7	13	nw.	W. S. Slagle
Cherokee	Cherokee	1,196	9	22.6	+ 2.1	54	30	— 8	18†	34	0.19	— 0.63	0.11	1.7	3	15	5	11	s.	J. E. Wirth
Estherville	Emmet	1,298	34	20.8	+ 0.5	50	30	—11	19	30	0.45	— 0.26	0.20	3.0	5	17	6	8	nw.	A. O. Peterson
Hawarden	Sioux	1,181	3								0.27	— 0.41	0.16	3.2	6	15	2	14	nw.	Earl V. Slife
Inwood (near)	Lyon	1,474	25	20.3	+ 0.9	49	4†	—12	19	38	0.19	— 0.47	0.06	1.3	7	15	5	11	nw.	A. C. Hanson
Lake Park (near)	Dickinson	1,489	16	19.7	+ 0.2	49	30	—12	18	37	0.38	— 0.25	0.18	2.0	4	15	2	14	nw.	P. M. Lawrence
Le Mars	Plymouth	1,224	33	22.4	0.0	53	30	—10	19	37	0.30	— 0.57	0.20	5.0	5	16	1	14	nw.	Henry Newell
Marathon	Buena Vista	1,390	3								0.19		0.09	1.7	4	9	9	13	nw.	E. G. Smith
Pocahontas	Pocahontas	1,248	25	22.8	+ 1.1	54	30	—10	19	39	0.28	— 0.64	0.10	3.5	8	13	6	12	nw.	F. E. Hronek
Rock Rapids	Lyon	1,319	30	19.2	— 0.5	48	30	—11	18†	32	0.23	— 0.40	0.12	2.6	3	16	0	15	n.	Nellie F. Medberry
Sanborn	O'Brien	1,553	15	20.0	+ 0.6	50	30	—12	18†	38	0.36	— 0.49	0.32	4.5	2	11	7	13	ne.	J. W. Dow
Sheldon	O'Brien	1,418	18	21.4	+ 1.0	52	30	— 9	18†	40	0.21	— 0.61	0.08	1.7	8	13	8	10	nw.	Ross E. Forward
Sioux Center	Sioux	1,461	30	20.4	— 0.4	51	30	—11	19	38	0.18	— 0.70	0.12	2.3	2	18	1	12	nw.	F. C. Aue
Spencer	Clay	1,319	15	21.4	+ 0.7	52	30	— 9	19	37	0.42	— 0.43	0.15	2.0	6	14	4	13	nw.	E. W. Little
Storm Lake	Buena Vista	1,438	40	23.0	+ 0.5	54	30	— 9	19	32	0.34	— 0.48	0.09	3.6	6	14	5	12	nw.	L. B. Florey
Washta	Cherokee	1,157	31	23.3	+ 1.2	55	30	— 9	19	38	0.16	— 0.67	0.12	3.0	2	16	2	13	n.	H. L. Felter
West Bend	Palo Alto	1,197	36	22.2	+ 1.1	53	30	—11	19	39	0.11	— 1.05	0.04	1.2	3	16	5	10	nw.	Jos. Dorweiler
Means and extremes				21.4	+ 0.6	55	30	—12	18†	40	0.26	— 0.55	0.32	2.5	5	14	5	12	nw.	
North Central District																				
Algona	Kossuth	1,224	56	20.7	— 0.8	56	30	—13	19	31	0.37	— 0.58	0.24	5.0	4	18	3	10	se.	W. E. Laird
Allison	Butler	1,060	15																	W. P. Miller
Belmond	Wright	1,181	19	21.6	+ 0.7	54	30	—13	19	38	0.22	— 1.11	0.12	1.5	4	11	3	17	sw.	H. F. Luick
Britt	Hancock	1,236	42	21.6	+ 1.1	52	30	—16	19	37	0.23	— 0.57	0.20	5.0	2	16	3	12	nw.	E. P. Healy
Charles City	Floyd	1,015	38	21.4	+ 1.0	52	30	— 8	19	33	0.25	— 1.05	0.35	4.9	4	8	11	12	nw.	U. S. Weather Bureau
Forest City	Winnebago	1,226	35	20.4	— 0.9	52	30	—16	19	40	0.49	— 0.39	0.35	4.9	5	15	1	15	se.	Dr. M. B. Neil
Hampton	Franklin	1,145	4																	L. H. Davis
Humboldt	Humboldt	1,095	41	23.2	+ 0.6	55	30	—10	19	39	0.44	— 0.42	0.30	3.0	3	10	8	13	nw.	H. C. Snitkey
Mason City	Cerro Gordo	1,148	32	21.1	+ 0.2	51	30	—10	22	32	0.30	— 0.58	0.15	3.8	6	9	10	12	nw.	American Beet Sugar Co.
Northwood	Worth	1,222	33	20.0	+ 0.3	50	30	—13	19	35	0.40	— 0.83	0.20	4.0	2	7	11	13	nw.	Charles Dwelle
Osage	Mitchell	1,163	35	20.8	+ 0.8	49	30	—10	19	34	0.55	— 0.67	0.20	4.5	5	16	3	12	w.	Dr. C. E. Juhl
Means and extremes				21.2	+ 0.3	56	30	—16	19	40	0.36	— 0.70	0.35	4.1	4	12	6	13	nw.	
Northeast District																				
Decorah	Winneshiek	872	36	20.2	— 2.0	48	30	—12	3†	36	0.48	— 0.80	0.26	7.0	5	10	8	13	nw.	M. D. Whitney
Dubuque	Dubuque	700	56	25.6	+ 0.9	56	30	— 4	3	30	0.54	— 0.90	0.29	6.3	12	4	7	20	nw.	U. S. Weather Bureau
Fayette	Fayette	1,003	41	22.4	+ 1.0	53	30	—10	3	34	0.73	— 0.68	0.45	5.3	3	12	8	11	sw.	R. Z. Latimer
Independence	Buchanan	956	65	24.6	+ 1.0	57	30	— 3	2†	34	0.45	— 0.86	0.37	3.7	2	8	8	15	sw.	Dr. Geo. Boody
Lansing	Allamakee	632	22																	Mrs. Mary Spinner
New Hampton	Chickasaw	1,169	32	21.8	+ 1.0	50	30	—10	3	34	0.28	— 0.81	0.28	3.5	1	8	10	13	nw.	D. W. Dawson
Oelwein	Fayette	1,036	6	22.4	— 0.6	54	30	— 7	20†	41	0.32	— 0.96	0.32	4.0	1	13	4	14	s.	John T. Ridler
Postville (near)	Clayton	1,192	30	21.1	+ 0.2	49	30	— 8	3	31	0.67	— 0.69	0.40	6.8	3	10	11	10	sw.	F. L. Williams
Waterloo‡‡	Black Hawk	851	46	23.8	+ 0.3	59	30	— 8	3	36	0.43	— 0.77	0.27	3.2	6	17	2	12	nw.	R. B. Slippy
Waverly	Bremer	936	33	22.4	— 0.8	55	30	— 9	3	48	0.32	— 0.86	0.32	4.0	1	15	7	9	nw.	D. H. Murphy
Means and extremes				22.6	0.0	57	30	—12	3†	48	0.47	— 0.78	0.45	5.1	4	10	8	13	nw.	
West Central District																				
Audubon (near)	Audubon	1,297	34	24.3	+ 1.5	56	30	— 8	19	33	0.39	— 0.60	0.20	5.0	6	13	8	10	nw.	George Kibby
Carroll	Carroll	1,265	39	23.9	+ 0.1	56	30	— 9	19	34	0.50	— 0.48	0.30	4.2	7	16	4	11	nw.	Mrs. Jos. J. Wolfe
Denison	Crawford	1,171	35	23.8	0.0	56	30	—10	6	32	0.20	— 0.67	0.13	3.0	4	12	7	12	nw.	V. L. Byers
Guthrie Center	Guthrie	987	34	25.7	+ 1.2	67	30	— 8	19	37	0.29	— 0.82	0.24	3.5	2	4	15	12	w.	Floyd H. Bainter
Harlan	Shelby	1,192	30	24.1	+ 0.5	60	30	— 9	3†	37	0.35	— 0.65	0.17	2.9	4	13	5	13	nw.	Walter Bell
Jefferson	Greene	1,052	30	25.1	+ 1.5	60	30	— 8	19	40	0.55	— 0.52	0.30	5.5	3	12	6	13	nw.	W. I. Lyon
Little Sioux	Harrison	1,040	24	25.5	+ 1.5	60	30	— 7	19	37	0.30	— 0.58	0.10	1.7	11	11	8	12	nw.	H. W. Kerr
Logan	Harrison	1,120	62	25.0	— 0.4	59	30	— 9	19	34	0.43	— 0.70	0.16	6.0	3	11	10	10	nw.	Amy Ann Stern
Onawa	Monona	1,051	28	24.8	+ 0.9	58	30	— 9	19	38	0.15	— 0.95	0.10	2.0	2	12	3	16	sw.	Mrs. H. E. Colby
Rockwell City	Calhoun	1,232	33	23.6	+ 0.8	55	30	—10	19	38	0.39	— 0.59	0.20	3.0	4	18	1	12	nw.	A. W. McIsaac
Sac City	Sac	1,269	53	23.2	+ 0.7	54	30	— 8	19	36	0.20	— 0.92	0.08	2.5	3	15	3	13	nw.	F. P. Kessler
Sioux City	Woodbury	1,135	40	24.8	+ 1.7	55	30	— 8	19	37	0.27	— 0.63	0.16	3.2	4	8	10	13	nw.	U. S. Weather Bureau
Means and extremes				24.5	+ 0.9	67	30	—10	6†	40	0.34	— 0.67	0.30	3.5	4	12	7	12	nw.	
Central District																				
Ames	Story	926	52	25.2	+ 1.4	59	30	— 7	19	38	0.48	— 0.58	0.40	5.0	3	15	2	14	nw.	Iowa State College
Baxter	Jasper	998	29	26.2	+ 1.8	61	30	— 7	19	39	0.19	— 0.76	0.16	2.3	3	15	5	11	nw.	F. A. Kanne
Boone (near)	Boone	894	24	24.2	+ 0.2	60	30	—12	3	48	0.45	— 0.44	0.30	5.0	4	11	6	14	nw.	C. F. Henning
Des Moines	Polk	861	51	26.9	+ 0.9	61	30	— 6	19	35	0.34	— 0.88	0.27	4.5	10	9	8	14	nw.	U. S. Weather Bureau
Fort Dodge	Webster	1,114	29	23.3	+ 1.0	55	30	—10	19	38	0.33	— 0.50	0.11	4.0	10	16	1	14	nw.	Mrs. Emma Sampson
Grinnell	Poweshiek	1,031	35	26.0	+ 0.8	58	30	— 6	3	38	0.31	— 0.86	0.28	3.5	2	12	7	12	nw.	R. E. Bates
Grundy Center	Grundy	976	38	24.2	+ 0.3	58	30	— 8	19	39	0.58	— 0.58	0.28	4.0	4	13	7	11	nw.	M. G. Heiberger
Iowa Falls	Hardin	1,127	36	23.2	+ 0.7	57	30	— 9	19	36	0.67	— 0.63	0.30	3.8	8	13	4	14	nw.	C. H. Gilbert
Marshalltown	Marshall	947	37	25.2	+ 0.1	60	30	— 6	19	35	0.37	— 0.90	0.27	3.9	5	10	4	17	nw.	C. C. Pigman
Monroe	Jasper	922	17	26.4	+ 0.5	60	30	— 6	19†	31	0.31	— 0.75	0.14	2.0	4	16	4	11	sw.	J. A. Dibel
Perry	Dallas	975	28	25.0	+ 0.6	60	30	— 7	3	38	0.51	— 0.51	0.37	3.9	8	11	8	12	nw.	Eugene N. Hastie
Toledo	Tama	847	35	24.8	+ 0.2	61	30	— 7	19	36	0.48	— 0.64	0.23	4.3	10	11	10	10	nw.	H. P. Giger
Van Meter	Dallas	872	10								0.35		0.25	5.0	2					Calvin K. Smith
Waukee	Dallas	1,032	26	25.8	+ 1.5	60	30	— 8	19	35	0.34	— 0.78	0.20	6.0	7	15	7	11	sw.	O. D. Ellsworth
Webster City	Hamilton	1,042	24	22.8	— 0.2	58	30	—11	19	46	0.31	— 0.67	0.22	5.0	4	12	6	13	nw.	Frank A. Bonebright
Means and extremes				24.9	+ 0.7	61	30	—12	3	48	0.40	— 0.68	0.40	4.1	6	13	5	13	nw.	

Climatological Data for December, 1929—Continued

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Departure from normal	Highest	Date	Lowest	Date	Greatest daily range	Precipitation, in inches: Total	Departure from normal	Greatest in 24 hours	Total snowfall (unmelted)	Number of Days: Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
East Central District																				
Belle Plaine	Benton	866	39	25.5	+ 1.3	60	30	— 8	3	38	0.65	— 0.70	0.28	3.7	12	8	10	13	nw.	O. C. Burrows
Cedar Rapids	Linn	737	47	25.7	+ 1.7	60	30	— 6	3	36	0.56	— 0.75	0.38	6.0	4	11	1	19	sw.	J. T. Wurster
Clinton	Clinton	595	56	27.0	+ 0.7	59	30	— 7	3	33	0.44	— 1.34	0.24	7.8	9	12	4	15	s.	Dr. A. P. Bryant
Davenport	Scott	580	58	28.4	+ 1.3	61	30	— 1	3	28	0.53	— 0.95	0.42	5.3	8	6	8	17	w.	U. S. Weather Bureau
Fairport	Muscatine	567	8	28.5	+ 1.3	61	30	— 4	3	31	0.48	— 1.08	0.35	6.0	5	10	2	19	sw.	Bureau of Fisheries
Iowa City	Johnson	733	69	26.6	+ 0.8	60	30	— 8	3	35	0.64	— 0.97	0.49	5.0	8	12	4	15	nw.	Prof. J. F. Reilly
Le Claire	Scott	576	29																	Margaret T. Disney
Maquoketa (near)	Jackson	692	24	24.8	+ 0.8	59	1	—11	3	35	0.45	— 0.86	0.32	4.0	7	8	6	17	sw.	John Strodthoff
Muscatine	Muscatine	516	68																	William Molis
Olin	Jones	760	30	25.2	+ 0.3	60	30	— 9	3	38	0.36	— 0.99	0.32	4.5	2	12	6	13	nw.	Mrs. L. Stingley
Tipton (near)	Cedar	806	30	26.2	+ 0.6	59	30	— 7	3	33	0.65	— 0.83	0.65	6.0	1	6	8	17	nw.	John Kroeplen
Williamsburg	Iowa	770	13	26.2	+ 1.8	56	30	— 7	3	33	0.30	— 0.95	0.25	2.6	5	15	4	12	nw.	Dr. F. C. Schadt
Means and extremes				26.4	+ 1.0	61	30	—11	3	38	0.51	— 0.98	0.65	5.1	6	10	5	16	nw.	
Southwest District																				
Atlantic	Cass	1,110	38	25.6	— 0.1	60	30	— 8	19	38	0.12	— 1.00	0.05	1.7	4	14	6	11	nw.	Roy L. Fancolly
Bedford	Taylor	1,200									0.18	— 0.80	0.10	1.2	3	15	3	13	nw.	Arthur L. Bishop
Clarinda	Page	1,009	39	27.6	+ 0.7	63	30	— 7	19	43	0.04	— 1.06	0.04	0.5	1	14	6	11	nw.	Dr. H. C. Hawley
Corning	Adams	1,150	37								0.10	— 1.14	0.10	1.0	1	11	6	14	sw.	C. A. Smith
Cumberland (near)	Cass	1,225	30								0.22	— 0.71	0.05	1.5	2	16	2	13	nw.	Carl E. Pollock
Glenwood	Mills	1,100	31	27.3	+ 0.5	60	30	— 6	19	31	0.03	— 0.64	0.03	0.3	1	13	5	13	nw.	George Mogridge
Lenox	Taylor	1,250	34	27.2	+ 1.6	62	30	— 8	19	38	0.66	— 0.32	0.36	2.0	6	14	7	10	nw.	J. L. Hurley
Oakland	Pottawattamie	1,139	10	26.2	+ 1.0	59	30	— 8	19	40	0.04	— 0.92	0.04	0.5	1	17	2	12	nw.	W. S. Matthews
Red Oak (near)	Montgomery	1,030	4								0.08	— 0.97	0.08	1.0	1	11	11	9	nw.	B. R. Bridge
Riverton (near)	Fremont	920	3								0.12	— 0.96	0.12	1.0	1	13	5	13	nw.	Geo. C. Rader
Thurman	Fremont	960	32	27.2	— 0.2	58	1	— 6	3†	47	0.04	— 1.27	0.04	0.8	1	11	5	15	n.	H. H. Askew
Omaha, Neb.		1,105	58	27.8	+ 1.4	62	30	— 5	19	30	0.14	— 0.79	0.07	2.0	5	15	5	11	nw.	U. S. Weather Bureau
Means and extremes				27.0	+ 0.8	63	30	— 8	19	47	0.15	— 0.88	0.36	1.1	2	14	5	12	nw.	
South Central District																				
Afton	Union	1,212	35	27.4	+ 1.2	60	30	— 6	19	34	0.31	— 0.88	0.13	5.0	9	14	4	13	nw.	S. R. Brown
Albia	Monroe	919	31	27.6	+ 1.4	62	30	— 5	19	36	0.31	— 0.76	0.15	1.7	4	8	6	17	nw.	O. E. McBride
Centerville	Appanoose	1,013	24	27.0	— 0.7	65	30	— 6	19	33	0.70	— 0.40	0.36	6.1	7	14	3	14	sw.	Thomas Wood
Chariton (near)	Lucas	1,042	34	27.3	+ 0.9	61	30	— 7	3†	39	0.29	— 0.87	0.19	2.0	2	12	7	12	nw.	C. C. Burr
Corydon (near)	Wayne	1,050	36	27.6	+ 0.8	60	30	— 6	19	35	0.18	— 1.11	0.10	1.0	5	14	3	14	nw.	J. C. Davis
Creston	Union	1,291	24	26.0	+ 1.0	60	30	— 8	19	39	0.18	— 0.88	0.05	1.0	7	12	4	15	nw.	Mrs. N. Spangler
Earlham (near)	Madison	1,126	27	26.0	+ 1.5	61	30	— 7	3†	42	0.28	— 0.91	0.24	3.5	2	17	3	11	sw.	George Phillips
Indianola	Warren	972	38	26.6	+ 1.0	62	30	— 7	19	40	0.57	— 0.75	0.28	5.6	3	12	7	12	nw.	Seth F. Shenton
Knoxville	Marion	920	34	27.8	+ 1.9	63	30	— 5	3†	37	0.49	— 0.83	0.20	3.5	6	13	4	14	nw.	W. J. Casey
Lacona	Warren	824	30								0.49	— 1.13	0.20	3.0	8	8	13	10		J. B. Alter
Lamoni	Decatur	1,123	22	27.5	+ 1.5	60	30	— 8	19	38	0.08	— 1.10	0.02	0.4	6	16	3	12	nw.	F. S. Parks
Melrose	Monroe	871									0.16		0.16	2.0		13	7	11	sw.	J. M. Carr
Mount Ayr	Ringgold	1,220	36	27.5	+ 1.0	60	30	— 7	19	40	0.12	— 1.11	0.07	1.4	2	18	2	11	sw.	E. O. Gleason
Tingley	Ringgold	1,275	4	27.4	+ 1.4	58	30	— 8	19	36	0.25	— 0.89	0.05	0.6	8	16	5	10	nw.	James A. Verploegh
Winterset	Madison	1,118	38	27.5	+ 1.7	61	30	— 7	19	34	0.32	— 0.87	0.16	4.0	2	15	5	11	nw.	H. S. Ely
Means and extremes				27.2	+ 1.2	65	30	— 8	19	42	0.32	— 0.88	0.36	2.7	5	14	5	12	nw.	
Southeast District																				
Bonaparte (near)	Van Buren	563	38	28.2	+ 0.4	63	30	— 6	3	37	0.70	— 0.56	0.60	6.0	2	15	2	14	w.	B. R. Vale
Burlington	Des Moines	514	33	29.2	— 0.2	60	30	— 3	3	33	1.21	— 0.39	0.91	8.5	7	16	1	14	sw.	John W. Donnelly
Columbus Junction	Louisa	595	28	27.0	— 0.8	60	30	— 3	2	36	0.64	— 0.68	0.48	5.5	9	14	5	12	sw.	Miss Musa Todd
Fairfield	Jefferson	780	45	26.8	+ 0.4	60	30	— 4	3	36	0.67	— 0.95	0.50	4.7	7	12	5	14	n.	R. M. McKenzie
Keokuk	Lee	614	58	30.0	+ 0.4	59	30	— 1	3	31	0.69	— 0.76	0.65	7.7	4	6	6	19	sw.	U. S. Weather Bureau
Keokuk No. 2	Lee	651		29.7		60	30	— 5	3	35	0.90		0.60	7.5	8					J. N. D. Dickinson
Keosauqua	Van Buren	639	37	28.4	+ 0.7	65	30	— 5	3	40	0.52	— 0.86	0.48	6.0	2	7	13	11	w.	Dr. J. W. Rinabarger
Mt. Pleasant	Henry	730	48	28.4	+ 0.3	63	30	— 4	3	35	0.64	— 0.73	0.43	5.0	8	10	7	14	sw.	J. H. Jericho
Oskaloosa	Mahaska	835	53	27.4	+ 1.4	61	30	— 6	3	39	0.65	— 0.52	0.29	4.6	11	7	10	14	sw.	Roy R. Robinson
Ottumwa	Wapello	649	34	28.6	+ 0.9	62	30	— 8	3	44	0.44	— 0.82	0.32	4.0	4	13	7	11	nw.	C. L. Mikesh
Sigourney (near)	Keokuk	790	33	27.0	+ 0.3	60	30	— 6	3	48	0.58	— 0.65	0.49	5.8	4	12	3	16	nw.	W. E. Utterback
Stockport (near)	Van Buren	747	27	28.0	+ 1.2	64	30	— 8	3	40	0.58	— 0.69	0.54	5.0	2	14	4	13	w.	C. L. Beswick
Washington	Washington	757	47	27.8	+ 1.2	62	30	— 8	3	36	0.61	— 0.71	0.45	4.7	7	6	7	18	nw.	D. D. Sherman
Wever	Lee	552																		H. G. Liddle
Means and extremes				28.2	+ 0.6	65	30	— 8	3	48	0.68	— 0.67	0.91	5.8	6	11	6	14	sw.	
State means and extremes				21.8	+ 0.7	67	30	—16	19	48	0.39	— 0.75	0.91	3.8	5	12	6	13	nw.	

Temperature normals are based on the 46-year period July 3, 1875 to July 2, 1921; shorter records corrected to harmonize. Precipitation normals are based on the 50-year period ended December 31, 1927 at first order stations; upon all records of 10 years or more ending December 31, 1920 for most of the co-operative observing stations; and upon interpolations from normal maps for recently established stations.

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.

PRECIPITATION

The average precipitation for the State, derived from the averages of 9 districts of nearly equal area, and based on the records of 113 stations, was 0.39 inch, or —0.75 inch below normal. The greatest district deficiency was in the east-central district, —0.98 inch, and the least was in the northwest district, —0.55 inch. There was a deficiency at every station, Clinton having the greatest, 1.34 inches, while Lake Park, with 0.25 inch, had the least. More than 75% of the precipitation was in the form of snow. The greatest amount at a single station was 1.21 inches at Burlington, and the least was 0.03 inch at Glenwood. The greatest amount occurring in 24 consecutive hours was 0.91 inch at Burlington on the 1st. The average number of days with precipitation 0.01 inch or more for the State was 5.

SNOWFALL

The average snowfall for the State was 3.8 inches, or 2.2 inches below normal. The greatest total snowfall for the month was 8.5 inches at Burlington, and the least, 0.3 inch at Glenwood. The greatest snowfall in 24 hours was 8.0 inches at Burlington on the 1st.

Daily Precipitation for December, 1929

Stations	Drainage Basin	Day of Month																													To-tals
		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	
Northwest District																																	
Akron	Big Sioux	.10							.01		T.	T.	.02					.02									T.					0.15
Alta	Raccoon	.08					T.	T.	.04			.02	.03		.02		.02	.03														0.24
Alton	Floyd	.10					T.	T.	.05	T.	T.	T.	.06		T.		T.	.05	.05		T.											0.31
Cherokee	Little Sioux	.11	T.				T.	T.	T.	T.	T.	T.	.05	T.	T.	T.	T.	.03	T.		T.				T.							0.19
Estherville	Des Moines	.20							.05		.05	T.	.05					.10														0.45
Hawarden	Big Sioux	.16					T.	T.	.02	T.	T.	.02	.01	T.			T.	.04	.02													0.27
Inwood (near)	Big Sioux	.06						.01		.02	.02	.02	.03					.03							T.							0.19
Lake Park (near)	Little Sioux	.18							T.	.08								.02	.10													0 38
Le Mars	Floyd	.20					T.	T.	.01	.01	T.	T.	T.					.02	.06													0.30
Marathon	Raccoon	.09					T.	T.		T.	T.	.02	T.		T.	T.	.02	.06			T.				T.							0.19
Pocahontas	Des Moines	.10							.04	T.	.02	.05	.01				.02	.03	.01													0.28
Rock Rapids	Big Sioux	.12						.01		T.	T.	T.	T.					.10														0.23
Sanborn	Floyd	.32						T.		T.	T.	T.	T.	T.				.04														0.36
Sheldon	Floyd	.08						.01	.01	.01	.02	T.	.01	T.		T.	T.	.05	.02		T.	T.										0.21
Sioux Center	Floyd	.12								T.	T.	T.	T.	T.	T.	T.	T.	.06														0.18
Spencer	Little Sioux	.15						T.	.01		.05	.05	.05					.08														0.42
Storm Lake	Raccoon	.09					.03	T.	.02		T.	.08				T.		.04	.03													0.34
Washta	Little Sioux	.12							.04									T.														0.16
West Bend	Des Moines	.01							.04	T.	T.	T.	T.				.03															0.11
North Central District																																	
Algona	Des Moines	.24							.03								.03	.07														0.37
Allison	Cedar																																
Belmond	Iowa	.12							T.			.04					.04	.02				T.										0.22
Britt	Iowa	.20																	T.	T.	.03											0.23
Charles City***	Cedar	.15	T.					T.	T.	T.	.03	T.	T.	T.			.03	.04							T.							0.25
Forest City	Cedar	.35							.02	T.							.05	.05	.02													0.49
Hampton	Cedar																																
Humboldt	Des Moines	.30							.04	T.	T.	T.	T.	T.	T.		T.	T.	.10													0.44
Mason City	Cedar	.15					T.	T.	T.	T.	T.	.06	T.		T.	.01	.03	.02	.03								T.		T.			0 30
Northwood	Cedar	.20						T.		T.	T.			T.	T.	T.	T.	T.	.20						T.							0.40
Osage	Cedar	.11									.20		.10				.10	.01														0.55
Northeast District																																	
Decorah	Mississippi	.26								T.	T.	T.	T.	.08	.03		.03	.08							T.							0.48
Dubuque***	Mississippi	.29						T.	T.	T.	.03	.03	.02	.01	T.	.01	.04	.04	.01	.02	T.		T.	.03	.01	T.						0.54
Fayette	Mississippi	.45							T.	T.	T.	.24					T.	T.	.04						T.	T.						0.73
Independence	Wapsipinicon	.37							T.	T.	T.	.08						T.	T.													0.45
Lansing	Mississippi																																
New Hampton	Wapsipinicon	.28								T.	T.	T.	T.		T.		T.	T.	T.													0.28
Oelwein	Wapsipinicon	.32																	T.													0.32
Postville (near)	Mississippi	.40										T.				.02	T.	T.	.20						.05							0 67
Waterloo	Cedar	.27							T.	.03	.04	.03	.01					T.	.02													0 43
Waverly	Cedar	.32						T.	T.	T.	T.	T.	T.	T.	T.	T.	T.															0.32
West Central District																																	
Audubon (near)	Nishnabotna	.20							.05	.05	.02	.02							.05													0.39
Carroll	Raccoon	.30							.05	.03	T.	.03	.02				.05		.02													0 50
Denison	Missouri	.13	.02						.02								T.	T.	.03													0.20
Guthrie Center	Raccoon	.21							.05																							0.29
Harlan	Nishnabotna	.17							.10	T.	.03	T.	T.	T.	T.	T.	T.	T.	.05													0.35
Jefferson	Raccoon	.30						T.	.05							T.		T.	.20		T.											0.55
Little Sioux	Little Sioux	.02							.05	.02	.02	.02	.01	.01	.03	.01	.01		.10													0.30
Logan	Missouri	.15							.16									T.	.12													0.43
Onawa	Missouri								.05			.10				T.	T.	T.	T.		T.		T.									0.15
Rockwell City	Raccoon	.20							.04	T.							.05	.10	T.													0.39
Sac City	Raccoon	.08							.08		T.	T.	T.				T.	T.	.04													0 20
Sioux City***	Missouri	.16					T.	T.	.07	T.	T.	T.	T.	T.	T.	T.	T.	T.	.03	.01		T.		T.		T.							0.27
Central District																																	
Ames	Skunk	.40							.02										.06													0.48
Baxter	Skunk	.16							.01										.02													0.19
Boone (near)	Des Moines	.30							T.		.01	.04							.10													0.45
Des Moines***	Des Moines	.09						T.	.04	.02	.01	.01	.02	T.	T.	.03	.02	.02	.08	T.													0 34
Fort Dodge	Des Moines	.11							.05		T.	.05	.03	T.				T.	.09													0.33
Grinnell	Iowa	.28							T.	T.		T.	T.	T.		T.	T.		.03													0.31
Grundy Center	Cedar	.28	T.						T.	T.	.15	.10		.05		T.	T.	T.														0.58
Iowa Falls	Iowa	.30							.03		.05	.06	.08	.04			.06	T.	.05													0.67
Marshalltown	Iowa	.27							.02	T.	.02	T.	T.	T.	T.	T.	T.	.04	.02										T.			0.37
Monroe	Des Moines	T.							.08	T.	.04	T.	T.	T.	T.	T.	T.	.14	.05													0.31
Perry	Raccoon	.37						T.	.03		T.	T.	.01	.01	.01	.01	.01	T.	.06													0.51
Toledo	Iowa	.23							.01	.04	.03	.02	.02	T.		.02	.03	.02	.03	T.													0.48
Van Meter	Raccoon																																
Waukee	Raccoon	.20							.01		.01	.02	.02			T.	.02		.03	T.													0.31
Webster City	Des Moines	.22							.03		.03	T.	T.	T.			T.	T.	.03													0.31
East Central District																																	
Belle Plaine	Iowa	.28							.03	.01	.03	.02	.01	.03	.01	.02	.05	.04	.12	T.					T.							0.65
Cedar Rapids	Cedar	.38							T.				.02			T.		.12	.04													0.56
Clinton	Mississippi	.24							.01	T.	T.	T.	.06	T.	T.	.01	.02	.02	.01	T.	.01			.06	T.							0.44
Davenport***	Mississippi	.30						T.	.01	.01	T.	.07	.02	T.	T.	.02	.02	.08	T.	T.				T.	T.			T.					0.53
Fairport	Mississippi	.35									T.	.03				.03		.05	.02	T.	T.											0.48
Iowa City	Iowa	.49							T.		.02	.02	.03	.01		.01	.01	.05	T.	T.													0.64
Le Claire	Mississippi																																
Maquoketa (near)	Maquoketa	.32									.02	.01		.01		.01	.03	.05						T.								0.45
Muscatine	Mississippi																																
Olin	Wapsipinicon	.32								T.	T.	T.	T.	T.	T.	T.	T.	.04														0.36
Tipton (near)	Cedar	.65																T.														0.65
Williamsburg	Iowa	.25							.01			T.		T.	.01	.01		.02				T.										0.30

Daily Precipitation for December, 1929—Continued

Stations	Drainage Basin	Day of Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals
Southwest District																																	
Atlantic	Nishnabotna	.05							.01	T.	T.	T.	T.	T.	T.	T.	T.	.02	.04														0.12
Bedford	102	.05																.10	.03														0.18
Clarinda	Nodaway	.01																															0.04
Corning	Nodaway	T.																	.10														0.10
Cumberland(near)	Nodaway	.15								T.	T.	T.	T.	T.	T.	T.	T.		.07														0.22
Glenwood	Missouri	T.								T.	T.	T.	T.	T.	T.	T.		T.	.03														0.03
Lenox	Missouri	.05								.05	.03	.02	T.	T.	T.	T.	T.	.36	.15														0.66
Oakland	Nishnabotna							T.										T.	.04														0.04
Red Oak (near)	Nishnabotna																		.08														0.08
Riverton (near)	Nishnabotna									T.						T.			.12														0.12
Thurman	Missouri	T.				T.	T.	T.		T.	T.	T.	T.	T.	T.	T.	T.	T.	.04														0.04
Omaha, Neb.***	Missouri	.05					T.			T.	T.	.01	T.	T.	T.	.01	T.	.03	.04		T.		T.		T.								0.14
South Central District																																	
Afton	Grand	.13								.01	.01	.01	.02		.01	.02	.02	.08															0.31
Albia	Des Moines	.15						T.	T.							.06		.08	.02	T.		T.											0.31
Centerville	Chariton	.36					T.	T.	T.	.01	T.	.02	T.	T.	T.	.01	.02	.03	.25	T.		T.											0.70
Chariton (near)	Chariton	.10			T.											T.	T.	.19															0.29
Corydon (near)	Chariton	T.									T.	T.	T.	.01	.01	.01	T.	.05	.10														0.18
Creston	Missouri	.05								.02	T.	T.	.01	.01	T.	.02	T.	.03	.04														0.18
Earlham (near)	Des Moines	.24								T.	T.	T.	T.			T.	T.		.04														0.28
Indianola	Des Moines	.28							T.	T.	T.	T.	T.	T.		.01	T.	T.	.28														0.57
Knoxville	Des Moines	.20							.05		T.	.05	T.			.05	.01		.10						T.								0.49
Lacona	Des Moines	.10								.05	.02	.02	.02			.02	.06		.20														0.49
Lamoni	Grand	.02								T.	.01	.01	T.	.01			.01		.02														0.08
Melrose	Des Moines	.16							*	*	*	*	*	*	*	*	*	*	.08														0.24
Mount Ayr	Grand											T.	T.	.05					.07														0.12
Tingley	Platte	.04						T.		.04	.03	.05	.03	T.	T.	.02	.02	T.	.02														0.25
Winterset	Des Moines	.16							T.		T.	T.	T.	T.	T.	T.	T.	T.	.16														0.32
Southeast District																																	
Bonaparte (near)	Des Moines	.60										.03	.02	T.	T.	.08	.02	.12	.03	T.					T.				T.				0.70
Burlington	Mississippi	.91										.01	.01	.01		.01	.01	.07		.02													1.21
Columbus Jct.	Iowa	.48							.02				.01	.01		.01	.01	.07		.02													0.61
Fairfield	Skunk	.50							T.		T.		T.		.02	.02	.02	.06	.03	.02													0.67
Keokuk***	Mississippi	.45		T.						T.	T.	T.	T.	T.	T.	.02	T.	.21	T.	T.			T.		T.				.01				0.69
Keokuk No. 2	Mississippi	.60									T.	.02	T.	.02		.03	.02	.15	.05										.01	T.			0.90
Keosauqua	Des Moines	.48																.04	T.														0.52
Mt. Pleasant	Skunk	.43										.03	.02	.01	.01	.03	.01	.10	T.														0.64
Oskaloosa	Des Moines	.29	T.		T.				.03	.04	.03	.01	.02	.02	.02	.03	.06	T.	.10	T.		T.			T.								0.65
Ottumwa	Des Moines	.32										.01				T.		.03	.08	T.													0.44
Sigourney (near)	Skunk	.49						T.	.03	T.	T.	T.	T.	T.	T.	T.	T.	.04	.02	T.				T.	T.								0.58
Stockport (near)	Skunk	.54																	.04														0.58
Washington	Skunk	.45							.02		T.	.03	.01	.01	T.	.05	T.	.04	T.	T.					T.								0.61
Wever	Mississippi	.52																															**

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.

T. Precipitation is less than .01 inch rain or melted snow.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea Level) Mean	Highest	Date	Lowest	Date	Relative Humidity, % Mean 7 A. M.	Mean 12 Noon‡	Mean 7 P. M.	Lowest	Date	‡‡Wind Total movement	Average hourly velocity	Maximum Miles	Maximum From	Maximum Date	Sunshine % possible	Sunshine Departure from normal
Chas. City.	30.09	30.65	2	29.55	26	94	79	88	44	30	4,407	5.9	18	n.	18	46	+ 2
Davenport	30.07	30.57	17	29.59	30	89	75	80	42	30	6,916	9.3	31	n.	18	37	— 5
Des Moines	30.09	30.63	21	29.58	31	88	72	79	31	30	6,594	8.9	30	n.	18	50	0
Dubuque	30.00	30.59	21	29.53	30	90	79	82	42	30	4,310	5.8	23	n.	18	38	— 4
Keokuk	30.10	30.64	21	29.62	31	84	71	78	41	3	5,263	7.1	25	nw.	28	45	— 2
Sioux City.	30.13	30.77	18	29.55	31	84	74	76	30	30	7,957	10.7	34	nw.	1	52	+ 3
Omaha,Nb	30.12	30.69	21	29.56	31	83	70	72	31	30	5,565	7.5	30	nw.	17,18	55	+ 4
Means and extremes	30.09	30.77	18	29.53	30	87	74	79	30	30		7.9	34	nw.	1	46	0
Normals and records	30.12	*31.09	29th 1917	§29.00	13th 1920	84		77	¶18	12th 1922			*47	nw.	24th 1907	46	

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

‡‡January 1, 1928, 3-cup anemometers replaced the 4-cup instruments used since the establishment of the Weather Bureau stations. The new instruments will more accurately indicate the true wind movement. The records of the 4-cup instruments were somewhat too high at moderate velocities and considerably too high at the higher velocities. Tables of true velocities corresponding to indicated velocities appear in the January, 1928 Climatological Data. For purposes of comparison the highest velocity of record in the lower line of the table has been converted into a 3-cup velocity.

RIVERS

Moderately low stages prevailed on all the interior streams with little fluctuation in their stages. The interior streams were frozen over the entire month. On the Missouri River the stages averaged below normal. At Sioux City, the extreme stages were 3.4 and 5.4 feet, and the average stage was 4.2 feet or 0.5 foot below normal. At Omaha the extreme stages were 3.3 and 5.9 feet, and the average stage was 4.2 feet or 1.5 feet below normal. The Missouri River froze over at Omaha on the 19th, but reopened on the 26th. The low stages prevailed at both stations from the 6th to the 20th, and much higher stages prevailed the remaining period of the month.

On the Mississippi River a peculiar situation existed in the river stages. At Dubuque, the average stage for the river was higher than during any of the four preceding months. The lowest stage, 2.2 feet, was registered on the list. The water rose steadily to 5.1 feet, the highest of the month, on the 10th. This stage was maintained until the 19th, after which a slow fall set in and continued to the end of the month. The river was frozen throughout the month. Ice measurements showed an average thickness of 6 inches on the 3d; 8 inches on the 10th; 7 inches on the 16th, and 10 inches on the 23d and 30th. At Davenport the extreme stages were 0.4 and 5.0 feet, and the average stage was 2.9 feet or 0.1 foot above normal. The lowest stage, 0.4 foot, was registered on the 2d. The water rose steadily to 5.0 feet, the highest of the month, on the 21st, 22d. and 23d, after which it continued to fall until the stage of 3.2 feet was reached on the 31st. At Keokuk the river was the lowest this month that it has been for several years. The average stage was 0.6 foot below the zero of the gage, and the lowest reading was 3.1 feet below the zero of the gage, which equals the lowest stage on record.

MISCELLANEOUS PHENOMENA

Aurora: 3d, 4th, 5th.

Fog: 5th, 6th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 22d, 23d, 31st.

Haze: 13th, 14th, 15th, 16th, 31st.

Halos (lunar and solar): 2d, 5th, 6th, 18th, 19th, 20th, 26th, 31st.

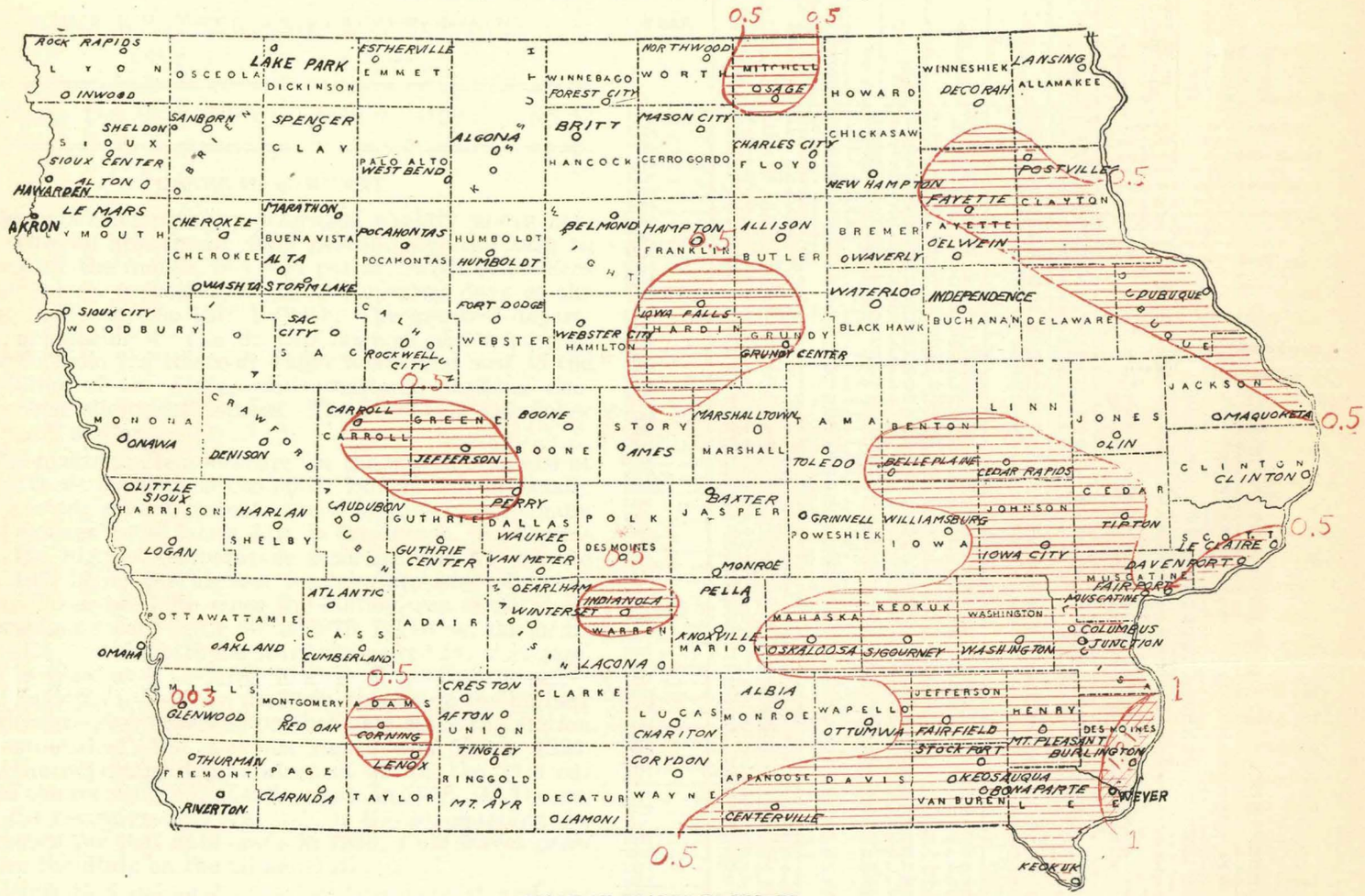
Sleet: 8th, 10th, 11th, 12th, 14th, 15th, 16th, 17th.

Glaze: 9th, 10th, 11th, 12th, 14th, 15th, 16th, 17th, 18th.

Daily Maximum and Minimum Temperature for the Month of December, 1929

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	Maximum	18	15	18	40	45	38	22	20	28	31	43	37	34	31	25	26	26	12	2	5	10	12	23	25	38	42	38	35	45	56	48	28.6
	Minimum	3	0	−3	9	23	19	10	18	17	16	30	31	30	14	18	22	10	−8	−13	−7	−1	−9	−4	10	9	27	26	21	22	30	27	12.8
Alta	Maximum	20	11	25	46	40	38	20	26	31	32	32	33	31	34	34	30	30	4	7	10	10	13	28	35	42	46	39	35	50	52	45	30.0
	Minimum	3	−2	−3	12	26	13	6	18	18	30	29	30	21	18	18	20	4	−9	−10	−5	−2	−5	2	18	12	30	27	23	23	31	27	13.7
Alton	Maximum	23	10	26	45	40	38	17	24	30	33	33	34	33	32	33	28	29	3	5	10	8	12	26	35	40	46	40	36	49	51	43	29.4
	Minimum	4	0	−4	8	18	17	5	12	20	29	26	32	28	16	20	20	3	−8	−9	−4	−2	−8	0	18	10	25	29	27	21	26	25	13.0
Belmond	Maximum	24	9	23	45	40	41	27	26	29	35	34	35	35	32	32	31	31	15	4	9	11	15	25	37	37	46	39	35	51	54	42	30.6
	Minimum	6	−3	−5	7	15	15	12	13	13	28	28	31	30	20	20	24	15	−7	−13	−8	−3	−9	−6	15	12	26	24	25	19	28	23	12.7
Charles City	Maximum	24	10	21	41	36	37	23	23	28	34	32	35	35	31	31	31	31	17	5	7	12	15	23	37	31	43	33	33	47	52	40	29.0
	Minimum	1	3	4	8	13	15	14	12	15	28	27	31	30	26	22	27	17	5	8	6	2	5	2	15	13	24	23	26	21	28	25	13.7
Decorah	Maximum	35	12	21	36	36	39	32	28	26	34	31	35	35	35	32	31	29	8	9	14	16	15	23	35	27	40	41	33	41	48	41	29.6
	Minimum	10	−4	−12	0	12	6	15	6	4	23	24	28	32	25	20	24	−4	−6	−6	−2	−5	−12	2	9	15	23	21	24	20	25	20	10.9
Dubuque	Maximum	30	14	18	38	41	35	30	29	31	36	35	37	39	34	34	35	35	26	13	11	20	23	27	40	30	43	38	37	45	56	42	32.3
	Minimum	9	1	−4	8	20	22	23	17	16	31	32	32	34	31	26	29	26	6	5	2	4	3	14	17	20	26	25	23	27	31	26	18.8
Forest City	Maximum	21	10	23	45	38	40	23	23	25	33	31	33	38	30	30	29	29	20	5	10	12	14	25	30	34	47	41	35	48	52	42	29.5
	Minimum	7	−3	−8	5	22	15	10	15	12	22	25	28	28	16	16	20	10	−8	−16	−11	−4	−11	−6	10	10	25	29	22	17	27	23	11.2
Independence	Maximum	31	18	20	40	39	35	35	26	29	35	35	35	36	34	32	31	32	31	13	12	17	20	24	39	32	45	44	36	47	57	49	32.6
	Minimum	14	−3	−3	6	14	17	16	21	17	26	29	31	33	29	25	25	29	12	−3	−3	3	−2	8	14	15	23	28	25	19	27	25	16.7
Inwood	Maximum	21	10	26	49	42	29	26	24	28	32	32	32	37	31	31	26	27	1	5	9	9	12	24	32	42	46	44	48	40	49	39	29.1
	Minimum	3	−3	−3	11	20	13	2	15	20	25	21	31	25	12	18	18	−1	−11	−12	−7	−6	−10	0	19	8	29	28	22	24	28	18	11.5
Lake Park	Maximum	19	10	22	46	39	36	18	26	26	30	31	32	32	30	31	27	28	2	3	4	7	15	26	31	41	43	40	33	48	49	45	28.1
	Minimum	4	−2	−5	9	22	11	5	16	17	25	23	29	21	9	17	18	0	−12	−10	−6	−4	−9	−2	18	7	26	26	23	18	30	26	11.3
Mason City	Maximum	21	9	22	41	37	38	27	23	26	33	32	34	36	33	31	31	31	23	1	5	8	10	25	35	34	41	39	33	47	51	40	29.0
	Minimum	8	−4	−5	9	16	14	13	14	12	25	26	30	31	21	19	24	21	−4	−5	−8	−2	−10	−6	15	12	22	22	26	20	31	23	13.2
New Hampton	Maximum	27	15	18	38	40	36	34	24	29	35	35	34	36	37	36	32	33	27	11	10	15	19	25	35	29	42	40	33	45	50	40	31.0
	Minimum	10	−3	−10	4	11	13	15	9	7	25	26	30	31	21	21	25	24	−4	−6	−5	−1	−6	−1	12	12	22	21	23	18	25	24	12.7
Northwood	Maximum	19	15	20	40	37	39	27	22	25	33	32	33	35	33	31	37	26	20	0	3	10	5	20	34	33	41	34	32	46	50	40	28.2
	Minimum	8	0	−4	5	16	15	13	14	12	25	22	31	31	22	20	20	12	−4	−13	−9	−10	−9	−7	5	11	22	21	21	19	30	24	11.7
Pocahontas	Maximum	26	12	25	47	40	41	20	25	29	34	33	35	33	33	35	31	31	10	7	11	12	11	27	37	43	48	38	36	51	54	43	30.9
	Minimum	6	−1	−5	8	23	18	9	20	19	28	30	31	29	29	30	20	10	−7	−10	−5	−2	−7	−5	17	10	28	28	26	21	27	29	14.6
Postville	Maximum	27	11	15	34	35	34	30	25	26	33	32	33	34	32	31	30	31	17	7	8	15	17	25	34	28	40	38	40	40	49	38	28.7
	Minimum	9	−7	−8	3	12	17	15	11	6	25	25	28	31	28	21	25	17	−5	−5	−5	−1	−5	6	15	15	23	20	24	26	27	24	13.5
Rock Rapids	Maximum	14	11	25	35	36	35	19	25	27	27	32	32	32	30	32	27	27	5	4	7	7	10	24	31	40	39	40	35	40	48	40	27.0
	Minimum	5	−1	−3	9	16	17	3	15	19	25	23	30	25	11	17	18	3	−11	−11	−5	−5	−10	−2	18	8	24	23	24	20	24	23	11.4
Central Division																																	
Ames	Maximum	29	14	21	45	42	40	35	26	33	37	36	37	37	34	34	32	32	20	8	13	17	15	24	43	41	48	43	38	53	59	45	33.4
	Minimum	12	−1	7	7	23	20	13	23	22	32	34	32	32	26	26	26	17	0	−7	−3	4	−2	−1	20	17	15	29	27	22	28	25	16.9
Belle Plaine	Maximum	30	16	22	42	45	40	31	30	32	38	36	37	37	34	34	33	33	30	10	15	21	20	27	42	36	50	42	41	49	60	47	34.3
	Minimum	12	−4	−8	4	21	19	18	21	20	31	33	32	33	31	29	28	24	3	−3	−3	1	−2	1	14	14	27	28	26	19	26	24	16.7
Carroll	Maximum	29	13	25	46	41	41	28	29	32	34	34	35	33	33	35	32	31	11	6	12	13	11	27	40	43	47	40	37	50	56	44	31.9
	Minimum	11	−1	−3	12	28	21	8	19	18	32	31	31	30	25	22	22	11	−5	−9	−6	−1	−6	−2	19	15	34	27	27	24	33	27	15.9
Cedar Rapids	Maximum	31	15	20	40	44	39	36	30	32	37	36	37	38	35	34	34	34	32	14	14	21	23	25	40	34	48	42	39	47	60	46	34.1
	Minimum	12	−2	−6	4	15	18	19	22	19	31	31	32	33	31	30	28	29	5	0	−1	3	1	9	11	17	24	27	26	20	26	23	17.3
Davenport	Maximum	32	14	20	39	47	38	34	30	34	40	37	39	42	35	36	36	36	29	14	18	23	24	28	44	32	54	42	40	46	61	47	35.2
	Minimum	9	1	−1	11	30	26	23	25	25	34	33	33	35	33	29	29	29	11	5	4	8	9	18	18	22	30	28	26	25	34	29	21.6
Des Moines	Maximum	32	13	27	47	45	44	26	30	35	40	37	39	39	38	39	31	34	17	10	15	19	16	27	44	46	52	38	40	55	61	47	35.0
	Minimum	6	3	−1	12	28	24	14	22	25	35	33	33	33	30	29	29	17	−3	−6	0	7	0	3	19	19	28	29	32	25	31	28	18 8
Ft. Dodge	Maximum	26	12	24	46	43	41	23	26	32	34	34	36	35	33	33	32	32	14	6	11	14	12	27	38	42	46	40	37	51	55	42	31.5
	Minimum	10	0	−4	8	21	17	11	19	19	31	32	32	31	22	22	21	13	−5	−10	−6	0	−6	−5	19	12	29	29	27	21	30	24	15.1
Grinnell	Maximum	30	16	23	43	43	42	37	29	33	39	38	38	37	34	35	33	34	29	8	12	18	17	21	41	37	49	44	48	50	58	46	34.3
	Minimum	15	−4	−6	5	25	20	15	20	22	32	33	32	33	30	31	28	23	5	−4	−4	3	−2	2	15	16	27	30	26	27	28	28	17.8
Guthrie Center	Maximum	32	15	28	46	45	43	36	28	35	37	37	36	35	38	38	33	35	20	10	14	17	15	30	42	47	50	44	39	54	67	46	35.2
	Minimum	12	−1	−7	12	27	19	10	21	22	22	32	31	31	28	25	25	15	−2	−8	−5	0	−5	−6	20	16	28	28	30	30	30	22	16.2
Iowa City	Maximum	31	15	21	41	46	40	33	30	34	37	36	37	38	35	35	34	35	31	12	16	22	23	26	45	34	55	42	40	49	60	47	34.8
	Minimum	15	−1	−8	6	19	19	19	23	23	33	35	32	34	32	29	28	29	7	2	0	5	2	6	15	17	25	25	23	21	29	26	18.4
Iowa Falls	Maximum	26	9	23	43	40	39	29	26	29	35	34	36	36	33	33	32	32	24	6	10	13	14	24	39	36	45	40	36	50	57	42	31.3
	Minimum	6	−3	−4	7	18	16	15	19	15	29	31	31	32	26	24	25	20	−1	−9	−6	1	−4	−3	15	16	26	25	27	21	31	24	15.2
Little Sioux	Maximum	31	14	32	48	43	42	24	26	35	35	36	36	34	34	38	32	32	10	10	14	13	17	31	43	49	52	47	42	54	60	47	34.2
	Minimum	9	0	−3	11	21	20	20	19	21	32	32	32	31	28	25	22	9	−5	−7	−4	−2	−5	2	24	18	31	32	28	23	30	27	16.8
Marshalltown	Maximum	29	11	22	44	42	39	31	27	32	37	36	36	36	33	32	32	33	25	9	12	19	15	25	39	37	47	41	37	50	60	46	32.8
	Minimum	11	−2	−1	9	27	20	16	23	20	31	33	31	33	29	26	27	21	−2	−6	−4	5	−3	3	17	17	29	29	27	23	32	27	17.7
Olin	Maximum	30	15	20	37	45	38	34	31	32	37	36	38	38	37	32	33	35	32	13	15	23	24	29	41	32	50	41	40	42	60	47	34.1
	Minimum	12	−2	−9	0	8	12	21	23	20	31	29	32	32	31	29	28	31	12	2	0	2	0	12	10	18	22	22	19	18	22	21	16.4
Sioux City	Maximum	26	13	28	52	43	40	24	25	34	36	35	34	33	38	38	29	28	5	7	13	12	16	29	39	49	50	44	39	54	55	46	32.7
	Minimum	6	3	2	15	28	12	8	20	22	31	29	31	28	24	20	20	2	−6	−8	−2	1	−2	6	24	21	35	32	29	28	34	32	16.9
Southern Division																																	
Albia	Maximum	31	15	27	45	49	43	37	31	35	40	39	39	41	35	39	35	36	27	8	14	21	17	27	45	44	53	43	40	53	62	53	36.3
	Minimum	14	−1	−4	9	34	24	18	20	27	33	33	32	33	30	32	28	21	5	−5	−3	3	−1	0	18	18	33	26	26	24	33	29	19.0
Atlantic	Maximum	32	12	29	46	44	42	30	29	36	37	36	35	35	35	38	31	33	14	19	14	19	12	30	44	47	51	42	41	51	60	47	34.6
	Minimum	10	−1	−7	8	28	20	10	17	24	32	33	32	31	28	26	26	13	−1	−8	−4	0	−6	−5	21	17	30	29	30	24	29	29	16 6
Burlington	Maximum	32	18	22	39	46	42	36	34	35	40	38	39	42	36	40	39	39	33	15	17	23	23	26	49	36	49	43	40	47	60	50	36.4
	Minimum	18	0	−3	9	33	27	24	21	29	31	35	35	35	32	34	31	33	15	4	2	7	8	8	16	20	30	31	26	24	34	30	22 0
Columbus Jct.	Maximum	32	18	21	40	47	38	35	32	34	38	37	37	40	35	36	36	36	31	12	16	22	22	26	42	34	54	42	40	48	60	49	35.2
	Minimum	17	−3	−1	4	26	20	21	17	26	32	33	32	34	31	30	29	29	10	2	0	5	3	5	15	17	26	25	21	21	31	23	18.7
Corning	Maximum																																
	Minimum																																
Corydon	Maximum	31	15	27	44	48	41	38	31	35	42	40	39	41	35	41	35	37	24	8	14	19	16	26	44	43	53	44	40	52	60	51	36.0
	Minimum	14	−1	−5	9	33	25	18	20	27	34	31	33	39	30	34	30	21	2	−6	−2	3	0	0	18	18	31	28	25	23	31	29	19 2
Creston	Maximum	32	12	28	47	47	42	30	30	35	41	40	37	37	37	39	35	34	17	7	16	19	17	30	44	47	53	42	40	52	60	49	35.4
	Minimum	9	−3	−6	8	29	24	12	18	26	33	33	32	31	28	28	28	15	0	−8	−5	2	−4	−3	18	18	29	28	22	20	29	28	16.7
Fairfield	Maximum	31	15	23	40	47	39	36	32	34	40	38	38	40	34	39	36	36	29	8	13	20	19	24	43	36	52	42	40	49	60	52	35.0
	Minimum	14	−2	−4	4	33	21	20	20	28	28	33	33	33	31	30	29	25	7	−1	−1	4	2	4	15	17	29	24	19	22	31	31	18.7
Keokuk	Maximum	33	14	27	42	50	46	35	38	37	42	40	42	50	40	44	40	40	30	10	17	22	22	26	41	39	52	40	40	49	59	54	37.5
	Minimum	11	0	−1	11	38	29	23	24	30	35	36	36	34	33	33	33	27	7	4	2	7	9	8	20	23	37	29	29	27	35	33	22.6
Knoxville	Maximum	32	16	27	45	49	45	37	29	34	40	38	38	37	34	39	33	33	22	10	14	21	18	27	46	45	56	45	41	55	63	59	39.6
	Minimum	18	−3	−5	8	33	24	17	21	27	33	34	33	34	31	32	29	22	4	−5	−2	4	0	0	18	17	33	31	26	24	31	27	19.2
Lamoni	Maximum	33	14	28	49	49	44	38	31	36	43	41	39	40	35	42	36	37	19	8	14	22	19	31	46	49	54	41	40	56	60	54	37.0
	Minimum	12	−1	−4	11	28	25	18	18	24	33	33	32	32	28	31	29	17	2	−8	−4	0	1	0	18	18	29	27	27	23	31	29	18.0
Sigourney	Maximum	31	18	27	44	49	43	37	30	33	38	36	37	39	35	36	34	34	34	9	14	22	21	26	45	37	53	45	40	50	60	49	35.7
	Minimum	17	−3	−6	−4	28	21	20	19	26	33	33	32	34	31	31	29	26	8	−2	−2	3	0	2	15	16	28	30	24	22	31	26	18.3
Thurman	Maximum	34	15	30	56	45	41	33	33	37	38	38	38	39	37	41	36	37	14	10	17	18	13	31	41	49	54	45	42	54	58	48	36.2
	Minimum	15	−1	−6	9	27	23	13	19	30	34	33	32	32	30	32	28	13	−2	−6	−1	3	−4	−3	27	19	19	33	33	26	30	27	18.2
Winterset	Maximum	32	15	30	47	48	44	38	30	35	40	38	37	37	33	39	32	32	28	18	15	20	16	29	44	46	53	42	41	54	61	49	36.2
	Minimum	15	−1	−3	13	32	24	13	21	25	31	33	32	32	30	30	28	18	0	−7	−4	4	−4	0	18	18	32	30	30	26	35	29	18.8
Omaha, Neb.	Maximum	35	13	31	52	44	42	25	30	37	36	36	35	36	41	41	33	31	6	10	15	14	15	32	45	52	52	46	42	54	62	46	35.1
	Minimum	5	4	5	23	33	17	11	22	30	33	33	33	31	31	25	25	5	−3	−5	−1	5	2	8	30	27	38	34	33	32	37	31	20.5

TOTAL PRECIPITATION, DECEMBER, 1929



SCALE OF SHADES IN INCHES

Less than 0.5 | 0.5 to 1.0 | More than 1.0

ERRATA

Report for October, 1929. Page 74. New Hampton, mean temperature recorded 49.2°, should be 49.0°; departure recorded —1.0°, should be, —1.2°. Page 76. New Hampton; mean minimum temperature recorded 37.6°, should be 37.3°.

The length of record for all stations in this publication from January, 1929 till November, 1929, inclusive, should be increased 1 year.

Report for November, 1929. Page 85, Omaha; date of lowest barometer reading published 28th, should be 26th. Page 83, Omaha; total snowfall for the month published 8.4 inches, should be 8.5 inches. Page 82, Fort Dodge, monthly mean temperature published 29.8°, should be 30.0°; Departure recorded —5.5°, should be, —5.3°. Page 82, Sac City, total precipitation published 0.62 inch, should be 0.72; Departure recorded —0.68, should be —0.58. Page 84, Sac City, total precipitation published 0.62 inch, should be 0.72. Page 86, Fort Dodge, monthly mean minimum temperature published 20.8°, should be 20.6°.

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

CLIMATOLOGICAL DATA.

IOWA SECTION
In co-operation with
IOWA WEATHER AND CROP BUREAU
CHARLES D. REED, Senior Meteorologist

VOL. XL DES MOINES, IOWA, ANNUAL, 1929 NO. 13

GENERAL SUMMARY

The mean temperature of the year 1929 for the State of Iowa as a whole, was 46.4°, or 1.6° below normal. January, February and November produced most of the deficiency in temperature, though May, June and September were also deficient. March and April were noticeably warmer than normal, and July, August and December slightly warmer. The mean temperature of the crop season, May to September inclusive, was 66.5° or 1.3° below normal. The average length of the growing season for the State between the average date of last killing frost in spring, May 13, and the average date of first killing frost in autumn, September 28, was 138 days, or 17 less than the normal. Eighty-five per cent of the corn escaped frost damage.

Precipitation averaged 30.20 inches, or 1.95 inches less than the slightly revised normal. Excessive rains in April hindered spring seeding and planting. Excessive snows in January and February, the greatest since records began in 1892, greatly reduced transportation and marketing and caused spring floods in many places. The State average snowfall for the year was 41.8 inches, or 11.1 inches above the normal, and the greatest since records began in 1892, except 1909, which had 49.0 inches. The greatest total snowfall of the year, 75.8 inches, occurred at Northwood, Worth County. Sunshine was deficient or just normal in all months, but August and November, which had slight excesses. Hail, tornado and storm damage generally was less than in 1928.

Corn did not yield as well as in 1928, but the cool weather crops, such as oats, wheat, hay and potatoes, yielded well.

AVERAGE TEMPERATURE DEPARTURE
State of Iowa, Year, 1929

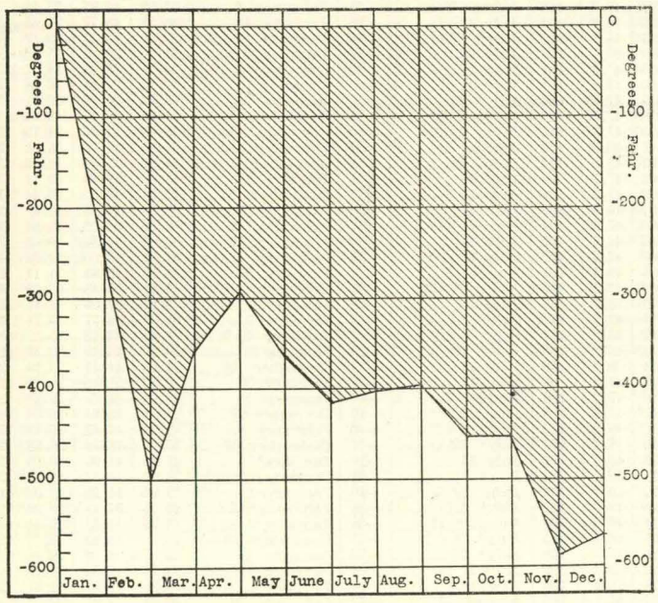


Figure 1.—Line bounding shaded area shows accumulated departure of temperature from normal. Upward slope means temperature above normal; downward, below.

SYNOPSIS BY MONTHS

Persistent low temperatures, yet with freakish fluctuations in the early part of the month, and the largest average snowfall since statewide records of snowfall began in 1892, were the outstanding features of the weather of January, 1929. Travel by rail and automobile was suspended for long periods; country roads remote from the main highways were blocked for weeks; snow in the city streets was reduced to the consistency of ice, through which deep tracks were cut by automobiles; and an unusually large amount of damage to paved streets occurred. The ice harvest was completed during the month, but deep snows added considerably to the cost of harvesting. Where the ground was blown bare of snow it froze to unusual depths. The snow cover and severe temperature made it impossible for birds to obtain feed, and large numbers perished. The consumption of feed by livestock was very heavy.

Severe winter weather continued most of February, with the same general characteristics as January, only temperature extremes were greater, though the average temperature was higher and the blizzards were less intense. Traffic interference continued. The snowfall was dry and easily blown about, rapidly filling the cuts of the railways and the cleared tracks of the main highways. In some cases drifts were 15 feet deep. Snow fences were buried and detours were necessary around persistently drifted places. Rural mail delivery was almost impossible; damage to paving continued, and this, together with the cost of snow removal, amounted to several million dollars in the state. Many roofs were damaged. The care of livestock was made difficult and the consumption of feed continued heavy. Rabbits severely injured fruit trees and berry canes.

Though the average temperature of the winter of 1928-1929 was not exceptionally low, due to the warm December, the heavy and frequent snows and rather low temperatures of January and Febraury made it the most severe winter since automobiles have come into general use, and it is generally remembered as a severe winter.

AVERAGE PRECIPITATION
State of Iowa, Year, 1929

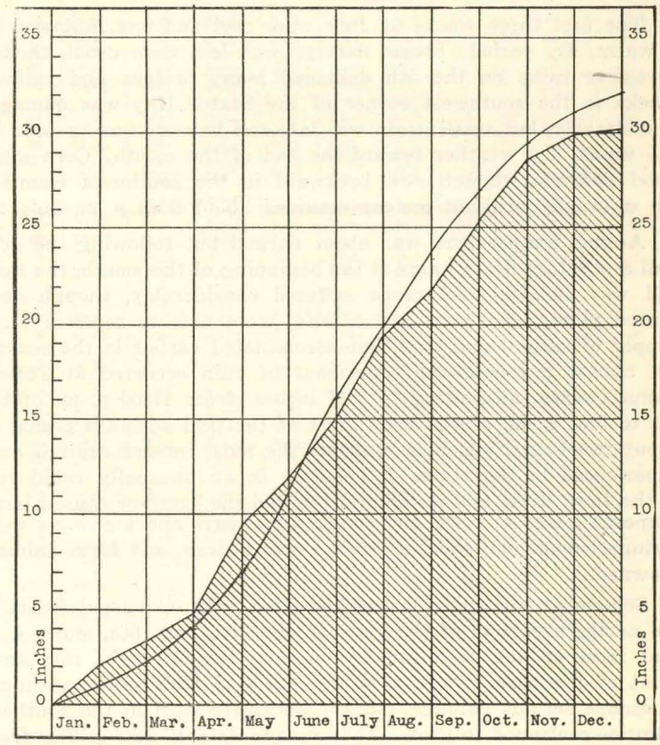


Figure 2.—Line bounding shaded area shows accumulated depth of precipitation in inches. Smooth curve shows normal.

Wintry weather relaxed early in March, though the accumulated snow did not disappear generally till toward the middle of the month, when a warm period melted it rather rapidly, causing the highest known water in connection with ice gorges in many of the rivers. This was particularly true of the Iowa, Cedar, Nishnabotna, Raccoon and lower Des Moines rivers. On the 30th a destructive ice and sleet storm occurred in central and northern Iowa, doing great damage between Waterloo and Dubuque. The melted snow made country roads and even graveled highways impassable.

Summerlike weather occurred early in April, prematurely opening the buds of trees and fruits, but the decreased fruit crop was due more to cool, rainy weather during the blooming season than to subsequent frost. Bees had suffered severely from winter killing and were notably absent. Precipitation averaged 60% in excess of the normal. The period October, 1928, to April, 1929, inclusive, averaged wetter than any similar period in 55 years. Streams were higher than normal and floods occurred in sections of the Mississippi River and smaller streams emptying into it. Spring seeding was much impeded and preparations for corn planting delayed. Dirt roads were generally impassable, and hundreds of mudholes had to be planked on graveled highways. Tornadoes occurred on four days, and there was considerable hail.

May was generally cool, and there was a severe drop in temperatures of 40° or more on the 15th-16th. Frosts were frequent during the first two weeks, and as late as the 21st in the northern counties, but there was little damage because vegetation was backward. The average date of last killing frost was May 13, ten days later than normal. Tree fruit fell off badly as a result of the frost. Precipitation was generally deficient, but there were locally heavy and damaging rains, particularly in Woodbury, Plymouth and Lyon counties, which washed out bridges and railway embankments, overflowed farm land and drowned animals. Farm work was backward, and corn planting was greatly delayed in some sections, particularly the southwest counties.

June was generally cool, with deficient precipitations, though with excessive rainfall in localities. On the 11th, hail, wind and floods caused damage amounting to about $1,000,000 in the northwest counties. Three-fourths of this damage was in Monona and Woodbury counties. In general, the crop situation at the close of June was better than the spring weather seemed to warrant, except that corn was very backward in the southwest counties. The hay and small grain crops were in unusually good condition. White clover was unusually luxuriant.

The first three weeks of July were cool and wet, followed by a warm, dry period. Storm damage was less than usual, though excessive rains on the 5th damaged many bridges and railway tracks in the southwest corner of the State. Hay was damaged considerably, but small grain was late and harvest was favored by the warm, dry weather toward the end of the month. Corn made good progress, though still backward in the southwest counties. An unusually brilliant meteor occurred about 9:46 p. m. July 25.

August temperature was about normal but following the general and rather heavy rains at the beginning of the month, the rainfall was deficient and crops suffered considerably, though deep rooted plants, like corn and alfalfa, were able to reach a large supply of subsoil moisture that accumulated earlier in the season. An almost unprecedented downpour of rain occurred at Toledo, Tama County, amounting to 8.27 inches, from 11:00 p. m. of the 1st to 6:00 a. m. of the 2nd. Most of this fell within a period of about two hours, which is probably the most intense rainfall ever experienced in the state. It resulted in an unusually rapid rise in the Iowa River and its tributaries, and the overflow caused large property losses in town and country, railways and highways were seriously damaged, shocked grain carried away, and farm animals drowned.

September was cool till near the close, with occasional frosts in the northern portion of the state on the 14th and 16th, and a general frost on the 18th in the northern two-thirds of the state. Most of the corn in the area affected was sufficiently advanced to escape serious damage, but the backward corn in the southern counties continued to grow. The average date of first killing frost

(Continued on page 104)

SUPPLEMENTAL PRECIPITATION TABLE, YEAR 1929

STATIONS	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Northern Division													
Allison	2.03	1.53	1.20	3.18		1.85							
Hampton	2.07	1.99	0.68	5.29	3.61	2.01	2.87	3.37	3.98	1.81			
Hawarden	0.65	0.94	0.57	4.08	4.67	3.42	4.59	1.70	3.06	2.11	0.18	0.27	26.24
Lansing			1.47	4.08	2.49	3.26	2.33	2.85	2.70	1.19	1.44		
Marathon	1.08	1.56	1.38	4.64	1.00	3.38	2.16	2.80	4.91	2.17	0.60	0.12	25..6
Northwood	2.55	1.10	1.88	5.61	3.89		2.41	3.54	4.61	1.55	0.96	0.40	
Waverly	3.81	1.54	1.85	2.97		1.85	4.35	3.97	4.10	1.36	1.40	0.32	
Central Division													
Davenport, No. 2	3.59	0.92	2.01	6.07	1.67	4.38	6.32	3.14					
Grinnell	2.63	0.85	1.70	5.45	2.61	1.89	4.26	2.23		2.43	1.49	0.31	
Guthrie Center				4.56	2.03	2.96	4.31	0.78	3.26	4.69	0.94	0.29	
LeClaire			2.18	5.30	2.13	4.50	5.01	3.45	4.71	3.31			
Maquoketa (near)	2.07	0.87	1.74	4.33	1.30		2.54	2.57	2.35	3.60	1.28	0.45	
Muscatine	3.39	0.81	2.14	7.97	1.30	2.74	8.78	2.33	3.91	3.33	1.72	0.85	39 27
Rockwell City			0.82				4.60	2.30	4.13	2.33		0.30	
Sac City	1.32	1.92	0.30	2.63	1.45		3.49	1.99	2.34	1.80	0.72	0.20	
Van Meter	2.20	1.23	1.20	4.99	1.78	2.88	4.60	2.58	3.36	2.80	1.58	0.35	29.55
Waukee			1.05	5.67	1.48	1.99	5.81	1.97	4.42	3.25	1.77	0.34	
Southern Division													
Afton	2.22	2.81	0.98	4.99	2.40	3.48	2.77		4.06	4.78	1.80	0.31	
Bedford	2.47	1.58	0.67	6.43	3.18	4.31	6.16	1.46	3.80	6.55	1.27	0.18	28.06
Corning	2.72	1.00	1.12	5.52	3.84	2.36	3.58	1.44	4.30	6.51		0.10	
Keokuk, No. 2				5.68	3.93	5.18	6.25	1.87	4.98	5.18	1.72	0.90	
Lacona	3.79	1.75	1.58	4.60	1.68	2.86	2.35	2.03	2.35	2.91	1.58	0.49	27.97
Melrose				5.99	2.16	3.25	5.79	1.75	4.48	4.97	1.76	0.16	
Red Oak	1.23	2.26	0.87	5.81	3.66	5.00	5.34	1.07	4.07	5.72	1.16	0.08	36.27
Riverton (near)	1.34	1.13	0.97	5.76	5.79	4.85	12.30	0.88	2.63	5.97	1.60	0.12	43.34
Wever	3.51	1.17	4.92	6.95	2.49	5.34	4.53	1.68	3.44	5.75	1.55		

COMPARATIVE DATA FOR THE STATE—Annual

	Temperature					Precipitation in Inches			
Year	Mean annual	Highest	Date	Lowest	Date	Annual	Greatest annual	Least annual	Average snowfall
1873	46.1	102	August 31	—38		33.92	41.04	23.34	
1874	47.7	101	July 5	—24	January 24	30.76	39.76	25.43	
1875	43.3	97	July 16	—31	January 11	35.83	48.42	28.55	
1876	45.9	96	August 24	—28	December 9	36.65	53.57	19.92	
1877	48.4	100		—31	January 8	35.16	49.82	22.52	
1878	50.0	104		—13	January 6	34.53	42.08	20.92	
1879	48.0	102		—35	December 25	28.23	46.71	16.49	
1880	47.9	104		—25	December 27	30.95	51.10	14.90	
1881	47.5	104		—40	January 9	44.16	56.81	34.02	
1882	48.4	98		—23	December 7	33.40	50.30	17.71	
1883	44.8	100		—38		34.54	46.15	18.00	
1884	46.0	96		—38	January 5	35.59	46.60	23.35	
1885	44.7	102	July 30	—42	January 28	32.23	44.89	17.91	
1886	46.4	103	July 13	—34	February 4	24.71	35.48	15.55	
1887	46.6	105	July 29	—34	January 7	26.31	38.61	12.30	
1888	45.3	110	August 2	—43	January 15	31.44	41.17	20.60	
1889	48.0	104	August 30	—28	February 23	24.95	37.61	13.66	
1890	47.5	110	July* 13	—27	January 22	29.48	45.45	16.51	
1891	47.3	106	August 9	—31	February 4	32.90	49.05	23.48	
1892	46.6	104	July 11	—38	January 19	36.58	48.77	24.78	34.2
1893	45.7	102	July* 13	—36	January 14	27.59	33.27	19.19	37.2
1894	49.7	109	July 26	—37	January 25	21.94	29.81	15.65	19.2
1895	47.2	104	May 28	—33	February 1	26.77	35.25	18.57	26.0
1896	48.6	104	July 3	—20	January 4	37.23	51.60	28.68	22.6
1897	47.8	106	July* 23	—30	January 25	26.98	36.18	20.21	38.8
1898	47.7	103	August 20	—25	December 31	31.34	55.47	19.51	40.3
1899	47.3	104	Sept. 6	—40	February 11	28.68	42.06	21.79	23.4
1900	49.3	103	August 3	—27	February 15	35.05	47.33	25.05	25.8
1901	49.0	113	July 22	—31	December 15	24.41	37.69	16.35	38.5
1902	47.7	98	July 30	—31	January 27	43.82	58.80	20 14	28.0
1903	47.2	101	August 24	—27	December 13	35.39	50.53	26.41	19.4
1904	46.3	100	July 17	—32	January 27	28.51	38.93	19.34	29.2
1905	47.2	101	August 11	—41	February* 2	36.56	52.26	24.66	38.3
1906	48.4	102	July 21	—32	February 10	31.60	44.34	20.63	32.8
1907	47.4	102	July 5	—31	February 5	31.61	43 90	19.93	24.0
1908	49.4	101	August 3	—18	January 29	35.09	49.98	24.11	22.7
1909	47.4	103	August* 15	—26	February* 15	40.01	53.48	37.20	49.0
1910	48.6	108	July 16	—35	January 7	19.87	27.99	12.11	23.4
1911	49.5	111	July* 3	—35	January 3	31.37	46.77	19.74	35.3
1912	46.3	104	Sept. 8	—47	January 12	28.65	33.13	15.25	39.5
1913	49.7	108	July* 16	—25	January 8	29.95	45.18	20.31	25.4
1914	49.1	109	July 12	—31	December 26	31.93	44.11	23.30	27.5
1915	47.8	99	May 14	—32	January 28	39.53	51.15	27.29	31.3
1916	47.2	106	August 4	—34	January 13	28.90	46.34	22.48	29.5
1917	44.8	106	July 30	—40	December 29	27.81	36 00	20.78	32.4
1918	49.2	113	August 4	—36	February 4	32.78	47.53	25.03	33.4
1919	48.6	104	July* 30	—36	December 10	36.76	48.16	26.88	26.6
1920	48.2	102	July 23	—26	January* 4	31.75	41.00	20.95	21.7
1921	52.2	104	July* 11	—22	December 25	32.03	46.47	20.44	30.7
1922	50.2	104	June 23	—29	January 6	29.98	44.20	19.08	13.5
1923	49.0	102	July* 22	—23	February* 3	29.50	37.47	21.36	36.3
1924	46.4	100	August* 21	—36	January 5	31.39	43 85	19.41	37.2
1925	48.8	105	July* 1	—25	December 29	28.24	45.53	13.77	29.2
1926	48.3	109	July* 19	—22	January 28	33.07	48.36	22.35	27.8
1927	48 8	102	July 11	—27	January 15	29.35	47.54	18.75	17.9
1928	49.4	100	August 1	—20	January 2	35.96	47.81	24.67	22.5
1929	46.4	102	August 22	—35	February 20	30.20	44.24	20.57	41.8
Mn	47.7					31.82			29.8

*And other dates.

CLIMATOLOGICAL DATA FOR THE YEAR 1929

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit					Precipitation, in Inches							Number of Days				Prevailing direction of wind
				Mean	Highest	Date	Lowest	Date	Length of record, years	Total	Greatest Monthly	Month	Least Monthly	Month	Total snowfall (unmelted)	Precipitation .01 in. or more	Clear	Partly cloudy	Cloudy	
Northern Division																				
Akron	Plymouth	1,153							2	22.88	3.79	Aug.	0.15	Dec.	22.0	97	169	124	72	n.
Algona	Kossuth	1,224	56	44.7	95	Sept. 2	—20	Feb. 9	57	26.55	5.09	Sept.	0.32	Mar. *		67	236	41	88	se.
Allison	Butler	1,060	17						17											
Alta	Buena Vista	1,513	38	44.8	98	Aug. 24	—19	Feb. 9	38	25.22	4.02	Sept.	0.24	Dec.	48.5	97	157	114	94	s.
Alton	Sioux	1,305	24	44.6	97	July 27	—24	Feb. 9	24	22.14	3.85	June	0.31	Dec.	46.9	97	89	178	98	nw.
Belmond	Wright	1,181	19	43.9	94	July 25	—28	Feb. 20	19	27.78	5.10	April	0.22	Dec.	62.7	95	121	68	176	nw.
Britt	Hancock	1,236	42	44.1	95	July 25†	—22	Feb. 1†	42	26.01	4.59	April	0.23	Dec.	44.5	73	163	52	150	sw.
Charles City	Floyd	1,015	38	43.3	93	Sept. 2	—28	Feb. 20	43	27.29	4.89	April	0.25	Dec.	64.6	106	140	107	118	se.
Cherokee	Cherokee	1,196	7	44.6	97	Aug. 24	—21	Feb. 9	7	23.04	4.54	Sept.	0.19	Dec.	38.3	95	173	99	93	s.
Decorah	Winneshiek	872	36	43.3	98	Sept. 2	—35	Feb. 20	43	26.81	4.38	April	0.48	Dec.	56.0	93	174	84	107	nw.
Dubuque	Dubuque	700	56	46.0	94	July 25	—24	Feb. 20	76	24.26	4.69	June	0.54	Dec.	55.2	114	105	92	168	nw.
Estherville	Emmet	1,298	34	44.1	99	Aug. 24	—25	Feb. 19	34	22.88	4.40	Sept.	0.45	Dec.	56.5	81	180	133	52	nw.
Fayette	Fayette	1,003	41	44.6	95	July 24†	—33	Feb. 20	41	28.30	5.36	April	0.73	Dec.	56.2	84	188	82	95	sw.
Forest City	Winnebago	1,226	35	43.1	95	July 26	—22	Feb. 20	35	29.44	5.04	May	0.43	Mar.	55.7	103	123	97	145	se.
Hampton	Franklin	1,145	5						5		5.29	April								
Hawarden	Sioux	1,181							3	26.24	4.67	May	0.18	Nov.	30.4	91	151	58	156	nw.
Humboldt	Humboldt	1,095	41	45.2	96	July 26†	—22	Feb. 9	44	27.48	4.43	April	0.44	Dec.	49.0	67	144	108	113	nw.
Independence	Buchanan	956	65	45.7	94	July 13	—26	Feb. 20	65	30.22	5.72	Sept.	0.45	Dec.	29.8	88	179	48	138	ne.
Inwood (near)	Lyon	1,474	25	43.8	97	July 27†	—28	Feb. 19	25	23.57	4.10	Sept.	0.19	Dec.	26.6	96	204	72	89	nw.
Lake Park (near)	Dickinson	1,489	9	42.4	95	Aug. 24	—28	Feb. 19	9	25.80	5.54	Sept.	0.08	Nov.	34.4	82	127	88	150	nw.
Lansing	Allamakee	632							22		4.08	April								
Le Mars	Plymouth	1,221	33	45.5	100	Aug. 24	—22	Feb. 9	41	21.20	3.51	June	0.30	Dec.	52.8	104	198	57	110	s.
Marathon	Buena Vista	1,390							3	25.96	4.91	Sept.	0.19	Dec.	47.8	91	137	91	137	nw.
Mason City	Cerro Gordo	1,148	32	42.9	95	July 25†	—30	Feb. 20	32	25.55	5.38	April	0.30	Dec.	75.1	103	117	149	99	nw.
New Hampton	Chickasaw	1,169	32				—27	Feb. 20	32	24.70	4.70	Sept.	0.28	Dec.	41.5	64	114	134	117	nw.
Northwood	Worth	1,222	33		93	July 25	—26	Feb. 20	33		5.61	April	0.40	Dec.	75.8					nw.
Oelwein	Fayette	1,036	6	44.7	92	July 25†	—24	Feb. 20	6	29.96	5.99	April	0.32	Dec.	50.0	64	147	100	118	s.
Osage	Mitchell	1,163	39	43.2	94	Sept. 2	—21	Feb. 20	39	23.94	4.09	Sept.	0.55	Dec.	66.5	88	126	119	120	nw.
Pocahontas	Pocahontas	1,218	25	41.7	95	Sept. 2	—22	Feb. 9	25	25.70	4.89	April	0.28	Dec.	42.8	102	176	77	112	se.
Postville (near)	Clayton	1,192	30	42.2	90	July 26†	—29	Feb. 20	30	21.95	3.41	Sept.	0.67	Dec.	43.5	78	170	111	84	sw.
Rock Rapids	Lyon	1,349	30	43.1	97	Aug. 24	—34	Feb. 19	30	30.00	5.71	Sept.	0.23	Dec.	59.3	91	241	48	76	n.
Sanborn	O'Brien	1,553	15	43.0	96	Aug. 24	—23	Feb. 9†	15	28.50	5.18	Sept.	0.11	Nov.	55.2	82	125	117	123	ne.
Sheldon	O'Brien	1,418	17	44.1	96	Aug. 24	—21	Feb. 9	22	27.56	4.66	Sept.	0.21	Dec.	37.5	109	162	109	94	nw.
Sioux Center	Sioux	1,461	30	44.1	97	July 27	—22	Feb. 9	30	20.57	3.24	Sept.	0.18	Dec.	38.0	59	156	117	92	se.
Spencer	Clay	1,319	15	44.8	99	Aug. 24	—26	Feb. 9	15	23.71	3.80	Sept.	0.42	Dec.	56.3	88	132	120	113	nw.
Storm Lake	Buena Vista	1,438	40	45.3	95	Aug. 24	—19	Feb. 9	40	25.53	4.19	July	0.34	Dec.	43.7	85	173	96	96	sw.
Washta	Cherokee	1,157	31	45.2	98	Aug. 24	—29	Feb. 9	31	25.27	6.34	June	0.16	Dec.	30.0	82	183	81	101	s.
Waterloo	Black Hawk	851	46	45.5	95	July 25	—25	Feb. 20	47	24.93	3.66	Sept.	0.43	Dec.	40.5	86	195	66	104	se.
Waverly	Bremer	936	33		94	July 25	—30	Feb. 15	33		4.35	July	0.32	Dec.	60.1					nw.
West Bend	Palo Alto	1,197	36	44.6	95	Sept. 2	—24	Feb. 9	36	24.65	4.24	April	0.11	Dec.	42.2	78	182	98	85	nw.
Central Division																				
Ames	Story	926	52	46.7	93	July 25†	—19	Feb. 20	53	31.30	6.62	July	0.48	Dec.	44.4	82	202	51	112	s.
Audubon (near)	Audubon	1,297	34	46.2	96	Aug. 24	—17	Feb. 9	34	29.39	4.55	April	0.39	Dec.	57.0	101	158	124	83	s.
Baxter	Jasper	998	29		94	July 25	—19	Feb. 9	29	30.96	5.56	July	0.19	Dec.						nw.
Belle Plaine	Benton	866	39	46.7	96	July 27	—20	Feb. 20	39	31.62	7.03	Aug.	0.65	Dec.	50.7	117	147	101	117	nw.
Boone (near)	Boone	894	24	45.9	94	July 31†	—25	Feb. 9	24	27.42	5.15	Sept.	0.45	Dec.	37.4	102	140	120	105	s.
Carroll	Carroll	1,265	39	45.8	97	Aug. 21	—19	Feb. 9	39	27.19	3.88	Sept.	0.50	Dec.	28.7	85	217	57	91	nw.
Cedar Rapids	Linn	737	47	46.4	95	July 25†	—23	Feb. 20	47	30.12	5.30	July	0.56	Dec.	43.5	91	135	34	196	sw.
Clinton	Clinton	595	56	47.9	98	Aug. 22	—23	Feb. 20	58	32.59	5.50	April	0.44	Dec.	33.7	112	172	53	140	s.
Davenport	Scott	580	58	48.8	98	Aug. 22	—11	Feb. 20†	58	34.71	5.64	July	0.53	Dec.	29.4	120	109	116	140	nw.
Denison	Crawford	1,171	35	46.0	95	June 30†	—19	Feb. 9	35	22.04	3.73	July	0.20	Dec.	32.7	87	131	123	111	nw.
Des Moines	Polk	861	51	48.0	95	July 31	—13	Feb. 9	51	31.01	4.67	Sept.	0.34	Dec.	47.6	115	102	119	144	sw.
Fairport	Muscatine	567	8	48.8	97	Aug. 22	—20	Feb. 20	8	37.89	8.28	July	0.48	Dec.	28.2	115	142	49	174	s.
Fort Dodge	Webster	1,114	29	45.2	96	Sept. 2	—22	Feb. 9	29	27.60	4.27	Sept.	0.33	Dec.	45.3	105	177	70	118	nw.
Grinnell	Poweshiek	1,031	35				—19	Feb. 9†	35		5.45	April	0.31	Dec.	30.9					nw.
Grundy Center	Grundy	976	38	45.4	94	July 25	—20	Feb. 9	38	33.37	5.62	July	0.58	Dec.	54.0	88	181	84	100	nw.
Guthrie Center	Guthrie	987	34		99	June 30			34		4.69	Oct.	0.29	Dec.						
Harlan	Shelby	1,192	30	46.1	94	June 30†	—18	Feb. 9	30	26.37	4.17	April	0.35	Dec.	30.8	99				nw.
Iowa City	Johnson	733	69	47.5	95	Aug. 22	—22	Feb. 20	69	33.33	5.42	July	0.64	Dec.	33.5	108	143	108	114	nw.
Iowa Falls	Hardin	1,127	36	44.6	95	July 27	—26	Feb. 20	46	36.31	5.82	April	0.67	Dec.	65.4	97	158	90	117	nw.
Jefferson	Greene	1,052	30				—17	Feb. 9	30	24.08	3.66	Sept.	0.55	Dec.	45.5	78				sw.
Le Claire	Scott	576							29		5.30	April								
Little Sioux	Harrison	1,040	24	47.7	97	June 30	—19	Feb. 9	24	26.81	5.17	July	0.30	Dec.	33.1	128	115	154	96	s.
Logan	Harrison	1,120	62	47.1	96	June 30	—19	Feb. 9	62	32.59	6.03	July	0.43	Dec.	52.0	98	81	226	58	nw.
Maquoketa (near)	Jackson	692	24				—32	Feb. 20	24				0.45	Dec.	32.2					nw.
Marshalltown	Marshall	947	37	46.7	94	July 25	—17	Feb. 9	37	30.25	5.76	Aug.	0.37	Dec.	49.4	101	136	99	130	nw.
Monroe	Jasper	922	17	47.8	94	Aug. 21	—18	Jan. 7	17	28.32	4.89	July	0.31	Dec.	45.2	79	185	56	124	s.
Muscatine	Muscatine	546							84	39.27	8.78	July	0.81	Feb.	33.5					s.
Olin	Jones	760	30	46.1	97	Aug. 22	—32	Feb. 20	30	27.91	4.90	April	0.36	Dec.	38.7	73	195	66	104	sw.
Onawa	Monona	1,051	28	46.9	95	June 30†	—19	Feb. 9	41	26.92	5.63	June	0.15	Dec.	48.5	83	159	78	128	se.
Perry	Dallas	975	28	46.3	94	July 31†	—20	Feb. 9	28	29.67	7.36	Sept.	0.51	Dec.	44.4	95	134	125	106	nw.
Rockwell City	Calhoun	1,232	33						33											
Sac City	Sac	1,269	53				—18	Feb. 9	53				0.20	Dec.	45.0					s.
Sioux City	Woodbury	1,135	40	46.6	97	July 27	—15	Feb. 9	40	26.81	8.47	June	0.27	Dec.	30.1	112	95	145	125	nw.
Tipton (near)	Cedar	807	30	46.9	95	Aug. 22	—28	Feb. 20	30	35.36	4.88	April	0.65	Dec.	39.7	82	96	154	115	sw.
Toledo	Tama	847	35	45.8	93	July 25	—26	Feb. 20	35	36.01	9.27	Aug.	0.48	Dec.	50.3	103	164	105	96	nw.
Van Meter	Dallas	872							10	29.55	4.99	April	0.35	Dec.	45.7	78				
Waukee	Dallas	1,032	26	46.8	95	June 30	—18	Feb. 9	26		5.81	July	0.34	Dec.			205	78	82	sw.
Webster City	Hamilton	1,042	24	44.5	94	July 22†	—28	Feb. 1†	24	28.95	5.48	July	0.31	Dec.	69.0	90	180	95	90	nw.
Williamsburg	Iowa	770	13	46.4	94	July 23†	—26	Feb. 20	14	30.60	5.65	July	0.30	Dec.	27.5	77	209	76	80	nw.

CLIMATOLOGICAL DATA FOR THE YEAR 1929—Continued

STATIONS	COUNTIES	Elevation, feet	Length of record, years	Temperature, in Degrees Fahrenheit: Mean	Highest	Date	Lowest	Date	Precipitation, in Inches: Length of record, years	Total	Greatest Monthly	Month	Least Monthly	Month	Total snowfall (unmelted)	Number of Days: Precipitation .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Southern Division																				
Afton	Union	1,212	35				—15	Feb. 9	35		4.99	April	0.31	Dec.	48.5					sw.
Albia	Monroe	949	31	48.6	98	Aug. 22	—14	Feb. 9	31	30.06	5.50	Sept.	0.31	Dec.	19.9	109	126	74	165	sw.
Atlantic	Cass	1,110	38	47.1	98	Aug. 24	—15	Feb. 9	38	31.73	5.39	Oct.	0.12	Dec.	44.2	121	134	129	102	nw.
Bedford	Taylor	1,200							1	38.06	6.55	Oct.	0.18	Dec.	32.9	90	164	71	130	nw.
Bonaparte (near)	Van Buren	563	38	48.4	96	Aug. 22	—15	Feb. 20	38	34.37	6.08	April	0.67	Feb.	18.8	93	201	59	105	w.
Burlington	Des Moines	544	33	50.3	98	Aug. 22	—10	Jan. 7	33	41.24	7.38	April	1.00	Feb.	32.3	116	169	90	106	sw.
Centerville	Appanoose	1,013	24	49.1	96	Aug. 21†	—15	Feb. 9†	24	41.07	7.33	July	0.70	Dec.	27.9	113	167	71	127	sw.
Chariton (near)	Lucas	1,042	34	48.3	99	Aug. 22	—16	Jan. 7†	34	24.37	4.70	July	0.29	Dec.	16.0	57	148	123	94	sw.
Clarinda	Page	1,009	39	48.6	98	Aug. 21	—15	Feb. 9†	39	41.87	8.79	July	0.04	Dec.	35.0	110	164	131	70	s.
Columbus Junction	Louisa	595	28	47.7	96	Aug. 22	—19	Feb. 20	28	38.15	7.81	July	0.64	Dec.	28.7	128	170	115	80	se.
Corning	Adams	1,150	37		98	Aug. 21			37		6.51	Oct.	0.10	Dec.						sw.
Corydon (near)	Wayne	1,050	36	48.2	96	Aug. 22	—17	Feb. 9	36	33.92	5.80	April	0.18	Dec.	23.1	100	152	69	144	nw.
Creston	Union	1,291	24	47.1	97	Aug. 21	—18	Feb. 9	24	29.99	4.80	April	0.18	Dec.		122	129	149	87	s.
Cumberland (near)	Cass	1,225							29	31.73	5.32	Oct.	0.22	Dec.	38.5	90	158	98	109	s.
Earlham (near)	Madison	1,126	27	46.6	96	Aug. 21	—20	Feb. 9	27	29.00	5.14	April	0.28	Dec.	55.0	89	206	49	110	sw.
Fairfield	Jefferson	780	45	47.9	95	Aug. 22†	—19	Feb. 20	47	36.25	7.06	April	0.67	Dec.	26.0	108	141	88	136	n.
Glenwood	Mills	1,100	31	48.9	96	June 30†	—16	Feb. 9	35	31.66	7.38	July	0.03	Dec.	35.5	91	139	128	98	nw.
Indianola	Warren	972	38	48.2	97	June 30†	—17	Feb. 9	38	29.17	5.56	April	0.57	Dec.	50.2	92	152	108	105	nw.
Keokuk	Lee	614	58	50.6	97	Aug. 22	— 8	Jan. 7	58	38.77	5.75	July	0.69	Dec.	23.7	119	106	90	169	s.
Keosauqua	Van Buren	639	37		97	June 30	—19	Feb. 10	37	35.03	7.13	April	0.52	Dec.	18.6	78	109	149	107	nw.
Knoxville	Marion	920	34	48.3	96	Aug. 22	—16	Feb. 9	31	24.64	3.78	April	0.49	Dec.	46.2	79	153	90	122	nw.
Lacona	Warren	824							30	27.97	4.60	April	0.49	Dec.	48.0	119	132	145	88	
Lamoni	Decatur	1,123	22	47.9	98	Aug. 21	—19	Feb. 9	23	33.81	7.33	July	0.08	Dec.	24.7	109	147	76	115	nw.
Lenox	Taylor	1,250	34	48.5	98	July 31†	—16	Feb. 9	34	35.35	6.87	April	0.66	Dec.	32.5	100	187	91	87	nw.
Mount Ayr	Ringgold	1,220	36	48.2	97	Aug. 21	—13	Feb. 9	36	30.55	4.94	Oct.	0.12	Dec.	26.2	80	226	47	92	s.
Mt. Pleasant	Henry	730	48	49.4	97	Aug. 22†	—13	Jan. 7	48	35.34	7.35	April	0.61	Feb.*	23.7	109	128	127	110	sw.
Oakland	Pottawattamie	1,139	10	47.8	95	June 30	—15	Feb. 9	10	33.67	7.77	July	0.04	Dec.	38.6	90	171	67	127	sw.
Oskaloosa	Mahaska	835	53	48.0	97	Aug. 22	—17	Jan. 7	53	30.17	4.98	July	0.65	Dec.	35.6	117	133	98	134	sw.
Ottumwa	Wapello	649	34	49.4	97	Aug. 22	—16	Feb. 20	35	33.65	6.17	April	0.44	Dec.	19.3	103	169	88	108	nw.
Red Oak (near)	Montgomery	1,030							16	36.27	5.81	April	0.08	Dec.	43.0	71	128	151	86	s.
Riverton (near)	Fremont	920							3	43.34	12.30	July	0.12	Dec.	32.3	95	162	40	163	s.
Sigourney (near)	Keckuk	790	33	48.1	98	Aug. 22	—21	Feb. 20	33	31.28	5.01	July	0.58	Dec.	28.9	100	171	72	122	nw.
Stockport (near)	Van Buren	747	27	48.4	98	Aug. 22	—18	Feb. 10†	27	36.89	7.76	April	0.58	Dec.	23.0	113	188	55	122	s.
Thurman	Fremont	960	32	49.5	98	Aug. 21†	—16	Feb. 9	38	35.98	10.09	July	0.04	Dec.	28.9	89	168	66	131	s.
Tingley	Ringgold	1,275	4	47.9	100	Aug. 21	—16	Feb. 9	4	29.76	4.66	Oct.	0.25	Dec.	26.1	106	167	103	95	sw.
Washington	Washington	757	47	48.6	95	Sept. 2	—16	Jan. 7	50	36.49	6.93	July	0.61	Dec.	28.7	95	139	96	130	sw.
Wever	Lee	552	1		100	Aug. 22	—16	Feb. 10	7		6.95	April								
Winterset	Madison	1,118	38	47.9	98	Aug. 21	—16	Feb. 9	38	30.57	5.69	April	0.32	Dec.	48.0	95	199	79	87	sw.
Omaha, Neb.		1,105	58	49.4	98	Aug. 21	—11	Feb. 9	58	25.69	5.04	July	0.14	Dec.	43.4	119	141	120	104	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 days.
*Also in other months.

MONTHLY STATE DATA FOR 1929

MONTH	Barometric Pressure Inches (Sea Level): Mean	Highest	Date	Lowest	Date	Temperature Degrees, F.: Mean	Departure from Normal	Highest	Lowest	Relative Humidity Per Cent: 7 a. m.*	12 noon‡	7 p. m.*	Departure from Normal¶	Lowest	Precipitation, Inches: Average	Departure from Normal	Greatest	Least	Snowfall	No. of Days: With .01 inch or More Precipitation	Clear	Partly Cloudy	Cloudy	Sunshine: Pct. of Possible Amt.	Departure from Normal	Wind: Average Hourly Velocity	Prevailing Direction
January	30.15	30.65	7	29.27	5	10.2	—8.3	47	—29	83	73	79	+ 1	34	2.06	+0.99	4.10	0.40	17.5	9	11	6	14	44	— 7	8.1	nw.
February	30.16	30.72	1	29.33	26	14.0	—8.6	52	—35	88	71	79	+ 6	27	1.31	+0.10	3.03	0.34	12.5	8	10	7	11	50	— 5	6.8	nw.
March	29.91	30.69	9	29.17	6	39.1	+4.5	83	— 5	80	61	63	+ 2	9	1.44	—0.33	4.92	0.30	3.5	5	12	8	11	54	— 3	8.7	nw.
April	29.88	30.31	2†	29.17	5	51.2	+2.3	93	9	77	56	58	+ 2	14	4.62	+1.66	7.97	1.81	1.1	11	12	8	10	56	— 1	8.9	se.
May	30.04	30.50	9	29.49	1	57.7	—2.4	91	24	75	52	53	— 4	19	2.47	—2.11	5.79	0.82	T.	8	11	12	8	62	0	7.4	se.
June	29.93	30.32	3	29.44	11	67.6	—1.7	99	38	75	53	54	— 6	25	3.08	—1.42	8.47	0.82	0	9	14	9	7	66	— 1	6.9	s.
July	29.99	30.30	20	29.61	27	74.1	+0.4	98	43	78	54	58	0	22	4.31	+0.48	10.30	1.47	0	9	16	10	5	67	— 6	5.8	sw.
August	30.02	30.34	19	29.66	13	71.9	+0.2	102	37	79	52	57	— 4	26	2.44	—1.00	9.27	0.78	0	6	18	9	4	74	+ 4	5.6	se.
September	30.04	30.44	18	29.58	15	62.4	—1.9	98	25	81	54	62	— 2	28	3.74	+0.07	7.36	1.55	T.	9	14	7	9	60	— 2	6.8	se.
October	30.07	30.43	9	29.55	31	51.8	0.0	84	23	83	56	62	0	21	3.10	+0.67	6.55	1.10	0.7	9	15	5	11	54	— 6	7.3	nw.
November	30.14	30.84	21	29.46	27	32.3	—4.3	66	—12	83	61	69	0	25	1.24	—0.31	2.58	0.08	2.7	6	13	8	9	53	+ 3	8.1	nw.
December	30.09	30.77	18	29.53	30	24.8	+0.7	67	—16	87	74	79	+ 2	30	0.39	—0.75	1.21	0.03	3.8	5	12	6	13	46	0	7.9	nw.
Means and Extremes	30.04	30.84	Nov. 21	29.17	Mar. 6	46.4	—1.6	102	—35	81	60	64	0	9	30.20	—1.95	10.39	0.03	41.8	94	158	95	112	57	— 2	7.4	nw.
Normals and Records	30.02	31.09	Jan. 25 1905	28.69	Feb. 28 1902	48.0		113	—47	81		66		5	32.15		19.80	0.00	30.7	85	166	101	98	59			

‡Local mean time.
*Normal central time.
†And other dates.
¶7 A. M. and 7 P. M. observations only.

MEAN MONTHLY AND ANNUAL TEMPERATURES, WITH DEPARTURES FROM THE NORMAL, FOR 1929

STATIONS	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.
Northern Division																										
Algona	7.2	− 8.2	11.2	− 7.6	36.3	+ 4.8	50.2	+ 2.6	57.9	− 1.3	68.3	− 0.3	72.8	− 0.2	70.9	+ 0.6	60.6	− 2.7	49.9	− 0.6	30.2	− 4.4	20.7	− 0.8	44.7	− 1.5
Allison	6.0	− 9.3	9.6	− 9.7	34.4	+ 2.3	48.7	+ 1.4			65.7	− 2.8														
Alta	7.1	− 8.9	11.7	− 8.0	36.8	+ 3.8	49.8	+ 2.7	57.0	− 1.6	66.8	− 1.0	74.5	+ 2.1	73.0	+ 2.7	59.8	− 2.9	51.0	+ 0.9	28.8	− 5.1	21.8	+ 0.4	44.8	− 1.3
Alton	7.4	− 8.1	10.8	− 8.1	36.9	+ 4.9	49.1	+ 2.1	57.1	− 1.5	66.6	− 1.8	74.6	+ 1.1	72.5	+ 1.6	59.5	− 3.3	50.0	+ 0.2	29.6	− 4.0	21.2	+ 0.4	44.6	− 1.4
Belmond	5.5	− 9.2	9.0	− 9.3	35.2	+ 3.9	49.0	+ 2.3	55.6	− 3.0	65.7	− 2.8	73.2	− 0.4	70.7	+ 0.9	61.4	− 2.2	49.9	− 0.7	29.8	− 4.4	21.6	+ 0.7	43.9	− 2.0
Britt	6.6	− 7.6	10.8	− 6.8	35.8	+ 4.3	48.6	+ 2.4	55.9	− 2.1	65.5	− 1.9	73.2	+ 2.0	70.0	+ 0.1	60.9	− 1.5	50.0	+ 0.3	30.2	− 3.3	21.6	+ 1.1	44.1	− 1.1
Charles City	4.6	− 9.1	9.1	− 8.0	34.1	+ 3.5	48.8	+ 2.4	54.8	− 3.0	65.6	− 0.9	72.9	+ 0.6	69.4	+ 0.3	60.4	− 0.6	48.9	+ 0.3	29.2	− 3.8	21.4	+ 1.0	43.3	− 1.4
Cherokee	7.2	− 8.0	11.0	− 8.5	36.6	+ 4.7	49.6	+ 3.2	56.6	− 1.4	65.2	− 2.3	72.8	+ 1.7	71.8	+ 1.8	60.2	− 2.0	51.0	+ 1.5	30.4	− 2.7	22.6	+ 2.1	44.6	− 0.8
Decorah	4.6	−10.6	10.3	− 7.5	35.0	+ 3.7	48.8	+ 1.5	54.6	− 3.0	64.8	− 3.2	72.8	+ 0.6	68.7	+ 0.2	61.2	− 0.4	48.2	− 0.9	30.1	− 4.6	20.2	− 2.0	43.3	− 2.2
Dubuque	9.6	− 9.5	14.0	− 8.2	38.6	+ 4.6	51.0	+ 2.4	56.8	− 3.5	66.4	− 3.0	74.0	− 0.1	70.4	− 1.3	62.6	− 1.4	50.7	− 1.2	32.3	− 4.7	25.6	+ 0.9	46.0	− 2.1
Estherville	4.2	− 8.9	9.6	− 8.3	34.4	+ 2.8	48.8	+ 3.9	56.2	− 0.8	66.4	− 0.5	75.3	+ 3.4	73.0	+ 4.2	60.8	− 0.9	50.3	+ 1.2	29.0	− 5.0	20.8	+ 0.5	44.1	− 0.7
Fayette	6.6	− 8.8	11.2	− 7.8	35.8	+ 4.5	50.0	+ 3.1	56.2	− 1.8	66.6	− 0.7	74.2	+ 2.3	70.6	+ 1.2	62.0	− 0.3	49.6	0.0	30.4	− 3.7	22.4	+ 1.0	44.6	− 1.0
Forest City	5.1	− 9.2	9.4	− 9.2	34.3	+ 2.5	47.5	+ 1.2	54.8	− 3.3	65.3	− 2.5	71.9	− 0.3	69.4	− 0.8	60.4	− 2.3	49.6	+ 0.5	29.0	− 4.5	20.4	− 0.9	43.1	− 2.4
Humboldt	7.8	− 8.7	11.2	− 9.3	36.6	+ 3.4	49.8	+ 1.7	57.0	− 3.0	66.6	− 2.7	74.0	− 0.1	71.4	− 0.4	61.8	− 2.4	51.6	+ 0.3	30.8	− 4.8	23.2	+ 0.6	45.2	− 2.1
Independence	8.8	− 8.1	13.0	− 8.2	36.4	+ 2.3	51.0	+ 2.3	57.3	− 2.3	66.9	− 1.4	73.2	+ 0.2	69.8	− 1.5	62.2	− 1.7	51.6	− 0.5	33.5	− 3.0	24.6	+ 1.0	45.7	− 1.7
Inwood	5.8	− 8.2	8.6	− 9.2	36.6	+ 3.9	48.4	+ 1.7	56.1	− 1.6	65.8	− 1.9	73.9	+ 1.3	72.6	+ 2.1	59.0	− 4.1	49.8	0.0	28.5	− 4.5	20.3	+ 0.9	43.8	− 1.6
Lake Pk. (near)	3.8	− 9.5	7.4	−10.4	33.8	+ 2.4	47.0	+ 1.4	54.6	− 2.9	64.2	− 3.1	71.8	− 0.2	71.0	+ 1.5	58.4	− 3.1	50.2	+ 1.4	27.2	− 5.8	19.7	+ 0.2	42.4	− 2.4
Le Mars	8.6	− 8.5	12.6	− 8.3	38.6	+ 5.3	50.1	+ 2.3	57.4	− 1.6	67.4	− 1.2	74.4	+ 1.1	72.7	+ 1.7	60.1	− 3.6	50.6	− 0.5	30.8	− 4.2	22.4	0.0	45.5	− 1.5
Mason City	5.0	− 9.2	8.8	− 9.5	34.3	+ 3.4	47.9	+ 1.4	54.0	− 4.0	64.8	− 2.8	72.2	− 0.2	69.2	− 0.4	60.1	− 1.6	48.6	− 1.0	28.8	− 4.7	21.1	+ 0.2	42.9	− 2.3
New Hampton	5.0	− 9.5	9.4	− 9.3	34.2	+ 2.9	48.3	+ 1.3	54.3	− 4.0			72.5	+ 0.3	70.4	+ 0.6	61.7	− 0.7	49.0	− 1.2	30.6	− 3.5	21.8	+ 1.0		
Northwood	4.0	− 8.7	9.9	− 6.4	33.6	+ 4.4	47.4	+ 2.3	54.8	− 2.5			72.2	+ 1.0	69.7	+ 1.2	60.0	− 1.0	48.9	+ 0.7	28.8	− 3.6	20.0	+ 0.3		
Oelwein	7.4	− 9.0	12.0	− 8.3	36.2	+ 3.2	49.6	+ 2.0	55.6	− 3.1	66.4	− 1.4	73.4	+ 1.2	69.8	− 0.4	62.8	0.0	50.0	− 1.2	30.7	− 4.5	22.4	− 0.6	41.7	− 1.8
Osage	4.8	− 8.5	9.9	− 6.9	33.8	+ 3.9	47.8	+ 1.9	54.6	− 3.2	65.4	− 1.8	72.8	+ 0.9	70.2	+ 1.5	60.4	− 0.8	49.2	+ 0.7	28.7	− 4.5	20.8	+ 0.8	43.2	− 1.3
Pocahontas	7.2	− 8.8	11.0	− 8.7	35.8	+ 3.5	48.6	+ 1.5	57.2	− 1.6	66.5	− 1.8	73.6	+ 0.9	71.5	+ 0.9	60.8	− 2.7	52.0	+ 1.3	29.4	− 5.3	22.8	+ 1.1	44.7	− 1.7
Postville	4.6	−10.6	9.5	− 8.8	33.8	+ 3.2	47.2	+ 0.9	52.3	− 5.1	62.8	− 2.9	70.6	+ 0.6	67.0	− 0.8	60.0	− 0.8	48.2	− 1.1	28.8	− 5.2	21.1	+ 0.2	42.2	− 2.5
Rock Rapids	6.0	− 7.5	8.7	− 9.2	36.1	+ 4.6	47.8	+ 1.5	55.9	− 2.1	65.2	− 2.7	73.3	+ 0.7	71.0	+ 1.3	57.6	− 4.1	48.3	− 0.6	28.4	− 4.8	19.2	− 0.5	43.1	− 2.0
Sanborn	5.2	− 9.4	9.0	− 9.5	34.8	+ 3.2	47.6	+ 1.1	55.1	− 3.0	64.3	− 3.4	73.1	+ 0.3	71.1	+ 0.6	58.0	− 4.8	49.2	− 0.2	28.2	− 4.3	20.0	+ 0.6	43.0	− 2.4
Sheldon	6.4	− 8.2	9.8	− 8.7	35.8	+ 4.2	48.5	+ 1.5	56.2	− 2.0	65.4	− 2.1	73.2	+ 0.2	72.5	+ 2.0	59.6	− 3.8	50.5	+ 0.3	29.6	− 3.6	21.4	+ 1.0	44.1	− 1.6
Sioux Center	7.2	− 7.9	10.6	− 8.1	36.3	+ 4.8	48.0	+ 1.5	56.0	− 2.2	65.6	− 1.9	74.2	+ 1.2	72.6	+ 2.1	58.4	− 4.6	49.6	− 0.2	29.6	− 3.9	20.4	− 0.4	44.1	− 1.6
Spencer	6.5	− 8.2	10.3	− 8.2	36.6	+ 4.2	49.7	+ 2.7	56.9	− 1.6	67.2	− 1.3	75.4	+ 2.0	73.6	+ 3.0	59.9	− 3.6	50.8	+ 0.6	29.2	− 4.4	21.4	+ 0.7	44.8	− 1.2
Storm Lake	8.2	− 8.6	12.0	− 8.4	36.5	+ 3.9	50.0	+ 2.6	57.3	− 1.8	67.0	− 1.5	74.8	+ 1.3	72.7	+ 1.3	60.4	− 3.6	51.8	+ 0.6	30.2	− 5.3	23.0	+ 0.5	45.3	− 1.6
Washta	9.6	− 7.0	12.8	− 8.0	37.8	+ 4.5	49.9	+ 2.4	56.8	− 1.5	65.0	− 3.1	73.0	+ 0.7	71.4	+ 0.8	60.4	− 3.1	51.1	+ 0.6	31.5	− 3.5	23.3	+ 1.2	45.2	− 1.4
Waterloo	7.4	−10.0	12.2	− 8.7	37.2	+ 2.8	50.8	+ 2.0	57.4	− 2.8	67.4	− 2.0	74.2	+ 0.5	70.6	− 0.9	62.9	− 1.2	50.3	− 1.6	31.3	− 4.8	23.8	+ 0.3	45.5	− 2.2
Waverly	5.8	−10.4	10.1	− 9.9	36.4	+ 3.5	50.0	+ 2.4			67.2	− 1.0	73.3	+ 0.8	70.2	− 0.4	61.8	− 1.6	49.6	− 1.5	29.8	− 5.8	22.4	− 0.8		
West Bend	7.2	− 7.8	10.2	− 9.0	35.6	+ 3.6	49.0	+ 1.6	56.5	− 2.8	66.4	− 2.0	74.0	+ 0.8	71.9	+ 1.3	61.2	− 2.2	50.8	+ 0.2	29.8	− 4.3	22.2	+ 1.1	44.6	− 1.6
Central Division																										
Ames	10.6	− 7.9	13.1	− 9.4	38.8	+ 3.8	52.2	+ 3.4	58.3	− 2.5	68.4	− 1.5	74.2	+ 0.2	71.6	− 0.2	62.4	− 2.0	52.6	+ 0.9	33.0	− 2.9	25.2	+ 1.4	46.7	− 1.4
Audubon	9.2	− 7.9	13.4	− 8.1	38.6	+ 4.8	50.9	+ 3.3	57.9	− 1.4	67.4	− 0.9	74.0	+ 1.3	70.3	+ 2.2	62.2	− 1.5	52.5	+ 1.7	31.5	− 3.3	21.3	+ 1.5	46.2	− 0.7
Baxter	10.4	− 9.0	13.9	− 9.0	40.0	+ 5.0			58.2	− 2.3	68.0	− 1.6	73.4	− 0.8	72.2	0.0	63.1	− 1.2	54.0	+ 1.6	33.2	− 4.0	26.2	+ 1.8		
Belle Plaine	10.0	− 8.8	14.5	− 8.4	39.2	+ 4.3	52.3	+ 2.9	58.0	− 2.4	67.8	− 1.4	74.4	+ 0.9	71.0	− 0.5	63.3	− 1.1	51.2	− 0.7	32.8	− 4.2	25.5	+ 1.3	46.7	− 1.5
Boone (near)	10.4	− 7.5	12.4	−10.9	38.0	+ 2.0	51.4	+ 2.4	57.7	− 2.2	66.7	− 2.3	73.0	− 0.5	71.5	+ 0.6	62.2	− 1.6	51.6	− 0.1	32.0	− 4.6	24.2	+ 0.2	45.9	− 2.1
Carroll	9.6	− 7.8	12.6	− 9.3	38.0	+ 2.0	50.4	+ 1.9	57.2	− 2.7	66.8	− 1.6	73.6	+ 0.4	72.5	+ 1.4	61.6	− 2.1	52.2	+ 0.6	30.8	− 5.3	23.9	+ 0.1	45.8	− 1.8
Cedar Rapids	10.0	− 8.9	14.4	− 8.1	40.0	+ 5.3	51.2	+ 2.2	57.8	− 2.9	66.9	− 2.2	73.6	− 0.4	70.0	− 1.8	63.6	− 1.0	51.0	− 0.4	32.8	− 3.6	25.7	+ 1.7	46.4	− 1.7
Clinton	12.7	− 7.9	16.4	− 8.2	42.2	+ 6.4	52.4	+ 2.6	58.8	− 2.3	68.0	− 2.4	75.0	+ 0.2	71.5	− 1.2	64.4	− 0.8	51.7	− 1.3	34.7	− 3.2	27.0	+ 0.7	47.9	− 1.5
Davenport	13.7	− 8.1	18.1	− 6.8	43.4	+ 7.3	53.0	+ 3.1	59.6	− 1.7	69.0	− 1.5	75.7	+ 0.4	72.4	− 0.7	64.6	− 1.0	53.2	− 0.5	34.6	− 4.4	28.4	+ 1.3	48.8	− 1.1
Denison	9.6	− 8.6	13.8	− 8.6	38.4	+ 3.4	50.4	+ 1.2	56.7	− 2.5	67.8	− 1.3	73.8	+ 0.4	72.4	+ 0.9	61.5	− 2.5	52.2	+ 0.5	30.6	− 5.0	23.8	0.0	46.0	− 1.8
Des Moines	11.6	− 8.5	15.2	− 8.5	40.8	+ 4.9	53.0	+ 2.9	59.2	− 2.1	69.0	− 1.6	75.3	− 0.1	73.4	+ 0.3	63.8	− 1.8	53.6	+ 0.2	33.8	− 4.6	26.9	+ 0.9	48.0	− 1.5
Fairport	14.9	− 7.0	17.8	− 7.4	43.5	+ 6.5	54.2	+ 3.5	58.7	− 3.2	68.0	− 2.0	74.4	− 0.6	72.4	− 0.6	65.2	− 0.8	52.8	− 1.0	34.5	− 4.7	28.5	+ 1.3	48.8	− 1.3
Fort Dodge	8.0	− 8.7	11.8	−10.5	37.0	+ 2.7	50.0	+ 2.4	57.0	− 2.2	66.8	− 2.2	73.8	− 0.2	71.0	+ 0.2	61.6	− 2.4	51.8	+ 0.5	30.0	− 5.3	23.3	+ 1.0	45.2	− 2.0
Grinnell	10.8	− 9.4	13.4	− 9.8	39.2	+ 3.9	51.1	+ 1.7	57.8	− 3.0	67.3	− 2.3	73.1	− 1.2	71.2	− 1.4			52.4	− 0.6	33.2	− 4.5	26.0	+ 0.8		
Grundy Center	8.0	−10.5	12.4	− 9.6	37.2	+ 2.5	50.5	+ 1.4	56.8	− 3.8	67.4	− 2.3	73.2	− 0.9	70.8	− 1.1	62.1	− 2.5	50.9	− 0.2	31.8	− 4.5	24.2	+ 0.3	45.4	− 2.6
Guthrie Center							51.2	+ 1.8	58.1	− 1.4	68.6	− 0.4	74.4	+ 0.8	73.0	+ 1.3	62.2	− 2.4	52.1	− 0.4	32.6	− 4.4	25.7	+ 1.2		
Harlan	10.8	− 7.3	14.8	− 8.1	38.4	+ 3.1	51.0	+ 2.0	57.3	− 2.8	67.4	− 1.7	73.2	+ 0.1	71.9	+ 0.9	61.2	− 2.6	51.9	+ 0.7	31.2	− 4.6	24.1	+ 0.5	46.1	− 1.7
Iowa City	12.0	− 8.0	15.4	− 8.8	41.8	+ 6.2	52.4	+ 2.5	58.8	− 1.5	68.0	− 1.1	74.2	+ 0.4	71.0	− 1.0	64.0	− 0.8	51.6	− 0.8	33.8	− 3.8	26.6	+ 0.8	47.5	− 1.3
Iowa Falls	7.4	− 8.3	10.0	−11.0	35.3	+ 1.2	50.0	+ 2.2	56.5	− 2.3	66.7	− 1.2	73.1	+ 0.8	70.2	− 0.9	61.2	− 1.4	50.3	− 0.4	30.8	− 4.5	23.2	+ 0.7	44.6	− 2.0
Jefferson	10.2	− 7.9	13.5	− 8.9	38.4	+ 2.6	51.2	+ 2.7	57.4	− 2.4	67.2	− 2.0	73.4	+ 0.1			61.6	− 2.0	52.6	+ 1.2	32.0	− 4.2	25.1	+ 1.5		
Little Sioux	12.3	− 7.0	16.6	− 7.3	40.6	+ 4.5	52.4	+ 1.9	59.4	− 1.7	69.0	− 1.1	75.2	+ 0.8	74.2	+ 1.6	62.3	− 3.0	53.2	+ 1.0	31.9	− 4.6	25.5	+ 1.5	47.7	− 1.1
Logan	12.2	− 8.1	16.6	− 8.4	40.4	+ 3.2	51.2	+ 0.4	58.6	− 2.7	68.3	− 1.5	74.0	− 0.2	72.7	0.0	61.8	− 3.9	52.4	− 0.8	32.0	− 5.2	25.0	− 0.4	47.1	− 2.3
Maquoketa (nr.)	9.6	− 9.0	12.4	− 9.4	39.7	+ 6.2	50.4	+ 3.1	56.2	− 2.8			73.1	+ 1.9	69.0	− 0.6	62.2	− 1.0	49.5	− 0.7	32.2	− 3.6	24.8	+ 0.8		
Marshalltown	9.8	−10.2	13.8	− 9.8	38.8	+ 3.2	51.8	+ 2.2	58.4	− 2.5	68.4	− 1.9	74.4	− 0.9	72.3	− 0.5	63.0	− 2.4	52.3	− 0.7	32.6	− 4.8	25.2	+ 0.1	46.7	− 2.4
Monroe	11.6	− 9.1	15.6	− 9.0	41.2	+ 5.2	53.0	+ 2.9	58.9	− 1.2	68.4	− 1.4	74.9	− 0.1	73.0	− 0.4	63.6	− 2.5	53.5	− 0.5	33.5	− 5.5	26.4	+ 0.5	47.8	− 1.8
Olin	9.2	− 9.0	13.4	− 8.7	39.4	+ 4.9	51.5	+ 2.3	58.0	− 2.3	66.8	− 2.7	73.6	− 0.4	69.7	− 1.9	63.4	− 0.3	49.4	− 1.6	33.0	− 3.3	25.2	+ 0.3	46.1	− 1.8
Onawa	11.8	− 7.0	15.6	− 7.6	39.6	+ 4.3	51.9	+ 1.8	58.4	− 2.5	67.8	− 2.2	74.4	+ 0.1	72.4	+ 0.3	61.2	− 3.4	52.2	+ 0.4	32.4	− 3.3	24.8	+ 0.9	46.9	− 1.5
Perry	10.3	− 8.7	12.8	−10.7	38.4	+ 3.0	51.5	+ 2.4	58.2	− 2.6	67.6	− 2.9	73.6	− 0.6	71.5	− 0.4	61.6	− 2.9	52.2	0.0	32.4	− 4.6	25.0	+ 0.6	46.3	− 2.2
Sac City	8.4	− 8.8	12.0	− 8.5	37.1	+ 4.0	49.0	+ 1.2	56.8	− 1.9			73.4	+ 0.5	71.9	+ 0.3	60.8	− 2.9	51.2	− 0.3	30.3	− 5.2	23.2	+ 0.7		
Sioux City	9.3	− 8.5	13.5	− 7.5	39.6	+ 6.9	51.5	+ 3.7	58.6	− 1.8	67.6	− 1.9	75.8	+ 1.5	73.0	+ 1.8	60.6	− 2.8	52.4	+ 1.5	31.8	− 3.4	24.8	+ 1.7	46.6	− 0.7
Tipton (near)	11.2	− 8.5	14.0	− 9.8	40.8	+ 5.3	51.6	+ 1.6	58.0	− 2.8	67.8	− 2.9	73.6	− 0.9	69.9	− 2.3	63.4	− 1.4	52.3	− 0.1	33.8	− 3.6	26.2	+ 0.6	46.9	− 2.1
Toledo	9.0	−10.3	13.2	− 9.8	38.8	+ 3.4	51.4	+ 1.8	57.6	− 3.3	67.0	− 2.9	72.7	− 1.5	70.4	− 1.7	62.2	− 2.9	50.8	− 2.5	32.3	− 5.6	24.8	+ 0.2	45.8	− 3.0
Waukee	11.0	− 7.8	14.0	− 9.1	39.3	+ 4.1	52.2	+ 2.8	58.2	− 2.5	68.4	− 1.1	72.9	− 1.2	72.5	0.0	62.0	− 2.8	52.5	− 0.3	33.0	− 4.1	25.8	+ 1.5	46.8	− 1.7
Webster City	7.2	− 9.7	10.0	−11.2	36.0	+ 2.0	49.6	+ 1.1	56.6	− 3.1	66.6	− 2.6	73.0	− 1.0	70.2	− 1.4	61.7	− 2.3	50.4	− 1.0	29.9	− 5.7	22.8	− 0.2	44.5	− 2.9
Williamsburg	10.4	− 8.6	13.8	− 9.0	40.6	+ 6.2	52.2	+ 3.2	58.0	− 1.8	67.4	− 1.0	73.6	+ 0.2	70.0	− 0.1	62.2	− 1.4	50.2	− 0.5	32.8	− 3.7	26.2	+ 1.8	46.4	− 1.3
Southern Division																										
Afton	12.6	− 8.5	16.6	− 9.0	41.0	+ 4.5	52.6	+ 2.4	59.1	− 2.3	69.1	− 0.3	75.8	+ 2.0			63.0	− 2.1	53.6	+ 0.3	33.8	− 4.7	27.4	+ 1.2		
Albia	13.6	− 7.3	17.6	− 7.8	42.8	+ 6.6	53.1	+ 2.4	59.4	− 1.9	68.8	− 1.6	74.8	+ 0.3	73.0	+ 0.4	64.3	− 1.1	53.6	+ 0.1	31.6	− 3.6	27.6	+ 1.4	48.6	− 1.0
Atlantic	11.6	− 7.7	15.7	− 8.2	39.8	+ 3.8	51.8	+ 2.0	57.8	− 2.9	68.2	− 1.2	73.8	− 0.4	73.0	+ 0.3	62.0	− 3.0	52.4	+ 0.2	33.4	− 4.1	25.6	− 0.1	47.1	− 1.8
Bonaparte (nr.)	14.6	− 7.4	17.5	− 9.3	43.4	+ 6.0	52.4	+ 1.6	58.6	− 2.7	67.8	− 2.3	74.2	− 0.2	71.0	− 1.8	64.2	− 1.7	53.6	− 0.1	35.4	− 4.2	28.2	+ 0.4	48.4	− 1.8
Burlington	17.0	− 7.2	20.4	− 8.3	48.8	+ 5.9	54.2	+ 2.1	61.1	− 1.8	70.4	− 1.3	76.8	+ 0.8	72.8	− 1.6	65.8	− 1.4	54.6	− 0.3	36.4	− 4.7	29.2	− 0.2	50.3	− 1.5
Centerville	14.2	− 8.4	17.4	− 9.7	44.2	+ 6.3	53.3	+ 1.3	59.8	− 1.6	70.0	− 0.5	75.8	+ 0.9	74.0	+ 0.8	64.4	− 1.2	53.8	− 0.2	35.0	− 4.5	27.0	− 0.7	49.1	− 1.4
Chariton (near)	12.3	− 8.7	16.2	− 8.9	41.6	+ 5.6	52.4	+ 2.9	58.6	− 1.5	68.6	− 0.2	74.4	+ 1.1	73.6	+ 1.7	64.2	− 0.6	54.6	+ 1.8	35.6	− 3.1	27.3	+ 0.9	48.3	− 0.7
Clarinda	14.0	− 8.4	18.3	− 9.5	41.7	+ 3.6	53.6	+ 2.5	59.2	− 3.7	69.8	− 1.6	74.6	− 0.9	74.0	− 0.6	63.2	− 3.1	53.4	− 0.6	33.7	− 6.0	27.6	+ 0.7	48.6	− 2.3
Columbus Jct.	14.4	− 7.4	17.5	− 8.8	43.2	+ 6.2	52.8	+ 1.6	58.7	− 3.5	67.2	− 3.5	72.8	− 2.2	69.6	− 3.5	63.2	− 2.9	52.2	− 2.1	34.1	− 5.5	27.0	− 0.8	47.7	− 2.7
Corydon (near)	13.6	− 8.3	16.4	− 9.8	42.2	+ 5.6	53.0	+ 2.5	59.2	− 2.1	69.4	− 1.8	74.2	− 0.4	72.4	− 0.8	63.3	− 2.4	53.3	− 0.5	34.2	− 4.6	27.6	+ 0.8	48.2	− 1.8
Creston	11.8	− 8.3	15.4	− 9.3	39.8	+ 4.2	52.2	+ 2.7	58.2	− 2.5	67.8	− 0.9	74.2	+ 0.8	73.2	+ 1.2	62.4	− 1.7	52.4	− 0.1	32.2	− 6.0	26.0	+ 1.0	47.1	− 1.6
Earlham (nr.)	11.7	− 7.5	14.0	− 9.3	38.8	+ 3.8	51.5	+ 2.8	57.1	− 3.1	66.8	− 1.7	73.4	+ 0.6	72.2	+ 0.8	61.3	− 3.3	53.0	+ 1.0	34.0	− 3.2	26.0	+ 1.5	46.6	− 1.5
Fairfield	13.6	− 8.0	16.4	− 9.1	43.0	+ 6.3	52.6	+ 2.5	59.2	− 1.9	68.4	− 1.4	74.1	− 0.3	71.0	− 1.8	64.2	− 1.4	52.4	− 0.6	33.6	− 4.9	26.8	+ 0.4	47.9	− 1.7
Glenwood	14.4	− 7.5	18.2	− 8.3	42.4	+ 4.5	53.8	+ 2.5	59.8	− 1.5	69.8	− 0.6	75.6	+ 0.3	75.0	+ 1.0	63.4	− 3.3	53.8	+ 0.2	33.5	− 5.1	27.3	+ 0.5	48.9	− 1.5
Indianola	12.0	− 7.7	15.9	− 8.7	41.0	+ 4.7	53.2	+ 2.7	58.8	− 2.7	69.0	− 1.0	75.1	+ 0.3	73.6	+ 0.5	64.2	− 1.4	54.2	+ 1.0	34.6	− 3.7	26.6	+ 1.0	48.2	− 1.2
Keokuk	17.6	− 7.3	21.4	− 6.9	46.0	+ 7.1	54.4	+ 2.1	60.4	− 3.4	70.0	− 2.5	77.0	+ 0.3	73.2	− 1.8	65.4	− 2.1	54.8	− 0.6	36.6	− 4.5	30.0	+ 0.4	50.6	− 1.6
Keosauqua	15.6	− 6.4	18.0	− 9.3	43.8	+ 5.9	53.0	+ 1.9	59.0	− 3.2	68.4	− 1.8	74.6	+ 0.1	71.8	− 1.4	63.6	− 2.2			31.8	− 4.2	28.4	+ 0.7		
Knoxville	12.3	− 9.1	16.0	− 9.7	42.3	+ 5.7	53.0	+ 2.4	58.3	− 3.2	68.6	− 1.9	74.5	0.0	73.1	+ 0.7	64.8	− 1.0	53.8	+ 0.1	35.0	− 3.8	27.8	+ 1.9	48.3	− 1.5
Lamoni	13.0	− 8.4	16.2	−11.2	41.4	+ 4.5	52.6	+ 2.1	58.5	− 2.7	68.4	− 1.2	74.2	+ 0.3	72.8	+ 0.4	63.3	− 1.4	53.4	− 0.1	33.6	− 5.1	27.5	+ 1.5	47.9	− 1.8
Lenox	13.1	− 8.5	16.8	− 8.7	40.8	+ 4.2	53.2	+ 3.0	59.4	− 2.5	69.6	− 1.2	75.8	+ 0.7	75.3	+ 1.6	63.7	− 2.0	53.6	+ 0.4	33.6	− 4.6	27.2	+ 1.6	48.5	− 1.3
Mount Ayr	13.9	− 8.3	16.5	− 9.9	41.6	+ 4.6	53.0	+ 2.8	58.4	− 2.9	68.1	− 1.9	73.8	− 0.5	73.8	+ 0.8	63.8	− 1.6	53.4	− 0.2	34.8	− 4.0	27.5	+ 1.0	48.2	− 1.7
Mt. Pleasant	15.6	− 6.9	19.0	− 7.5	44.4	+ 6.8	53.3	+ 1.8	60.2	− 2.3	69.2	− 2.4	75.4	− 0.3	72.2	− 1.4	65.6	− 0.5	53.8	− 0.2	36.1	− 3.6	28.4	+ 0.3	49.4	− 1.4
Oakland	13.5	− 6.4	17.6	− 7.0	40.6	+ 4.4	52.5	+ 2.4	58.7	− 2.5	68.1	− 2.1	74.7	+ 0.4	73.2	+ 0.3	62.3	− 2.8	53.0	+ 0.7	33.0	− 4.5	26.2	+ 1.0	47.8	− 1.3
Oskaloosa	12.8	− 7.9	16.4	− 8.3	42.2	+ 6.4	52.8	+ 2.7	58.8	− 2.4	68.2	− 1.4	73.8	+ 0.1	72.1	0.0	64.0	− 0.9	53.1	+ 0.3	34.8	− 3.7	27.4	+ 1.4	48.0	− 1.2
Ottumwa	15.4	− 7.2	18.2	− 8.5	44.0	+ 5.2	53.4	+ 1.2	60.4	− 2.6	68.8	− 2.9	75.9	− 0.4	73.3	− 0.7	64.9	− 1.4	54.2	− 0.4	36.2	− 4.0	28.6	+ 0.9	49.4	− 1.8
Sigourney (near)	12.7	− 7.8	16.3	− 8.4	42.4	+ 6.3	52.8	+ 2.8	59.6	− 1.2	68.4	− 1.3	74.3	+ 0.2	71.8	− 0.8	64.2	− 0.9	53.0	0.0	34.8	− 3.4	27.0	+ 0.3	48.1	− 1.2
Stockport	14.2	− 7.2	17.3	− 8.4	42.9	+ 6.5	52.6	+ 2.8	58.4	− 2.1	68.4	− 1.3	75.2	+ 1.4	71.1	− 1.1	64.0	− 1.0	53.4	+ 1.0	35.0	− 3.4	28.0	+ 1.2	48.4	− 0.9
Thurman	15.8	− 6.8	18.6	− 9.3	42.9	+ 4.9	54.6	+ 2.6	60.2	− 2.5	70.7	− 1.4	75.8	+ 0.2	75.3	+ 0.9	64.2	− 3.4	54.2	+ 0.9	34.0	− 4.4	27.2	− 0.2	49.5	− 1.5
Tingley	12.1	− 9.0	15.4	−10.7	41.0	+ 4.7	52.0	+ 2.9	58.6	− 1.8	69.0	− 0.8	74.8	+ 1.4	73.9	+ 1.7	63.4	− 1.4	53.6	+ 0.5	33.3	− 5.1	27.4	+ 1.4	47.9	− 1.4
Washington	13.8	− 7.2	18.0	− 7.5	43.6	+ 7.1	53.2	+ 2.5	59.6	− 1.9	68.5	− 1.7	73.5	− 1.0	71.6	− 0.8	65.3	+ 0.1	53.4	+ 0.1	34.4	− 4.3	27.8	+ 1.2	48.6	− 1.1
Wever	16.8		19.7		44.7		53.3		60.3		69.4		75.0		71.9		64.9		53.7		36.2					
Winterset	12.4	− 8.3	15.8	− 9.0	40.8	+ 4.6	52.0	+ 1.7	58.7	− 2.9	68.8	− 1.6	74.8	− 0.1	73.8	+ 0.6	63.0	− 2.5	53.5	− 0.1	34.2	− 4.2	27.5	+ 1.7	47.9	− 1.7
Omaha, Nb.	13.6	− 8.3	18.6	− 6.9	42.4	+ 5.4	54.2	+ 3.0	60.8	− 1.6	70.6	− 1.0	77.0	+ 0.3	75.8	+ 1.4	63.6	− 3.2	55.0	+ 0.7	33.8	− 4.7	27.8	+ 1.4	49.4	− 1.2

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

MEAN MONTHLY AND ANNUAL PRECIPITATIONS, WITH DEPARTURES FROM THE NORMAL, FOR 1929

STATIONS	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.
Northern Division																										
Akron	0.48	−0.11	0.58	−0.30	0.81	−0.45	3.25	+0.62	2.75	−1.00	3.50	−0.79	2.11	−1.70	3.79	+0.87	2.71	−0.08	2.45	+0.70	0.30	−0.84	0.15	−0.50	22.88	−3.58
Algona	1.45	+0.63	1.18	+0.09	0.32	−1.10	4.15	+1.53	4.05	−0.23	2.62	−1.89	2.49	−0.57	2.48	−1.07	5.09	+1.77	2.03	−0.24	0.32	−1.04	0.37	−0.58	26.55	−2.70
Alta	0.90	+0.14	2.01	+0.99	1.31	−0.24	3.52	+0.43	1.75	−3.16	3.13	−2.03	2.95	−1.30	2.12	−1.46	4.02	+0.74	2.38	+0.15	0.89	−0.53	0.24	−0.67	25.22	−6.94
Alton	1.45	+0.69	1.35	+0.39	1.75	+0.65	1.87	−0.62	1.37	−3.45	3.85	−0.11	1.69	−1.85	3.47	+0.37	2.76	−0.20	1.77	+0.01	0.50	−0.87	0.31	−0.49	22.14	−5.48
Belmond	1.96	+0.70	1.44	+0.33	0.74	−0.59	5.10	+1.84	3.56	−1.65	1.85	−2.91	3.62	0.00	3.52	+0.44	3.12	−1.08	1.66	−1.06	0.99	−0.66	0.22	−1.11	27.78	−5.75
Britt	1.53	+0.85	1.56	+0.75	0.91	−0.34	4.59	+2.02	3.72	−1.18	1.53	−3.00	3.04	−0.94	3.00	−0.77	3.79	+0.33	1.64	−0.76	0.47	−0.98	0.23	−0.57	26.01	−4.59
Chas. City	2.68	+1.63	1.73	+0.63	1.67	−0.10	4.89	+2.37	3.24	−1.09	1.49	−3.14	3.54	−0.23	1.24	−2.24	3.96	+0.28	1.49	−0.64	1.11	−0.42	0.25	−1.05	27.29	−4.20
Cherokee	0.65	+0.03	1.27	+0.28	0.82	−0.46	3.14	−0.85	1.30	−3.37	3.65	−0.79	2.82	−1.00	2.46	−0.74	4.54	+1.27	2.83	+0.92	0.37	−1.14	0.19	−0.63	23.04	−6.48
Decorah	2.48	+1.24	1.34	+0.29	1.63	−0.17	4.38	+1.83	3.38	−1.28	1.64	−2.88	3.19	−0.86	1.20	−2.10	3.55	−0.56	2.32	−0.50	1.22	−0.62	0.48	−0.80	26.81	−6.41
Dubuque	3.13	+1.83	1.00	−0.38	2.41	+0.38	3.47	+0.62	1.39	−2.83	4.69	+0.38	1.47	−2.47	1.83	−1.41	1.55	−2.46	2.10	−0.38	0.68	−1.02	0.54	−0.90	24.26	−8.64
Estherville	1.34	+0.76	0.75	−0.09	1.20	−0.07	3.35	+0.72	2.58	−1.89	1.48	−2.86	2.45	−1.71	1.33	−1.86	4.40	+1.07	3.05	+1.14	0.50	−0.81	0.45	−0.26	22.88	−5.86
Fayette	3.15	+1.90	1.32	+0.04	2.58	+0.47	5.36	+2.26	1.24	−3.62	1.76	−3.06	1.77	−2.06	2.62	−0.92	4.74	+1.07	1.94	−0.59	1.07	−0.65	0.73	−0.68	28.30	−5.84
Forest City	2.15	+1.27	1.55	+0.61	0.43	−1.00	5.03	+2.55	5.04	+0.40	1.81	−2.74	4.18	+0.61	2.70	−0.67	3.67	+0.34	1.43	−1.00	0.96	−0.59	0.49	−0.39	29.44	−0.61
Humboldt	1.75	+0.94	1.51	+0.59	1.00	−0.44	4.43	+1.75	2.91	−1.41	2.41	−1.97	3.65	−0.09	2.93	−0.37	3.12	−0.15	2.55	+0.33	0.78	−0.89	0.44	−0.42	27.48	−2.13
Independence	2.02	+0.85	1.00	−0.05	1.74	+0.02	3.79	+1.28	2.93	−1.34	2.38	−2.24	3.88	−0.26	3.31	+0.10	5.72	+1.77	1.97	−0.58	1.03	−0.41	0.45	−0.86	30.22	−1.72
Inwood (near)	0.85	+0.20	0.51	−0.36	0.40	−0.80	2.37	−0.16	3.42	−0.78	3.03	−2.28	4.02	+0.65	2.46	−0.13	4.10	+1.31	2.01	+0.10	0.21	−0.91	0.19	−0.47	23.57	−3.63
Lake Pk. (nr.)	1.06	+0.41	0.88	−0.04	1.33	+0.04	2.66	+0.28	2.72	−1.39	1.89	−2.01	3.86	+1.06	2.57	−0.93	5.54	+1.93	2.83	+1.49	0.08	−0.98	0.38	−0.25	25.80	−0.28
Le Mars	1.11	+0.51	2.01	+1.21	1.54	+0.29	2.44	−0.38	1.15	−3.38	3.51	−0.87	1.88	−2.20	2.01	−0.67	2.91	−0.32	1.94	−0.12	0.40	−0.73	0.30	−0.57	21.20	−7.20
Mason City	1.38	+0.41	1.99	+1.04	1.02	−0.35	5.38	+2.83	3.53	−1.16	1.45	−3.69	1.69	−1.83	2.51	−1.23	4.09	+1.28	1.20	−1.00	1.01	−0.47	0.30	−0.58	25.55	−4.75
New Hampton	1.96	+0.98	1.12	+0.07	1.54	−0.38	3.95	+1.35	3.61	−1.19	1.26	−3.31	1.93	−1.84	1.70	−1.80	1.70	+1.11	1.50	−1.07	1.12	−0.57	0.28	−0.81	24.70	−7.46
Oelwein	1.44	+0.28	0.96	−0.22	1.82	0.00	5.99	+3.21	2.60	−1.82	2.02	−2.44	4.95	+1.03	2.45	−0.87	4.90	+1.11	1.35	−1.18	1.16	−0.42	0.32	−0.96	29.96	−2.28
Osage	2.22	+1.21	1.68	+0.62	1.05	−0.54	3.38	+0.92	3.77	−0.91	1.23	−3.52	2.33	−0.94	1.19	−1.94	4.09	+0.58	1.54	−0.90	0.91	−0.60	0.55	−0.67	23.94	−6.69
Pocahontas	1.06	+0.28	1.25	+0.13	1.26	−0.11	4.89	+2.17	1.62	−2.81	2.63	−2.01	3.34	−0.11	2.85	−0.52	3.67	+0.08	2.25	−0.48	0.60	−1.08	0.28	−0.64	25.70	−5.10
Postville (nr.)	2.10	+0.87	0.90	−0.21	1.56	−0.36	2.87	−0.14	2.10	−2.96	2.35	−2.31	1.82	−2.57	1.67	−1.78	3.41	−0.43	1.37	−1.31	1.13	−0.56	0.67	−0.69	21.95	−12.48
Rock Rapids	1.23	+0.54	1.08	+0.40	0.81	−0.51	4.70	+1.90	4.48	+0.93	2.42	−2.20	3.11	−0.26	3.15	+0.80	5.71	+3.12	2.83	+1.04	0.25	−0.94	0.23	−0.40	30.00	+4.42
Sanborn	1.64	+0.94	0.76	−0.24	1.12	−0.28	2.84	−1.16	3.49	−1.30	4.29	−0.44	3.04	−0.46	3.20	−0.01	5.18	+1.98	2.47	+0.62	0.11	−1.19	0.36	−0.49	28.50	−1.03
Sheldon	1.14	+0.42	1.10	+0.12	1.14	−0.16	2.70	−0.25	2.48	−2.27	4.01	−0.39	3.15	−0.95	3.84	+0.84	4.66	+1.40	2.88	+0.88	0.25	−1.23	0.21	−0.61	27.56	−2.20
Sioux Center	1.00	+0.26	0.96	−0.01	0.58	−0.68	1.81	−1.01	2.62	−2.09	2.90	−1.16	3.10	−0.73	1.48	−1.34	3.24	+0.29	2.42	+0.58	0.28	−0.90	0.18	−0.70	20.57	−7.49
Spencer	1.60	+0.90	1.32	+0.41	1.09	−0.23	3.20	+0.30	2.05	−2.15	2.19	−2.01	2.30	−1.20	2.03	−1.37	3.80	+0.48	2.30	+0.38	1.41	+0.11	0.42	−0.43	23.71	−4.81
Storm Lake	0.83	+0.13	1.51	+0.55	1.59	+0.29	3.02	+0.09	2.03	−2.46	2.96	−2.04	4.19	+0.12	2.95	−0.19	3.46	+0.21	1.84	−0.20	0.78	−0.52	0.34	−0.48	25.53	−4.50
Washta	0.53	−0.08	0.89	−0.05	1.26	+0.25	2.24	−0.38	1.26	−3.36	6.34	+1.76	2.65	−1.58	3.07	+0.13	3.88	+0.49	2.51	+0.40	0.48	−0.84	0.16	−0.67	25.27	−3.93
Waterloo	2.63	+1.51	1.22	+0.04	1.92	+0.25	3.53	+1.00	2.13	−1.96	1.00	−3.13	3.40	−0.58	2.14	−1.17	3.66	−0.38	1.57	−0.87	1.30	−0.19	0.43	−0.77	24.93	−6.25
West Bend	0.92	−0.03	0.92	−0.06	1.08	−0.48	4.24	+1.37	3.98	−0.21	1.99	−2.30	2.67	−0.80	1.70	−1.99	4.21	+1.07	2.27	+0.24	0.56	−0.93	0.11	−1.05	21.65	−5.17
Central Division																										
Ames	1.81	+0.91	1.97	+1.03	1.02	−0.40	3.79	+0.81	2.31	−2.20	2.66	−1.71	6.62	+2.76	2.83	−0.61	1.60	+0.93	1.92	−0.69	1.29	0.00	0.48	−0.58	31.30	+0.25
Audubon (nr.)	2.32	+1.49	2.23	+1.20	0.67	−0.78	4.55	+1.43	1.76	−2.62	3.99	−0.03	4.39	+0.72	0.84	−2.79	2.91	−0.85	4.08	+1.77	1.26	−0.07	0.39	−0.60	29.39	−1.13
Baxter	1.99	+1.09	1.61	+0.59	1.85	+0.01	3.62	+0.56	2.57	−2.79	2.10	−2.49	5.56	+1.67	2.41	−0.82	5.23	+1.26	2.15	−0.27	1.68	+0.25	0.19	−0.76	30.96	−1.70
Belle Plaine	3.17	+1.61	1.42	−0.18	1.85	−0.43	3.40	+0.01	1.33	−3.48	1.56	−2.79	4.22	+0.27	7.03	+3.80	2.53	−1.04	2.73	+0.24	1.73	+0.04	0.65	−0.70	31.62	−2.67
Boone (near)	1.80	+0.96	1.49	+0.49	1.12	−0.32	3.26	+0.38	2.32	−2.71	1.56	−2.97	4.64	+0.92	2.37	−1.19	5.15	+1.10	2.26	−0.53	1.00	−0.37	0.45	−0.44	27.42	−4.68
Carroll	1.05	+0.27	1.49	+0.43	0.55	−1.14	3.42	+0.47	3.34	−1.22	3.62	−1.16	3.77	+0.19	2.05	−1.80	3.88	+0.41	2.49	−0.09	1.03	−0.29	0.50	−0.48	27.19	−4.41
Cedar Rapids	3.07	+1.67	1.32	−0.08	1.31	−0.96	4.32	+1.07	1.32	−3.38	1.32	−3.03	5.30	+1.40	4.99	+1.49	2.20	−1.40	2.89	+0.44	1.49	−0.16	0.56	−0.75	30.12	−3.69
Clinton	3.28	+1.46	0.78	−1.18	2.13	−0.69	5.50	+2.46	2.53	−2.07	4.38	−0.01	3.07	−0.82	2.49	−1.14	3.30	−0.19	3.33	+0.77	1.36	−0.53	0.44	−1.34	32.59	−3.28
Davenport	3.01	+1.59	0.81	−0.77	2.60	+0.29	5.49	+2.80	1.23	−2.71	4.30	+0.19	5.64	+2.31	2.69	−0.80	3.13	−0.45	3.77	+1.38	1.51	−0.31	0.53	−0.95	34.71	+2.57
Denison	0.88	+0.22	0.88	−0.06	0.41	−1.12	2.27	−0.56	2.27	−2.01	3.55	−0.54	3.73	−0.02	3.02	−0.79	2.67	−0.45	1.63	−0.60	0.53	−0.82	0.20	−0.67	22.04	−7.42
Des Moines	2.70	+1.63	2.06	+0.94	1.11	−0.67	4.38	+1.47	2.18	−2.38	2.42	−2.34	3.72	+0.22	2.82	−0.70	4.67	+1.00	2.74	+0.24	1.87	+0.44	0.34	−0.88	31.01	−1.03
Fairport	3.03	+1.40	0.65	−1.10	2.26	−0.20	6.45	+3.47	1.50	−2.68	3.26	−1.01	8.28	+1.67	3.09	−0.86	3.59	−0.01	3.51	+1.02	1.79	−0.21	0.48	−1.08	37.89	+3.41
Fort Dodge	1.69	+0.85	1.47	+0.62	1.21	−0.39	3.49	+0.75	2.51	−2.07	2.15	−2.27	4.14	+0.23	3.92	+0.32	4.27	−0.11	1.60	−1.44	0.82	−0.76	0.33	−0.50	27.60	−4.77
Grundy Cntr	3.15	+2.18	1.34	+0.40	2.38	+0.58	4.91	+1.68	2.17	−2.77	1.69	−3.39	5.62	+1.89	2.20	−1.10	5.51	+1.74	1.94	−0.85	1.88	+0.44	0.58	−0.58	33.37	+0.22
Harlan	0.97	+0.17	1.28	+0.15	0.70	−0.63	4.17	+1.29	2.81	−1.72	3.18	−1.45	3.61	−0.27	2.38	−1.28	3.34	−0.43	2.33	−0.32	1.22	−0.24	0.35	−0.65	26.37	−5.38
Iowa City	2.57	+0.93	1.04	−0.47	2.26	−0.14	4.73	+1.55	1.94	−2.59	3.14	−1.35	5.42	+1.30	3.96	−0.14	2.36	−1.52	3.75	+1.01	1.52	−0.65	0.64	−0.97	33.33	−3.04
Iowa Falls	2.73	+1.49	3.03	+1.40	1.70	−0.17	5.82	+2.70	4.77	+0.16	1.81	−3.65	3.99	+0.05	3.29	−0.12	5.42	+1.62	1.67	−0.79	1.41	−0.19	0.67	−0.63	36.31	+1.87
Jefferson	1.80	+0.91	2.10	+1.07	1.15	−0.31	3.02	+0.17	2.84	−1.71	2.07	−2.13	2.44	−1.24	1.18	−2.00	3.36	−0.33	1.89	−0.65	1.38	−0.55	0.55	−0.52	24.08	−7.26
Little Sioux	0.52	−0.23	1.69	+0.41	0.74	−0.58	2.80	+0.13	2.19	−2.25	3.96	−0.30	5.17	+0.97	2.37	−1.37	2.99	−0.18	2.81	+0.76	1.27	−0.30	0.30	−0.58	26.81	−3.52
Logan	1.09	+0.09	1.12	−0.07	1.10	−0.56	5.48	+2.69	2.61	−1.63	3.12	−2.06	6.03	+1.62	2.48	−1.21	1.72	+1.56	2.73	+0.35	1.68	+0.28	0.43	−0.70	32.59	+0.36
Marshalltown	2.30	+1.13	1.57	+0.36	1.60	−0.26	4.27	+1.43	2.11	−2.38	1.49	−3.08	5.02	+1.01	5.76	+2.76	2.83	−1.28	1.90	−0.86	1.03	−0.49	0.37	−0.90	30.25	−2.56
Monroe	2.20	+1.10	1.59	+0.39	1.19	−0.61	4.82	+1.57	1.61	−3.34	1.59	−2.91	4.89	+1.33	1.10	−2.30	4.05	−0.05	3.05	+0.55	1.92	+0.42	0.31	−0.75	28.32	−4.60
Olin	2.80	+1.37	0.94	−0.71	1.73	−0.53	4.90	+2.09	2.77	−1.92	3.23	−0.95	3.08	−0.77	2.02	−1.58	1.92	−1.75	3.01	+0.52	1.15	−0.47	0.36	−0.99	27.91	−5.69
Onawa	0.40	−0.59	1.40	+0.12	1.20	−0.42	1.87	−0.80	1.97	−2.86	5.63	+0.95	4.08	−0.07	2.47	−1.59	3.31	−0.20	3.60	+1.42	0.84	−0.54	0.15	−0.95	26.92	−5.53
Perry	2.21	+1.19	1.92	+0.60	0.63	−1.11	3.24	+0.25	1.36	−3.48	1.84	−2.58	4.21	+0.17	2.59	−1.48	7.36	+3.59	2.91	+0.19	0.89	−0.63	0.51	−0.51	29.67	−3.80
Sioux City	0.59	−0.15	1.00	+0.18	1.12	−0.03	2.99	+0.29	1.73	−2.32	8.47	+4.48	3.27	−0.27	1.55	−1.58	3.18	+0.15	2.23	+0.46	0.41	−0.59	0.27	−0.63	26.81	−0.01
Tipton (near)	2.75	+1.30	1.07	−0.42	2.58	−0.01	4.88	+1.64	1.93	−2.96	4.58	+0.48	4.54	+0.71	4.61	+0.79	2.54	−1.39	3.57	+1.19	1.66	−0.21	0.65	−0.83	35.36	+0.29
Toledo	2.91	+1.81	1.43	+0.30	2.25	+0.45	4.43	+1.37	1.55	−3.14	0.82	−3.70	6.08	+2.54	9.27	+6.34	3.35	−0.62	2.16	−0.35	1.28	−0.32	0.48	−0.64	36.01	+4.04
Webster City	1.76	+0.70	1.17	+0.03	0.88	−0.62	2.81	+0.02	4.02	−0.25	1.57	−2.68	5.48	+2.14	3.82	+1.00	5.15	+1.21	1.10	−1.38	0.88	−0.73	0.31	−0.67	28.95	−1.23
Williamsburg	2.55	+1.15	0.92	−0.38	1.21	−0.90	3.82	+0.47	1.50	−3.10	3.14	−1.36	5.65	+1.70	2.77	−0.73	3.55	−0.10	2.61	+0.16	2.58	+0.88	0.30	−0.95	30.60	−3.16
Southern Division																										
Albia	2.15	+0.96	1.32	−0.04	1.44	−0.52	4.90	+1.82	1.62	−3.37	3.21	−1.11	3.34	−0.80	0.91	−2.42	5.50	+1.44	3.96	+1.68	1.40	−0.16	0.31	−0.76	30.06	−3.28
Atlantic	2.30	+1.46	2.30	+1.16	0.87	−0.72	4.81	+1.67	1.96	−2.27	2.65	−2.41	4.21	+0.70	1.52	−1.95	4.38	+0.97	5.39	+2.79	1.19	−0.11	0.12	−1.00	31.73	+0.29
Bonap'te (nr.)	2.07	+0.53	0.67	−0.59	2.21	−0.04	6.08	+2.88	2.06	−2.57	5.37	+1.01	3.97	+0.11	2.57	−0.92	3.60	−0.53	3.88	+2.00	1.19	−0.61	0.70	−0.56	34.37	+0.71
Burlington	4.10	+2.34	1.00	−0.81	4.32	+1.81	7.38	+4.28	2.81	−1.72	5.24	+0.95	5.79	+2.38	2.81	−0.92	3.34	−0.58	5.02	+2.14	1.22	−0.64	1.21	−0.39	44.24	+9.44
Centerville	2.36	+1.11	0.71	−0.79	1.73	−0.20	6.81	+3.31	1.89	−2.70	4.94	+0.54	7.33	+3.40	2.26	−1.22	5.18	+1.08	5.93	+3.72	1.23	−0.21	0.70	−0.40	41.07	+7.64
Chariton (nr.)	1.20	+0.13	0.34	−0.79	0.95	−0.79	4.08	+0.78	0.82	−3.70	2.61	−1.77	4.70	+0.39	1.96	−1.73	2.43	−1.51	3.88	+1.56	1.11	−0.35	0.29	−0.87	24.37	−8.65
Clarinda	0.96	0.00	0.68	−0.46	1.56	−0.16	7.05	+4.14	3.99	−0.96	5.46	+0.75	8.79	+4.46	2.22	−1.31	3.88	+0.41	5.67	+3.03	1.57	+0.05	0.04	−1.06	41.87	+8.89
Columbus Jct.	2.61	+1.30	0.82	−0.58	2.43	+0.39	7.30	+4.32	1.37	−2.94	4.14	−0.16	7.81	+4.24	2.26	−2.03	3.92	+0.26	3.24	+0.69	1.61	−0.13	0.64	−0.68	38.15	+4.63
Corydon (near	2.43	+1.16	1.10	−0.30	1.80	−0.21	5.80	+2.39	1.32	−3.35	2.90	−1.74	5.75	+1.91	1.77	−1.47	2.93	−1.16	4.09	+1.50	1.86	+0.36	0.18	−1.11	33.92	−1.99
Creston	1.65	+0.60	1.40	+0.06	0.49	−0.97	4.80	+1.37	2.47	−2.07	3.84	−1.11	3.64	−0.36	1.25	−2.01	1.00	0.00	4.26	+1.48	2.01	+0.29	0.18	−0.88	29.99	−3.60
Cmb'ld (near)	1.81	+1.01	2.77	+1.68	0.50	−1.04	4.87	+2.13	1.90	−2.28	2.75	−1.57	4.21	+0.56	1.40	−2.05	4.35	+0.97	5.32	+2.61	1.60	+0.51	0.22	−0.71	31.73	+1.85
Earlham (nr.)	2.89	+1.71	1.80	+0.39	0.81	−0.90	5.14	+1.79	2.65	−1.79	2.55	−1.88	2.87	−0.79	2.28	−1.55	3.49	−0.20	2.92	+0.48	1.32	−0.34	0.28	−0.91	29.00	−3.99
Fairfield	1.88	+0.36	1.57	−0.02	2.32	−0.01	7.06	+3.40	1.59	−3.85	2.43	−2.40	4.41	+0.59	5.52	+2.05	3.19	−0.41	4.34	+1.58	1.27	−0.89	0.67	−0.95	36.25	−0.58
Glenwood	0.98	+0.27	1.46	+0.59	0.89	−0.45	4.14	+1.25	2.31	+2.30	4.00	−0.87	7.38	+3.78	1.19	−2.17	3.13	+0.45	4.31	+1.63	1.84	+0.69	0.03	−0.61	31.66	+2.23
Indianola	2.70	+1.55	1.45	+0.24	1.14	−0.49	5.56	+2.40	2.19	−2.26	2.28	−2.16	3.59	−0.20	2.57	−1.27	2.76	−0.97	2.84	+0.48	1.52	−0.05	0.57	−0.75	29.17	−3.48
Keokuk	3.14	+1.58	0.97	−0.58	4.78	+2.40	4.60	+1.61	2.97	−0.96	3.91	−0.22	5.75	+2.34	1.41	−1.79	4.77	+0.93	4.27	+2.01	1.51	−0.43	0.69	−0.76	38.77	+6.13
Keosauqua	1.97	+0.41	0.55	−0.92	2.11	−0.16	7.13	+3.74	1.88	−3.00	5.73	+1.26	3.17	−0.82	1.16	−2.11	3.56	−0.64	5.40	+3.41	1.85	+0.24	0.52	−0.86	35.03	+0.55
Knoxville	2.95	+1.72	2.06	+0.81	1.00	−0.80	3.78	+0.38	1.38	−2.87	1.52	−2.58	2.68	−1.29	1.28	−2.63	2.62	−1.52	2.54	+0.23	2.34	+0.78	0.49	−0.83	24.64	−8.60
Lamoni	2.30	+1.24	1.38	+0.14	1.34	−0.53	4.40	+0.98	1.34	−3.61	5.60	+0.75	7.33	+3.39	1.23	−2.55	2.97	−1.01	4.88	+1.95	0.96	−0.48	0.08	−1.10	33.81	−0.86
Lenox	1.85	+1.18	1.09	+0.10	0.87	−0.67	6.87	+3.60	2.64	−2.04	4.42	+0.25	3.98	−0.23	1.82	−1.54	3.53	−0.68	5.78	+3.06	1.84	+0.37	0.66	−0.32	35.35	+3.11
Mount Ayr	2.91	+1.89	1.18	−0.12	1.60	−0.30	4.04	+0.68	1.61	−3.86	4.40	−0.34	3.94	−0.48	1.45	−1.95	3.00	−0.95	4.94	+2.42	1.36	−0.18	0.12	−1.11	30.55	−4.30
Mt. Pleasant	2.78	+1.24	0.64	−0.80	2.41	+0.21	7.35	+4.38	1.42	−3.20	3.18	−1.85	4.29	+0.63	2.50	−0.77	3.83	+0.30	4.97	+2.57	1.33	−0.48	0.64	−0.73	35.34	+1.50
Oakland	1.41	+0.61	1.39	+0.34	0.50	−0.97	4.11	+1.25	3.01	−1.27	3.38	−1.42	7.77	+3.93	2.07	−1.40	4.47	+1.21	3.31	+0.76	2.18	+0.93	0.04	−0.92	33.67	−3.05
Oskaloosa	2.42	+1.39	1.43	+0.28	1.65	−0.26	4.44	+1.59	1.14	−3.11	2.76	−1.22	4.98	+1.26	2.12	−0.97	3.30	−0.10	3.65	+1.40	1.63	+0.03	0.65	−0.52	30.17	−0.23
Ottumwa	2.49	+0.97	0.74	−0.71	2.49	+0.52	6.17	+3.26	2.00	−2.65	2.96	−1.05	4.16	+0.60	1.94	−1.51	3.49	−0.36	4.79	+2.41	1.98	+0.60	0.44	−0.82	33.65	+1.26
Sig'rney (nr.)	2.63	+1.37	1.19	−0.21	2.66	+0.65	4.27	+0.99	2.05	−2.22	2.08	−2.18	5.01	+1.16	2.64	−0.46	3.49	−0.20	3.23	+0.98	1.45	−0.20	0.58	−0.65	31.28	−0.97
Stockp'rt (nr.)	2.77	+1.39	0.76	−0.63	2.75	+0.58	7.76	+4.64	1.77	−2.89	3.39	−1.10	3.86	−0.73	3.58	+0.48	4.00	−0.09	4.24	+2.18	1.34	−0.30	0.58	−0.69	36.80	+2.84
Thurman	0.87	+0.19	0.68	−0.70	0.59	−0.89	5.18	+2.03	3.74	−1.22	3.59	−1.61	10.09	+5.92	1.32	−2.75	2.70	−1.56	5.88	+2.94	1.31	−0.54	0.04	−1.27	35.98	+0.44
Tingley	2.61	+1.71	1.60	+0.42	0.84	−0.96	4.34	+0.96	1.86	−3.11	4.01	−0.66	2.64	−1.50	1.41	−2.07	3.93	−0.21	4.66	+1.97	1.61	+0.14	0.25	−0.89	29.76	−4.20
Washington	2.65	+1.17	1.46	+0.17	2.58	+0.39	6.09	+3.34	1.65	−2.51	4.22	+0.31	6.93	+3.59	1.86	−1.79	3.63	+0.25	3.60	+1.40	1.21	−0.46	0.61	−0.71	36.49	+5.15
Winterset	2.15	+1.23	2.50	+1.42	0.70	−1.05	5.69	+2.11	2.92	−1.60	3.02	−1.85	2.23	−2.17	2.21	−1.28	3.07	−0.68	3.48	+1.11	2.28	+0.81	0.32	−0.87	30.57	−2.82
Omaha, Nb.	1.15	+0.45	2.20	+1.31	0.51	−0.83	3.98	+1.47	2.02	−1.75	2.94	−1.62	5.04	+1.50	1.56	−1.49	2.05	−1.16	2.69	+0.52	1.38	+0.31	0.14	−0.79	25.69	−2.08

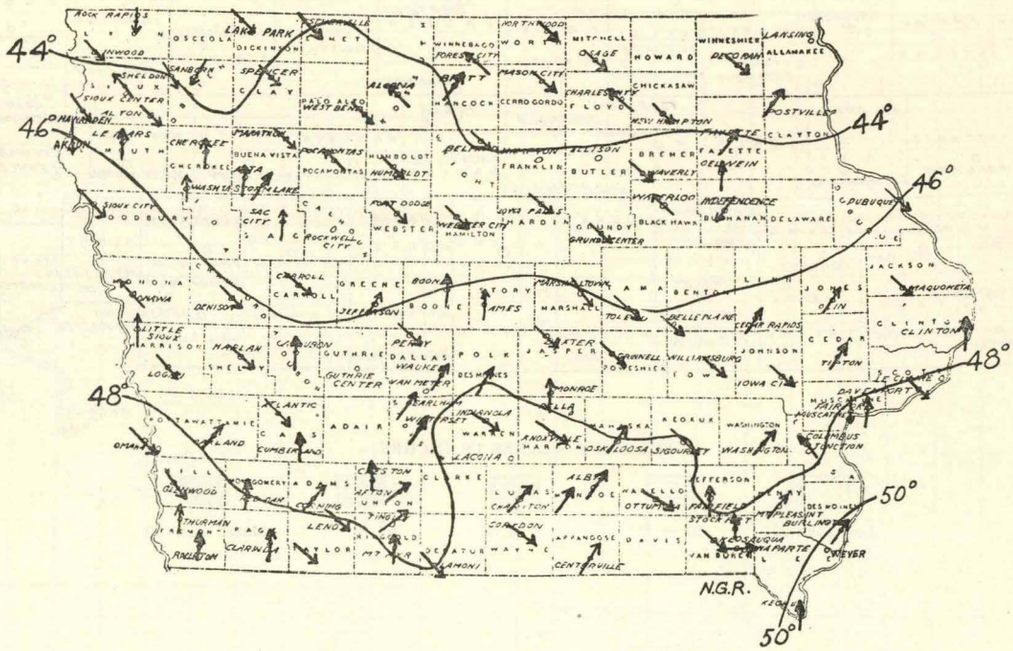
DATES OF KILLING FROST, 1929

Charles City, Davenport, Des Moines, Dubuque, Keokuk, Sioux City, Omaha and Marshalltown, excluded from averages because of city influences.

STATIONS	Last in Spring	First in Autumn	Days in Growing Season
Northwest District			
Alta	May 16	Sept. 18	125
Alton	May 16†	Sept. 18	125
Cherokee	May 16†	Sept. 18†	125
Estherville	May 19†	Sept. 18	122
Inwood (near)	May 16	Sept. 18	125
Lake Park (near)	May 16†	Sept. 18†	125
Le Mars	May 16†	Sept. 18	125
Pocahontas	May 19†	Sept. 18†	122
Rock Rapids	May 16†	Sept. 18	125
Sanborn	May 16†	Sept. 18	125
Sheldon	May 16†	Sept. 18	125
Sioux Center	May 16†	Sept. 18†	125
Spencer	May 16†	Sept. 18†	125
Storm Lake	May 16†	Sept. 18	125
Washta	May 21†	Sept. 18	120
West Bend	May 19†	Sept. 18†	122
Rural Average	May 17	Sept. 18	124
West Central District			
Audubon (near)	May 16†	Sept. 18	125
Carroll	May 16†	Sept. 18†	125
Denison	May 16†	Sept. 18†	125
Guthrie Center	May 16†	Sept. 18†	125
Harlan	May 16†	Oct. 21†	158
Jefferson	May 16†	Sept. 18†	125
Little Sioux	May 16†	Oct. 21†	158
Logan	May 16†	Oct. 21†	158
Onawa	May 16†	Oct. 21†	158
Rockwell City	May 16†	Sept. 18†	125
Sac City	May 16†	Sept. 18†	125
Sioux City	May 5	Oct. 23	171
Rural Average	May 16	Sept. 30	137
Southwest District			
Atlantic	May 16†	Sept. 18	125
Clarinda	May 16†	Oct. 21†	158
Corning	May 16†	Oct. 21	158
Cumberland (near)		Sept. 18†	
Glenwood	May 2†	Oct. 13	164
Lenox	May 16†	Oct. 25	162
Oakland	May 16†	Sept. 18†	125
Red Oak (near)			
Riverton (near)		Oct. 21†	
Thurman	May 2†	Oct. 25†	176
Omaha, Neb.	April 2†	Oct. 23	204
Rural Average	May 12	Oct. 12	153
North Central District			
Algona	May 16†	Sept. 18	125
Allison	May 19	Sept. 18†	122
Belmond	May 19	Sept. 18	122
Britt	May 19†	Sept. 18	122
Charles City	May 9	Sept. 18	132
Forest City	May 19†	Sept. 18	122
Hampton			
Humboldt	May 19†	Sept. 18	122
Mason City	May 19	Sept. 18	122
Northwood	May 19†	Sept. 18	122
Osage	May 19†	Sept. 18†	122
Rural Average	May 19	Sept. 18	122
Central District			
Ames	May 7†	Sept. 18	134
Baxter	May 19†	Sept. 18	122
Boone (near)	May 21	Sept. 18	120
Des Moines	April 13	Oct. 25	195
Fort Dodge	May 19†	Sept. 18†	122
Grinnell	May 19†	Sept. 18	122
Grundy Center	May 19†	Sept. 18	122
Iowa Falls	May 19	Sept. 18	122
Marshalltown	May 19	Sept. 18	122
Monroe	May 5	Sept. 18	136
Perry	May 21†	Sept. 18	120
Toledo	May 19	Sept. 18	122
Waukee	May 16†	Sept. 18	125
Webster City	May 21†	Sept. 18	120
Rural Average	May 17	Sept. 18	124
South Central District			
Afton	May 2†	Oct. 25†	176
Albia	May 5†	Oct. 25†	173
Centerville	May 5†	Oct. 25†	173
Chariton (near)	May 5†	Oct. 22†	170
Corydon (near)	April 15	Oct. 23†	191
Creston	May 3†	Oct. 23†	173
Earlham (near)	May 16†	Sept. 18	125
Indianola	May 5†	Sept. 18	136
Knoxville	May 5†	Oct. 23†	171
Lamoni	May 3†	Oct. 23†	173
Mount Ayr	May 5†	Oct. 25	173
Tingley	May 2†	Oct. 25	176
Winterset	May 16†	Sept. 18	125
Rural Average	May 4	Oct. 16	165
Northeast District			
Decorah	May 19†	Sept. 18	122
Dubuque	April 1†	Oct. 23	205
Fayette	May 19	Sept. 18	122
Independence	May 19†	Sept. 18†	122
New Hampton	May 19†	Sept. 18	122
Oelwein	May 19†	Sept. 18†	122
Postville (near)	May 21†	Sept. 18	120
Waterloo	May 19†	Sept. 18	122
Waverly	May 19†	Sept. 18	122
Rural Average	May 19	Sept. 18	122
East Central District			
Belle Plaine	May 19†	Sept. 18	122
Cedar Rapids	May 21†	Sept. 18	120
Clinton	May 5†	Sept. 18†	136
Davenport	April 1	Oct. 23	205
Fairport	May 4†	Oct. 23	172
Iowa City	May 5	Sept. 18†	136
Maquoketa (near)	May 21†	Sept. 18†	120
Olin	May 21†	Sept. 18†	120
Tipton (near)	May 19†	Sept. 18†	122
Williamsburg	May 21†	Sept. 18†	120
Rural Average	May 15	Sept. 22	130
Southeast District			
Bonaparte (near)	April 2†	Oct. 23†	204
Burlington	April 1†	Oct. 23†	205
Columbus Junction	May 5†	Oct. 23†	171
Fairfield	May 5†	Sept. 18†	136
Keokuk	April 1	Nov. 9	222
Keosauqua	May 5†	Oct. 23†	171
Mt. Pleasant	April 2†	Oct. 23	204
Oskaloosa	May 5	Oct. 23	171
Ottumwa	May 6†	Oct. 25	172
Sigourney (near)	May 5†	Sept. 18	136
Stockport (near)	May 5†	Oct. 23†	171
Washington	May 5†	Sept. 18†	136
Wever	May 5†	Oct. 23†	171
Rural Average	April 27	Oct. 14	170
State Average, 1929	May 13	Sept. 28	138
State Normal	May 3	Oct. 5	155

†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, 1929



GENERAL SUMMARY

(Continued from Page 98)

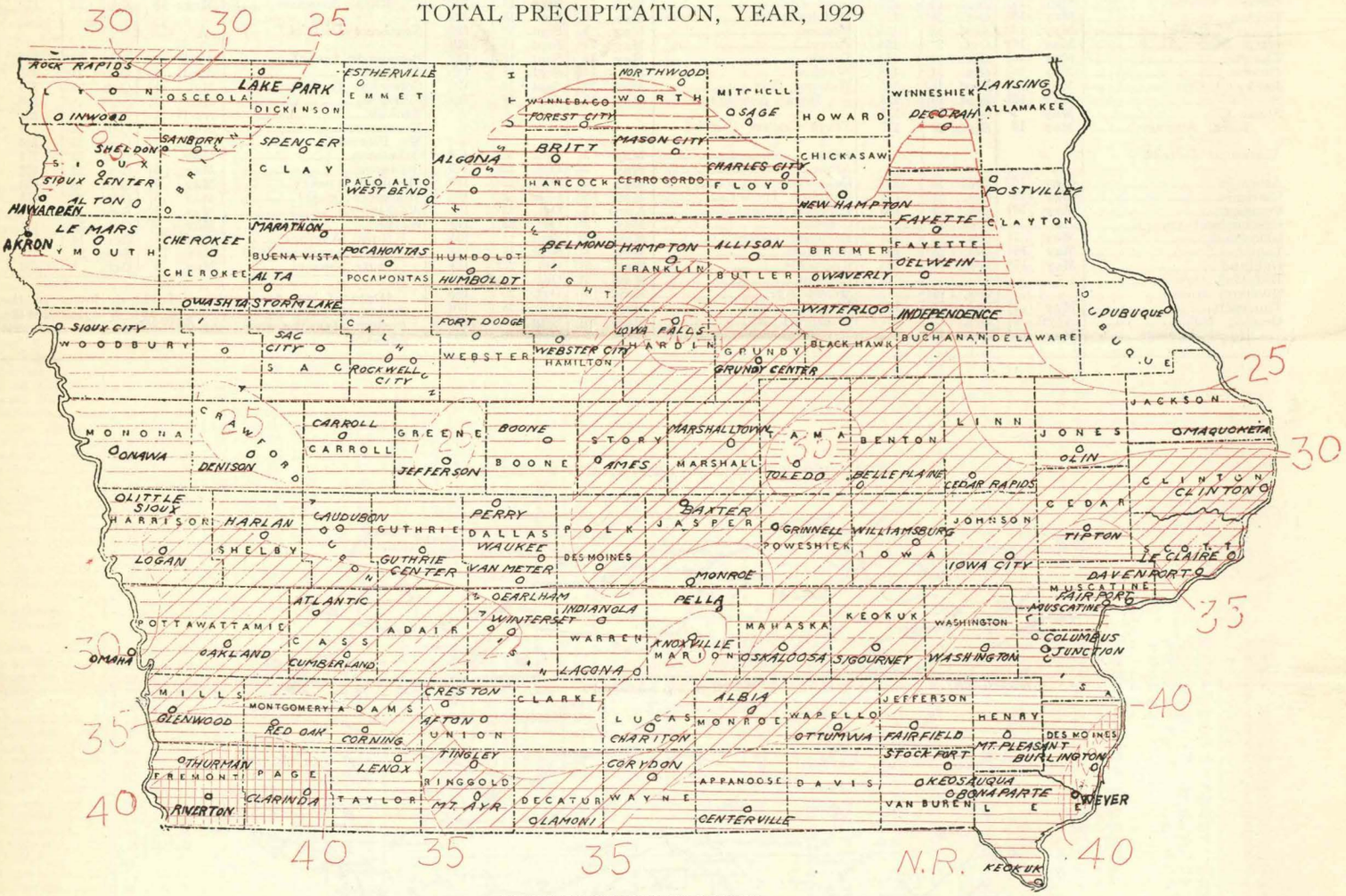
was September 28th, a week earlier than normal. The growing season was 17 days shorter than normal. Rainfall was ample.

October temperature averaged about normal, with frequent frosts, and a general freeze on the 23d. Corn continued to grow and mature in the southern counties to an unusual degree, so that the average yield per acre reported by correspondents on November 1st, was somewhat higher than on October 1st. Frequent rains prevented corn from drying, so that the moisture content was about 5% higher than a year ago. Sugar beets were harvested with no damage from freezing, and commercial canneries were able to complete operations with very little loss of material. Road construction was pushed with little interruption.

November was generally cold, with an outstanding cold period at the close of the month, and a temperature of 12 below zero at Webster City on the 30th. Precipitation was deficient. These conditions favored the drying and husking of the corn crop. Highway paving was brought to a satisfactory conclusion. Gales of unusual strength occurred on the 27th.

Frequent fluctuations in temperature occurred in December till an abnormally warm period came toward the close of the month, with the highest temperature generally on the 30th, when records were broken for high temperature on that date. Precipitation was generally below normal, but there was a remarkable period of cloudy, drizzly weather from about the 6th to the 19th, during which, in most of the state, the sun was not visible for 10 days. At Des Moines this exceeded by four days all previous records for consecutive days without sunshine. Though conditions were not very favorable, most of the corn was in the crib by the end of the month, but a little remained in the field in the southern counties.

TOTAL PRECIPITATION, YEAR, 1929



SCALE OF SHADES IN INCHES

Less than 25	25 to 30	30 to 35	35 to 40	More than 40